

4.0 SITE CHARACTERIZATION

4.1 Source Area

Based on information provided by Mr. David Rogers, the principal source of PCBs at 112 and 114 Brent Street appears to be soil and demolition debris removed from the KEC and Ice House (Davis Farmer) properties. During the course of performing grading work on the KEC, L. M. & R Service, Inc. reportedly transported by truck and deposited soil, brick and construction debris that contained PCBs onto property located at 112 and 114 Brent Street in Crystal Springs, Mississippi.

4.2 Regional Geology

According to published data, Copiah County lies within the Piney Woods District of the Gulf Coastal Plain Physiographic Province of southern Mississippi. Elevations of most of the upland part of the Copiah County ranges from 300 to 500 feet above sea level. Most of Copiah County consists of upland areas with topographic features ranging from rolling plains to rugged hills. A prominent ridge extends north and south through the central part of the county on which the city of Crystal Springs is situated. The ridge is the hydrologic divide between the Pearl River drainage basin on the east side of the county and the Bayou Pierre drainage basin on the northeast (Bicker, 1969).

Sedimentary rocks that range from unconsolidated to poorly consolidated clastic rocks underlie the region. The oldest Coastal Plain rocks are Jurassic in age and are deeply buried in the subsurface. A thick and extensive salt layer of Jurassic age composes the lower part of the Coastal Plain sequence in the Gulf Coast Basin (Renken, 1998).

Near surface geology exposed in the vicinity of Crystal Springs consists of Miocene, Pleistocene, and Recent sediments. The uppermost recent sediments are composed of alluvium deposits occurring in major drainage channels. The Pleistocene age sediments,

also exposed at the surface are identified as the Citronelle Formation. The Citronelle Formation consists of red to orange fine to coarse-grained sands, abundant chert and quartz gravels with discontinuous clay lenses. Miocene sediments include the Catahoula Formation consisting of gray to tan clay, fine to coarse-grained sand, and white to gray silt (Bicker, 1969). The Citronelle Formation lies unconformably over the Catahoula Formation in the vicinity of Crystal Springs with the base elevations of the Citronelle ranging from 375 feet mean sea level (msl) to about 430 msl. The Citronelle and Catahoula formations are productive and well used aquifers in the vicinity of Crystal Springs.

4.3 Regional Hydrogeology

According to published literature, the uppermost aquifer in the area of Crystal Springs exists under phreatic conditions (unconfined) and rises into the Citronelle Formation. Groundwater generally exists near the base of the Citronelle. Depth to groundwater ranges from 20 to greater than 100 feet in wells throughout the region with a majority being deeper than 50 feet. Since the surficial aquifer is under phreatic conditions, no extensive clay confining units are anticipated above this first aquifer.

Average rainfall totals 57.2 inches per year in the Covich County area. Precipitation that does not evaporate (approximately 44 inches evaporation per year) or run off into streams and drainages recharges the surficial aquifer. Precipitation infiltrates vertically through the upper sediments to a saturated zone near the bottom of the Citronelle Formation. The groundwater then occupies the voids or pore spaces between sand grains. Groundwater moves either vertically into the lower aquifer in the Catahoula Formation or moves horizontally, discharging from springs and into streams, or is stored in the aquifer.

The region surrounding Crystal Springs is situated in a recharge zone of the Coastal Low Lands Aquifer System. Average recharge into the aquifer system ranges from 0.17 to 0.66 inches per year while discharge rates range from 0 to 0.17 inches per year. The

discharge deficit is the result of large water well withdrawals used to meet agricultural demands.

4.4 Study Area Geology

Sediments observed in the drainage ditch to the south of the MSL properties consisting of fine-grained sands with local lenses of clay and gravel underlie the drainage channel study area. These red and orange sediments comprise the Citronelle Formation. The Citronelle Formation covers approximately 30 percent of Covich County and is present at ground surface at Crystal Springs. Gravel, mainly consisting of chert and quartz is present throughout the formation near Crystal Springs and is heavily mined in the surrounding area. The thickness of this formation ranges from a few feet to a maximum of 100 feet with average depths ranging from 20 to 80 feet. Thickness of the unit is controlled by erosion of surface soils. The thinner segments are located in washes and drainage ditches/channels, while the thicker portions are located on topographically elevated areas.

Soil samples, collected from within the drainage ditch and surrounding area, confirm that the area under the MSL properties is underlain by pockets of fine to coarse sand, with chert and quartz gravel, and clay lenses. The Raymond Lamar property and drainage ditch contain pockets of fine to coarse sand at shallow depths (0-30 inches) and are underlain by sandy clay and clay layers. A section of the west central and west portion of the Raymond Lamar property south and west of the subject site has been previously mined for gravel. A small pond that was formerly a gravel pit is located on the Raymond Lamar property approximately 450 feet southwest of the MSL Property boundary.

4.5 Study Area Hydrogeology

Based on subsurface investigations conducted in Crystal Springs, the depth to the water table beneath upland areas is approximately 60-65 feet below ground surface (bgs).

Localized perched groundwater exists at numerous areas above small clay lenses deposited within the Citronelle Formation. The depth to perched groundwater ranges from just beneath ground surface to approximately 20 feet. During site assessment activities, Geoprobe™ direct push soil borings were advanced to a maximum depth of eight (8) feet in some areas of the drainage ditch south and west of the MSL Property and ground water was not encountered.

No groundwater monitoring wells have been installed on either the MSL, adjacent or down gradient properties.