6.0 KEY TECHNICAL ISSUES

This section highlights selected key technical issues associated with the remedial alternatives. Because they influence the evaluation of alternatives under the CERCLA criteria (including overall protectiveness, effectiveness, cost, and implementability), these issues will be considered in the remedy selection process. The following identification and discussion of conditions and issues provides a broad overview, and is not meant to be exhaustive. Further detail and background on these issues can be currently found throughout the RI (URSG and CH2M HILL 2001a) and this FS.

6.1 IMPACTED SEDIMENTS

Remediation of site sediments that have been contaminated by metals released from historic mining operations in the upper basin presents a difficult and complex cleanup challenge. These impacted sediments are the major source of metals in basin waters, the major source of risk to human and ecological receptors from metal exposures, and a major source of potential future recontamination of downstream areas that are cleaned up.

Although large quantities in the upper basin have been removed and placed in repositories by the Silver Valley Natural Resource Trustees (SVNRT) and others and as part of remedial actions in the BHSS, the remaining quantities of impacted sediments are massive and basinwide in extent. Roughly 100 million tons of impacted sediments are dispersed over thousands of acres that include large areas of private and public land use, which complicates accessibility for remedial actions, in the upper basin and extensive areas of wildlife habitat in the lower basin.

Large-scale cleanup of the impacted sediments would be difficult and costly, presenting major technical and administrative challenges, as well as significant adverse short-term impacts to the local communities and natural environment. Potential adverse short-term impacts include, to varying extents, increased truck traffic, dust and noise generation, localized reduction in surface water quality, disruptions to services and recreational opportunities, and reduced aesthetic quality. Other related issues are included in the following discussions.

6.2 LONG PERIODS OF TIME TO MEET AMBIENT WATER QUALITY CRITERIA

Because of the widespread occurrence of impacted sediments, which would be difficult to completely remediate, the ecological alternatives are anticipated to require relatively long periods of time to reach ambient water quality criteria, particularly for zinc. As would be

expected, the probable time period decreases with the aggressiveness and completeness of the alternative.

6.3 AVAILABILITY OF MATERIALS

There are potential shortages in the basin of both available topsoil (either natural or manufactured) for covering waste piles or engineered repositories and available clean soil for backfill of sediment removal areas. These shortages present specific challenges to cleanup in the basin, potentially affecting cost and implementability. Harvesting of native topsoil could also create adverse environmental impacts that would require mitigation. Land use and erosion control issues would have to be adequately addressed, as would limitations or requirements posed by local regulations.

6.4 REPOSITORY SITING

Limitations on the availability of suitable sites for large, engineered repositories for disposal of excavated or dredged source material are a major concern. Although repository sites have been assumed and identified in the FS as necessary to formulate the alternatives and provide a basis for costing, actual or candidate sites have not been formally identified at this time. Actual repository sites would be suitably selected based on the remedy selected in the ROD.

In particular, confined aquatic disposal (CAD) has been identified in some ecological alternatives as a possible option for consolidation and isolation of existing contaminated media. For example, use of CAD could be limited to contaminated sediments that are already currently submerged to consolidate the contaminated sediments within a particular wetland or lateral lake, thus reducing the "footprint" or area affected by contamination. CAD is designed to isolate the contaminated material from the environment (e.g., with disposal below depths that ensure geochemical stability over time, capping with clean material, locating CAD sites in depositional areas to prevent erosion of the cap). Excavated upland soils (e.g., from residential areas) would likely be disposed of in repositories on land located outside of the floodplain and are not considered for disposal by CAD.

The FS incorporates consideration of both CAD facilities and upland repositories for disposal of contaminated soils and sediments. The specific location(s) of CAD facilities and repositories will be a subject of public comment and stakeholder input as part of remedy selection and remedial design/remedial action.

6.5 REMEDY PLANNING

Practical issues related to selecting and planning site-specific remedial actions present significant challenges. Any comprehensive remedy would include numerous site-specific remedial actions implemented over some time period. Planning these actions would require the phasing or staging and sequencing and linking of the individual actions. Besides engineering and construction factors, this effort would necessitate myriad risk management, cost/benefit, and administrative considerations.

6.6 LONG-TERM MANAGEMENT AND ASSOCIATED COSTS

Any effective remedy would likely require substantial long-term management with associated costs. Institutional control programs to protect human health and the environment would be needed. Depending on the remedy, long-term management would include operation and maintenance of engineering controls, such as repositories, and water treatment systems (either passive, on-site systems or active, regional water treatment plants). Required periodic cleanups of remediated areas that are recontaminated by subsequent flood events would add to long-term management costs, as would required long-term monitoring and periodic site reviews.

6.7 METAL LOADING FROM THE BUNKER HILL SUPERFUND SITE

Although CERCLA remedial actions are ongoing in the BHSS, as discussed in Section 1.1.6 of the FS Part 3, the BHSS has historically been a major source of zinc, cadmium, and lead loading to the South Fork Coeur d'Alene River. While it remains to be seen how much the BHSS remedial actions will reduce future metal loading to the South Fork Coeur d'Alene River, the remedial alternatives developed for this FS have not included additional actions in the BHSS.

It is anticipated that future cleanup actions in the BHSS could be required to meet ambient water quality criteria in the South Fork Coeur d'Alene River and the Coeur d'Alene River.