Based on this analysis and sensitivity studies which are described later in Section 8.3, the calculated flow rate at the river bend is 25,000 stbpd.

For a detailed discussion of how the range of qualifying flow rates was determined, see Appendix G.

8.2 Kink Leake Flow Rate

To calculate the flow rate through the kink leak, I continued the model used to estimate flow from the River Bend to include the kink section of the river (refer to Section 7 for a description of the kink model). In these simulations, I varied the unknown resistance through the kink to produce different flow rates through the river. As described in Section 8.3, I ran simulations with the various flow rates on May 13 and single peak behavior on May 19. From these qualitative simulations, I chose the simulation with the maximum kink leak flow rate.

I consider this the maximum kink leak flow rate for the following reasons. First, I selected an upstream pressure at River Bend that was higher than the recorded values for that gauge. A higher pressure results in a higher calculated kink leak flow rate. Second, instead of tracing the pressure levels through the kink, I traced the pressure levels when they were at their final state (that is, after the kinked section of the river had been reinstalled). I note that the pressure levels of the rivers on May 13 and May 20 could have had a

Conservative measurement of the pressure, I calculated the maximum possible flow rate for the three holes composing the Kink leak during the May 13 to May 20 period. This maximum kink leak flow rate is 4900 stbpd.

8.3 Sensitivities

Some of the model inputs are not known to the same degree of certainty as others. To address uncertainties in the inputs, I ran several sensitivity studies. The same general procedure was performed for each of the sensitivity studies performed:

- Vary one model input to address its uncertainty.
- Run simulations using the May 13 and May 13 river flow characteristics described in Appendix F.
- Determine the range of acceptable flow rates as described in Section 8.4.

As an example, the roughness of the river floor was not known. To address this uncertainty, I ran the roughness for both a smooth pipe and 100 times the roughness of a smooth pipe. Detailed discussion of all such sensitivity studies are included in Appendix G.

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