

## **2.0 MINING OPERATIONS**

### **2.1 EXISTING SAND AND GRAVEL MINING OPERATIONS**

Sand and gravel mining activities at the Chelsea Plant are currently conducted at two processing plant areas, the North Plant and the South Plant (see Figure 2). Mining on the South Plant property is conducted “in the dry,” meaning all mining is conducted above the level of the water table. In addition, wet washing is used at the South Plant area to produce washed sand and gravel products. All wash water used at the South Plant area is obtained from the onsite pond at the North Plant, and all wash water is circulated through a series of settling ponds and returned to the onsite pond for reuse. The site operations, mining and washing methods, site geology, groundwater flow, and the water budget of the onsite pond were previously evaluated (see Section 1.2). The results of the 2006 hydrogeologic evaluation concluded that the onsite pond will have a negligible adverse impact to the hydrologic environment in the area (see Appendix 2). Based on the MDEQ’s review and concurrence with these technical analyses, the MDEQ issued Part 301 Inland Lakes and Stream Permit No. 012-38-0010-P to allow the sand and gravel mining and the creation of the lake at the North Plant area. Water from the pond is also used for the purpose of dust suppression, as required under the MDEQ Air Quality District General Permit to Install. During sand and gravel mining at the South Plant area, excavating machines including bulldozers, wheel loaders, excavators, trucks, and similar equipment are used to dig and transport the sand and gravel to the processing plant. At the South Plant processing plant, the sand and gravel is crushed and sorted to meet various specifications. The equipment used at the South Plant includes screens, crushers, conveyor belts, etc.

The equipment used to excavate and transport sand and gravel at the North Plant area is similar to the equipment used at the South Plant; however, in addition, a drag line is periodically used to remove sand and gravel below the water table, in accordance with MDEQ Inland Lakes and Streams Permit No. 12-38-0010-P. Subsequent monitoring of water levels adjacent to the new lake, and in the vicinity of the site, have confirmed that no adverse impact has occurred related to the creation and operation of the new lake at the North Plant area.

### **2.2 PREVIOUS SAND AND GRAVEL MINING OPERATIONS**

During 2008, AI developed a plan for sand and gravel mining operations to be conducted on the “Dault Property” (see Appendix 3), which was located a short distance east of Pond Lily Lake, near the south end of the South Plant area. The proposed sand and gravel mining plan would have included removing sand and gravel both above and below the level of the water table in a manner that would create a small lake measuring approximately four acres in size. While the mining activities were conducted above the

water table, the fine sands located below the water table were left behind, even though the mining was not expected to result in any unacceptable adverse resource impact, and the proposed lake was never developed.

## **2.3 PROPOSED SAND AND GRAVEL MINING OPERATIONS**

The proposed sand and gravel mining operations to be conducted on land leased from the State of Michigan will be conducted following the same methods and procedures as those currently used at the South Plant area. The proposed sand and gravel mining operations will be conducted above the water table. No pond will be created and the water table will not be affected. The material will be conveyed to the South Plant for processing.

During sand and gravel mining adjacent to the South Plant area, excavating machines including bulldozers, wheel loaders, excavators, and trucks will be used to dig and transport the sand and gravel to the processing plant. At the South Plant processing plant, the sand and gravel will be crushed, sorted, and washed (as needed) using screens, crushers, conveyor belts, etc.

The proposed sand and gravel mining will represent an extension of the existing South Plant mining operations to the west and north. Figure 2 is a site map showing the property boundaries of the State of Michigan owned lease area (proposed expansion area). Figures 3 and 4 illustrated the proposed mining area looking towards the west and north. Figures 3 and 4 are prepared from Google Earth Pro aerial images using digital terrain mapping so that the elevation of the ground surface and the aerial photograph can illustrate the proposed sand and gravel mining area. The vertical scale of the photographs are presented so that the ground surface is illustrated at a scale factor that is two times the horizontal scale to better illustrate the topography of the proposed mining area. The green line illustrated on Figures 3 and 4 is the actual property boundary. Sand and gravel removal will continue in these proposed mining areas until the established ground slopes and the property boundary meet the limits established in the land lease documents and the MDEQ-approved mine reclamation plan. Figure 5 illustrates the proposed ground surface topography following the completion of sand and gravel mining. At the end of the proposed sand and gravel mining, the site will be reclaimed, in accordance with the MDNR-approved mine reclamation plan, to a natural state that is both ecologically stable and beneficial to the community.

As can be seen on Figures 3 and 4, the existing forested land surface elevations west and north of the proposed mining area will remain in place as a sight and sound barrier. Most mining activities will be conducted on east/southeast facing slopes so neighboring properties will not be adversely affected by the proposed operations. The existing topography, the topography of the exposed mining area, and the forest cover to the north and west will shelter from view and buffer sound from the existing and proposed mining activities.

It is important to note that, unlike the proposed mining plan for the “Dault Property,” no sand and gravel removal below the water table is proposed for the land to be leased from the State of Michigan.