



hearing testimony. Based on the record for this matter, the Hearing Examiner makes the following:

### **FINDINGS OF FACT**

1. A Petition for Controlled Ground Water Area (Petition) was received by the DNRC on October 27, 2008. The Petition was submitted by the Butte Silver Bow County Health Department and signed by Rick Larson of the Butte Silver Bow County Health Department. (DNRC File)
2. The Petition alleges that the ground water aquifers (bedrock and alluvial) within the proposed Butte Alluvial and Bedrock Controlled Ground Water Area (BABCGWA) have been impacted by over a century of mining and associated activity. The Petition seeks ground water restrictions to meet the requirements of the Records of Decision or Consent Decrees for the Butte Priority Soils Operable Unit (BPSOU), Butte Mine Flooding Operable Unit (BMFOU) and the Montana Pole and Treatment Plant NPL Site (MPTP). These Units are part of the Butte portion of the Silver Bow Creek/Butte Area NPL (National Priorities List) under the Federal Superfund Program. The entire Butte portion of the Silver Bow Creek/Butte Area NPL along with the MPTP NPL would fall within the proposed BABCGWA. (Petition)
3. The Petitioner requests that the Department establish a controlled ground water area pursuant to § 85-2-506(2)(e) and (g), MCA alleging that excessive ground water withdrawals would cause contaminant migration and that the water quality in portions of the alluvial and bedrock aquifers impacted from and underlying the BPSOU, BMFOU and MPTP are not suitable for a specific use as defined by 85-2-102(2)(a), MCA (2005) (currently 85-2-102(4)(a))(2009). (Petition)
4. The Petition proposes that:
  - (a): new ground water wells will only be permitted within the BABCGWA after review and approval of the Butte-Silver Bow Board of Health acting as the Butte Silver Bow Water Quality District office, the USEPA and MDEQ, in compliance with the provisions below. Superfund or other environmental monitoring/treatment wells necessary for environmental cleanup purposes are allowed within the BABCGWA.
  - (b): an existing well used for irrigation or industrial use may be replaced at the well owner's expense, but only if the replacement irrigation well meets the criteria stated in

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1 All citations are to the Mont. Code Annotated 2007 unless otherwise noted.

(e) below.

(c): all wells used as drinking water supply for human consumption within the BABCGWA for which monitoring results establish that the MDEQ-7 (the Montana DEQ numeric water quality standards) ground water human health standards for arsenic, lead, cadmium, copper, and/or zinc, are exceeded, will cease being used for such purposes. The water user will then be provided (by the Settling Defendants under BMFOU and BPSOU consent decrees) with an approved drinking water source as determined by the Butte-Silver Bow Water Quality District until a verification sample is collected and analyzed. The process to determine if the well meets the above requirements are as follows: If the MDEQ-7 ground water human health standards for arsenic, lead, cadmium, copper and/or zinc are exceeded during an approved sampling event, the well will be re-tested for verification. If the verification sample also exceeds, the well will cease being used for such purposes.

(d): the boundaries and provisions of this BABCGWA may be amended, with the express written approval of the DNRC, USEPA, and MDEQ, if the ground water quality improves or if degradation of ground water expands.

(e): Irrigation/Industrial Use Exemption – The Butte Silver Bow Water Quality District, in conjunction with USEPA and MDEQ, may approve new or replacement wells within the BABCGWA for limited irrigation or industrial use. Any proposed new well owner must supply data indicating that the uses will not be detrimental to the environment or to human health. If the Butte Silver Bow Water Quality District sets criteria for irrigation use, any proposed irrigation well must meet those criteria by presenting representative data.

(Petition)

5. The proposed BABCGWA consists generally of lands within the cities of Butte and Walkerville, Montana. The proposed area is in all of the following land descriptions: all of Sections 17 & 18, T3N, R7W; all of Section 13, T3N, R8W; all of the SW $\frac{1}{4}$  Section 16, N $\frac{1}{2}$  Section 19, NW $\frac{1}{4}$  Section 7, S $\frac{1}{2}$  Section 7, SW $\frac{1}{4}$  Section 8, T3N, R7W; all of E $\frac{1}{2}$  Section 12, and N $\frac{1}{2}$  Section 24, T3N, R8W. The area is also in portions of NW $\frac{1}{4}$  & SE $\frac{1}{4}$  Section 16, S $\frac{1}{2}$  Section 19, N $\frac{1}{2}$  Section 20, N $\frac{1}{2}$  Section 21, SW $\frac{1}{4}$  Section 6, NE $\frac{1}{4}$  Section 7, N $\frac{1}{2}$  Section 8, and SE $\frac{1}{4}$  Section 8, T3N, R7W; SE $\frac{1}{4}$  Section 8, SW $\frac{1}{4}$  Section 9, SE $\frac{1}{4}$  Section 11, W $\frac{1}{2}$  Section 12, E $\frac{1}{2}$  Section 14, S $\frac{1}{2}$  Section 1, N $\frac{1}{2}$  Section 23, S $\frac{1}{2}$  Section 23, S $\frac{1}{2}$  Section 24, NW $\frac{1}{4}$  Section 25, NE $\frac{1}{4}$  Section 26, T3N R8W, all in Silver Bow County. The alluvial portion of the proposed BABCGWA comprises approximately 8.11 square miles with maximum vertical depths of over

300 feet in the northeast thinning to less than 10 feet at the western edge. The bedrock portion of the proposed BABCGWA covers approximately 6.75 square miles with a maximum vertical depth of approximately 1500 feet above mean sea level (msl). A copy of the Petition that includes a detailed map showing the proposed boundaries of the area and a list of land parcels within the area is available from the DNRC, Water Resources Regional Office, 1424 9<sup>th</sup> Ave. in Helena, MT or on the internet at: <http://dnrc.mt.gov/wrd/>. (Petition, Department File)

6. Pursuant to § 85-2-506(4), MCA, notice of the Petition for a Butte Alluvial and Bedrock Controlled Ground Water Area was published in the Montana Standard, a newspaper of general circulation within the county within which the proposed controlled ground water area is located, on March 17, March 24, and March 31, 2009, setting forth the Petitioner, the purpose of the Petition, the legal description of the proposed ground water area, and the time, place, and purpose of a hearing on the Petition. Additionally, DNRC served notice by first class mail on approximately 44 individuals, businesses, and public agencies that the DNRC determined might be interested in or affected by the proposed controlled ground water area. The notice advised that all interested persons may present relevant evidence or testimony at the hearing, either in person or by attorney, in support of or in opposition to the granting of the Petition as proposed. (Department File)

7. The Petition consists primarily of a document and attachments titled "Petition for a Butte Alluvial and Bedrock Controlled Ground Water Area, October 2008" prepared by Water & Environmental Technologies in Butte, Montana. The Petition includes an introduction which describes the history of the site and the on-going efforts under the Superfund program, the geology and hydrogeology of the alluvial aquifer, the geology and hydrogeology of the bedrock aquifer, a description of the proposed BABCGWA boundary, the existing water quality of the alluvial and bedrock aquifers, the existing wells in the proposed BABCGWA boundary, and a list of proposed ground water controls. (Petition)

8. To facilitate mining activities, the bedrock aquifer ground water level was lowered approximately 4200 feet from pre-mining conditions. With the cessation of mining activities in 1982, pumping of the system was no longer necessary and the underground mines and Berkeley Pit began to flood. Due to the presence of oxygen and water during and after mining the naturally occurring sulfide minerals began to oxidize resulting in acidic conditions and the release of sulfides, metals and arsenic into the bedrock aquifer. The alluvial aquifer was adversely impacted by the deposition of mine wastes in the Silver Bow Creek drainage and from

smelting operations located along the creek. Again, the exposure of the mine waste to oxygen and water resulted in acidic conditions and the subsequent release of metals and arsenic into the Silver Bow Creek and the shallow aquifer. In addition, the lower (western) end of the proposed BABCGWA was the location of the Montana Pole and Treatment Plant which utilized organic and hydrocarbon compounds in the process. Some of those compounds escaped during the process which subsequently impacted the alluvium of Silver Bow Creek in the vicinity of the plant. (Petition)

9. The Petition provides evidence that the alluvial ground water within the proposed BABCGWA is contaminated with arsenic, cadmium, copper, zinc and lead as shown on Figure 6 and Table IA of the Petition at levels that exceed the maximum contaminant level (mcl) under MDEQ-7. In addition, the Petition shows that the MPTP at the lower (western) end of the proposed BABCGWA is contaminated with PCP (pentachlorophenol) and to some degree with chlorophenols, PAH (polycyclic aromatic hydrocarbons), DRO (diesel range organics), and Dioxin/Furans. (Petition Figure 6, Table IA, Table IB)

10. The Petition provides evidence that the bedrock ground water within the proposed BABCGWA is contaminated with arsenic, cadmium, copper, zinc and lead as shown on Figure 6 and Table IA. The Hearing Examiner notes that the MBMG GWIC database shows that wells throughout the proposed BABCGWA, within both the alluvial and bedrock aquifers, show extremely high levels of trace elements such as aluminum, cobalt, lithium, nickel, selenium, strontium, and uranium. (Petition, MBMG GWIC)

11. EPA and MDEQ have granted Technical Impracticability Waivers for both the BPSOU and the BMFOU because it is impracticable from an engineering standpoint to comply with the MCL's for ground water in these areas. This means that for the bedrock aquifer the proposed remedy for the east (Berkeley Pit) side of the proposed BABCGWA is to use the pit as a hydraulic sink which will prevent any further migration of the contaminated bedrock ground water from impacting Silver Bow Creek and the associated alluvial aquifer. For the east side of the bedrock aquifer, the proposed remedy is to prevent the rise of ground water levels above 5435 msl. This is accomplished by pumping water from either wells or from the Travona Shaft and again preventing water from entering the Silver Bow Creek drainage and alluvium. Since it is impossible or infeasible to actually attain the MCL's for the bedrock aquifer the strategy is one of containment. (Petition)

12. As for the alluvial aquifer, it is also covered by the Technical Impracticability waiver for

the BSPOU. In the Record of Decision for the BSPOU, the USEPA concludes that “[a] controlled ground water area shall be established for the alluvial aquifer to prevent domestic use of this water and to prevent any well development that would exacerbate or spread existing contamination.” (Petition)

13. Testimony at the hearing established that the proposed BABCGWA is compatible with and meets the requirements of the Record of Decision and/or Consent Decrees for the BPSOU, the BMFOU and the MPTP. (Hearing Record)

14. Based on the information in the Petition and testimony presented at the hearing, the Department finds the water in the underlying alluvial and bedrock aquifers within the proposed BABCGWA is not suitable as a domestic water source and finds that uncontrolled ground water withdrawal from the alluvial and bedrock aquifers within the proposed boundary is not consistent with the scope and intent of the ROD and/or Consent Decrees for the BPSOU, the BMFOU, and the MPTP. (Petition, Hearing Record)

15. Based on the information in the Petition and testimony presented at the hearing, the Department finds that the public health, safety, or welfare requires a corrective control be adopted. (Petition, Hearing Record)

Based upon the foregoing Findings of Fact, the Hearing Examiner makes the following:

### **CONCLUSIONS OF LAW**

1. The Department has jurisdiction over the parties and over the subject matter herein.

The Department may establish a CGWA where the following statutory criteria are met:

The department shall order declare the area in question to be a controlled ground water area if the department finds on the basis of the hearing that;

- (a) the public health safety, or welfare requires a corrective control to be adopted; and ...
- (b)(iii) the facts alleged in the petition, as required by 85-2-502(2) are true.

(85-2-506 and 507, MCA (2007))

2. As a public health agency the Petitioner has standing to petition the Department for a CGWA. The Department gave proper notice pursuant to §85-2-506(4), MCA, (2007) of the hearing and substantive procedural requirements of law or rule have been complied with. (Finding of Fact 6)

3. There is sufficient evidence to designate a controlled ground water area which includes

both the alluvial and bedrock ground water aquifers within the proposed BABCGWA described generally as: all of Sections 17 & 18, T3N, R7W; all of Section 13, T3N, R8W; all of the SW¼ Section 16, N½ Section 19, NW¼ Section 7, S½ Section 7, SW¼ Section 8, T3N, R7W; all of E½ Section 12, and N½ Section 24, T3N, R8W. The area is also in portions of NW¼ & SE¼ Section 16, S½ Section 19, N½ Section 20, N½ Section 21, SW¼ Section 6, NE¼ Section 7, N½ Section 8, and SE¼ Section 8, T3N, R7W; SE¼ Section 8, SW¼ Section 9, SE¼ Section 11, W½ Section 12, E½ Section 14, S½ Section 1, N½ Section 23, S½ Section 23, S½ Section 24, NW¼ Section 25, NE¼ Section 26, T3N R8W, all in Silver Bow County. The attached map (Figure 1) is a small scale map of the outside perimeter of the proposed BABCGWA. A copy of the Petition that includes a detailed map (Petition file Figure 6) showing the proposed boundaries of the area and a list of land parcels within the area is available from the DNRC, Water Resources Regional Office, 1424 9<sup>th</sup> Ave. in Helena, MT or on the internet at: <http://dnrc.mt.gov/wrd/>. (Findings of Fact 2, 3, 5, 7 – 15)

4. There is sufficient evidence to support a closure of the alluvial and bedrock aquifers within the proposed BABCGWA to further domestic use based upon public health considerations as conditioned in the Petition and regulation of all other beneficial water uses as provided in the proposed controls in the Petition. The Department finds that the public health, safety, or welfare requires a corrective control to be adopted and that the facts alleged in the petition are true. (Findings of Fact 2, 3, 7 – 15; 85-2-506(2)(e) and (g))

Based upon the foregoing Findings of Fact and Conclusions of Law, the Hearing Examiner makes the following:

### **ORDER**

1. A controlled ground water area is **DESIGNATED** for the alluvial and bedrock aquifers within the Butte Alluvial and Bedrock Controlled Ground Water Area in the general area consisting of all of Sections 17 & 18, T3N, R7W; all of Section 13, T3N, R8W; all of the SW¼ Section 16, N½ Section 19, NW¼ Section 7, S½ Section 7, SW¼ Section 8, T3N, R7W; all of E½ Section 12, and N½ Section 24, T3N, R8W. The area is also in portions of NW¼ & SE¼ Section 16, S½ Section 19, N½ Section 20, N½ Section 21, SW¼ Section 6, NE¼ Section 7, N½ Section 8, and SE¼ Section 8, T3N, R7W; SE¼ Section 8, SW¼ Section 9, SE¼ Section 11, W½ Section 12, E½ Section 14, S½ Section 1, N½ Section 23, S½ Section 23, S½ Section 24, NW¼ Section 25, NE¼ Section 26, T3N R8W, all in Silver

Bow County. The attached map (Figure 1) is a small scale map of the outside perimeter of the proposed BABCGWA. A copy of the Petition that includes a detailed map (Petition file Figure 6) showing the proposed boundaries of the area and a list of land parcels within the area is available from the DNRC, Water Resources Regional Office, 1424 9<sup>th</sup> Ave. in Helena, MT or on the internet at: <http://dnrc.mt.gov/wrd/>.

2. New ground water wells will only be allowed within the BABCGWA after review and approval of the Butte-Silver Bow Board of Health acting as the Butte Silver Bow Water Quality District office, the USEPA and MDEQ, in compliance with the provisions below and in compliance with 85-2-311 or -306, MCA (2009). Superfund or other environmental monitoring/treatment wells necessary for environmental cleanup purposes are allowed within the BABCGWA in compliance with applicable statutory criteria.
3. An existing well used for irrigation or industrial use may be replaced at the well owner's expense, but only if the replacement irrigation well meets the criteria stated in provision 6, below and complies with applicable statutory requirements.
4. All wells used as drinking water supply for human consumption within the BABCGWA for which monitoring results establish that the MDEQ-7 ground water human health standards for arsenic, lead, cadmium, copper, and/or zinc, are exceeded, will cease being used for such purposes. The process to determine if the well meets the above requirements are as follows: If the MDEQ-7 ground water human health standards for arsenic, lead, cadmium, copper and/or zinc are exceeded during an approved sampling event, the well will be re-tested for verification. If the verification sample also exceeds the standards, the well will cease being used for such purposes. It is the Department's understanding from the Petitioner that Settling Defendants under the BMFOU and BPSOU consent decrees will supply those with contaminated wells with an approved drinking water source as determined by the Butte-Silver Bow Water Quality District.
5. The boundaries and provisions of this BABCGWA may be amended in accordance with § 85-2-506, MCA (2009), with the express written approval of the DNRC, USEPA, and MDEQ, if the ground water quality improves or if degradation of ground water expands.
6. Irrigation/Industrial Use Exemption – The Butte Silver Bow Water Quality District, in conjunction with USEPA and MDEQ, may approve new or replacement wells within the BABCGWA for limited irrigation or industrial use. Any new or replacement well must comply with the requirements of MCA Title 85, Chapter 2,



Parts 3 and 4 as applicable. Any proposed new well owner must supply data to the Butte Silver Bow Water Quality District indicating that the uses will not be detrimental to the environment or to human health. If the Butte Silver Bow Water Quality District sets criteria for irrigation use, any proposed irrigation well must meet those criteria by presenting representative data.

**NOTICE**

If all administrative remedies have been exhausted, this Final Order may be appealed by a party in accordance with the Montana Administrative Procedure Act (Title 2, Chapter 4, Mont. Code Ann.) by filing a petition in the appropriate court within 30 days after service of the order.

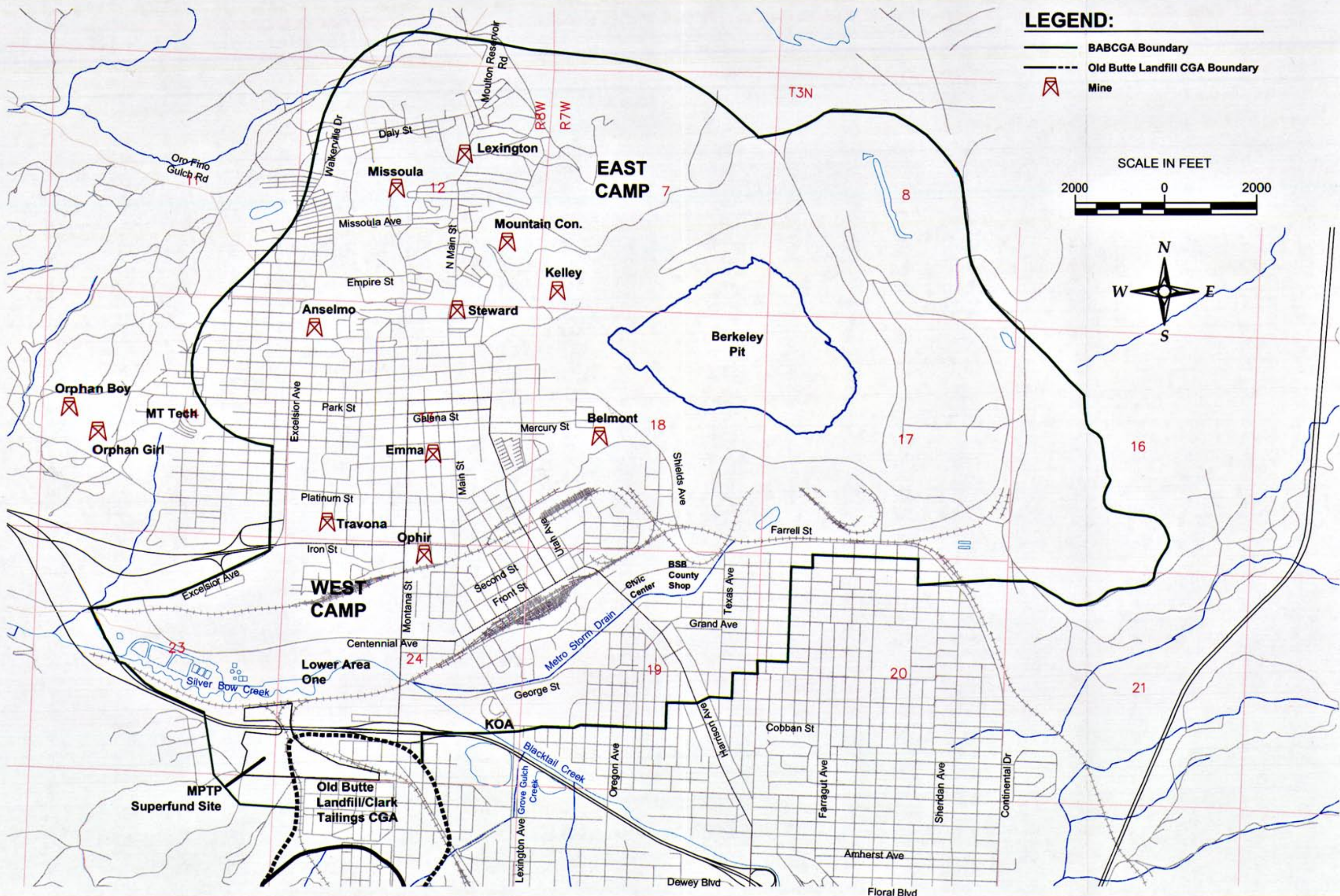
If a petition for judicial review is filed and a party to the proceeding elects to have a written transcript prepared as part of the record of the administrative hearing for certification to the reviewing district court, the requesting party must make arrangements for preparation and payment of the written transcript. If no request is made, the Department will transmit only a copy of the audio recording of the oral proceedings to the district court.

DATED this 30<sup>th</sup> day of October 2009.




/Original signed by David A Vogler/

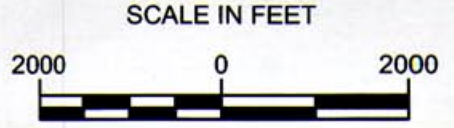
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**LEGEND:**

-  BABCGA Boundary
-  Old Butte Landfill CGA Boundary
-  Mine



BSBHD\_M06-b2  
 DATE: 10/20/08  
**FIGURE 1**

**WATER & ENVIRONMENTAL TECHNOLOGIES, PC**

**BABCGA SITE MAP**