The potential detection of gravitational wave signals from neutron star black hole (NSBH) binary mergers is poised to provide a deeper insight into the complex physics underlying the structure of neutron stars. The morphology of an NSBH waveform may range widely from completely disruptive coalescences, similar to the waveforms of binary neutron star mergers such as GW170817, to signals with miniscule tidal disruption almost indistinguishable to those produced during binary black hole mergers. We present recent developments and improvements that have been made to past phenomenological modeling of NSBH waveforms, with applications for the current LVC gravitational wave detectors and an eye toward next-generation detectors.