

Comment Letter B-3



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Protecting and Restoring the Santa Barbara Channel and Its Watersheds

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February 25, 2009

Planning and Environmental Services Department
 130 Cremona Drive, Suite B
 Goleta, CA 93117

Attention: Dan Nemechek

**Re: Goleta General Plan/Coastal Land Use Plan Track 3 – General Plan Amendments
 Draft Supplemental Environmental Impact Report (SEIR)**

Dear Mr. Nemechek,

Please accept these comments on the Goleta General Plan/Coastal Land Use Plan Track 3 – General Plan Amendments Draft Supplemental Environmental Impact Report (SEIR), which are hereby submitted by Santa Barbara Channelkeeper. Santa Barbara Channelkeeper is a non-profit organization dedicated to protecting and restoring the Santa Barbara Channel and its watersheds. Since 2001, Channelkeeper has been monitoring water quality throughout the Goleta Slough Watershed.

- B-3.1 *Glen Annie Canyon*
 Glen Annie Canyon is listed as impaired for nitrate on the Central Coast Regional Water Quality Control Board's 303(d) List of Impaired Water Bodies (Attachment A). The SEIR erroneously states that no creeks within the City of Goleta are listed as impaired water bodies on the 303(d) list. The SEIR needs to be updated to reflect this water quality impairment.
- B-3.2 *Conservation Element 1.9, Alternatives 2a and 3*
 Conservation Element 1.9 describes standards that are applicable to development projects. These standards have the potential to affect water quality, however, impacts to water quality resulting from amendments to Conservation Element 1.9 are not included in Section 3.9 of the SEIR. These impacts need to be determined before the SEIR can be deemed complete.
- B-3.3
 Channelkeeper strongly believes that Conservation Element 1.9 Alternatives 2a, 2b, and 3 may result in significant impacts to the environment. Alternatives 2a, 2b, and 3 would allow for grading, earthmoving, and vegetation clearance adjacent to an Environmentally Sensitive Habitat Area (ESHA) during the rainy season, when "erosion control measures such as sediment basins, silt fencing, sandbagging, or installation of geofabrics have been incorporated into the project and such measures receive prior City approval." Such measures are widely referred to as Best Management Practices (BMPs). BMPs are often effective in minimizing construction impacts. However, even when installed correctly, the installation of BMPs at a construction site by no means guarantees that a significant impact to the environment will not occur. Furthermore, it is possible for an entity to be in compliance with the City's adopted Storm

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B-3.4	<p>Water Management Program and NPDES General Construction Permit and still produce significant impacts. Neither of these programs preclude significant environmental impacts. BMPs are regularly bypassed and breached during large storms that carry sediment and other harmful pollutants to waterways. Improperly installed BMPs provide virtually no mitigation whatsoever. Santa Barbara Channelkeeper regularly documents local occurrences of improperly installed, bypassed, and breached construction BMPs along with the resulting significant water quality impacts (Exhibit A). The City cannot therefore conclude that no significant impacts will occur through Alternatives 2a, 2b, and 3 to Conservation Element 1.9.</p>
B-3.5	<p><i>Conservation Element 2.2 and 3.5, Alternatives 2a and 3</i> Channelkeeper strongly disagrees with the SEIR's assertion that the reduction of Streamside Protection Areas and wetland buffers from 100 to 50 feet as proposed by Conservation Element 2.2, Alternatives 2a and 3 would not produce significant environmental impacts to biological and/or water resources.</p>
B-3.6	<p>The SEIR repeatedly states throughout section 3.9 that no significant impacts will occur to water resources in part because existing Federal and State regulations will not be modified through this amendment. This logic is flawed. Existing Federal and State regulations do not provide the same level of protection to ESHAs as existing General Plan policy. Therefore, alterations to Conservation Element 2.2 will substantially reduce existing protections to ESHAs and may result in significant impacts to biological and water resources.</p>
B-3.7	<p>The SEIR also repeatedly states throughout section 3.9 that no significant impacts will occur to water quality by reducing the Streamside Protection Area (SPA) width because the City's adopted Storm Water Management Program contains provisions that minimize impacts to water quality. Similarly, however, the City's Storm Water Management Program does not provide the same level of protection to ESHAs as existing General Plan policy. Further, as stated above, the City's Storm Water Management Program was not designed to reduce water quality impacts to a less than significant level.</p>
B-3.8	<p>Section 3.4 of the SEIR suggests that reducing SPAs as proposed by alternatives 2a and 3 will not produce significant impacts to the environment because "some areas that would no longer be part of the mandated SPA buffer would likely be protected under other CE policies" (emphases added). Wetland buffers are given as one of the potential overlapping General Plan policies that may provide such protection, however wetland buffers themselves will also be reduced by Alternative 2a and 3. Butterfly roost areas are the other example given in the SEIR. Channelkeeper is highly skeptical that a significant amount of lost SPA produced through Alternatives 2a and 3 would in fact be protected through other CE policies.</p>
B-3.9	<p>Additionally, throughout section 3.4 the SEIR repeatedly states that "none of the policy changes under Alternative 2a would amend the GP/CLUP in ways that eliminate or substantially change the requirements to avoid, minimize, and mitigate potentially significant impacts to special status biological resources" without offering any reasoning or logic behind this claim. Channelkeeper asks for clarification on how it could be possible to reduce existing SPA and wetland buffer requirements by 50% (as is proposed) without "substantially changing the requirements to avoid, minimize, and mitigate potentially significant impacts to special status biological resources." This is simply not the case and must be accounted for in the SEIR.</p>
B-3.10	<p>Multiple scientific studies (Attachment C) have demonstrated that although 50 foot buffers will provide multiple benefits, increasing streamside buffers to a width greater than 50 feet significantly enhances benefits to water quality and riparian ecosystems. Wider buffers are especially important around wetlands. Wider buffers provide greater control of nitrogen. As</p>
<p><i>Santa Barbara Channelkeeper's Comments on the Goleta General Plan/Coastal Land Use Plan Track 3 – General Plan Amendments Draft Supplemental Environmental Impact Report (SEIR)</i> 2</p>	

previously noted, Glen Annie Creek is listed on the Central Coast Regional Water Quality Control Board's 303(d) List of Impaired Water Bodies for nitrate, and based on Channelkeeper's water quality monitoring, most Goleta creeks exhibit nitrate concentrations far in excess of the EPA's recommended levels for the protection of aquatic organisms.

B-3.11 | Therefore, the City cannot conclude that no significant impacts will occur through Alternatives 2a and 3 to Conservation Element 2.2 and 3.5 because reducing the existing required SPA width has the potential to significantly impact the environment by eliminating current buffer protections and benefits.

Thank you for your careful consideration of these comments.

Respectfully,

Ben Pitterle
Watershed Programs Director
Santa Barbara Channelkeeper

*Santa Barbara Channelkeeper's Comments on the Goleta General Plan/Coastal Land Use Plan
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Attachment 1 of 3

Attachment A

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2006 CWA SECTION 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS REQUIRING TMDLS

CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

USEPA APPROVAL DATE: JUNE 28, 2007

REGION TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE/AFFECTED	PROPOSED TMDL COMPLETION
3 R	Franklin Creek	31534020	Nitrate as Nitrate (NO3)	Source Unknown	2.8 Miles	2019
3 R	Gabilan Creek	30919000	Fecal Coliform	Urban Runoff/Storm Sewers Natural Sources Nonpoint Source	6.4 Miles	2007
3 R	Glen Annie Canyon	31531020	Nitrate as Nitrate (NO3)	Source Unknown	6.4 Miles	2019
3 E	Goleta Slough/Estuary	31531020	Nitrate as Nitrate (NO3)	Source Unknown	5.7 Miles	2019
3 R	Kings Creek	30412011	Pathogens	Urban Runoff/Storm Sewers	196 Acres	2015
3 R	Las Tablas Creek	30981293	Priority Organics	Nonpoint Source	196 Acres	2019
3 R	Las Tablas Creek	30981293	Sedimentation/Siltation	Silviculture Road Construction Disturbed Sites (Land Develop.) Erosion/Siltation Nonpoint Source	4.4 Miles	2019
3 R	Las Tablas Creek	30981293	Metals	Surface Mining	5.7 Miles	2019



Figure 5 and 6: Breached construction site BMPs carrying suspended sediments into Santa Barbara Bird Lagoon

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Attachment B



Figure 1: DDT contaminated stormwater breaching site BMPs and carrying pollutants through neighboring residences to Carpinteria State Beach.



Figures 2 and 3: A torrent of contaminated stormwater bypassing construction site BMPs into North Fork Matilija Creek. Upstream and downstream samples illustrate the resulting impact to turbidity (water clarity) in the creek.

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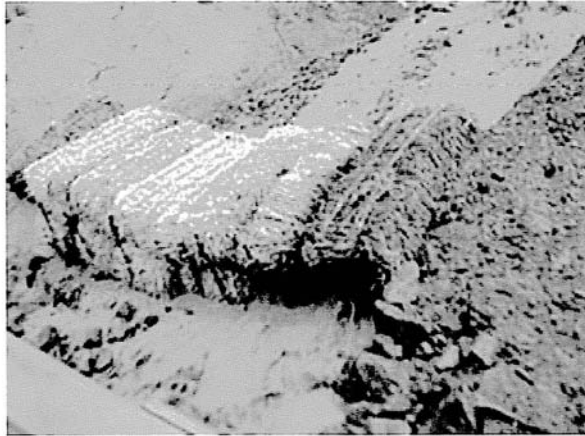


Figure 4: Muddy stormwater bypassing construction site BMPs into North Fork Matilija Creek

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Attachment C



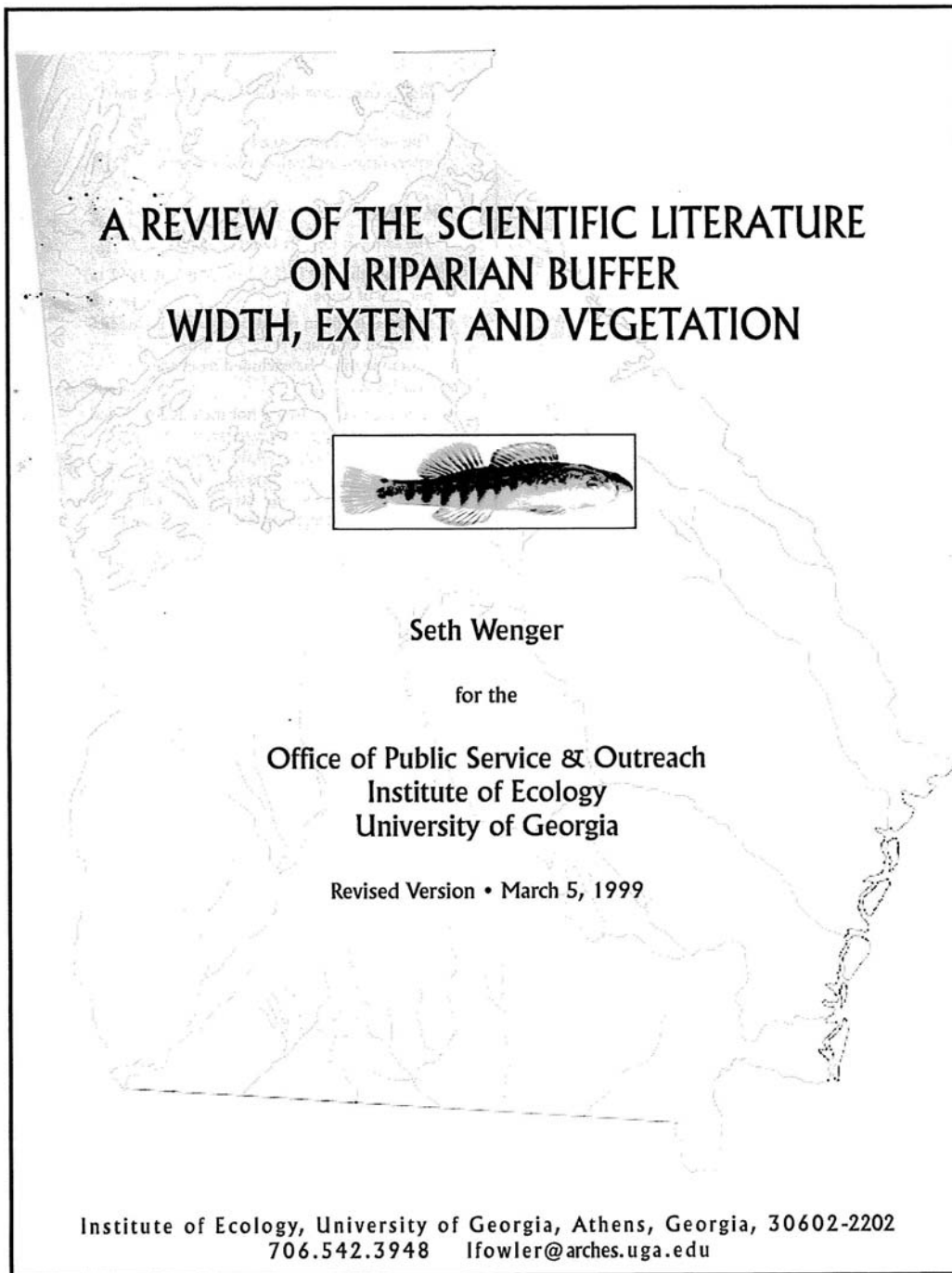
Figure 7: Failing BMPs at a Cal Trans construction site on Hwy 101.

The Office of Public Service and Outreach at the Institute of Ecology provides scientific and legal expertise to the citizens of Georgia in the development of policies and practices to protect our natural heritage. The goals of the office are to:

- Develop and implement a research agenda to meet community needs;
- Provide an opportunity for students, faculty and staff to work with other disciplines in integrated environmental decisionmaking and problem-solving to improve their ability to understand, communicate with, and influence other disciplines;
- Build capacity for service learning in the sciences by providing students an opportunity to apply skills learned in the traditional classroom setting to pressing community concerns and problems;
- Support high quality science education in K-12 schools by providing programs for students and instructional support and training for teachers;
- Increase awareness of the importance of addressing environmental issues proactively within the university community and the greater community.

The publication of this paper was made possible by support from the Turner Foundation, R.E.M./Athens, L.L.C., and the University of Georgia Office of the Vice President for Public Service and Outreach.

For more information about the Office of Public Service and Outreach at the Institute of Ecology, please contact Laurie Fowler at 706-542-3948.



C. Buffer Guidelines for Water Quality Protection

In the previous section it was established that buffer width should vary based on slope and should include wetlands. One final task remains before buffer guidelines are presented: to determine the minimum width of the buffer. Without considering terrestrial habitat, most recommendations for minimum buffer widths range from 15 m (~50 ft) to 30 m (~100 ft). It might be possible to determine the correct width from within this range by conducting additional research in the region of interest. In the absence of this, however, the choice of minimum width amounts to a choice regarding margin of safety or, conversely, acceptable risk. The greater the minimum buffer width, the greater the margin of safety in terms of water quality and habitat preservation. Accordingly, several options are proposed: The first two are variable-width options, one with a 100 ft base width, and one with a 50 ft base width. The first can be considered the "conservative" option: it meets or exceeds many buffer width recommendations, and therefore should ensure high water quality and support good habitat for native aquatic organisms. The second is the "riskier" option: it should, under most conditions, provide good protection to the stream and good habitat preservation, although heavy rain, floods, or poor management of contaminant sources could more easily overwhelm the buffer. All of these options are defensible given the literature reviewed here. As a third option, a 100 ft fixed-width riparian buffer is recommended for local governments that find it impractical to administer a variable-width buffer.

Option One:

- Base width: 100 ft (30.5 m) plus 2 ft (0.61 m) per 1% of slope.
- Extend to edge of floodplain.
- Include adjacent wetlands. The buffer width is extended by the width of the wetlands, which guarantees that the entire wetland and an additional buffer are protected.
- Existing impervious surfaces in the riparian zone do not count toward buffer width (i.e., the width is extended by the width of the impervious surface, just as for wetlands).

- Slopes over 25% do not count toward the width.
- The buffer applies to all perennial, intermittent and ephemeral streams.

Option Two:

The same as Option One, except:

- Base width is 50 ft (15.2 m) plus 2 ft (0.61 m) per 1% of slope.
- Entire floodplain is not necessarily included in buffer, although potential sources of severe contamination be excluded from the floodplain.
- Ephemeral streams are not included; affected streams are those that appear on US Geological Survey 1:24,000 topographic quadrangles. Alternatively, the buffer can be applied to all perennial streams plus all intermittent streams of second order or larger.

Figure 9 shows an example of how Option Two can be applied to a theoretical riparian landscape.

Option Three:

- Fixed buffer width of 100 ft.
- The buffer applies to all streams that appear on US Geological Survey 1:24,000 topographic quadrangles or, alternatively, all perennial streams plus all intermittent streams of second order or larger (as for Option Two).

All of the buffer options described will provide habitat for many terrestrial wildlife species. However, significantly wider buffers are necessary to provide habitat for forest interior species, many of which are species of special concern. The most common recommendation in the literature on wildlife (most of which focuses on birds) is for a 100 m (300 ft) riparian buffer. Although this is not practical in many cases, local governments should preserve at least some riparian tracts of 300 foot width or greater. Identification of these areas should be part of an overall, county-wide wildlife protection plan.

- Existing impervious surfaces in the riparian zone do not count toward buffer width (i.e., the width is extended by the width of the impervious surface, just as for wetlands).
- Slopes over 25% do not count toward the width.
- The buffer applies to all perennial, intermittent and ephemeral streams.

Option Two:

The same as Option One, except:

- Base width is 50 ft (15.2 m) plus 2 ft (0.61 m) per 1% of slope.
- Entire floodplain is not necessarily included in buffer, although potential sources of severe contamination should be excluded from the floodplain.
- Ephemeral streams are not included; affected streams are those that appear on US Geological Survey 1:24,000 topographic quadrangles. Alternatively, buffer can be applied to all perennial streams plus all intermittent streams of second order or larger

Option Three:

- Fixed buffer width of 100 ft.
- The buffer applies to all streams that appear on US Geological Survey 1:24,000 topographic quadrangles or, alternatively, all perennial streams plus all intermittent streams of second order or larger (as for Option Two).

For all options, buffer vegetation should consist of native forest. Restoration should be conducted when necessary and possible.

All major sources of contamination should be excluded from the buffer. These include construction resulting in major land disturbance, impervious surfaces, logging roads, mining activities, septic tank drain fields, agricultural fields, waste disposal sites, livestock, and clear cutting of forests. Application of pesticides and fertilizer should also be prohibited, except as may be needed for buffer restoration.

All of the buffer options described above will provide some habitat for many terrestrial wildlife species. To provide habitat for forest interior species, at least some riparian tracts of at least 300 ft width should also be preserved. Identification of these areas should be part of an overall, county-wide wildlife protection plan.

For riparian buffers to be most effective, some related issues must also be addressed. These include reducing impervious surfaces, managing pollutants on-site, and minimizing buffer gaps.

EXECUTIVE SUMMARY

Many local governments in Georgia are developing riparian buffer protection plans and ordinances without the benefit of scientifically-based guidelines. To address this problem, over 140 articles and books were reviewed to establish a legally-defensible basis for determining riparian buffer width, extent and vegetation. This document presents the results of this review and proposes several simple formulae for buffer delineation that can be applied on a municipal or county-wide scale.

Sediment is the worst pollutant in many streams and rivers. Scientific research has shown that vegetative buffers are effective at trapping sediment from runoff and at reducing channel erosion. Studies have yielded a range of recommendations for buffer widths; buffers as narrow as 4.6 m (15 ft) have proven fairly effective in the short term, although wider buffers provide greater sediment control, especially on steeper slopes. Long-term studies suggest the need for much wider buffers. It appears that a 30 m (100 ft) buffer is sufficiently wide to trap sediments under most circumstances, although buffers should be extended for steeper slopes. An absolute minimum width would be 9 m (30 ft). To be most effective, buffers must extend along all streams, including intermittent and ephemeral channels. Buffers must be augmented by limits on impervious surfaces and strictly enforced on-site sediment controls. Both grassed and forested buffers are effective at trapping sediment, although forested buffers provide other benefits as well.

Buffers are short-term sinks for phosphorus, but over the long term their effectiveness is limited. In many cases phosphorus is attached to sediment or organic matter, so buffers sufficiently wide to control sediment should also provide adequate short-term phosphorus control. However, long-term management of phosphorus requires effective on-site management of its sources. Buffers can provide very good control of nitrogen, include nitrate. The widths necessary for reducing nitrate concentrations vary based on local hydrology, soil factors, slope and other variables. In most cases 30 m (100 ft) buffers should provide good control, and 15 m (50 ft)

buffers should be sufficient under many conditions. It is especially important to preserve wetlands, which are sites of high denitrification activity.

To maintain aquatic habitat, the literature indicates that 10-30 m (35-100 ft) native forested riparian buffers should be preserved or restored along all streams. This will provide stream temperature control and inputs of large woody debris and other organic matter necessary for aquatic organisms. While narrow buffers offer considerable habitat benefits to many species, protecting diverse terrestrial riparian wildlife communities requires some buffers of at least 100 meters (300 feet). To provide optimal habitat, native forest vegetation should be maintained or restored in all buffers.

A review of existing models for buffer width and effectiveness showed that none are appropriate for county-level buffer protection. Models were found to be either too data-intensive to be practical or else lacked verification and calibration. Potential variables for use in a buffer width formula were considered. Buffer slope and the presence of wetlands were determined to be the most important and useful factors in determining buffer width.

Three options for buffer guidelines were proposed. All are defensible given the scientific literature. The first provides the greatest level of protection for stream corridors, including good control of sediment and other contaminants, maintenance of quality aquatic habitat, and some minimal terrestrial wildlife habitat. The second option should also provide good protection under most circumstances, although severe storms, floods, or poor management of contaminant sources could more easily overwhelm the buffer.

Option One:

- Base width: 100 ft (30.5 m) plus 2 ft (0.61 m) per 1% of slope.
 - Extend to edge of floodplain.
 - Include adjacent wetlands. The buffer width is extended by the width of the wetlands, which guarantees that the entire wetland and an additional buffer are protected.
-

The **UGA Land Use Clinic** provides innovative legal tools and strategies to help preserve land, water and scenic beauty while promoting creation of communities responsive to human and environmental needs. The clinic helps local governments, state agencies, landowners, and non-profit organizations to develop quality land use and growth management policies and practices. The clinic also gives UGA law students an opportunity to develop practical skills and provides them with knowledge of land use law and policy.

For more information about the UGA Land Use Clinic contact:

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The author thanks Larry Kaiser, Laurie Fowler, Seth Wenger and Christine Rodick for their valuable assistance in creating this document.

agricultural lands. Additional information is available from the Natural Resources Conservation Service.

Is This Possible?

An ordinance that establishes 100 ft or wider buffers on all perennial streams may sound unrealistic or too heavy-handed for most local governments. But such an ordinance is not as draconian as it first sounds. It is important to bear in mind that in most areas, such land use laws must of necessity exempt existing land uses: no local government is going to tell a small property owner that he must move his house or convert his lawn to forest (although he could be actively encouraged to do the latter). The people who are most affected are developers, who must now incorporate buffers into their designs. This will not necessarily have a negative economic impact. Several studies have shown that people will pay a premium to live or work near greenways or other protected areas, and this allows the developer to recoup at least some of the costs of not developing up to the stream bank. Finally, any buffer ordinance should always include clear, fair rules for variances, which will insure that anyone who is unfairly impacted by the law can obtain relief. More information on how local governments can develop and implement riparian buffer ordinances is included in a separate "Guidebook for Developing Local Riparian Buffer Ordinances," available from the University of Georgia Institute of Ecology Office of Public Service and Outreach. The document discusses various tools for protecting buffers, case studies of existing buffer protection programs, important issues of concerns such as "takings," and includes model riparian buffer ordinances.

D. Other Considerations

Establishing a system of protected riparian buffers is an important step in preserving healthy streams. However, a number of other steps must be taken if buffers are to be truly effective.

Reducing Impervious Surfaces

In a natural forested watershed, overland flow is quite rare, occurring only during the most

severe rainstorms. Impervious surfaces, on the other hand, transfer most precipitation into runoff, leading to increased surface erosion, higher and faster storm flows in streams, and increased channel erosion. As a consequence, urban streams characteristically have greatly elevated sediment levels (Wahl et al 1997, Frick et al 1998). Flow from impervious surfaces also carries pollutants directly to streams, bypassing the natural filtration that would occur by passage through soil. Impervious surfaces are so closely correlated with urban water pollution that they are commonly used as an indicator of overall stream quality (Arnold and Gibbons 1996). May et al (1997) note that impervious surfaces are the "major contributor to changes in watershed hydrology that drive many of the physical changes affecting urban streams." Trimble (1997) ascribed the cause of large-scale channel erosion in San Diego Creek to increased impervious surfaces in the watershed. Impervious surfaces also decrease groundwater recharge and stream base flow levels (Ferguson and Suckling 1990). In a study of Peachtree Creek in Atlanta, Ferguson and Suckling (1990) also linked impervious surfaces to an increase in evapotranspiration; water evaporates quickly from impervious surfaces, creating a warm microclimate which increases transpiration rates in trees and plants. This further reduces stream flows, except during rainstorms. In short, impervious surfaces cause "flashy" streams with low base flows and very high storm flows.

Riparian buffers cannot protect a stream from channel erosion if the stream is constantly scoured by high storm flows caused by runoff from impervious surfaces. All municipalities and counties experiencing urban and suburban growth should consider enacting impervious surface controls in addition to riparian buffer ordinances. These limits can range from 10-12%, the point at which streams are considered impacted, to 30%, the point at which streams can be considered degraded (Klein 1979). If existing technologies were vigorously applied, impervious surfaces could be nearly eliminated (Bruce Ferguson, pers. com.). Further information on reducing impervious surfaces is available in the publication *Land Development Provisions to Protect Georgia Water Quality* (UGASED 1997) and in a recent publication of the Etowah Initiative (Miller and Sutherland 1999).

planting small headwater streams achieves the greatest temperature reduction per unit length of riparian shade." This again indicates the need to establish buffers on even the smallest streams when possible.

Summary and Recommendations

Removal of riparian forests has a profoundly negative effect on stream biota. Davies and Nelson (1994) summarized the range of effects clearcutting can have on stream communities: "Logging significantly increased riffle sediment, length of open stream, periphytic algal cover, water temperature and snag volume. Logging also significantly decreased riffle macroinvertebrate abundance, particularly of stoneflies and leptophlebiid mayflies, and brown trout abun-

dance." The researchers recommended a 30 m (98 ft) buffer to mitigate these effects. At a minimum, a 50 ft (15 m) buffer appears necessary to provide woody debris inputs to the stream. No tree harvesting should occur within 25 ft (12 m) of the stream (50 ft/15 m is preferable), and harvesting in the remainder of the buffer should leave some mature and senescent trees. Native vegetation should be preserved whenever possible. To maintain stream temperatures, riparian buffers must be at least 10 m (30 ft) wide, forested, and be continuous along all stream channels to maintain proper stream temperatures. It is important to note that while some other riparian functions (e.g., sediment and nutrient retention) can be performed adequately by grassed buffers, forested buffers of native vegetation are vital to the health of stream biota.

Article	Widths Studied (m)	Min. Width Recommendation (m)
Hodges and Kremetz (1996)	36-2088	100
Keller et al (1993)	25-800	100
Kilgo et al (1998)	25-500	both narrow and wide
Kinley & Newhouse (1997)	14-70	70
Smith & Schaefer (1992)	20-150	no recommendation
Spackman and Hughes (1995)	25-200	150-175
Thurmond et al (1995)	15-50	15
Triquet et al (1990)	15-23	no recommendation

Table 6. Riparian Buffer Recommendations from Avian Studies.

The recommendations of the literature on riparian corridor widths for birds are summarized here. The second column shows the range of buffer widths studied by the authors. The third column shows the authors' recommendations for the minimum corridor widths necessary to support bird populations.

Wildlife suffers without sufficient riparian buffers.

In order to maintain aquatic habitats, research indicates that 35-100 foot buffers of native forest should be preserved or restored along all streams. Buffers provide streams with the temperature control and woody debris and other organic matter necessary for aquatic organisms. 300-foot buffers of native forest are necessary to protect land animals that live near streams.

Trout streams need buffers that are at least 100 feet wide to maintain viable trout populations. In a sampling of 35 streams, when buffers were reduced from 100 feet wide to 50 feet wide, the percentage of streams that could support trout fell from 63% to only 9%. This translates into an 80% reduction in the number of young trout.

Buffers should consist of native forest and plants. All major sources of contamination should be excluded from the buffer, including construction that results in major land disturbance, impervious surfaces (such as roads), logging roads, mining activities, septic tank drain fields, agricultural fields, waste disposal sites, livestock, and clear cutting of forests. Application of pesticides and fertilizer should be prohibited, except as may be needed for buffer restoration.

For buffers to be most effective, efforts are needed to reduce impervious surfaces, effectively manage pollutants on-site, and minimize buffer gaps.

In summary, a stream buffer is a strip of naturally vegetated land along a stream or river that provides a range of social, economic, and environmental benefits. In addition to the above-mentioned benefits, buffers:

- Stabilize stream banks and reduce channel erosion
- Trap and remove contaminants
- Store flood waters, thereby reducing property damage
- Improve aesthetics, thereby increasing property values
- Offer recreational and educational opportunities

Activities Prohibited in the Buffer

As a general rule, all sources of contamination should be excluded from the buffer. These include:

- land disturbing activities
- impervious surfaces
- logging roads
- mining
- septic tank drain fields
- agricultural fields
- waste disposal sites
- application of pesticides and fertilizer (except as necessary for buffer restoration)
- livestock

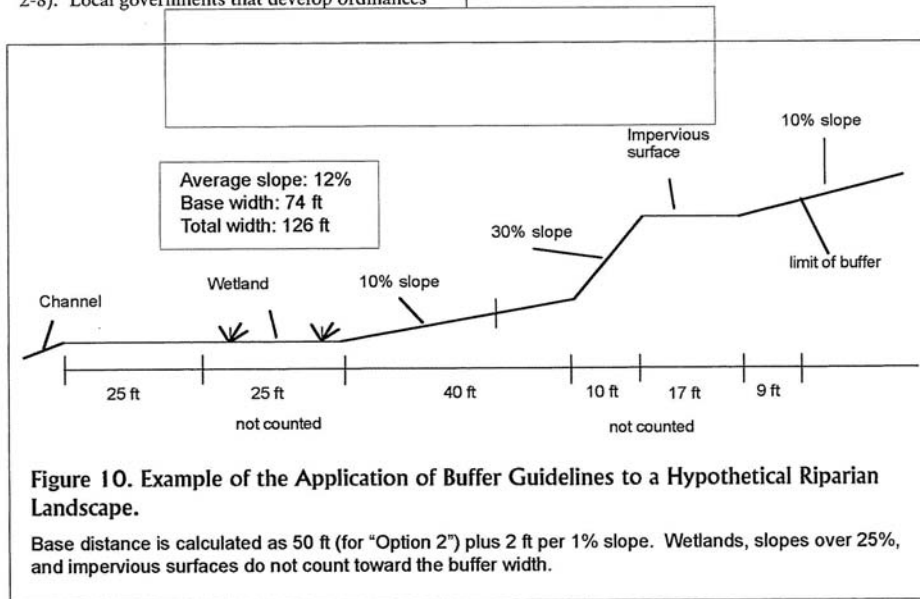
One exemption to this list that local governments may wish to consider is construction of a single family home. Minimum standards for river corridor protection issued by the Environmental Protection Division cannot by law prohibit the building of a single-family dwelling within the buffer for protected River Corridors (OCGA 12-2-8). Local governments that develop ordinances

more stringent than the minimum standards may also wish to make this exemption.

The Three-Zone Buffer System

A three-zone riparian buffer system has been suggested for agricultural areas to allow some limited use of riparian land while preserving buffer functionality (Welsch 1991). Zone one, which extends from the bank to 15 ft (4.6 m) within the buffer, is undisturbed forest. Zone two is a managed forest, beginning 15 ft (4.6 m) from the bank and extending to 75 ft (22.9 m). Periodic harvesting and some disturbance is acceptable within this zone. Zone 3 is a grassed strip, beginning 75 ft (22.9 m) from the bank and extending to the buffer's edge at 95 ft (29.0 m). Controlled grazing and mowing may be permitted in this zone.

While the three-zone system represents a good compromise for buffers on agricultural land, it introduces an added level of complexity to a buffer ordinance that may not be warranted, especially if a variable-width system is used. Local governments may want to encourage the three-zone system as a voluntary practice on



with photosynthesis of submerged plants by blocking sunlight, causing them to die. Their decomposition results in further depletion of dissolved oxygen which sets off a vicious downward cycle. Excess plants and algae, dead or alive, clog up waterways, and cause odors impacting both recreational values of the river and adjacent property values. Excessive phosphates in waters used for public water supply may lead to taste and/or odor problems due to its stimulation of excessive algae growth, Nitrates are difficult to remove from source water, and in excessive concentrations may make the water unhealthy for animals and/or humans to drink.

Pesticides and herbicides can get into rivers via surface runoff from roads, agriculture, lawns, and golf courses. Many of these substances are carcinogens and can kill aquatic organisms directly and/or accumulate in the food chain as well as harm water supplies. After application, many pesticides and herbicides are bound to soil particles, thus, if soil erodes from a nearby field and enters a stream, the pollutant will also enter. Pesticides and herbicides getting into riparian areas used for public or private water supplies can be expensive and/or difficult to remove from drinking water, and those that are not effectively removed may pose carcinogenic or other health risks or cause the abandonment of the supply.

Pathogens (viruses and harmful bacteria, e.g.) can get into rivers from a variety of sources, including animal feces washing off urban streets, malfunctioning and/or overburdened sanitary and storm sewers, poor agricultural practices, and septic systems sited too close to rivers and streams. Excessive concentrations of pathogens in rivers and streams can result in brief or extended closures of swimming areas, shellfish beds and sources of public or private water supply. Such closures can have serious adverse economic as well as public health impacts, as shellfishermen are thrown out of work, property values decline, communities lose tourism and tax revenue, etc..

Heavy metals are a common constituent of urban runoff, washing off roads and even galvanized and copper roofs. If these pollutants reach rivers and streams, they can have hidden and long-lasting impacts. Toxic metals such as mercury can kill aquatic organisms directly or accumulate insidiously in the food chain, ultimately killing higher predators that feed on aquatic organisms and making fish unsafe for human consumption. In addition, dissolved metals can harm water supply equipment and degrade the suitability of the water for drinking and other uses.

Although not ordinarily thought of as a pollutant, **excessive sediment** getting into rivers and streams can cause a wide variety of adverse impacts. Sediments can get into rivers by numerous means, including soil washed and/or wind-blown off of bare earth exposed during farming, forestry or mining operations and construction sites. Excessive sediments can also be a byproduct of excessive streambank erosion caused by removal of streamside forests and/or an increase in impervious surfaces upstream. Excessive sediment into rivers reduces flood storage, as eroded sediments settle out of the current and fill channels and deeper spots on the river so they can no longer convey or hold as much water. This reduction of storage capacity results in increasing peak discharges and increased likelihood of flood damage.

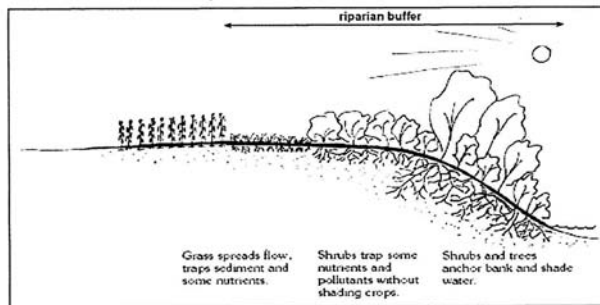
Sediments also increase stream turbidity (cloudiness), which leads to increases in stream temperature, which contributes to excessive algal growth and increased pathogenic activity. Many nutrients and other pollutants are bound to sediments, so sediments can serve as a means for the transfer of nutrients and chemicals such as fertilizers and pesticides from adjacent lands into the river. Excessive sediments can harm water supplies by damaging water treatment pumps and other equipment, increasing treatment costs to remove the sediment, and reducing reservoir storage capacity. It can also decrease river bottom infiltration, reducing the yield of nearby wells.

2

The Better Buffer:

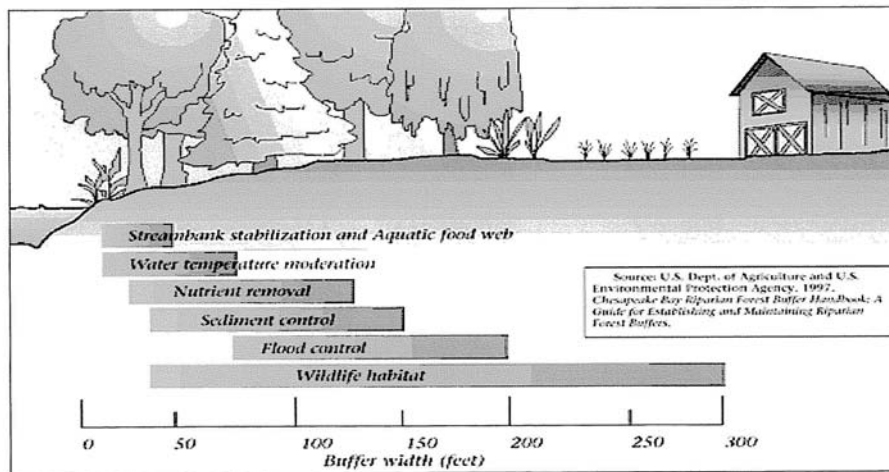
Buffers vary according to slope, use of adjacent land, size of the stream, and soil type.

- The most effective buffers have 3 zones:
 - Streamside - undisturbed mature forest stabilizes the stream bank; at least 25 ft.
 - Middle zone - trees & shrubs slow runoff and catch sediment, 50-100 ft.
 - Outer zone - vegetated or wooded; serves as the margin between the rest of the buffer and land actively used, typically 25 ft.



From the Connecticut River Joint Commissions Inc. River Banks & Buffers No. 5. September 2000.

- Bigger buffers ARE better. Depending on site-specific conditions, a buffer 100 feet generally can filter 60% or more of pollutants. However, landowners are usually only required to have a 35 ft minimum buffer. Buffers of less than 35 feet cannot sustain long-term protection of aquatic resources.



Federal and state cost-share programs are available to help with costs to establish riparian buffers. Contact the Department of Forestry, Department of Conservation and Recreation, or your local Soil and Water District for more information.



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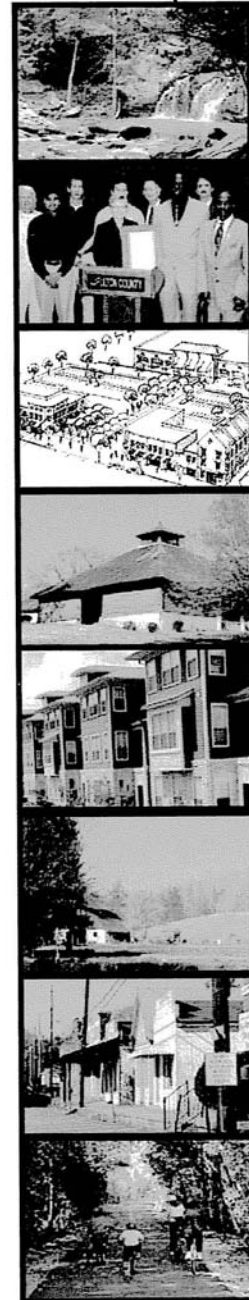
The Scientific Justification for Stream Buffers

Paul Mitchell
Spring 2006

Land Use Clinic



university of georgia
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undeveloped riparian areas in a naturally vegetated condition is a highly effective means of pollution prevention.

But riparian lands maintained in a naturally vegetated state do much more than simply take the place of other pollution-generating land uses. Streamside forests and other naturally-vegetated riparian areas act as a living filter to intercept and absorb excess nutrients, sediment and other pollutants carried along in runoff from adjacent development as well as by the river itself. Several different and complementary processes within the vegetated riparian area collaborate to accomplish this. First, living, decaying and dead vegetation within the riparian area provide a multitude of barriers that slow down and intercept runoff and wind-blown sand and silt from adjacent lands before they reach rivers and streams.

This slowdown enables a number of pollution-attenuating functions to occur. Much if not most of the runoff infiltrates into the porous, uncompacted soil within the riparian area, where sediments (many of which have pollutants bound to them) are trapped and where excess nutrients, heavy metals and many other pollutants are either taken up onto plant surfaces (adsorption), incorporated and sequestered into plant tissues (absorption), or are broken down into less harmful substances by soil bacteria and other microorganisms. Pesticides and other toxics borne into the riparian area by runoff are converted to non-toxic compounds by a number of biochemical processes, including microbial decomposition, oxidation, reduction, hydrolysis, solar radiation and other biodegrading forces at work in the soil and litter of the streamside forest.

A similar pollution-reducing phenomenon occurs in the river itself. Large woody debris (e.g. tree trunks and roots) extending or falling into the water hold back sediments and also provide ample surface area to support a large population of microbes that consume excess nutrients and other pollutants that have already gotten into the water. In the meantime, the streamside forest shades the water, which in turn lowers its temperature, thus enabling it to have a higher dissolved oxygen content necessary for the microbes to effectively metabolize pollutants and the other items in their diet. Keeping stream temperatures cool with shading streamside forests also keeps phosphorous and other sediment-bound pollutants from breaking free and becoming more harmful as dissolved substances.

When rivers are allowed to flood into adjacent vegetated floodplains, these floodplains act as sediment traps and nutrient sinks. When muddy water from streams and rivers rushes into the stillness of floodplain wetlands and forests, the silt in the water adheres to the stalks of water plants and settles to the bottom. As the flood waters recede, the waters returning to the river via the surface or ground are largely cleansed of their excess sediment and nutrients. Riparian wetlands improve water quality by a variety of anaerobic and aerobic processes, that precipitate or volatilize certain chemicals from the water column. The accumulation of organic peat characteristic of many riverine wetlands can ultimately lead to a permanent sink for many chemicals coming from adjacent development and/or the river itself. In addition, the high rate of biological productivity of many wetlands can lead to high rates of mineral uptake by, and accumulation in, plant material with subsequent burial in sediments.

Since for certain organisms and chemicals (fecal coliform bacteria, phosphates and nitrates, for example), it is not merely their presence but their overall concentration in the water that controls how harmful they are as pollutants, naturally vegetated riparian areas also perform an important pollution prevention function by helping to dilute concentrations of these pollutants below harmful levels. Precipitation falling on the vegetated buffer combines with surface and/or

The Scientific Justification for Stream Buffers

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Spring 2006

Stream buffers (a.k.a. riparian buffers) have been a source of controversy in Georgia. Although some say there is no sound science behind stream buffer requirements, some 890 scientific studies, articles, and books demonstrate the value of stream buffers. Stream buffers play a crucial role in promoting public health and protecting the environment.

A riparian buffer is a band of vegetation bordering a body of water; riparian buffers improve water quality, wildlife, and property value. Buffers provide a range of environmental services, including trapping and removal of sediment and other contaminants in stormwater as well as maintenance of fish and wildlife habitat. Scientific studies on buffer function demonstrate that, to provide these services effectively, buffers must be **at least 50 feet wide**. Wider buffers provide greater benefits and additional services. To be most effective, however, buffers should be coupled with on-site management of pollutants, including good stormwater management, erosion and sedimentation control, and proper agricultural and forestry practices.

Stream buffers address the following problems:

Sediment often causes more damage than any other pollutant in many streams and rivers. Vegetative buffers reduce the amount of sediment entering streams and rivers; they also reduce channel erosion.

A 100-foot buffer will trap sediments under most circumstances, but the steeper the slope, the wider the buffer must be. Buffers must extend along all streams—including intermittent and ephemeral channels—to be most effective. Both grassed and forested buffers are effective at trapping sediment, but forested buffers have other benefits as well. Finally, buffers alone are insufficient; sediment must also be managed effectively at its source. Even the best buffer can be overwhelmed by excessive sediment.

Phosphorus and **Nitrogen** threaten water quality. Vegetative buffers act as short-term sinks for phosphorus, and they also help control the amount of nitrogen and nitrates entering rivers and streams.

In most cases, 100-foot buffers should provide good control of phosphorus and nitrogen, and 50-foot buffers may be sufficient in many conditions. Although buffers help control phosphorus during the short-term, long-term management requires effective on-site control. Wetlands are especially important in controlling nitrogen.

development from getting into adjacent rivers and streams. Studies have consistently shown that naturally vegetated buffers must be at least 100 feet wide to achieve substantial reductions in most constituents of polluted runoff. A few pollutants (viruses, e.g.) can travel further distances and need greater buffer widths to be effectively filtered out. Dilution of contaminant-rich runoff by rain falling on the buffer is directly related to buffer width (i.e., the wider, the better). Maximum stream shading for maintaining beneficial lower stream temperatures is achieved when the riparian forest buffer is at least 80 feet wide on both sides of the stream.

Avoid development on steep slopes and/or permeable soils

Last but not least, slope and soil composition affects the ability of riparian areas to prevent pollution from entering adjacent water bodies. It is just as, if not more important, from a water quality standpoint to keep sources of pollution such as septic systems as far away from rivers bordered by uplands with drier permeable soils as it is for rivers bordered by wetlands. This is because riparian uplands are, generally speaking, not as efficient in filtering pollutants as are riparian wetlands. First, uplands typically are more steeply sloped than wetlands. This affects the detention time of water on or below the surface. Generally speaking, the steeper the slope, the shorter the detention time. The shorter the detention time, the less opportunity plants, microbes and other organisms within the riverine upland soils have to act on and absorb waterborne pollutants. The fact that wetland soils are usually flat and already saturated means that water passing on or through them moves at a relatively slower rate. The increased detention time gives wetland organisms a greater opportunity to filter out and absorb waterborne pollutants and excess nutrients before the water reaches the adjacent river. Second, riverine wetlands typically have a higher rate of biological activity (due to a greater diversity and concentration of flora and fauna, most notably of the macroinvertebrate and microscopic kind) than do riverine uplands. This also results in a generally higher level of pollutant and nutrient removal in wetlands than in uplands.

Consider retrofitting existing riparian development with structural pollutant controls where restoration of vegetated streamside buffer is not possible

In areas where riparian lands have already been developed and vegetated streamside buffers no longer exist and cannot be restored, it is important, where opportunities arise, to implement more structural pollution control technologies to reduce nonpoint source pollutant loadings to adjacent streams.

[This fact sheet was adapted for NYS from materials prepared by Russell Cohen, Rivers Advocate, Riverways Program, Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement.]

Sources consulted

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Riparian Buffers



What is a riparian buffer?

- Riparian buffers are vegetated or forested transitional zones between land and streams, rivers, lakes, ponds, or wetlands
- Buffers play an integral role in regulating the health of water systems and help lessen the impacts of adjacent land uses.
- The type, width, and effectiveness of riparian buffers vary according to stewardship goals and land use practices.
- Generally, forested buffers are the most effective since they slow and filter runoff while providing habitat for wildlife, as well as cover and a food source for aquatic life.

Why are riparian buffers important?

- Water flowing through a riparian forest is slowed and absorbed by the vegetation, leaf litter, and porous soils found there, therefore reducing soil erosion and sedimentation.
- Any sediment or runoff from your property eventually makes its way to the Chesapeake Bay, the largest estuary in the nation and a significant regional economic resource. Buffers help restore the quality of the Bay and the ecosystems we depend on for successful fisheries.
- Chemical and biological processes of the forest remove nutrients, such as phosphorous and nitrogen, and store them in the soil or as plant tissue. Pesticides are also converted to nontoxic compounds by various chemical and microbial activities within the forest.
- A forested canopy created by the tops of trees provides shade and cools water temperatures, which is essential for healthy fish populations and the food sources on which they depend.
- Habitat loss from landscape fragmentation has reduced many wildlife populations. Forested riparian buffers provide food and shelter for many wildlife species and serve as corridors for movement between habitats.
- Riparian forest buffers offer recreation to fishermen, birders, hikers, canoeists, and picnickers.

Buffer benefits to landowners:

- Buffers serve as flood right-of-way and reduces potential for structural damage.
- Buffers provide erosion and sediment control and prevent land from washing away.
- Buffers enhance the quality of water used by humans for drinking and can result in economic savings to the community due to reduced costs of water treatment.
- Buffers enhance privacy and aesthetic value of a property.
- Buffers can reduce the amount of mowing necessary.
- Buffers decrease herd injuries associated with cattle climbing steep and unstable stream banks and reduce health risks associated with contaminated water.
- Protected stream crossings can result in improved stability for equipment crossing.



Fact Sheet #9

Functions of Riparian Areas for Pollution Prevention

Why are the use and condition of riparian lands particularly important from a pollution prevention perspective?

Water pollution problems persist despite improvements in wastewater treatment

Passage of the state and federal Clean Water Acts 25 years ago has brought about a substantial reduction in water pollution from major point sources such as industrial and municipal wastewater discharges. New York's remaining water quality challenges are due to nonpoint source (NPS) pollution, which refers to contaminants that wash from the land into ground and surface waterbodies when it rains. Polluted runoff results from land activities such as fertilizer and pesticide applications, manure spreading, timber harvesting, road salt use, and construction activities. Individually, these sources of pollution may not be noticeable, but added together, they can have a significant impact on water quality. Since the primary contribution of pollution in over 90% of New York's impaired waterbodies is attributed to a wide range of nonpoint sources, a comprehensive approach is necessary to reduce its impact.

Maintaining riparian areas, &/or restoring them in a naturally vegetated condition, will partially or completely prevent pollution generated by adjacent land use from getting into streams, rivers & groundwater.

Pollution attributable to sources such as runoff from roadways, parking lots and other development on lands adjacent to rivers and streams (otherwise known as riparian areas), coupled with the removal of streamside vegetation, reduces the natural ability of rivers and streams to cleanse themselves. Reducing NPS pollution from riparian lands that are already developed, through methods such as retrofitting storm drains with pollution-filtering devices, can be cumbersome and expensive. On the other hand, maintaining riparian areas and/or restoring them to a naturally vegetated condition will partially or completely prevent NPS pollution generated by adjacent development from getting into rivers and groundwater, as well as help to mitigate pollution levels in the river itself regardless of the source.

What are the major types of nonpoint source pollutants and the land uses responsible for them? What adverse impacts can these pollutants cause on other functions and values of rivers and riparian areas?

Nutrients such as phosphates and nitrates are needed by all living organisms to carry out basic life processes, but in excess they can throw riverine systems out of balance. Excess nutrients from manure or commercial fertilizer applied to farmland, yards and golf courses, and septic system leachate getting into adjacent rivers and streams may trigger excessive algal and plant blooms, which deplete the dissolved oxygen in the water. Low oxygen harms young fish populations and eventually also causes plants to die. Algal blooms at the surface can interfere

In addition, chlorine is generally less effective as a water treatment disinfectant if the water has a high turbidity level.

Sediment can be particularly harmful to fisheries. In excessive quantities, sediment kills small bottom dwelling stream animals and destroys fish habitat. The cloudiness of soil particles suspended in water irritates the gills of fish and makes them more prone to disease. The soil that settles on the stream bottom smothers insect larvae and other bottom dwelling organisms that fish depend on for food. It also smothers fish eggs and embryos in their gravel nests. The reproductive habits of trout illustrates this well. A trout selects clean gravel to make a nest and lay its eggs. Cool clean water normally passes through the nest and supplies oxygen to the eggs. Silt settling on the gravel nest blocks the oxygen-rich water, causing the eggs to suffocate and die.

Thermal pollution also has a significant adverse impact on rivers and streams. The two major land use activities on riparian lands responsible for thermal pollution are the removal of shading streamside forests from and/or placing impervious surfaces in riparian areas, both of which lead to increased stream temperature. Water holds less oxygen as it becomes warmer. As a result, less oxygen is available for respiration by aquatic organisms. Furthermore, in the case of some fish species such as trout, higher temperatures increase their metabolic rate and need for oxygen at the very time that less oxygen is available. Other negative effects of increased water temperature include odors and more profuse growth of some pathogens and other bacteria. Small increases in water temperature can also cause nutrients that are sediment-bound at lower temperatures to break free, resulting in a substantial increase in the quantity of nutrients released into the water. When combined with sunlight from a treeless shoreline, these "free" nutrients can create large algal blooms which further diminish water quality.

Last but not least, the construction, maintenance and use of **roads and other paved surfaces** are responsible for a whole host of pollutants, including all of the above categories as well as motor oil, gasoline and other automobile fluids and residue from tire treads and brake linings. Sand applied to roads and parking lots during the wintertime to promote safe driving can nevertheless become a major source of sediment pollution if it is eventually carried by wind and water into rivers and streams. Road sand not only degrades rivers for fisheries (e.g., smothering gravel spawning beds) and flood control (sand reduces flood storage capacity), but the sand itself carries pollutants from automobiles and other pollutants hitting the pavement into adjacent streams. Even snow on and along roadways can be a significant source of pollution once it melts or is dumped alongside or into rivers and streams. Snowbanks accumulate roadway pollutants such as petroleum products/additives and metals, the direct application of salt and anti-skid grits, even deteriorated pieces of the roadway itself. High levels of chloride, lead, iron, phosphorous, biochemical oxygen demand and total suspended solids have been reported in snow dump runoff.

How do naturally vegetated riparian areas act to prevent pollution of adjacent rivers, streams and groundwater?

The most obvious pollution prevention function of riparian areas kept in a naturally vegetated condition is that such land is not in and of itself a pollution generator. In other words, the more that riparian lands along a particular watercourse are maintained in a naturally vegetated state as opposed to being converted to other pollution-generating land uses, the less pollution will get into that waterway from the riparian lands themselves. As an increasingly larger share of pollution in our rivers and streams is attributable to nonpoint source pollution originating from development of riparian areas along rivers and streams, merely keeping our remaining

groundwater flow to dilute concentrations of pollutants generated from adjacent land uses as they flow through the buffer. The cleaner surface and/or groundwater discharge into adjacent rivers and streams from naturally vegetated riparian areas also helps to dilute the concentrations of pollutants already present in those waterways. Degradation results when these natural pollution attenuation processes are overwhelmed by excessive pollutant loading, however.

What are some best management practices (BMPs) for naturally vegetated riparian areas to maintain or enhance their pollution prevention function?

The effectiveness of riparian areas in preventing and reducing pollution is influenced by several factors, including the width and nature of streamside vegetation, the manner in which runoff is discharged into and passes through the vegetated area, and the slope and composition of the soil within the riparian area. A key characteristic of effective vegetated riparian areas is a relatively long detention time between when the polluted runoff enters the riparian area and when it flows or seeps into the adjacent stream. As is the case with wastewater treatment plants and other pollution control mechanisms, generally speaking, the greater the detention time, the greater degree of pollutant reduction.

Retain/restore natural riparian vegetation

There are a number of ways to help ensure riparian areas' pollution prevention function. First and foremost is to retain as much of the area as possible in a naturally vegetated, undisturbed condition, especially the portion of the riparian area that is closer to the adjacent river or stream. In most situations, "naturally vegetated" in New York means native forest cover, as that is how most of our riparian areas were before settlement. Streamside forest vegetation, whether living, decaying or dead, on the ground or fallen or extending into the water, should be left in place wherever possible to maximize its detention capability and allow plenty of time for the breakdown of pollutants by plants and microorganisms. Excessive "tidying up" of riparian areas by leaf raking, brush clearing, removing fallen logs or other removal of plant material from the forest floor and/or streambank can significantly reduce detention time and the opportunity for the riparian area's living filter to beneficially interact with and attenuate water-borne pollutants.

Diffuse runoff into riparian areas and discharge as far as possible from the river

In addition to retaining undisturbed forest cover, riparian areas are most effective at pollution prevention when infiltration opportunities are maximized by discharging polluted runoff from adjacent areas at the outside edge of the area (the edge furthest away from the stream) and in a diffuse manner. Runoff has a strong tendency to concentrate and form a channel. The steeper the slope, the greater the tendency of runoff to form a channel. Vegetated streamside buffers are effective only when runoff is evenly distributed across them and given ample opportunity to infiltrate forest soils and interact with plants and microorganisms. Once a channel is formed, the buffer's living filter is effectively "shortcutted" and will not perform as desired. Buffer shortcutting also occurs when runoff is routed directly to receiving waters through storm sewers, culverts, and other confined drainage ways, often bypassing the buffer entirely. Therefore, it is important to ensure that drainage into buffers is not channelized but is instead spread evenly as sheet flow through use of a level lip spreader or similar mechanism. Compacting soils within riparian areas should be avoided for the same reason (it reduces infiltration).

Retain/reestablish a vegetated streamside buffer at least 100' wide

Buffer width is also important. Generally speaking, the greater the width of a vegetated streamside buffer, the more effective it will be in preventing pollutants generated by adjacent

Response to Comment No. B-3.1

The commentator correctly observes that Glen Annie Canyon is listed as impaired for nitrate on the Central Coast Regional Water Quality Control Board's 303(d) List of Impaired Water Bodies. This canyon drains into Goleta Slough which is acknowledged in the Draft SEIR as an impaired water way. The first paragraph on page 3.9-2 of the GP/CLUP Draft SEIR has been revised to reflect this status, as follows:

Glen Annie Canyon is listed as impaired for nitrate on the Central Coast Regional Water Quality Control Board's Clean Water Act (CWA) Section 303(d) List of Impaired Water Bodies. Glenn Annie Creek (also called Tecolotio Creek) flows through this canyon and discharges into Goleta Slough. No other surface waters in Goleta are listed as impaired on the 303(d) list. However, Goleta Slough located beyond the City limits in the City of Santa Barbara, which receives flows from Glenn Annie (Tecolotio), Los Carneros, Las Vegas, San Pedro, Mario Ygnacio, and San Jose Creeks, is listed as impaired for metals, pathogens, priority organics, and sedimentation/siltation.

In addition, the discussion for Impact 3.9-9, Water Quality Impacts from Discharge to Surface Water Bodies Where Water Bodies Are 303(d) Listed, has been revised as follows:

Impact 3.9-9. Water Quality Impacts from Discharge to Surface Water Bodies Where Water Bodies Are 303(d) Listed

Alternative 1: No Changes (No Project). Glen Annie Canyon is listed as impaired for nitrate on the Central Coast Regional Water Quality Control Board's Clean Water Act (CWA) Section 303(d) List of Impaired Water Bodies. Glenn Annie Creek (also called Tecolotio Creek) flows through this canyon and discharges into Goleta Slough. As indicated in the 2006 Final EIR, Goleta Slough has been listed under Section 303(d) of the CWA as impaired for the following constituents:

- metals,
- pathogens,
- priority organics, and
- sedimentation/siltation.

Under this impairment, the Goleta Slough has no remaining assimilative capacity or ability to accommodate additional quantities of these contaminants, irrespective of concentration. These constituents could be gathered from lawn runoff, rooftops, construction areas, and even indoor household runoff. While concentration of constituents in the discharge from any new development is anticipated to be relatively low, this small increase is still considered a significant contribution to cumulative impacts on Goleta Slough.

Response to Comment No. B-3.2

The methodology for identifying potential impacts of the proposed GP/CLUP amendments on water quality is presented on pages 3.9-12 and 13 of the Draft SEIR. Policies cited as mitigation for Class II water resources impacts identified in the 2006 GP/CLUP EIR are summarized in Draft SEIR Table 3.9-3, and do not include Policy CE 1.9. The proposed amendments to Policy CE 1.9 affect the biological resources analysis, and are therefore addressed in Section 3.4 of the Draft SEIR.

Response to Comments Nos. B-3.3 and B-3.4

The commentator contends that significant unmitigated impacts could result from the proposed changes to CE 1.9 under Alternatives 2a, 2b, and 3 and also notes that improperly installed BMPs are common and provide virtually no mitigation.

While the commentator is correct that improperly installed controls do not provide adequate mitigation, it does not follow that all such controls approved by the City under the proposed alternatives would be incorrectly installed or otherwise be ineffective. It also should be noted that the alternatives do not propose any changes to the monitoring programs required under CE policies.

Response to Comments Nos. B-3.5, B-3.6, and B-3.8 through B-3.11

The commentator strongly disagrees that proposed reduction of SPA minimum widths (CE 2.2) and minimum width of wetland buffers (CE 3.5) under Alternatives 2a, 2b, and 3 would not result in significant impacts to biological resources. The commentator also notes that protections of ESHAs and wetlands under existing policies are greater than provided under state and federal regulations. The comment letter is accompanied by attachments regarding improperly installed controls and studies of buffer widths and functions.

Regarding proposed changes to CE 2.2, Alternatives 2a, 2b, and 3 do not alter GP/CLUP requirements that apply to biological resources, especially special status species and habitats whose occurrence triggers ESHA requirements. Regardless of whether the SPA is a minimum of 50 or 100 feet, any area with ESHA resources would be designated as an ESHA and would require an ESHA buffer under the alternatives. Further, the proposed changes do not preclude the City from requiring a wider SPA based on site species considerations. The same applies to the proposed changes to the minimum wetland buffers under CE 3.5. The SEIR indicates that the proposed changes to CE 2.2 and 3.5 could result in potentially significant impacts and that the alternative has a higher level of risk than the existing policies. However, it does not follow that the alternatives would necessarily result in significant impacts just because they propose a different minimum width for buffers. See Attachment A for additional responses to comments on proposed changes to CE 2.2 and a description of the revised Policy CE 2.2 adopted by the City in May 2009 under a separate action.

Regarding the comment that existing City policies provide greater protection than state and federal regulations, the statement is accurate where City policies apply to non-regulated resources and where City policies impose requirements not specified or described in a different way in federal and state regulations. Changing such policies would provide different and potentially less protections under the GP/CLUP. However, it does not follow that any change to such City policies constitutes a substantial change in the protection provided ESHAs, wetlands, and other special status resources within the City. It also does not follow that the changes would necessarily result in that are significant and could not be reduced to less than significant levels under CEQA.

Response to Comment No. B-3.7

The commentator notes that the City's Stormwater Management Program does not provide the same level of protection of ESHAs as existing GP/CLUP policies. The protection of ESHAs is governed by the CE policies, which apply regardless of whether ESHAs are identified in the Stormwater Management Program.