Associated long-term impacts include increased impervious surface runoff and pollutants entering the streams with stormwater runoff. A limited decrease in water quality can occur due to highway runoff containing hydrocarbons, toxic substances, debris, and other pollutants associated with impervious surfaces. Increased runoff can also increase stream channel erosion and downstream sedimentation, though the existing low gradients decrease this danger. More important than the actual amount of runoff, however, may be the proximity of such runoff to designated public trust areas and areas of environmental concern. The closer those sources of impervious runoff occur, the less time for amelioration of effects of detrimental components in the runoff. Short-term impacts to the water quality associated with a construction project can include siltation and erosion.

Macroinvertebrates and fish can develop elevated levels of metals in their tissues, which may be locally related to the amount of traffic at upstream highway crossings (Van Hassel et al. 1980). The effect is likely to be greatest where small streams receive runoff from large stretches of highway (Maltby et al. 1995). Polycyclic aromatic hydrocarbons, derived from gasoline and oil, may not be acutely toxic to macroinvertebrates, but could cause long-term genetic damage, depending on the concentration (Levine et al. 2007).

No substantial adverse long-term impacts on water quality are anticipated as a result of any of the alternatives for the proposed bypass.

Many of these contaminants will tend to adsorb or chemically bond to sediment particles. Therefore, if sediments can be removed from runoff before entering surface waters, transport of these contaminants is minimized. Mechanisms for performing such functions include settling basins, strips of vegetation along the roadway or vegetated drainage swales (as opposed to ditches), and other erosion and sediment control measures, many of which are included in the NCDOT Best Management Practices for the Protection of Surface Waters[17]. Moreover, appropriate planning and construction using the NCDOT Best Management Practices for the Protection of Surface Waters[17] will manage local runoff, so no substantial adverse effects are incurred.