Upper Half of the Middle Susquehanna Subbasin

SUGAR CREEK WATERSHED (SRC)

There were three sites in the Sugar Creek Watershed, all located on the main stem of Sugar Creek, in Ecoregion 60 size medium reference category. The most upstream site (SRC 25.0) was rated as "lower" in water quality, contained a moderately impaired macroinvertebrate population, and had excellent habitat. SRC 16.4 had "middle" range water quality, a slightly impaired macroinvertebrate population, and excellent habitat. SRC 0.8 contained "middle" water quality, a moderately impaired macroinvertebrate community, and supporting habitat conditions. A municipal sewage treatment plant was upstream of SRC 25.0, which could explain the "lower" water quality at this site. The stream seemed to recover slightly around SRC 16.4, but then degraded at the mouth of the stream where the land use was more influenced by agriculture and industry.

TOWANDA CREEK WATERSHED (TWN)

All the sites within this watershed contained a slightly impaired macroinvertebrate population except STWN 0.1 (South Branch Towanda Creek), which harbored a nonimpaired community. All the sites had either supporting or excellent habitat. TWN 25.0, the most upstream site, was the only site to receive a "lower" water quality rating. TWN 25.0 also is listed on Table 2 for low dissolved oxygen. This sampling site was located in a more commercial and residential area, which could have

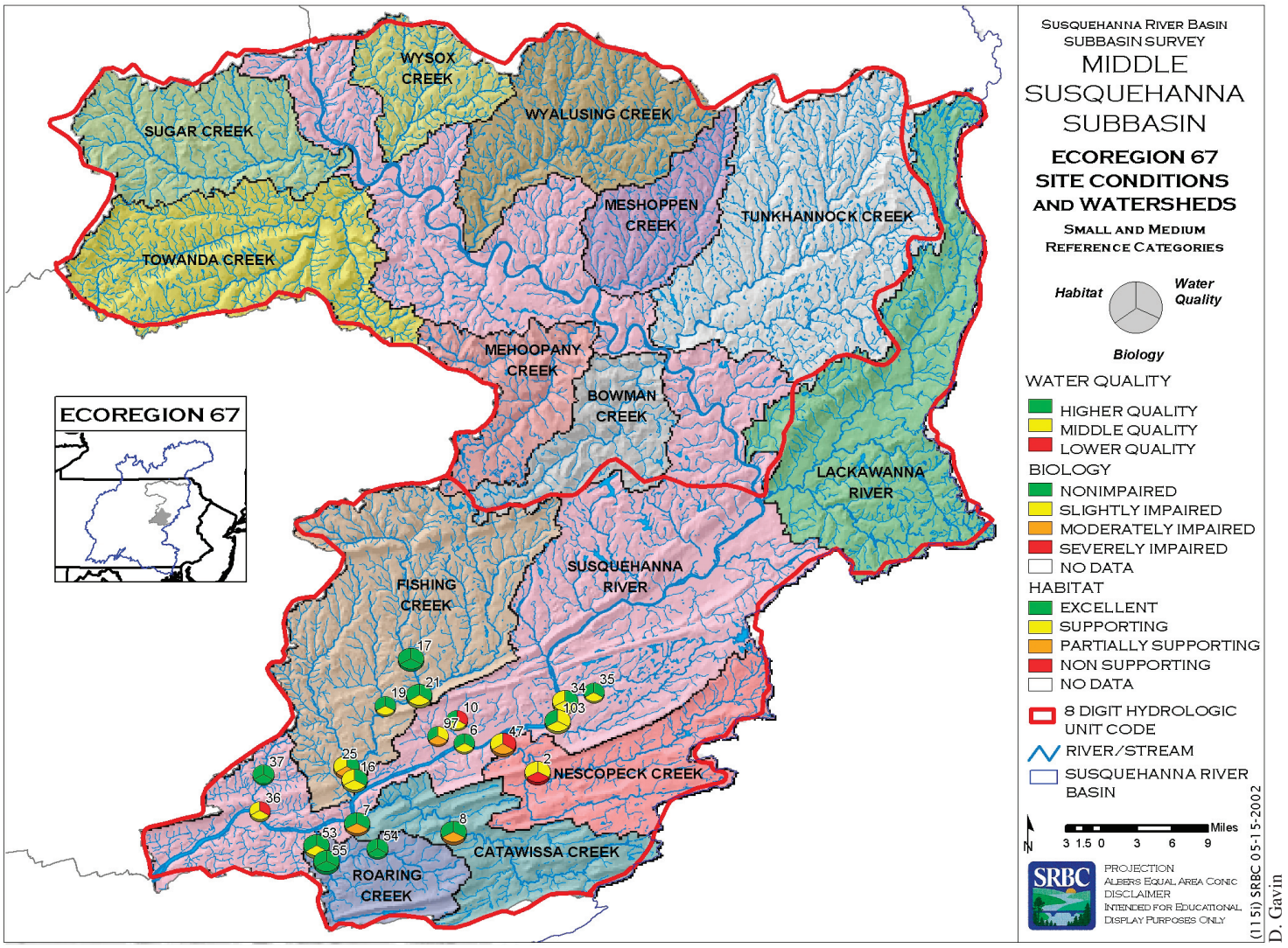


Figure 6. *Water Quality, Biological, and Habitat Categories in Ecoregion 67 (small and medium drainage) Sample Sites in the Middle Susquehanna Subbasin.*

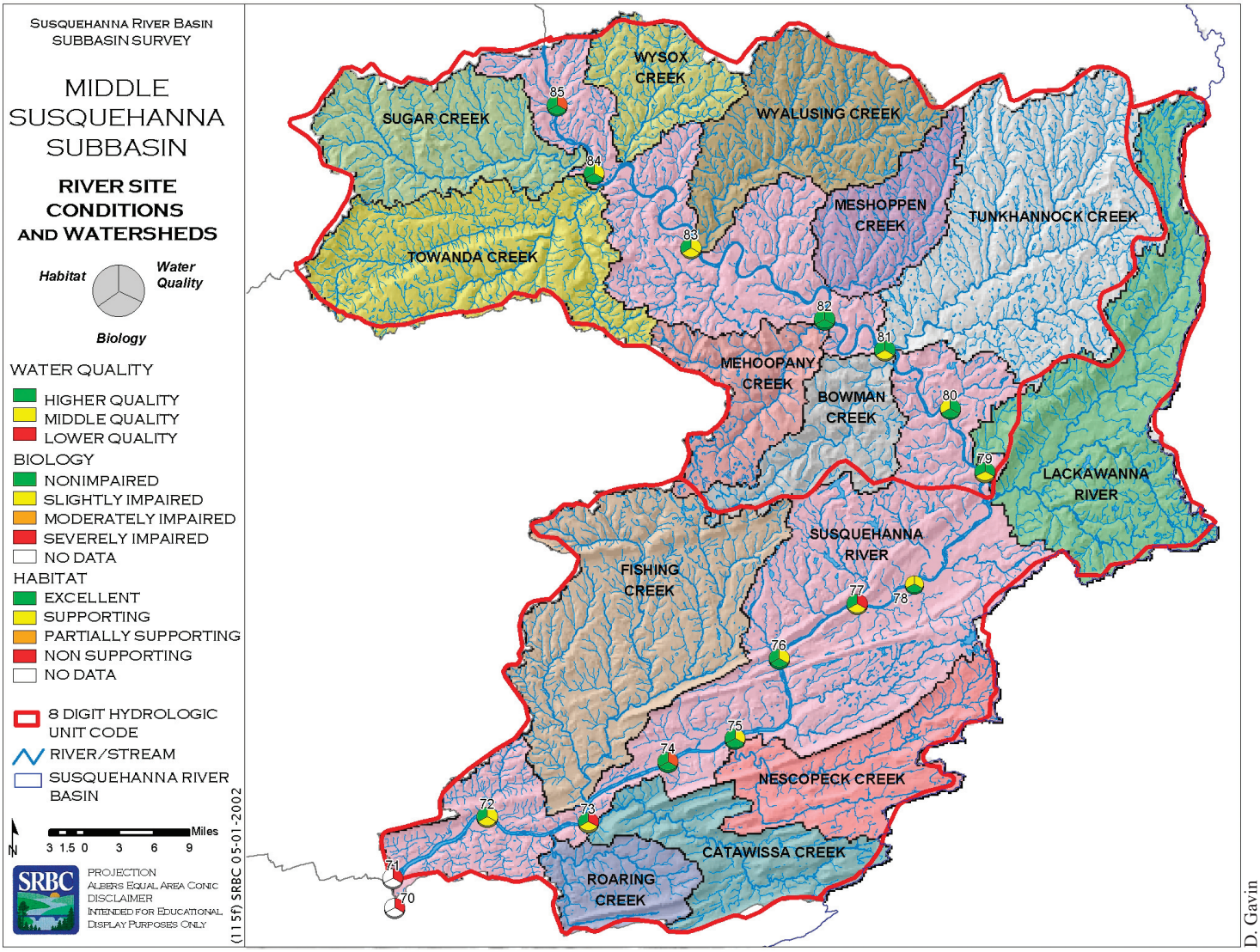


Figure 7. *Water Quality, Biological, and Habitat Categories at River Sample Sites in the Middle Susquehanna Subbasin.*

attributed to the "lower" water quality rating. TWN 16.9 was rated "middle" water quality, and is listed on Table 2 for dissolved oxygen below 4.0 mg/l. This site was located in an agricultural area. Both sites on Schrader Creek were rated "higher" water quality. Schrader Creek is designated as EV and HQ-CWF (Table 3); however, it also is listed on Table 2 for dissolved oxygen below 4.0 mg/l. Also, the land use map (Figure 3) indicates that there are abandoned mine lands in the Schrader Creek Watershed. STWN 10.0 was rated "middle" quality and is listed on Table 2 for high total organic carbon. The two remaining sites (STWN 0.1 and TWN 0.1) in this watershed were located in forested areas, and had "higher" water quality ratings.

WYSOX CREEK WATERSHED (WSX)

WSX 6.6 contained "middle" water quality, a slightly impaired macroinvertebrate population, and supporting habitat. WSX 0.2 was rated "higher" in water quality, and excellent in habitat, but had a moderately impaired macroinvertebrate population, possibly due to a scarcity of riffle areas.

WYALUSING CREEK WATERSHED (WYL)

The two sampling sites in this watershed are both within Ecoregion 60. The more upstream site, WYL 16.2, had a "higher" water quality rating, a nonimpaired biological community, and excellent habitat. Downstream at WYL 0.4, the water quality was "lower," and the macroinvertebrate population was slightly impaired, although the habitat was excellent. WYL 0.4, located near the borough of Wyalusing, was visibly impacted by human activities. WYL 16.2 is listed on Table 2 for low dissolved oxygen, and WYL 0.4 is listed for high total nitrogen.

MESHOPPEN CREEK WATERSHED (MSH)

This watershed contained the reference site for Ecoregion 60 small drainage areas on West Branch Meshoppen Creek (WMSH 0.5). The two sites upstream of West Branch Meshoppen Creek (MSH 12.0 and MSH

5.3) had "middle" range water quality, slightly impaired biological communities, and partially supporting and excellent habitats, respectively. MSH 12.0 was influenced by beaver dams and was located in an apple orchard. The site downstream of those land influences, MSH 5.3, is listed on Table 2 for high total organic carbon (4.5 mg/l). WMSH 0.5, which was heavily forested, had "higher" water quality, nonimpaired biological conditions, and excellent habitat. The site at the mouth of Meshoppen Creek (MSH 0.1), also had "higher" water quality and excellent habitat conditions; however, the biological condition was slightly impaired.

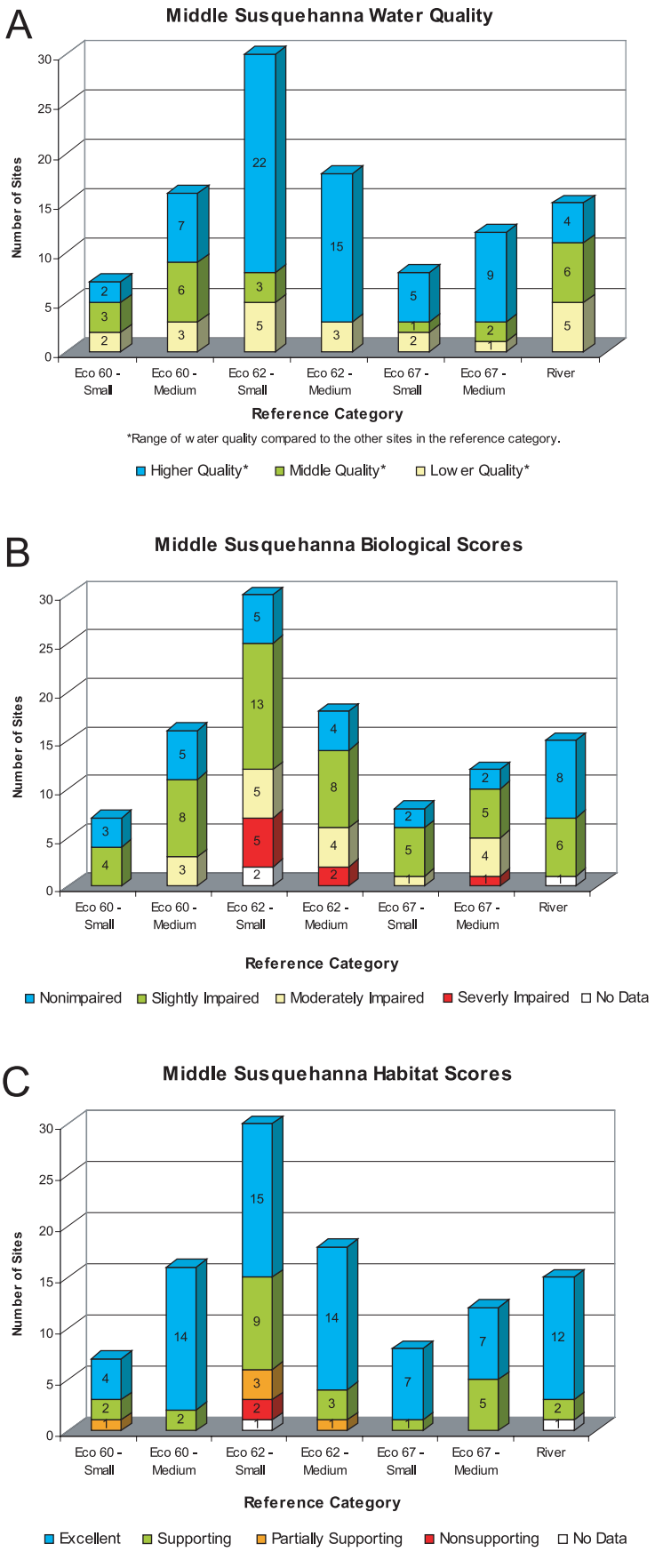
MEHOOPANY CREEK WATERSHED (MHO)

All the sites in this watershed were in the reference category Ecoregion 62 medium drainage size and were mostly forested. The water quality at all of the sites was rated "higher" quality and the habitat was excellent. The two upstream sites, MHO 15.0 and MHO 6.5, were both moderately impaired in biological condition, although MHO 15.0 was a HQ-CWF (Table 3). These sites scored poorly in EPT, EPT/Chironomidae, dominant taxa, and Hilsenhoff metrics. North Branch Mehoopany Creek (NMH 0.1) contained a better macroinvertebrate community, which was rated only slightly impaired. The site below North Branch Mehoopany Creek (MHO 0.1), at the mouth of Mehoopany Creek, had a nonimpaired biological community. MHO 0.1 was used as the reference site for biological condition and habitat in the Ecoregion 62 medium drainage size reference category. Our samples indicated that this watershed was healthy.

TUNKHANNOCK CREEK WATERSHED (TNK)

This watershed had two sampling sites located on both the East Branch and the South Branch Tunkhannock Creek, in addition to three sites on the main branch. The water quality at East Branch Tunkhannock Creek was "higher" than the South Branch, even though iron concentrations were elevated at ETNK 0.1 (Table 2). Both sites on the East Branch had "higher" water quality, excellent habitat, and nonimpaired macroinvertebrate communities. The site above the East Branch (TNK 20.0) had a "middle" water quality rating, supporting habitat, and a slightly impaired macroinvertebrate population. Below the confluence of the East Branch, Tunkhannock Creek

Figure 8. *Summary of Water Quality, Biological, and Habitat Characteristics.*



(TNK 11.3) still had a "middle" water quality rating, but the habitat was excellent, and the macroinvertebrate population was nonimpaired, similar to the East Branch. The South Branch also had excellent habitat, but the water quality was "lower" and the macroinvertebrate population at STNK 0.1 was slightly impaired. The site near the mouth of Tunkhannock Creek (TNK 0.3) contains a "higher" water quality, a nonimpaired biological community, and excellent habitat. Overall, this watershed was healthy.

BOWMANS CREEK WATERSHED (BOW)

The main branch of Bowmans Creek is designated as a HQ-CWF (Table 3), and this watershed appeared to be healthy. Both sites had "higher" water quality, slightly impaired macroinvertebrate communities, and excellent habitat.

Lower Half of the Middle Susquehanna Subbasin

LACKAWANNA RIVER WATERSHED (LWR)

This watershed was fairly healthy at the upstream sites. In fact, the East Branch Lackawanna River is designated as a HQ-CWF (Table 3). It was degraded downstream, however, due to abandoned mine land and urban influences (Figure 3). The East and West Branch Lackawanna River sites had "higher" water quality, excellent habitat, and slightly and moderately impaired macroinvertebrate populations, respectively. Despite signs of AMD starting to appear downstream on Lackawanna River at LWR 36.0 and LWR 15.0, these two sites on the main branch remained fairly healthy with "higher" water quality ratings, slightly impaired macroinvertebrate communities, and supporting and excellent habitats, respectively. Leggetts Creek (LGT 0.1) entered the Lackawanna River with "lower" water quality and a moderately impaired macroinvertebrate population. LGT 0.1 was located below joint sewage and wastewater treatment plants and is listed in Table 2 for high total nitrogen, high phosphorus, high total organic carbon, and high chloride. Roaring Brook also entered the Lackawanna River downstream of Leggetts Creek, but with "higher" water quality and slightly to moderately impaired macroinvertebrate populations despite strong urban influence. LWR 4.0 was characterized by "lower" water quality and a moderately impaired macroinvertebrate community. High total nitrogen was evident at this site (Table 2), and the stream sediments and water smelled of chlorine at the time of the sampling. Although a tributary to the main branch, Spring Brook (SPR 0.1), influenced the Lackawanna River with "higher" water quality and a slightly impaired macroinvertebrate population, the site at the mouth of the Lackawanna River (LWR 0.3) had "lower" water quality, severely impaired biological conditions, and supporting habitat. This site is listed in Table 2 for high iron and manganese (both indicators of AMD), and had yellow boy ($FeOH_2$) on the streambed.

SOLOMONS CREEK (SOL 0.9), NANTICOKE CREEK (NTK 0.4), and NEWPORT CREEK (NPT 0.1)

These streams were strongly impacted by AMD and urban influences (Figure 3). All the sites had "lower" water quality ratings and SOL 0.9 and NTK 0.4 had severely impaired macroinvertebrate communities. NPT 0.1 was not sampled for macroinvertebrates because

Nescopeck Creek outfall severly impacted by acid mine drainage.
(Left) Robert Hughes of EPCAMR helps remove litter during Streamside Cleanup 2001.