

Groundwater Elevation Monitoring Activities within the Balcones Canyonlands Preserve Along the Planned Jollyville Transmission Main Tunnel Alignment, June 2010 – July 2011 by INTERA and Glenrose Engineering

Water level monitoring activities were conducted by INTERA and/or Glenrose Engineering staff within the Balcones Canyonlands Preserve (BCP) between June 2010 and July 2011. Measurements were made in five monitoring wells and three vibrating wire piezometer (VWP) installations located within the BCP. The locations of the monitored wells and VWPs located within the BCP are shown along with the JTM tunnel alignment in Figure 1. Data were collected during this time to help establish a baseline prior to excavation of the Jollyville Transmission Main (JTM) tunnel, which will run beneath a section of the BCP along its route from the Water Treatment Plant 4 (WTP4) site near Lake Travis to the Jollyville Reservoir located at the intersection of US Highway 183 and McNeil Road. Routine collection of water level data transitioned over to the City of Austin Watershed Protection Department (WPD) in the Summer of 2011 as part of their broader environmental monitoring program for the WTP4 project.

Water level measurements in wells were collected using a Solinst 101 electric water level indicating tape. Monthly monitoring began for the wells on December 16, 2010. These wells were accessed from the gated entrance at the end of Old Lampasas Trail. The wells are designated JT-108-A, JT-107PZ-A, JT-107S-A, JT-107TW-A and JT-107D-A. These wells are completed at specific intervals within the Glen Rose Formation. Level TROLL data-logging pressure transducers began continual water level monitoring within all of these wells except for JT-107TW-A on July 26, 2011, and the three wells at the JT-107 cluster were connected to a telemetry system to allow remote access to the data. The WPD took control of data collection and management at this point. Data collected by INTERA at these locations have been provided to the WPD.

The VWP boreholes are designated B-8, B-9 and B-10 and are most easily accessed from the gated entrance at the end of River Place Blvd. Each of these boreholes has multiple VWPs installed at different depths. VWP data were collected by INTERA on a monthly basis from June 15, 2010, through July 12, 2011. Individual instruments are grouted into place at different depths within boreholes which have been backfilled to the surface. Wires from these instruments run to the surface and are contained within an enclosure. Measurements are taken from these instruments by connecting the wires to terminals on a data recorder which measures the frequency of the vibrating wire on the sensor. These frequency data are used to calculate the fluid pressure above the sensor by applying sensor-specific calibration

parameters. This fluid pressure is used with the sensor elevation data to calculate the total head at the location of the sensor (i.e., the level to which water would rise if a well was completed at that location, expressed as an elevation). A photograph of one of four sets of the VWP wires at the B-9 boring connected to the data recorder is shown in Figure 2. The data recorder was turned over to WPD staff, who are now in charge of data collection and management for the VWPs.

Glenrose Engineering staff provided assistance to WPD staff by conducting site visits to different spring locations and wells near or within the BCP. Glenrose staff assisted WPD by collecting samples in support of the recent dye tracing study that is addressed in the WPD Annual BCP Activities Report. Staff from Glenrose Engineering also accompanied INTERA and/or WPD staff occasionally for the retrieval of VWP data prior to these activities being overtaken by the WPD. Data collected by Glenrose Engineering were turned over to WPD.

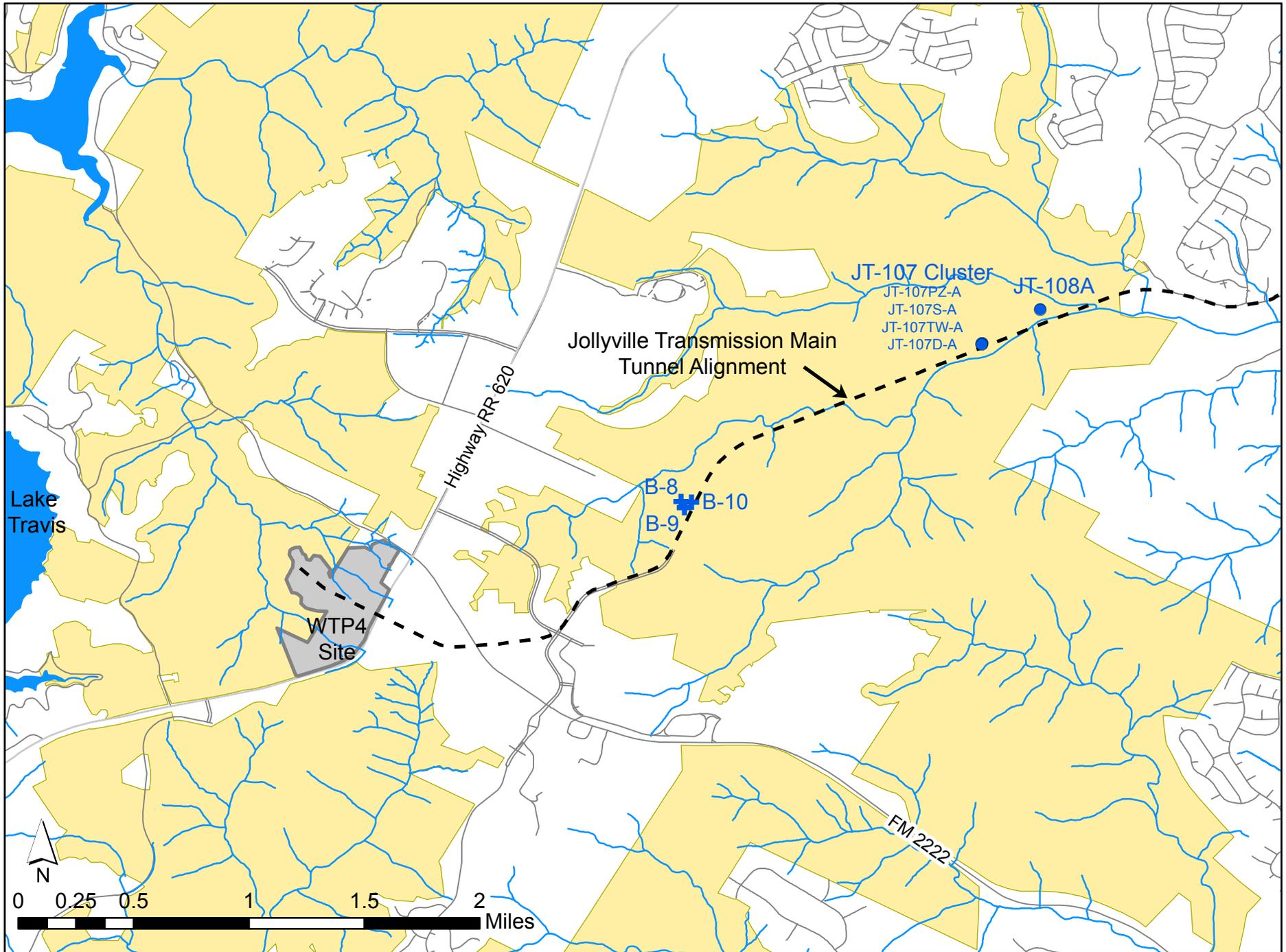


Figure 1. Map of vibrating wire piezometers and monitoring wells located on the BCP which were monitored by INTERA in 2011.



Figure 2. Photograph of the B-9 installation showing cable from one of the downhole instruments connected to the data recorder.