



(U) Tropical Storm Harvey: Infrastructure Impact Assessment: Wastewater Systems – Update 3 1900 EDT 29 August 2017

(U) Assessment

(U) Since the 2015 EDT, 26 August 2017 Infrastructure Impact Assessment: Water and Wastewater Systems – Update 1, OCIA has updated its flood projections to focus on additional potential flooding due to Tropical Storm Harvey in the area between Houston, Texas, and Lake Charles, Louisiana. This analysis focuses on wastewater assets of highest potential consequence if disrupted.

(U//FOUO) OCIA assesses that rainfall runoff flooding due to Tropical Storm Harvey will have a moderate-to-high impact on the Water and Wastewater Systems Sector over the next 3 days, as heavy rains continue to spread over southeastern Texas and southern Louisiana. Flood modeling and geospatial analysis identified 112 wastewater treatment plants expected to experience at least 4 feet of flooding. The capacity of each of these wastewater treatment plants is not available, but OCIA has determined that two of these facilities are particularly significant.

(U) Rainfall between 40 and 55 inches has been observed at several locations from the Houston metro area east to Beaumont, Texas (TX). The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) is forecasting up to an additional 10 inches of rain for Thursday, 31 August 2017, with storm surge flooding of 2-4 feet from Holly Beach, TX to Morgan City, TX with 1-3 feet expected from San Luis Pas, TX to Galveston Bay, TX.

(U) In general, OCIA's flooding simulation indicates reduced flooding on the western side of Houston, with increased flooding in Houston and north of Houston. OCIA's hydrological model uses the NOAA precipitation forecasts to project the depth and extent of flooding from runoff and river overflow. The model takes into account soil saturation from previous rainfall. The updated projection includes a 1-day hindcast using precipitation observations obtained from the NWS. In addition, a 5-Day quantitative precipitation forecast from NOAA was simulated, assuming that the majority of the precipitation will occur over the first 2 days of the simulated period.

(U) As of 1500 EDT 30 August 2017, the Environmental Protection Agency has reported that the Houston area wastewater treatment systems are still operational and pressurized, and there are no immediate concerns, despite continued severe flooding. If these facilities experiences sufficient damage to degrade operations, flooding will make it difficult for workers to get equipment to the site and to do any adjustments and maintenance.

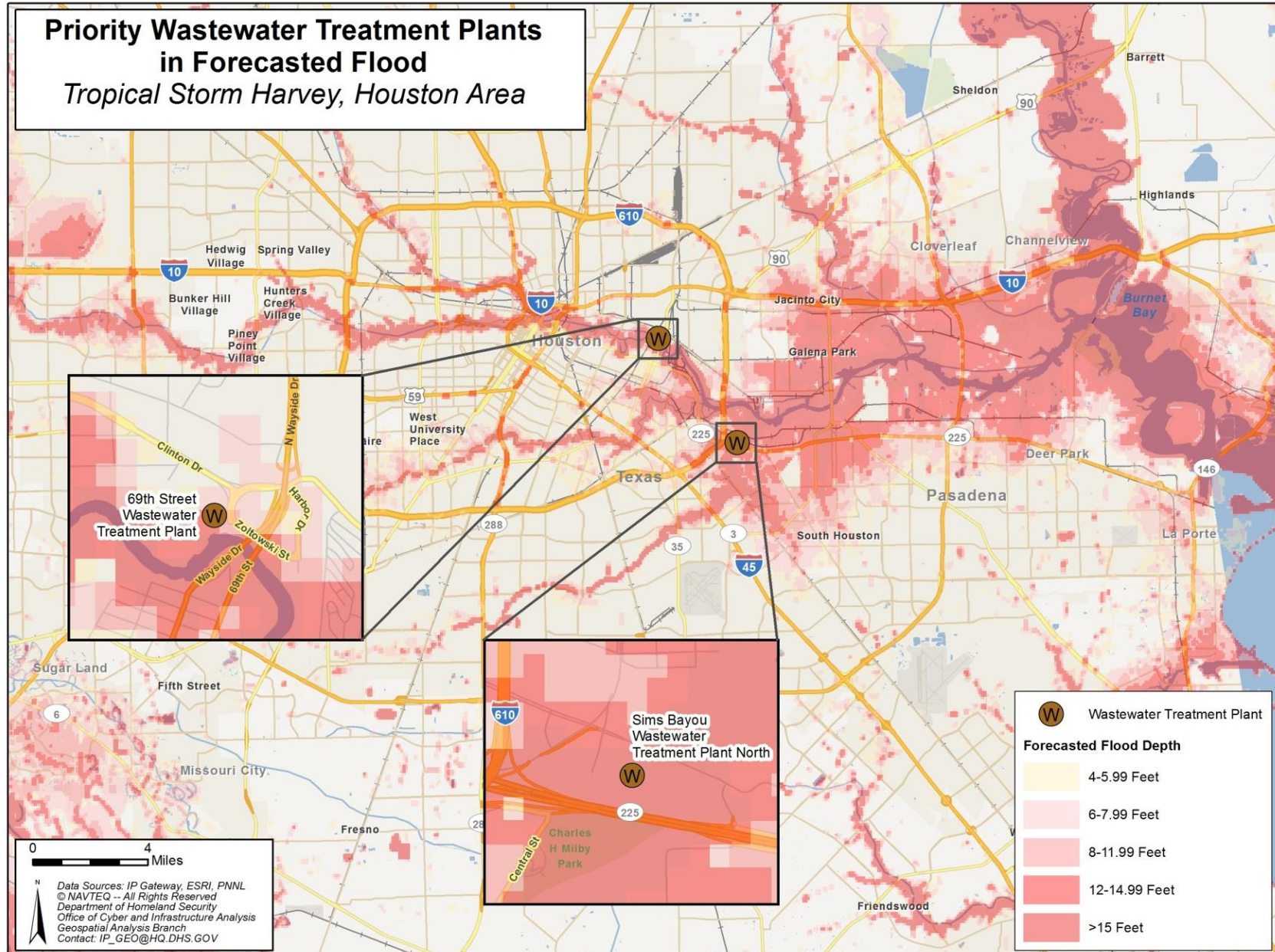
(U) Table 1 contains wastewater facilities of greatest consequence in the Tropical Storm Harvey area of concern as of 29 August 2017.

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TABLE 1, WASTEWATER TREATMENT PLANTS EXPECTED TO RECEIVE AT LEAST 4 FEET OF FLOODING

| FACILITY NAME | LOCATION | EXPECTED FLOOD DEPTH (FEET) |
|--|----------------|-----------------------------|
| City of Houston Sims Bayou Wastewater Treatment Plant North | Houston, Texas | 15 |
| City of Houston 69 th Street Wastewater Treatment Plant | Houston, Texas | 12 |

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(U) FIGURE I—PRIORITY WASTEWATER TREATMENT PLANTS IN FORECASTED FLOOD

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