

Haywood County Growth Readiness Roundtable

Final Report and Recommendations



JANUARY 2008

Authored by Watershed Education for Communities and Officials (WECO)
on behalf of the Haywood County Growth Readiness Roundtable Participants
This and other supporting documents are available at www.ncsu.edu/WECO/haywood
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Growth Readiness Roundtable Workshop Sponsors and Partners

The Haywood Waterways Association Board of Directors sincerely appreciates the time and input from all the workshop participants. A special note of thanks goes to our key partners and co-applicants for the grants that made the workshops possible: Haywood Soil and Water Conservation District and the Southwestern NC Resource Conservation and Development Council.

Funding for the workshops was provided by grants from the Tennessee Valley Authority and the NC Division of Water Quality 319 Program. For many years they have been faithful partners and loyal supporters of local conservation efforts. We thank them for their financial assistance and confidence in the local partners.

The Tennessee Valley Authority and Southeast Watershed Forum (SEWF) were instrumental in developing the Haywood County workshops. They have offered similar workshops in many communities throughout the Tennessee River Valley and those experiences were priceless in planning and conducting our workshops. The Z. Smith Reynolds Foundation supported SEWF involvement on this project.

The staff from NC State University, Watershed Education for Communities and Officials (WECO) were excellent facilitators of the workshops and group discussions. They captured the many topics of discussion and participant feedback in the workshop newsletters and the final project report. We commend their professionalism and the level of expertise they provided to make the Roundtable Workshops a valuable learning experience. Technical support was also provided by the NC Cooperative Extension Service, Haywood Community College and the Southeast Watershed Forum.

We also extend our sincerest thanks to the elected officials, our towns, state and local agencies and the professional organizations that invested their time to make this workshop series successful. Working together we can grow and prosper as we make wise decisions about the best use of our land and water resources.

Haywood Waterways Association and our partners see this series of workshops as a catalyst for an ongoing dialog and cooperative effort in the community. This will help ensure Haywood County grows in a manner that is sensitive to landowner concerns, conserves our land and water resources, and maintains the quality of life that makes Haywood County such a special place for us all. Our neighbors, our children and future generations will thank us.

Sincerely,



Ronald J. Moser
Director
Haywood Waterways Association



David M. Dudek
President
Haywood Waterways Association

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Final Report and Recommendations

Executive Summary

Haywood County is experiencing growth and development at an unprecedented scale. As a result, the community faces pressure on land, air, and water. A diverse group of community members including local government and realty, homebuilding, environmental, and citizen interests decided to collaboratively and proactively address these issues. The group of community leaders participated in a Roundtable to discuss and recommend how to encourage growth and development that is sensitive to both natural resources and quality of life.

Through a series of 5 workshops and additional subgroup meetings, Roundtable participants considered growth and development issues and developed recommendations to enable more sensitive site placement, design, and construction. The Center for Watershed Protection's *Better Site Design* principles were used to frame the discussion. The resulting Roundtable recommendations are suggestions for implementing these principles in Haywood County.

One notable exception to this format regards the issue of steep slope development, a critical consideration in western NC. The first Roundtable recommendation addresses steep slope issues specifically, while slope issues are also discussed within the recommendations for several of the 22 principles. (In 2008, recommendations from an Advisory Group facilitated by the Land of Sky Council of Governments about mountainside and steep slope development will also be available).

The Roundtable recommendations include modifications to local codes that encourage builders and property owners to apply low impact development techniques while also ensuring high quality development, adequate access and public safety. Some of the recommended changes are simple and may be easy to implement, while others will require more discussion and educational outreach within each jurisdiction to ensure that various local concerns are met.

Project partners from NC State University and Haywood Waterways Association suggest that each local government's elected and appointed bodies review these recommendations with staff and identify those recommendations that may be implemented quickly versus those which may be incorporated into future planning efforts. Local governments are encouraged to think expansively, keeping in mind that there are many organizations and funding sources that may be able to help make progress on these issues.

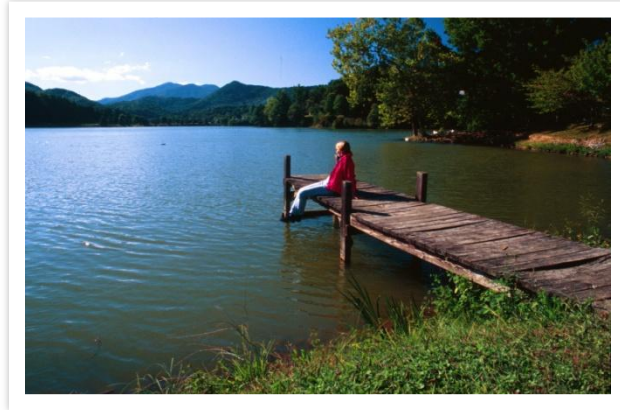
The mountains of North Carolina are blessed with natural resources and scenic vistas, attracting both visitors and new residents. Mountain communities are thus experiencing growth and development at an unprecedented scale. As a result, many communities, including Haywood County, are confronted with significant pressures on land, air, and water in their regions.

They are now faced with the challenge of maintaining economic growth, clean water and natural beauty at the same time. While growth is good for these local economies, they are in danger of losing the natural beauty, cultural heritage, and quality of life that is so important to them. *Economically-viable, yet environmentally-friendly development practices can help maintain water quality, decrease the costs of infrastructure and construction, and preserve quality of life.*

But **who is responsible** for ensuring that growth benefits the economy AND protects natural resources? Participants of this Roundtable provided a range of responses when posed with this question. Local, state, and federal governments, citizens, advocates, and developers *were cited in equal numbers* as those who must take responsibility. Amazingly, participants in the Roundtable represented *all* of those groups!

The Approach

Haywood Waterways Association (HWA) invited elected officials in Canton, Clyde, Haywood County, Maggie Valley, and Waynesville to support a roundtable discussion of environmentally-friendly design and development techniques. The elected officials unanimously agreed to voice their support for a community roundtable. The goals of the project were to engage the community in a discussion about local policies affecting land use, development, stormwater, and tourism, and to seek common ground about methods to reduce the impacts of growth on water resources.



A series of 5 workshops were held throughout 2007. Approximately 180 representatives from all local governments, development, realty, natural resource, recreation, community, and faith organizations were invited to participate in the educational and consensus-building workshops. Attendance ranged from 30-70 participants at each workshop. Participants used maps of the county to predict where new homes and supporting development would be located, and shared their concerns about impacts of this impending growth.

Guest speakers from various institutions shared information and local examples on the latest technology in conservation, site design and low impact development techniques. The Center for Watershed Protection's *Better Site Design* manual was provided to participants as a framework for discussing the issues and making recommendations for Haywood County communities.

Three subgroups developed recommendations along three themes: Streets & Parking, Lot Design, and Natural Areas. The groups met and developed draft recommendations, which were then discussed and agreed upon at Workshop 4. The final draft, with these changes, was distributed to all. This Report contains the final recommendations.

The recommendations are intended as guidance for communities and are not mandated by any agency. However, many are appropriate for inclusion in programs required by law, such as EPA Phase II Stormwater Programs.

The Methods

Haywood Waterways Association contracted with Watershed Education for Communities and Officials (WECO), a Cooperative Extension Program at NC State University, to facilitate the Roundtable process. Tennessee Valley Authority (TVA) and EPA Clean Water Act Section 319 funding supported the project. The process was based on the Better Site Design Roundtable process developed by the Center for Watershed Protection, and a streamlined version honed by the Tennessee Growth Readiness program and the Southeast Watershed Forum. Haywood County is the first community in NC to try this streamlined Roundtable process, which has been applied in Tennessee, Georgia, and Virginia. Wilmington, NC completed a similar process in 2002. Newsletters were created and distributed after each workshop. Newsletters and all other Roundtable information can be found online at www.ncsu.edu/weco/haywood.

Roundtable Summaries

Roundtable 1: April 4, 2007 Having Growth and Water Quality Too

Participants were provided an overview of the impacts of land use change on water resources. Undeveloped land intercepts rainfall and allows infiltration of stormwater into the ground, replenishing groundwater and removing pollutants. When land use changes from forested or agricultural to residential, commercial or industrial, this natural infiltration process is altered and rainfall flows off impervious surfaces (rooftops, roads, parking lots, compacted soil) as stormwater runoff. The increased amount and velocity of runoff erodes streambanks, increases downstream flooding and landslide risks, and contributes to higher stream temperatures and higher levels of pollutants. This can lead to degraded trout habitat, human health hazards, and increased drinking water treatment costs.

In small groups, participants discussed their concerns regarding growth, some examples include:

- Cost of treating problems instead of preventing them
- Concerns about trout habitat
- Concerns about slope development and landslides
- Loss of farmland from development
- The impact of developing land without understanding the local topography and related issues

Participants used maps of the county to illustrate where projected growth might occur. According to the State of NC, Haywood County population is projected to grow from 54,033 (in 2000) to 68,408 in 2030, a 26% increase. Most felt that the number of people predicted by the US Census count was an inadequate predictor of growth impacts, since it does not include non-resident's homes. They requested additional information about second home impacts. A survey gathered information on participants' ideas of land development and community resources. Participants viewed a video about water quality, flooding, development, and farmland preservation in the Bethel Community in Haywood County.



Participants at the First Roundtable project where growth may occur in Haywood County

Roundtable 2: May 2, 2007 Learning about Low Impact Development

Questions from Roundtable 1 were addressed, including information about non-resident owned parcels. Records show that 13,711 parcels are owned by residents outside of Haywood County. Sixty percent of these are owned by Florida residents, 10% are owned by other NC residents (data from Haywood Economic Development Commission). This presents a challenge for how to reach out to these owners to provide education about better site design and low impact development.

Participants learned about the *Resource Assessment for Mountainside Development* project. This collaborative project of Haywood Soil and Water Conservation District (SWCD), Haywood Community College, HWA, Natural Resources Conservation Service (NRCS) and local developers provides an onsite field assessment of the resources at a proposed development tract. A three-dimensional GIS (geographic information system) model is used to portray the information on a map, guiding recommendations for road and lot placement to reduce impacts on slopes and streams.

Participants were also provided an overview of best management practices used within low impact development to reduce stormwater impacts. Finally, participants heard an overview of the Center for Watershed Protection's *Better Site Design Principles*. Each jurisdiction agreed to complete a *codes and ordinance* worksheet that evaluates existing ordinances against the model principles. This admittedly subjective exercise provided participants with a framework to begin discussing where principles are already being met, and where improvements are possible.

Roundtable 3: June 6, 2007 Working Together for Better Water Quality

Participants learned about Haywood Community College's sustainability efforts. They were then

presented with an overview of low impact development. NC State University defines the LID approach as:

- Identifying and protecting green infrastructure (natural features like forests & wetlands)
- Minimize development impacts through preserving natural features and minimizing clearing and grading design
- Maximize infiltration of stormwater on-site
- Using multiple small scale best management practices onsite to treat runoff
- Public participation and education

The Bethel Elementary School case study was presented by its design firm, Equinox Environmental. The school was designed and constructed using low impact development techniques. HWA and Haywood SWCD worked with the school board to obtain a NC Clean Water Management Trust Fund grant to fund the additional costs. The design includes a stormwater wetland, filter strips, riparian revegetation, bio-swales, bio-retention areas (rain gardens) and water storage tanks.

Participants discussed the costs and the need to build up local expertise in LID among contractors and builders. Participants joined one of three subgroups representing streets and parking (car habitat), lot design (people habitat), and natural areas (nature habitat), and were provided copies of the Center for Watershed Protection's *Better Site Design Principles* manual and worksheets. People from each group volunteered to research one of the 22 principles, and develop a recommendation to bring back to the subgroup for discussion before the August Roundtable.

Roundtable 4 August 8, 2007 Working Together for Better Growth

All three subgroups submitted draft recommendations which were distributed to all

participants before this Roundtable. The draft recommendations were printed on posters hung around the room. Participants took turns writing comments and revisions on sticky notes, and reviewing those posted by others. The group reconvened to discuss the revisions and comments, eventually reaching agreement on the draft recommendations. Following the workshop, WECO staff incorporated the changes, indicating additions and deletions. The revised draft was distributed once more.

Roundtable 5: October 4, 2007 Taking Action for Change

At the fifth and final Roundtable, Rick Wooten, NC Geological Survey, provided an overview of the Landslide Hazard Mapping that is underway in the mountains. This information was particularly important for discussing slope issues, which are not covered in the *Better Site Design* principles discussed previously. A summary of Rick's presentation is included within the RT5 newsletter, and his slides are posted on the project website.



Bioretention at Bethel Elementary School

Participants were asked to formulate and briefly discuss future scenarios regarding the Growth Readiness project. They were asked to plan for implementing the Roundtable recommendations. They developed a list of ideas for short to long term actions. They also incorporated the information

about landslide hazard mapping into their action plan suggestions.

From Planning to Reality

This Final Report of recommendations is one step on the road to building capacity for protecting Haywood County's natural resources as it grows. Participants are interested in using the results of this process to move the community further along this road. Haywood Waterways Association will take the lead on educational and outreach items.

Short term actions (2008):

- Present results to elected and appointed officials
- Present report to public/landowners at public workshops and at community group meetings
- Present report to realtors and builders at their meetings
- Update County website to provide educational materials
- Local governments should seek results of the Mountainside and Steep Slope Advisory Committee (Available from Land of Sky Council of Governments in early 2008)

Medium term actions (2008-2009)

- Support and market the *Resource Assessment for Mountainside Development* project
- Provide a field tour of local low impact development sites for elected officials
- Provide workshops and seminars to builders, contractors, graders, consultants
- Provide workshops for landowners/buyers
- Local governments' staff and officials discuss and prioritize which of the Growth Readiness recommendations to pursue in their jurisdiction

Long term actions (2009)

- Reconvene Growth Readiness Roundtable to publicize and discuss landslide risk mapping information due from NC Geologic Survey

Recommendations

Steep Slopes and Landslide Recommendation:
Land hazard mapping information should be incorporated into education and land use planning as soon as it is available (projected early 2009)

- 1) Create maps/brochures of critical areas
- 2) Use in educational efforts to inform potential buyers and realtors
- 3) Use information to inform policy, such as Haywood County's slope ordinance
- 4) Support reconvening the Growth Readiness Roundtable to review and consider the new information

Education and Technology Transfer:

- 1) Educate the public and make the LID principles easily available to the public, use flow charts to allow for easier understanding of the material.
- 2) Find sustainable funding, such as county or municipal funding, to support Haywood Waterways' Resource Assessment for Mountainside Development project and make it accessible to all developers.

The following recommendations are based on the Center for Watershed Protection Better Site Design Principles. The principle evaluated by the Roundtable is stated (in orange) followed by the group's recommendation specific to that principle.

Principle 1: Street Width

Design residential streets for the minimum required pavement width needed to support travel lanes; on-street parking; and emergency, maintenance, and service vehicle access. These widths should be based on traffic volume.

- 1) Use traffic volume to delineate roads as collector, arterial, highway, etc.

- 2) Width should take into account vehicle sizes, with potential wider lanes in curves to address large vehicles (Raccoon Road is an example).
- 3) Examine where bike lanes are appropriate.
- 4) Allow narrower one-way roads with turnouts in subdivisions on steep slopes for roads serving few houses.
- 5) Mitigate stormwater increase from streets, including the parking and shoulder areas, with stormwater BMPs.

Principle 2: Street Length

Reduce the total length of residential streets by examining alternative street layouts to determine the best option for increasing the number of homes per unit length.

- 1) Agree with principle as written. Street standards promote the most efficient street layouts that reduce overall street length.
- 2) Require evaluation and minimization of street length and width as part of subdivision plan approval process, while keeping aware that longer roads may be necessary in order to minimize impacts to steep slope areas.
- 3) Reduce road frontage requirements to encourage more dense development (also see principle #12)

Principle 3: Right-of-Way Width

Wherever possible, residential street right-of-way widths should reflect the minimum required to accommodate the travel-way, the sidewalk, and vegetated open channels. Utilities and storm drains should be located within the pavement section of the right-of-way wherever feasible.

Group disagreed with the principle, instead preferring to focus upon reducing pavement width, not right of way.

Principle 4: Cul-De-Sacs

Minimize the number of residential street cul-de-sacs and incorporate landscaped areas to reduce their impervious cover. The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Alternative turnarounds should be considered.

- 1) Agreed with principle as written.
- 2) Encourage loop roads where applicable.

Principle 5: Vegetated Open Channels

Where density, topography, soils, and slope permit, vegetated open channels should be used in the street right-of-way to convey and treat storm water runoff.

- 1) Agreed with principle as written.
- 2) Where appropriate, use low maintenance native plants that provide forage for birds, butterflies, and other beneficial insects. Plant selection should consider traffic volume and speed to minimize impacts with birds and insects.
- 3) New developments that use vegetated open channels and divert parking lot runoff to stormwater BMPs (principle #10) should receive stormwater credits.
- 4) Use NCDWQ accepted BMP design standards for swales.

Principles 6 & 7 Parking Ratios & Codes

The required parking ratio governing a particular land use or activity should be enforced as both a maximum and a minimum in order to curb excess parking space construction. Review existing parking ratios for conformance taking into account local and national experience to see if lower ratios are warranted and feasible.

Parking Codes should be revised to lower parking requirements where mass transit is available or enforceable shared parking arrangements exist.

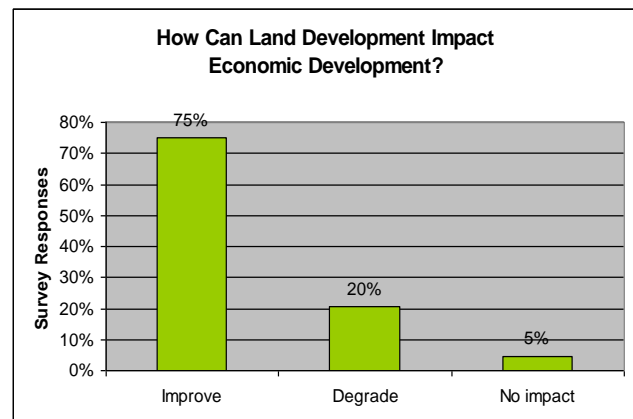
- 1) Parking ratios should be specific to land use.
- 2) Maximum ratios should be set for each land use. Going above the minimum ratio should require a compelling reason.

- 3) Going below the minimums should be allowed on a case by case basis.
- 4) Encourage shared parking, including between residential & business owners
- 5) On street parking should count toward meeting minimum parking ratios, with multiple businesses counting same spaces.

Principle 8: Parking Lots

Reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas.

- 1) Minimum stall width of less than 9 feet, with approval required for 9 feet or wider.
- 2) Minimum stall length of less than 18 feet, with approval required for 18 feet or longer.
- 3) Thirty percent (30%) of spaces in large lots should be designed for smaller (compact) cars.
- 4) Pervious materials should be used for spillover parking.
- 5) Landscaping should be designed to shade the parking lot.
- 6) Require bicycle parking close to the building.



Most participants who completed surveys saw benefits of land development

Principle 9: Structured Parking

Provide meaningful incentives that encourage structured and shared parking by making it more economically viable.

- 1) Structured parking should be utilized in multistory buildings in urbanized areas.
- 2) Encourage architectural designs that include parking beneath structures where appropriate.

Principle 10: Parking Lot Runoff

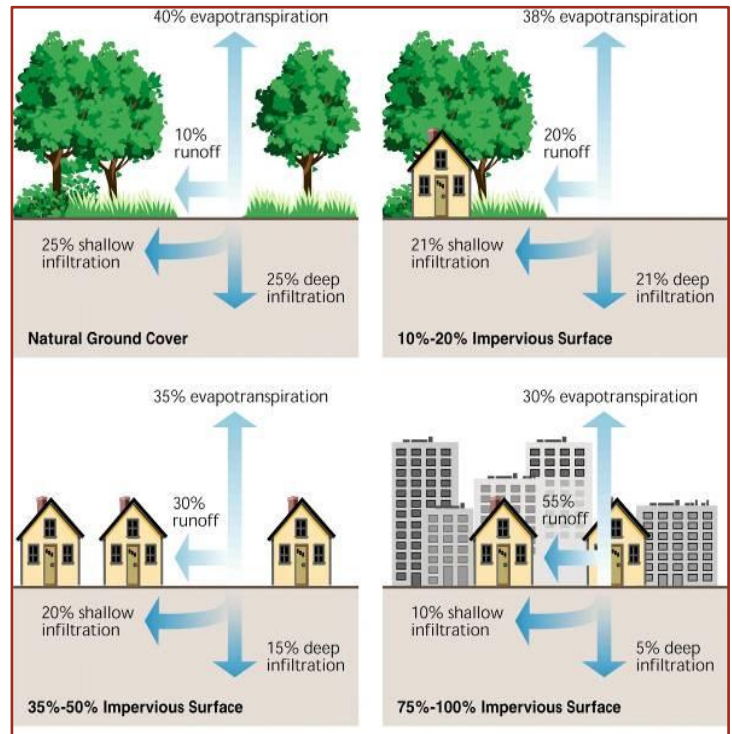
Wherever possible, provide storm water treatment for parking lot runoff using bio-retention areas, filter strips, and/or other practices that can be integrated into required landscaping areas and traffic islands.

- 1) All parking lot runoff should be directed to stormwater BMPs such as bioretention areas, filter strips, or grassy swales for stormwater treatment.
- 2) Landscaped areas should also serve to handle stormwater.

Principle 11: Open Space Development

Advocate open space development that incorporates smaller lot sizes to minimize total impervious area, reduce total construction

- 1) Educate the public/developers/realtors about open space design, and market it to homeowners to increase its popularity.
- 2) Encourage allowing the maximum size of the footprint of the dwelling to be based on the size of the lot. The topography of western NC promotes site specific planning.
- 3) Encourage open space design before property is put on the market. The realtors and buyers will have a better understanding of what land is usable and be more realistic on pricing. Steep slope areas are generally the areas put into open space. Other ideal areas are wetlands. This could be a required disclosure.
- 4) Make open space usable by and accessible to residential communities.
- 5) Provide a density bonus for additional open space conservation.



DEVELOPMENT IMPACTS ON THE NATURAL WATER CYCLE IN A WATERSHED

- 6) Define open space as natural (forested) or semi-natural (farmland), as compared to ball fields or golf courses, for example.
- 7) Require deed restrictions for open space and include requirements for ownership and maintenance. Maintenance could be required of homeowners associations, or in some cases may need to be County or Municipal, or through a land trust.

Principle 12: Setbacks and Frontages

Relax side yard setbacks and allow narrower frontages to reduce total road length in the community and overall site imperviousness. Relax front setback requirements to minimize driveway lengths and reduce overall lot imperviousness, costs, conserve natural areas, provide community recreational space and promote watershed protection.

- 1) Encourage the use of irregular lot shapes.
- 2) Encourage building houses close to road to have more open/play space in the backyard.

Principle 13: Sidewalks

Promote more flexible design standards for residential subdivisions sidewalks. Where practical, consider locating sidewalks on only one side of the street and providing common walkways linking pedestrian areas.

- 1) Recommend design standards based on street/neighborhood function.
- 2) Encourage the use of LID principles for subdivisions within town limits for maintenance, minimum width, stormwater drainage, pervious surfaces, and sidewalks on only one side of the street.
- 3) Allow alternative options, including grass trails and greenways, for pedestrian travel.
- 4) Sidewalks should be constructed when they can promote pedestrian use and connectivity, and developers should be held responsible for providing easements, funding and building them when they can provide that connectivity. Discourage “sidewalks to nowhere”.

Principle 14: Driveways

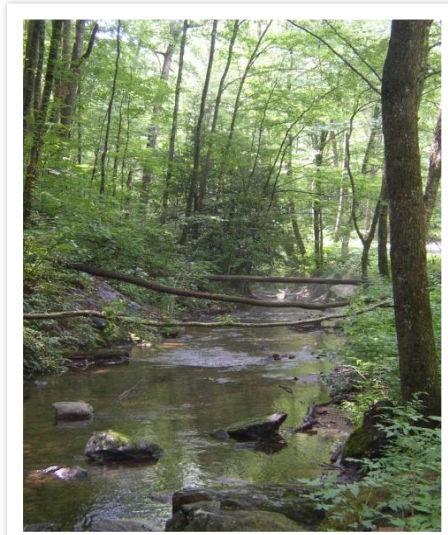
Reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together.

- 1) Encourage the use of LID principles for driveway design, as related to stormwater drainage, length, width, and pervious surfaces.
- 2) Allow shared driveways in residential areas to be considered driveways and not streets.

Principle 15: Open Space Management

Clearly specify how community open space will be managed and designate a sustainable legal entity responsible for managing both natural and recreational open space.

- 1) Guidelines should be established differently for municipally owned land vs. homeowners



Riparian forest canopy is crucial for protecting trout habitat and keeping water clean

- associations vs. public lands vs. developer owned land; and differentiations for developed land vs. undeveloped land.
- 2) Percentages of allowable open space and pervious space should be established based on land use planning, slope and natural vs. developed space.
- 3) Homeowners associations should have final say through established legal documents supported by the courts. Guidelines should fall within limitations set by the town or county in which the subdivision resides.
- 4) Public lands should be controlled by the managing entity (i.e., county, state, town, and federal) again with established legal documents supported by the courts.
- 5) Land being developed by a developer should fall within the restrictions set by the town or county in which the land resides, taking into consideration whether the area will become managed by a homeowners association in the future.

Principle 16: Rooftop Runoff

Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas and avoid routing rooftop runoff to the roadway and the storm water conveyance system.

- 1) Encourage the use of LID principles to manage rooftop runoff and direct it to pervious surfaces, surface drainage, subsurface drainage, bioretention areas, rain barrels/cisterns, and landscaping.
- 2) Encourage vegetated (green) roofs to slow and reduce runoff, promoting the use of plants that provide food for beneficial insects.
- 3) Strongly encourage keeping stormwater on-site.

Principle 17: Riparian Area Management
Create a variable width, naturally vegetated buffer system along all perennial streams that also encompasses critical environmental features such as the 100-year floodplain, steep slopes and freshwater wetlands.

Riparian Management Area: This is the interface between land and water - the land on either side of a waterbody that contributes to the overall health of the water.

- 1) All recommendations apply when there is a change in land use (i.e. farmland is converted to housing development). All existing land uses are exempt from these recommendations.
- 2) Native vegetation should be used in the riparian management area, with forested vegetation strongly encouraged over primarily grass. Invasive species should be prohibited from use and the county and/or municipalities should distribute a list of these prohibited plants.
- 3) Riparian management areas should be a minimum of 30 feet of undisturbed forested vegetation (measured from the top of bank) on each side of perennial streams and



Parking lot bioretention at Transylvania County Library

intermittent streams, wetlands and bogs. Incentives should be offered for wider riparian areas, particularly on high use value waters, such as trout waters, recreational waters, headwater areas, or waters that contain rare or sensitive species.

- 4) Averaging is allowed for riparian management areas.
- 5) Any new development plan should clearly define riparian management areas and these areas should be included in any permits. Riparian areas should be clearly designated on-site and county/municipal staff should ensure compliance by occasional site visits.
- 6) Riparian management areas should be extended for land with steep slopes. As an example, for every additional percent slope over 10%, an additional 1 foot could be added to the base of 30 feet. In this example, a slope of 15% would have a base riparian area width of 30 feet plus an additional 5 feet for the extra slope, resulting in a 35 foot riparian management area. Other site-specific methods for addressing the need for greater widths in steep slope areas are possible as well.
- 7) The 100-year floodplain should be protected from hazardous materials and fill. Potential

sources of contamination such as hazardous or solid waste facilities and animal waste lagoons should be located outside of the 100-year floodplain. There should be no net fill allowed in the 100-year floodplain to provide protection for the natural flood abatement provided by the floodplain. Development should be prohibited within the 100-year floodplain. In some areas, use of the 100-year floodplain for designating the width of the riparian management area may be practical or useful for conservation incentives.

Note of a dissenting opinion: Not all participants agreed that development should be prohibited within the 100-year floodplain. It was mentioned that development in the 100-year floodplain can be done safely, and/or allowed on a case-by-case basis.

- 8) Incentives should be offered for existing landowners interested in planting or restoring riparian areas (i.e. establishing a riparian area where one did not previously exist or converting a grassed riparian area to forest).

Principle 18: Riparian area Maintenance
The riparian stream (area) should be preserved or restored with native vegetation that can be maintained throughout the plan review, delineation, construction, and occupancy stages of development.

- 1) Stormwater Best Management Practices (BMPs) are encouraged along with forested riparian areas, to aid in treating runoff.
- 2) Permitted and prohibited activities within the riparian area should be defined.
- 3) Examples of permitted activities:
 - a. passive recreation (hiking/non-impervious footpaths, fishing, picnicking) – this will allow for a nice fit with the ‘greenways system’

- b. removal of damaged/diseased trees and non-native invasive species
 - c. utility right-of-ways
 - d. limited fertilizer/pesticide/herbicide applications
- 4) Examples of prohibited activities:
 - a. soil or vegetation disturbing activities (including clearing/grading), except as noted above; exceptions can be made upon review and special permit
 - b. impervious surfaces
- 5) Encourage the installation of utilities outside of riparian areas. If installed within or crossing a stream, encourage drilling under the streambed instead of trenching across the stream.
- 6) All development plans should clearly represent riparian areas and specify plans for clearing/grading and avoiding impacts to the riparian area(s). Riparian areas should be clearly designated on-site and county/municipal staff should ensure compliance by occasional site visits.
- 7) Minimize stream crossings, but where they occur should be at 90° to bank. Bridges are preferable to culverts, and culverts should allow for fish passage and provide least impact to stream hydrology. All crossings should be engineered to manage the flow of flood waters to prevent damming effects during high flow events.
- 8) Implement riparian area education such as kiosks in public parks, brochures, newspaper articles, etc. regarding importance/purpose of healthy riparian areas. Education should include why streambanks should not be mown, and the benefits of encouraging native vegetation.

Principles 19 & 20: Clearing and Grading and Tree Conservation

Clearing and grading of forests and native vegetation at a site should be limited to the minimum amount needed to build lots, allow access, and provide fire protection. A fixed portion of any community open space should be managed as a protected green space in a consolidated manner.

Conserve trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native plants. Wherever practical, manage community open space, street rights-of-way, parking lot islands, and other landscaped areas to promote natural vegetation.

- 1) Clearing of construction roads should coincide with planned permanent roadways whenever possible.
- 2) Plan grading for the complete site and not just for each building footprint.
- 3) Modify Haywood County slope ordinance to include limits on clear cutting and destruction of native plant and specimen trees. Allow waivers for clear cutting in special circumstances, such as exotic species removal.
- 4) Modify Haywood County ordinances for new subdivisions and properties to protect from destructive clearing and development practices and non-essential removal of specimen trees, especially in and near riparian areas, with strong consideration of potential risk of wildfires.
- 5) Create ordinances through Haywood County Health Dept.'s Environmental Health division to limit the clearing of native plants and trees on septic fields and allow no disturbance of repair area until needed.
- 6) Remove trees if proper grading requires it, but replace trees based on location and objectives. Develop a ratio for replacement.

- 7) Clarify and modify existing clearing, grading and land use ordinances governing protection of riparian areas and floodplains to minimize cumulative impacts of sediment to water resources, retain the natural hydrology of the development site, and maintain shade in riparian areas.
- 8) Haywood County, Clyde, Canton and Maggie Valley should consider adopting similar or modified tree preservation codes as that used by the Town of Waynesville.



The two adjacent developments pictured above illustrate conservation design (left) versus traditional design (right)

- 9) Educate the public about the economic benefits of planting trees, minimizing clearing, proper grading and conservation easements.
- 10) Develop a woodland preservation ordinance. Include objectives, such as to maintain aesthetics, provide shade for cooling lots and runoff temperature. Develop and include a list of specimen trees and minimum sizes for retaining. (Resources include Better Site Design handbook case study on page 149; Arbor Day Foundation at www.arborday.org)
- 11) Educate about and provide incentives for developers to assess sites and natural resources using the Resource Assessment Mountainside Development techniques demonstrated by Haywood Community College, Haywood

Waterways Association, and Haywood SWCD, and NRCS.

Principle 21: Land Conservation Incentives
Incentives and flexibility in the form of density compensation, buffer averaging, property tax reduction, storm water credits, and by-right open space development should be encouraged to promote conservation of stream buffers, forests, meadows, and other areas of environmental value. In addition, offsite mitigation consistent with locally adopted watershed plans should be encouraged.

- 1) Continue Haywood County’s participation in the state’s Present Use Tax Valuation System, (provides a reduction of property taxes if the land is actively used for agriculture, forestry, or horticulture), to encourage keeping land in a semi-natural state. Recommend to the NC General Assembly to amend state laws to let conservation lands qualify for this program and reduce the minimum required acreage (see Senate Bills 1203, 569, and 1305, among others).
- 2) The County’s four municipal areas should implement Voluntary Agricultural District (VAD) programs for land falling under their jurisdictions. Haywood County already has an active VAD (including an Enhanced VAD ordinance, approved in March 2007). VADs encourage landowners to restrict development on their land in return for various tax breaks and other incentives.
- 3) Increase efforts to educate eligible landowners about existing land conservation incentives, similar to the work now being done by the Bethel Rural Community Organization. Existing incentives aren’t always well-known or well-understood.
- 4) Town, county, state, and federal officials should find ways to provide additional funding to support outright purchase or conservation

easements on lands with conservation and/or open space values. Funding for conservation easements remains inadequate to address the need or the demand. Possible funding mechanisms include line-item appropriations, sales taxes, and bonds.

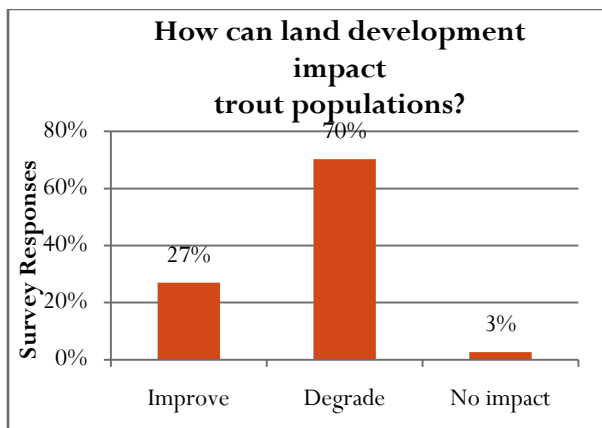
- 5) Haywood County should complete its Farmland Protection Plan. (The County and Pigeon River Fund have recently agreed to fund this effort). Once the plan is approved by the state, the county will qualify for an increased cost-share percentage for NC Farmland Preservation Trust Fund grants (i.e., only 15% cost-share required for counties with an approved Farmland Protection Plan; 30% without). For a \$100,000 project, that results in a \$15,000 increase in state funding.
- 6) Amend county and municipal ordinances to encourage more compact developments (smaller “footprints”), especially to keep developed areas away from riparian corridors, floodplains, and steep slopes. (see also Principal No. 11 – Open Space Design).
- 7) Provide density bonuses as an incentive for conserving more open space than required.

Principle 22: Storm Water Outfalls
New storm water outfalls should not discharge unmanaged storm water into jurisdictional wetlands, sole-source aquifers, or other water bodies.

Recommendations are most applicable to non-Phase II communities:

- 1) New stormwater outfalls should not discharge directly to streams, rivers, lakes, natural wetlands, sole-source aquifers, or other sensitive areas (i.e., trout waters, recreational areas).

- 2) Require all new development activities (and re-developments) to submit a stormwater management plan to the appropriate county and/or municipal official. The plan must contain a description of an adequate, temporary stormwater retention system to prevent construction site stormwater runoff. The temporary structure should satisfy the requirements of the permitting agency. The stormwater management plan should also include post-construction stormwater controls that satisfy the requirements of the permitting agency before a permit is issued. The plan should include a maintenance schedule and the responsible party for maintaining the practice.



Most survey participants responded with concern about trout populations

- 3) Stormwater from new stormwater outfalls should be treated with appropriate structural and/or nonstructural BMPs.
 - Structural BMPs are physical structures designed to remove pollutants from stormwater runoff, reduce downstream erosion, provide flood control, and allow groundwater recharge. They require engineered design and construction.
 - Nonstructural BMPs are passive or programmatic efforts like site planning that

help prevent the generation of stormwater runoff and the contamination of runoff by pollutants. They typically require community participation, involvement, and outreach to implement.

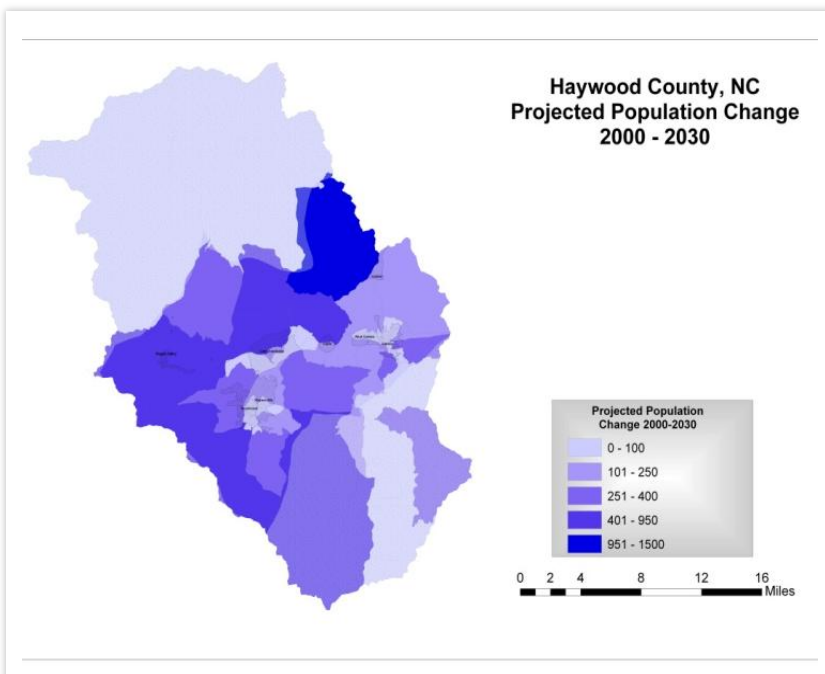
- Stormwater BMPs should follow guidance provided by the NCDENR Division of Water Quality.
 - Temporary BMPs should be monitored after storm events, and post-construction BMPs monitored annually to ensure the BMP is functioning properly.
- 4) Stormwater BMPs should conform to and, when possible, amplify natural features of the landscape. Filter strips, grassed swales, and restored riparian management areas can achieve this goal. Other natural looking BMPs such as bioretention and stormwater wetlands can blend into natural areas of site designs, or create new, small-sized natural areas within normally barren portions of the site, such as parking lots.
 - 5) Existing land use and topography (i.e., steep slope, low relief) should be considered during the planning process. Physiographic factors can limit use of many structural controls, and soils should be tested for infiltration feasibility. Projects that can demonstrate that post-construction stormwater controls match that of pre-construction hydrology should receive stormwater credits and a reduction in stormwater fees if fees are adopted.
 - 6) New development activities that include new stormwater outfalls should be defined as either low-density or high-density projects.
 - Low-density projects are permitted projects containing no more than two dwelling units per acre and the total built-upon area (impervious surface cover) is no more than 12 percent. Stormwater should be controlled

through vegetated conveyances where practicable, and all structures should be at least 30 feet from perennial and intermittent streams, and not within riparian areas. Deed restrictions and protective covenants are required by the locally issued permit and incorporated by the development to ensure that subsequent development activities maintain the development (or redevelopment) consistent with the approved plans.

- High-density projects are projects not defined by the low-density option. Structural stormwater BMPs must be installed to control stormwater flow, total suspended solids (TSS), and nutrients. Where temperature is a concern (i.e., new stormwater outfall to trout waters, recreational areas, and/or other sensitive areas), appropriate temperature controlling BMPs should be installed. These include stormwater wetlands (extended detention, pocket, and pond/wetlands) and wet detention basins. All built-upon areas should be at least 30 feet landward of perennial and intermittent surface waters, not

within riparian areas, and deed restrictions and protective covenants should be required by the locally issued permit and incorporated by the development to ensure that subsequent development activities maintain the development (or redevelopment) consistent with the approved plans.

- 7) An effective stormwater management program requires sufficient staff and resources to inspect and enforce applicable ordinances and specifications. Implementing a stormwater fee and/or an increase in water use fees is an option.
- 8) No new development or construction activities should be allowed in the regulated floodplain if the project increases the flood stage or velocity of the water's flow or presents a threat to public health, safety, and welfare. Hazardous materials should not be stored in the floodplain (See Recommendation and dissenting opinion for Principle 17).



This map shows where participants believe predicted population growth will occur, by census block. Darker blocks indicate more growth. Map created by TVA.

Participants

Thank you to those who participated in Roundtable workshops. The following organizations were represented:

Beaverdam Community Club
 Bethel Rural Community Organization
 Crabtree-Iron Duff-Hyder Mountain Community Club
 Cruso Community Club
 Downtown Waynesville Association
 Haywood Community College
 Haywood County (Board of Commissioners, Planning Board, Recreation, Engineering, Planning, and Emergency Services Depts.,)
 Haywood County Board of Realtors
 Haywood County Cooperative Extension
 Haywood County Economic Development Commission
 Haywood County Schools
 Haywood Home Builders Association
 Haywood Soil & Water Conservation District
 Haywood Waterways Association
 Lake Logan Episcopal Center
 Lake Junaluska Assembly
 Land Stewardship Consulting
 McGill Associates
 NC Dept of Agriculture and Consumer Services
 NC Division of Water Quality
 NC Natural Heritage Program
 NC Senator Sam Queen's Office
 NC Wildlife Resources Commission
 R.C.F. Construction Co.
 Southern Appalachian Highlands Conservancy
 Southwestern NC RC & D Council
 Town of Canton (Planning Dept.)
 Town of Clyde (Administration, Planning Board)
 Town of Maggie Valley (Administration, Planning Dept.)
 Town of Waynesville (Board of Aldermen, Administration, Public Works, Planning Depts.)
 US Environmental Protection Agency, Watersheds Office
 US Fish and Wildlife Service, Asheville Office
 US Senator Richard Burr's Office
 US Senator Elizabeth Dole's Office

Resources

(Many are posted on the project website):

Presentations from:

Bethel Rural Community Organization Video
 Equinox Environmental Consultation & Design
 Haywood Soil & Water Conservation District
 NC Geological Service
 NC State University:

- Water Quality Group, Dept. of Biological and Agricultural Engineering, Asheville Office;
- Watershed Education for Communities and Officials (WECO), Dept. Agricultural and Resource Economics
- Haywood Extension

Publications included:

Better Site Design: A Handbook for Changing Development Rules. Center for Watershed Protection, at

www.cwp.org/PublicationStore/bsd.htm

Conservation –Based Subdivision Design: Protecting Water Quality and Scenic Resources in the NC Mtns, Anne Valentine, available at Conservation Trust for NC www.ctnc.org/orderActWorkingJS.cfm

Layman's Guide to Private Road Construction in Southern Appalachian Mountains; USDA NRCS, at www.dfr.state.nc.us

NC State University Dept. of Biological and Agricultural Engineering fact sheets, including *Designing Stormwater BMPs for Trout Waters* at www.bae.ncsu.edu/stormwater/pubs.htm

NC DENR Stormwater BMP Manual http://h2o.enr.state.nc.us/su/bmp_draft_manual.htm

US EPA Post-Construction Storm Water Management in New Development & Redevelopment at <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/post.cfm>