TMDL STUDIES

EcoSummary

Central Branch below Walton County Landfill

July 29, 2003

VERY POOR

Stream Condition Index (SCI): The standardized biological assessment tool used by FDEP biologist to indicate ecosystem health and identify impairment as compared to reference (natural) conditions of streams within the various ecoregions of Florida

For samples collected before June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures and met FDEP quality assurance/quality control standards.
For samples collected on or after June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures (SOPs) and met DEP quality assurance/quality control standards.

Introduction



This site failed all three biometrics of a 2000 BioRecon conducted to assess the impacts of Walton County's Central landfill on the biota and wildlife habitat in a tributary to West Sandy Creek. For this reason, Central Landfill was included on the FDEP Basin Rotation Group 3 (Choctawhatchee Basin) Planning List of Impaired Waters. The FDEP planning list is an inventory of surface waters or segments for which impairment of one or more parameters is suspected and additional sampling is required to verify the suspected impairment(s). Stream Condition Index (SCI) assessments are required to verify biological impairment of a stream or water body segment (Rule 62-330.330). When impairment is verified, a TMDL will be developed, as provided in Subsection 403.067(2) in the Florida Statutes, to determine reductions in the pollutant to obtain the water body's designated use. This 2003 SCI was performed to verify biological impairment documented by the 2000 BioRecon at this same site (see: ftp://ftp.dep.state.fl.us/pub/water/eco/Enforce Central Landfill.pdf) For quality assurance and comparative purposes a BioRecon was also conducted along with this 2003 SCI assessment.

Watershed Characteristics

Central Landfill Branch at the bioassessment site is a second order stream originating above W.W.II Veterans Lane about 2 miles north of DeFuniak Springs, Walton County (latitude North 30 degrees 46 minutes 20.1 seconds longitude West 86 degrees 05 minutes 53.7 seconds). The sample site (STORET 32010030) is located in subecoregion 65f Southern Pine Plains and Hills. The watershed drains and flows into Choctawhatchee Bay via West Sandy Creek and Choctawhatchee River. Central Landfill Branch is designated Class III waters for recreation and maintenance of a healthy, well-balanced aquatic community.

Results and Discussion

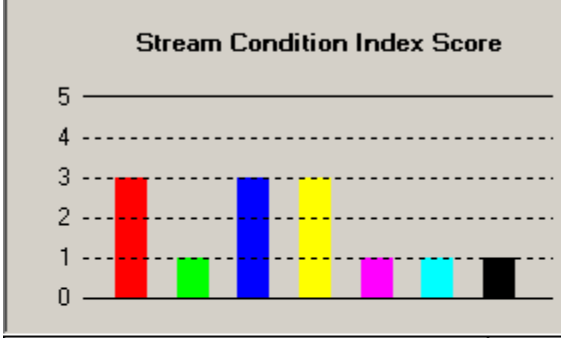
The SCI scoring system indicated a very poor condition with a score of 13 out of 33 index points. Like the SCI, both BioRecons indicated a severely impaired biological community. All three of the BioRecon biological indicators failed thresholds established for a healthy aquatic wildlife community:

BioRecon Results

Biometrics	2000 Value	2003 Value	Thresholds
Taxa Richness	4	2	≥24
Florida Index	4	0	≥22
EPT	1	1	≥17

The macroinvertebrate community was severely degraded. Pollution tolerant worms, beetles and flies were dominant in the 2003 BioRecon and SCI. Productivity was so low that the entire sample had to be sorted. Most SCI assessment sites are sorted for a 1/20 sub-sample and usually have at least 100 individuals in that sub-sample. Central Landfill Branch yielded only 71 individuals in the entire sample.

CENTRAL BRANCH BTWN SEEP34 BLW WALTON CO. LNDFL



BioRegion : Panhandle West

Index Period : Summer - Jul 2003

Excellent	27 - 33
Good	21 - 26
Poor	14 - 20
Very Poor	7 - 13

Core Metrics	Value	5 Points	3 Points	1 Point	Score
# TOTAL TAXA	19	>= 31	30 - 16	< 16	3
EPT INDEX	1	>= 7	6 - 4	< 4	1
# CHIRONOMID TAXA	6	>= 9	8 - 5	< 5	3
% DOMINANT TAXON	26.76	<= 22	23 - 61	> 61	3
% DIPTERA	60.56	-	<= 50	> 50	1
FLORIDA INDEX	2	>= 16	15 - 8	< 8	1

FLORIDA INDEX	2	>= 16	15 - 8	< 8	1
% SUSPENSION FEEDERS / FILTERERS	0	>= 12	11 - 6	< 6	1
Macroinvertebrate Dip Net (20 sweeps of most productive substrates)		SCI TOTAL SCORE :			13

The habitat assessment of the site essentially had not changed from 2000 (38%) to 2003 (36%). A score of 65% is an interim biometric threshold. A profuse bloom of iron/sulfur bacteria continued to smother the stream and riparian wetland. The iron/sulfur bacteria smothered 100% of the aquatic habitats, which eliminated the stream's wildlife diversity and productivity. This bloom produced a sheen that covered the water surface. These bacteria and the associated precipitated iron/sulfur and other compounds smother the gills and bodies of the fish and wildlife. Anaerobic sediments filled the stream channel to a depth of 3 feet or more. The stream was very turbid after disturbance, and the floc-like sediments re-suspended rapidly. A thundershower developed after sampling that resulted in a turbidity of 230 Nephelometric Units (NTU). The State Water Quality Standard 62-302.530(70) for turbidity is greater or equal to 29 NTU above natural background conditions. During rainfall events the turbidity, sediment, iron/sulfur, and other chemical compound leachate pollution load is transported down stream to West Sandy Creek, Sandy Creek, Choctawhatchee River, and into Choctawhatchee Bay. This pollutant load could affect the federally listed endangered Gulf Sturgeon, which inhabits the Choctawhatchee Basin. Iron is a contributor for algal blooms in marine waters. The Bay experienced a fish killing (including observed juvenile Gulf Sturgeon) red tide bloom during 1998-2000 where excessive iron loading may have been a factor

Conclusions

The 2003 SCI and BioRecon affirmed this site did not meet Class III State Water Quality Standards 62-302 for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The iron/sulfur bacteria, sediment, and chemical leachate effects from the un-lined landfill were most likely the major contributors to this stream not meeting State designated use. It is recommended that Central Landfill Branch be included on the verified list based on the observed biological effects.

For more information, please contact
Donald H. Ray
Northwest District Office
160 Government Center, Pensacola, FL 32502
(850) 595-8300 (Suncom 695-8300 x 1126)
E-mail: donald.ray@dep.state.fl.us

Published by the Florida Department of Environmental Protection
Tallahassee, Florida
For more information on the DEP Bioassessment programs, please visit our web site at http://www.dep.state.fl.us/water/bioassess

Central Branch below Walton County Landfill

