Appendix I

Site Inspection Photos and Observations

I. OU3 Herriman Agricultural Properties

In September 2008 DERR performed an inspection of the residential and agricultural properties within and around the City of Herriman. As observed during the inspection, the agricultural properties are primarily used to raise either alfalfa or other crops (dependent upon the planting cycle). Some of the agricultural fields have been left to fallow and subsequently have been repopulated with native weed species such as grasses and forbs (i.e. sage and rabbit brush). The residential properties also appeared to be structural intact (in terms of consistent vegetated soil covers).

The following photos document the current conditions of the selected remedy:

Figure No. 1: Typical agricultural property in use in the Community of Herriman.

Figure No. 2: Pictured is Butterfield Creek drainage (channel is off to the right side of frame near sprinkler equipment) looking west back towards Butterfield Canyon and waste rock dumps.

Figure No. 3: Pictured is a section of agricultural land not being farmed. As noted, native and weedy vegetation begins to become more prevalent as the cover vegetation when fields are left to fallow. The patch of dark green vegetation demarks the alignment of Butterfield Creek which is a loosing stream in this stretch.

Figure No. 4: Pictured is the western extent of the draw associated with Butterfield Creek and the Bingham Mine waste rock dumps in the background. Pictured are farm lands associated with HAG001.

The City of Herriman noted that only a few large development projects (on the lands with elevated lead and arsenic) had been pursued to date. DERR included an inspection of some of these properties, to which the following photos document conditions at these properties, at the time of the inspection.

Figure No. 5: Blackhawk development excavation trench or pit.

Figure No. 6: Alignment of buried flood control/storm water sewer conduit near 6000 West.

II. OU3 Butterfield Creek & Canyon

In September 2008 DERR included an inspection of Butterfield Creek & Canyon located west of the City of Herriman. As noted in the following pictures it is hard to imagine that a removal action was undertaken in the Canyon.

Figure No. 7: Pictured is the area of the confluence of Yosemite drainage and Butterfield Canyon north of the County road (1 year and 2 months after a release from the Yosemite Waste Rock Dump in the upper reaches of the drainage, See Appendix D).

Figure No. 8: Lower Yosemite drainage from above the confluence location with Butterfield Canyon.

Figure No. 9: Up-gradient storm water catch basin (a portion of the Eastside Collection System) in upper Yosemite drainage.

Figure No. 10: Pictured is the upper reach of Yosemite drainage. Note the reconstructed drain near the base of the dam. This area is a desilting basin and the drain allows decant water to flow down Yosemite drainage.

Figure No. 11: Base of Yosemite waste rock dump and reconstructed sedimentation traps.

Figure No. 12: Pictured is the Yosemite drainage cut-off wall located approximately 100 yards down gradient of the sediment traps near the base of the waste rock dump.

Figure No. 13: Pictured is Butterfield Creek channel, up-gradient of the Yosemite drainage confluence.

Figure No. 14: Pictured is Butterfield Creek channel up-gradient of the Yosemite drainage confluence.

Figure No. 15: Pictured is the adit drain of the Butterfield Mine Tunnel (adit is near rock outcrop). Waste rock was removed from around and near this portal during the removal action.

Figure No. 16: Pictured in this panorama is Butterfield Canyon just below the Butterfield Mine Tunnel. This is the area from where waste rock was removed.

Figure No. 17: Pictured is the Queen Mine in Queen's drainage. This series of panorama photos try to show the extent of tailings and waste rock piles remaining in place.

Figure No. 18: Queen drainage just below the Queen Mine site. Pictured is the Eastside Collection System cut-off wall (concrete structure in the first clearing). In the distance and at the base of the drainage is Butterfield Canyon recreational area. Photo was taken from approximately the same vantage point as Figure No. 17.

A storm event and release that took place in the Yosemite drainage prompted DERR to perform an inspection of the confluence of Butterfield Canyon and Yosemite drainages. Observations during the inspection determined that tailings that had visually been observed in the storm water had a lead and arsenic concentrations in compliance with applicable agricultural and open space standards under the 2001 Record of Decision for Ou3, 6 & 7. Please turn your attention to Appendix D for photos taken during this previous inspection.

III. OU6 Lark Waste Rock & Tailings, Ancillary Sites

In April 2009 the UDER – DERR project manager performed an inspection of the facilities associated with OU6. As is observable in the following photos, the current land (open space, agricultural and industrial) use is appropriate for the conditions of the site. Both Midas and Copper Creeks were found to be dry. The following photos are sub-grouped per association with the mining history of the site.

A. Mascotte Tunnel and Bingham Tunnel: The following photos document the current water management facilities to capture mine portal water and place it within the permitted water management system, as well as documenting the conditions of the facilities that led to creation of the Lark Waste Rock dumps and Tailings area.

Figure No. 19: Pictured is the Lower Keystone Drainage and cutoff wall. Early response work tried an experimental surface sulfide reducing bioreactor wetland near the wall (black sheeting material) to address surface flows with elevated sulfate; which subsequently was assessed unsuccessful. This cutoff wall is part of the larger Eastside Collection System, which manages potentially mine impacted waters filtering through the up gradient alluvium and flowing surface water. The Eastside Collection System is operated in compliance with a State of Utah Groundwater Pollution Protection permit.

Figure No. 20: View is westerly up lower Keystone Drainage up gradient from the Mascotte Tunnel.

Figure No. 21: Pictured is the Mascotte Tunnel portal, half submerged. The Tunnel is no longer used for ore haulage capacity, but is used to transport water away from the deeper tunnel workings. Mr. Brian Vinton noted that the visible bedrock near the portal is well weathered and crumbly (as can be attested to the fine grand sand left and right of the portal frame).

Figure No. 22: Pictured is the Mascotte Tunnel working just inside from the portal. The cribbing along this tunnel is wooden and in sections is in disrepair but the tunnel still produces water. The Mascotte Tunnel is down gradient from the Lower Keystone Drainage and cutoff wall.

Figure No. 23: Pictured is the sump structure where tunnel produced along the length of the Mascotte Tunnel reports to be pumped to the water management facilities of Kennecott.

Figure No. 24: Pictured the water pipe (white) from the Mascotte Tunnel and its associated sump, water quality is okay for the copper extraction process.

Figure No. 25: Pictured is the Bingham Tunnel portal and staging area near the USSRM administration building. The Bingham Tunnel is approximately 100 yards to the north of the Mascotte Tunnel. Mr. Kelly Payne and Mr. Brian Vinton are beside the tunnel portal.

Figure No. 26: Mr. Douglas Bacon (UDEQ project manager) is pictured at the entrance of the Bingham Tunnel. Located in the lower right corner of the photo is a pipe that delivers Lark Shaft water (the Bingham Tunnel intersects the Lark Shaft) to the water management control facilities of Kennecott. The Bingham Tunnel is used today to help dewater the Bingham Canyon Pit; water is taken from the tunnel to another location nearby and then sent via pipe to the water management facilities of Kennecott.

Figure No. 27: Pictured is the Bingham Tunnel just inside from the portal. Immediately to the right of the arched cribbing material is a tunnel that leads to the basement of the USSRM administration building. The tunnel is currently undergoing repair to replace some slipping sections of the cribbing. The waste rock produced from drilling this tunnel and the Mascotte Tunnel was the source of the waste rock found at Lark.

Figure No. 28: Pictured is the Apple Tree sump (behind the apple tree). At the base of the tree is a drop box where Bingham Creek Tunnel and Lark Shaft water combine and are piped to Kennecott's water management facilities near Copperton.

Figure No. 29: Mr. Kelly Payne is checking the historic flume that used to transport Bingham Tunnel water to the water management drop box; now the black HDPE pipe does.

Figure No. 30: Though difficult to make out the pale yellowish colored water is derived from the Bingham Tunnel.

B. Lark Waste Rock: The following photos document the surface conditions of the remediated and reclaimed areas once representing the Lark Waste Rock dumps. The locations of the Long Dump and North Dump are documented in the following photos and are represent-able of the 8 other dump sites.

Figure No. 31: Pictured is the first of two photos of the lower town site of Lark, near the removal area for the Long Dump.

Figure No. 32: Pictured is the second photo of two showing segments of the lower town site of Lark, near the removal area for the Long Dump.

Figure No. 33: Pictured is the area of the North Dump near the USSRM facilities. The North Dump was removed and the land was reclaimed and seeded.

Figure No. 34: Pictured is the ridge line where once stood the Long Dump (of the Lark Waste Rock site). The Long Dump was near the historic lower Lark town site (figures 34&35). Near the base of this ridge line is the Experimental Wetlands area.

Figure No. 35: Pictured are the ponds of the Experimental Wetlands in Lark, near the removal site of the Long Dump and near the historic site of Lower Lark. The seep feeding the wetlands is out of the frame to the rear right.

Figure No. 36: Pictured are ponds 3&4 of the Lark experimental wetlands. Though no longer active as a wetland treatment unit, wildlife has begun to make use of the wetlands (note the red-winged blackbird in the cattails). Other wildlife was observed during the inspection. The two ponds are separated by a zone of biological active material to help to reduce sulfate concentrations (though again it is noted that the ponds are not being maintained as a treatment unit).

Figure No. 37: Close-up of the black bird pictured in Figure No. 39.

Figure No. 38: Deer were observed in the area of the Long Dump site not far from the Lark Experimental Wetlands.

Figure No. 39: Though the situation of these eggs, whether the young hatched or these eggs underwent predation, mallard use of the ponds was observed (two mallards actually were spooked from the ponds).

Figure No. 40: Other red-wing blackbirds were observed in the cottonwoods or elm trees in the vicinity of the wetlands.

C. Lark Tailings: The following pictures document the lay of the land from the Randolph Peterson Gate area, through the confluence of the Mascotte & Bastian Ditches and Midas Creek, around to the south and into Copper Creek than onto the footprint of the Ohio

Copper Company No. 2 & 3 Mill. The photos also document the embankments and surface of the Lark Tailings area and its reclaimed surface.

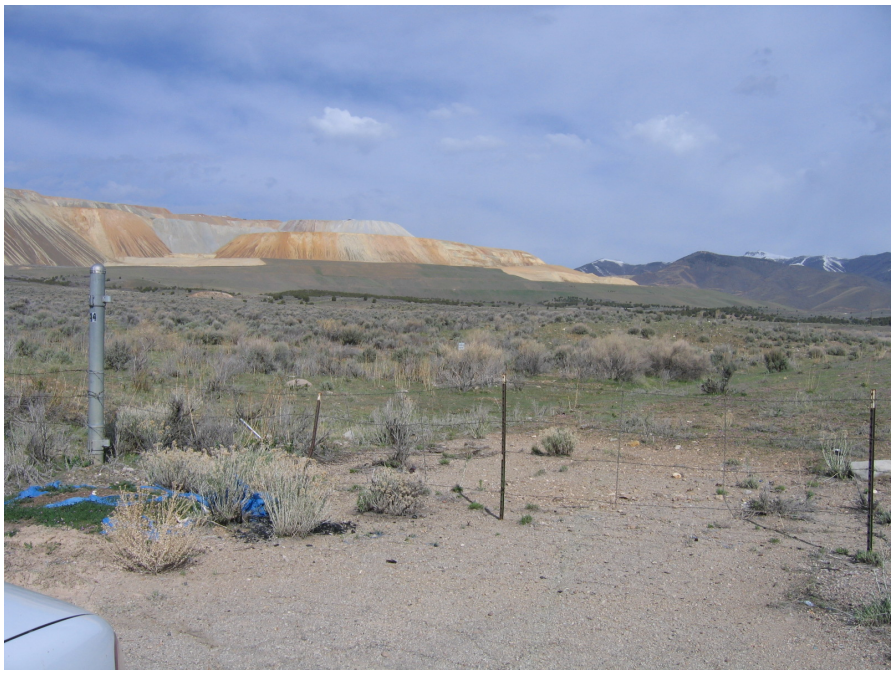

Figure No. 41: Pictured is the Randolph Peterson Gate area (though the historical gate is gone). This area was located slightly northeast of the Lark Waste Rock removal area, just off of Rt. 111 Southwest of the Midas Creek Silos area. The area was well vegetated with grasses and sage brush.

Figure No. 42: Pictured is the Midas Creek Silos area (Figure No. 46 is of the right side, or south side, of this area). Some removal action was performed in this area where once the Mascotte Ditch, Bastian Ditch and Midas Creek came together. The silos are still used for grain storage on a periodic basis and are visible from Rt. 111 (from where the photo was taken).

Figure No. 43: Pictured is the embankment and fence of the Lark Tailings reclamation area. To the north or left of the fence is farm land within the Midas Creek drainage. Off in the distance is the construction of a local high school for the Jordan School District along 6000 West (Photo taken from Rt. 111).

Figure No. 44: Pictured is Mr. Kelly Payne walking in an area suspected to be the confluence of the Bastian Ditch and the Mascotte Ditch, note discolored soils. Some cemented material similar to tailings was found as a chunk by Mr. Payne of which the lead concentration was less than 250 mg/kg and the arsenic was less than 50 mg/kg per XRF measurement. The farm land is to the north of Midas Creek; Midas Creek is situated between Lark Tailings area (denoted by sage brush) and the farm land. Note the Midas Creek Silos in the background; Rt. 111 is near the white shed.

Figure No. 45: Near the intersection of Rt. 111 and 11800 South is a depression just south of 11800 South. Across from the depression is a yellow "T" caution road sign. This is the suspected alignment of the Bastian Ditch prior to turning west and heading back toward the Midas Creek Silos area.

Figure No. 46: Pictured is a panorama of the Lark Tailings reclamation area from the site of the Mascotte Pond. On the eastern most end (left) is the southeastern turn of the Lark Tailings Area. Midas Creek flows in the draw located between the farm land in the foreground and the tailings area (where the sage brush is located) in the middle of the panorama. In the western frame (right side) is the Midas Creek Silos area with the white shed and aerial on the western side of Rt. 111. In the background (by about 4 to 5 miles) are the foothills of the Traverse Mountains and Butterfield Canyon is located near the southern extent of the Eastside Waste Rock Dumps of the Bingham Canyon Pit. Off in the distance to the southwest of Midas Creek Silos area (near the base of the tallest Bingham Canyon Waste Rock dump) a reader can just make out the red brick buildings of USSRM in the old town of Lark.

Figure No. 47: Pictured Mr. Brian Vinton standing in the area where once was located the Mascotte Ponds. In the distance is the USSRM buildings in the old town site of Lark, near the base of the 1000 foot high Bingham Canyon Waste Rock dumps (Copper Gulch and Notch are between the two waste rock dumps, the area vegetated). The Mascotte Pond site was cleaned up and has subsequently been returned to farm land.

Figure No. 48: Pictured is Midas Creek channel near the base of the northern boundary of the Lark Tailings reclamation area. Midas Creek Silos area is in the distance along the right side of the frame.

Figure No. 49: Pictured above Midas Creek is the fencing material running along the northern (pictured), eastern, southern and western boundaries of the Lark Tailings reclamation area. The fence is approximately 6 foot with two strings of barbed wired at the top.

Figure No. 50: Pictured is the south trending Midas Creek at its South Bend stretch. The sage brush covered hill in the distance is the Lark Tailings reclamation area.

Figure No. 51: Pictured is the generally trending eastern boundary of the Lark Tailings reclamation area. In the left side of the panorama the tailings area begins to turn south. Farming in this area is right up near to the site fence. Though dry farmed, the adjacent land to the tailings area is supportive for agricultural activities.

Figure No. 52: Pictured is Midas Creek channel from the Kennecott Land haul road coming into the site from Daybreak (north of 11800 South). The sage brush covered hill in the near distance is the eastern/southeastern trending boundary of the Lark Tailings reclamation area.

Figure No. 53: Located approximately 0.5 miles from the Southeast corner of the Lark Tailings reclamation area is a location entitled Lone Tree (note the lone tree immediately to the left of the distant power line) that was characterized on a minimal level and received some spot removals (as related by Mr. Brian Vinton during the April 23rd tour). This site is located near 6000 West. Photo was taken from the Kennecott haul road.

Figure No. 54: Pictured is the crossing of Midas Creek at 6000 West. Midas Creek continues East by Southeast until it converges with Copper Creek approximately at 5600 West and 12000 South. The power lines in the distance are approximately ½ mile east of the Lark Tailings reclamation site Southeast Area (subject of Figure No. 61.)

Figure No. 55: Pictured is Midas Creek after crossing 6000 West, just to the south of the new high school construction project. Some discolored soils were visible in the creek channel. Out of the frame to the right (south) is a pasture lot that is growing hay or alfalfa, Midas Creek channel follows the silt fencing lining the northern embankment and boundary of the channel.

Figure No. 56: Pictured are three antelope in the pasture lot noted in Figure No. 58. Midas Creek follows the alignment of the black silt fencing in the distance.

Figure No. 57: Pictured is the area (off in the distance) where Midas Creek and Copper Creek converge (Midas Creek roughly follows the black silt fencing on the left side of the frame). This area has been extensively farmed for many years; signs to the convergence of the creeks are almost invisible.

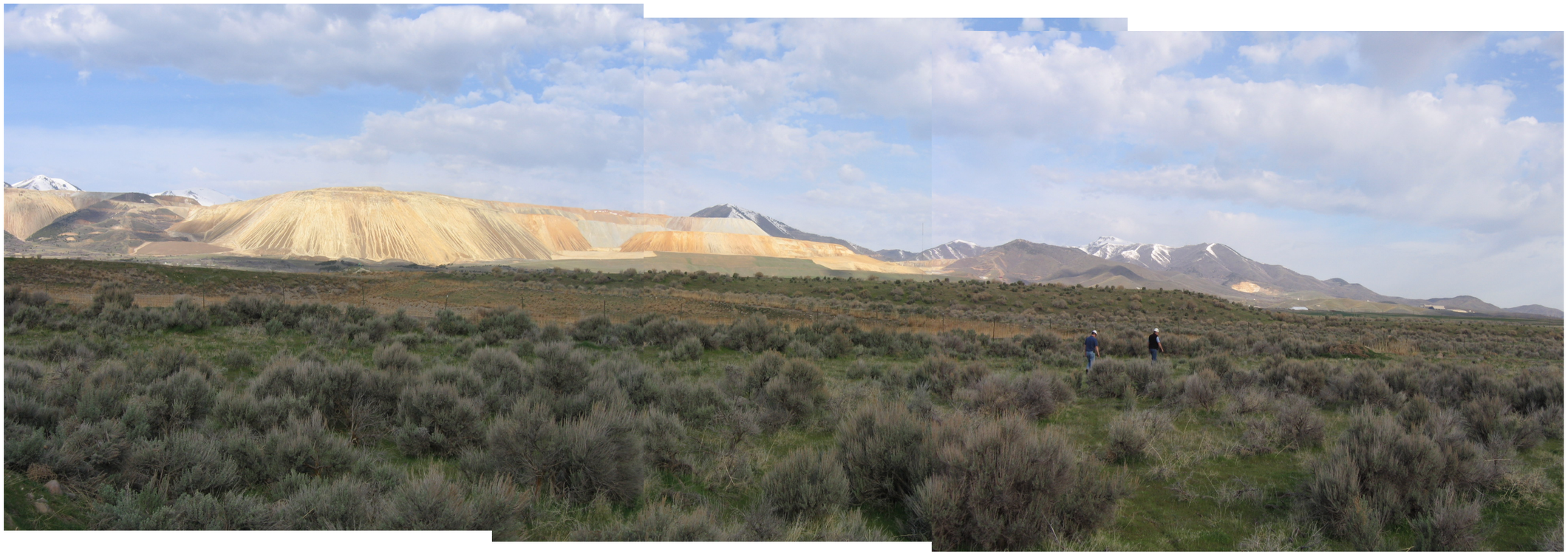

Figure No. 58: Pictured is the southeast corner of the Lark Tailings reclamation area, photo taken from a portion of the Southeast Area cleanup site where there was observable distressed vegetation during response work at the site. Mr. Brian Vinton and Mr. Kelly Payne are walking through the Southeast Area. Behind the sage brush in the foreground in the left side of the panorama is an area that Kennecott Land constructed a lined water reservoir to serve the purpose of storing dust suppression water during the use of the haul road from where the panorama was taken.

Figure No. 59: Pictured are Mr. Kelly Payne and Mr. Brian Vinton traversing through the Southeast Area of the Lark Tailings site. The fence surrounding the Lark Tailings reclamation area is visible along the right side of the frame.

Figure No. 60: Pictured is a rabbit hole located within the fenced area of the Lark Tailings reclamation site, immediately west of the Southeast Area. Jack rabbits have moved into the area and this is a location where they have brought up tailings to the surface.

Figure No. 61: Pictured is the top surface of the Lark Tailings reclamation site looking towards the southwest (toward Butterfield Canyon from the Southeast corner area of the site). The vegetation pictured here is predominantly the same across the whole site.

Figure No. 62: Pictured is the Southeast Are from on top of the Lark Tailings reclamation area's leading edge to its southeast embankment. The scarring and lack of vegetation is due to the haul road construction activities of Kennecott Land.

Figure No. 63: Pictured is the top surface of the Lark Tailings reclamation area from near the Southeast Corner. Visible in the distance right side of the panorama is the Midas Creek Silos area (right side of panorama), followed to the left by the white shed and aerial, and followed by the USSRM administration and warehouse buildings in the old town site of Lark. In the far distance are the Bingham Canyon Mine, Eastside Waste Rock Dumps

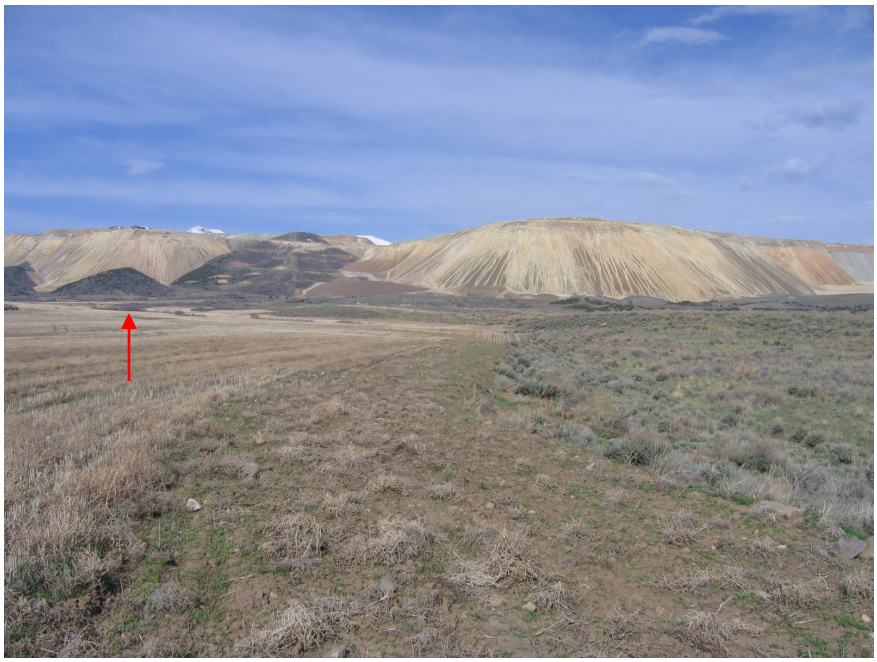

Figure No. 64: Pictured is the Copper Creek channel situated between farmed land and the Kennecott Land haul road. The southern boundary of the Lark Tailings reclamation area is approximately 600 feet to the north from this channel (off to the right out of the frame). In the distance is a tree line meandering south and west toward Copper Gulch (or Notch) area between the dumps of the Eastside Waste Rock Dumps of the Bingham Canyon Mine; the tree line follows Copper Creek (red arrow).

Figure No. 65: Near the southwestern boundary of the Lark Tailings reclamation area is the historic site of the Ohio Copper Company Mill No. 2&3. As part of the reclamation work the mill footings were removed and the area was reclaimed. The vegetation here is similar along the top of the reclaimed Lark Tailings.

Figure No. 66: Pictured is the Lark Tailings reclamation area as viewed from the Ohio Copper Company No. 2&3 mill site (near the southwest corner); view is north by northeast. In the left side of the panorama is the Midas Creek Silos site. The visible road is 11800 South and the Mascotte Ditch and Midas Creek alignments follow the natural depressions in the near background flowing east from the Midas Creek Silos area. In the foreground is the area where the Ohio Copper Company disposed of the reworked mill tailings from Mill No. 1. As noted in Figures No. 49, 54, 61 and 66 the top surface of the Lark Tailings reclamation area is well vegetated but the jack rabbits in the area are eating the low lying grasses (natural predators are few, one coyote was observed during the site inspection). The area where Figure No. 66 was taken is out of this panorama's right side (east by southeast).

IV. OU18 Acid Mine Drainage

UDEQ-DERR project manager periodically has joined personnel from Kennecott as they perform inspections of the Water Supply Tunnel and Water Supply Tunnel Dump, facilities within OU18. The Dump is primarily overburden material from the driving of the Water Supply Tunnel, and does have some elevated lead concentrations above a UU/UE standard.

In August of 2005 DERR inspected the Water Supply Tunnel and Water Supply Tunnel Dump to assess the progress of the revegetation action and to assess the functionality of the constructed drainage mechanism from the top of the waste rock dump.

Figure No. 67: Pictured is the top of the Water Supply Tunnel Dump from near the top edge of the western embankment and drainage pipe. Surface revegetation was beginning to have some success.

Figure No. 68: In 2005 the Water Supply Tunnel portal remained as historically left by the mine operators. Recessed from the portal front is a steel bulkhead door, which up till 2006 was used to prevent access to the tunnel.

Figure No. 69: Pictured is the southern boundary of the Water Supply Tunnel Dump near the edge of the embankment. Note the vegetated berm entering the picture from the bottom right corner. Native grasses and some shrubs have begun to voluntarily grow on the dump surface.

Figure No. 70: From on top of the Water Supply Tunnel Dump's southern embankment looking down to the Tooele County road, Middle Canyon Creek is visible as the dark line near the road base. The grasses and trees pictured here are from voluntary seeding.

Figure No. 71: Pictured is the Water Supply Tunnel Dump and Middle Canyon Creek from the Tooele County road.

Figure No. 72: Pictured is the Water Supply Tunnel Dump top surface with surface water discharging from the tunnel. In the distance is Middle Canyon viewed to the west. The drainage pipe from the top of the Dump is located near the conifer trees pictured in the shade.

Figure No. 73: Pictured is the drain/catch basin for surface water flowing from the Water Supply Tunnel across the top of the Dump surface. In 2006 this catch basin was seen to be undercut by excessive water pushed out from the tunnel during its reconstruction.

Figure No. 74: Pictured is the water storage tank and collection point for the local irrigation company's diversion structure off of Middle Canyon Creek (which is located in the depression visually separating the access road to the tank. The western slope of the Water Supply Tunnel Dump is barely visible through the trees just to the right of the tank.

In June 2008 DERR performed another inspection of the Water Supply Tunnel and Water Supply Tunnel Dump to assess the progress of the revegetation action and to assess the functionality of the constructed drainage mechanism from the top of the waste rock dump.

Figure No. 75: Pictured is the top of the Water Supply Tunnel Dump from near the top edge of the western embankment and newly reconstructed drainage channel. Surface revegetation was beginning to show better success.

Figure No. 76: Pictured is the Water Supply Tunnel portal post reconstruction. A pipe inside the tunnel (since reconstruction) takes surface water produced from inside the tunnel's reaches down off the Dump and directs the flow into the local irrigation company's system (see Figure 41). A more solid steel door is inset from the concrete portal opening to allow access by the mine operators, but not the public.

Figure No. 77: Pictured is the series of Jersey Barriers keyed into a concrete base from the tunnel portal to the eastern slope of the Water Supply Tunnel Dump. As of 2007 these barriers are used to keep the public from driving onto the ¾ of the Water Supply Tunnel Dump's top surface. This barrier was installed to facilitate the revegetation effort.

Figure No. 78: Pictured is the top surface of the Water Supply Tunnel Dump looking back toward the tunnel portal from the edge of the southern embankment. Along with the grasses seeded on the surface, many voluntary species were observed in the stands of vegetation.

Figure No. 79: Pictured is the water control berm located near the edge of the Water Supply Tunnel Dump's southern embankment (Kelly Payne – Kennecott Project Manager is also pictured). Note the vegetative cover compared to that shown in Figure No. 72 of the August 2005 inspection.

Figure No. 80: Pictured is the southern embankment of the Water Supply Tunnel Dump from along its top edge. The stands of vegetation are entirely voluntary in this location.

Figure No. 81: Pictured is the western embankment slope of the Water Supply Tunnel Dump taken from the reconstructed drainage channel from the top surface. Some of the slopes along the Dump have seen the successful introduction of voluntary vegetation species, more so then other slopes.

Figure No. 82: Pictured is the top section of the reconstructed drainage channel and capture area along the top edge of the western slope of the Water Supply Tunnel Dump. Top to bottom this drainage channel is significantly armored with rip-rap to protect it against undercutting. Note the water directional berm as part of the water control structures on top of the Dump.

Figure No. 83: Pictured is a close-up of the drainage channel and its rip-rap near the top of the Water Supply Tunnel Dump. This channel was assessed to be stable for the limited water it potentially will receive draining from the top surface of the Water Supply Tunnel Dump.

Figure No. 84: Pictured is the reconstructed drainage channel taken from the base of the channel near the water tank and irrigation system. Water from this channel is delivered to Middle Canyon Creek. Vegetative success near and along the base of the Water Supply Tunnel Dump is the best along the western and eastern slopes of the Dump.

Figure No. 85: Pictured is the confluence of the drainage channel from the Water Supply Tunnel Dump and Middle Canyon Creek near the base of the western slope of the Dump.

Figure No. 86: Pictured is the black HDPE pipe directing water from the Water Supply Tunnel straight into the local irrigation company's collection point off of Middle Canyon Creek. The green triangle is inserted in the frame to cover some publicly inappropriate graffiti on the white PVC pipe.