Deep Creek Watershed

Land Use and Stream Characteristics - 2014

Deep Creek Watershed

Legend

Deep Creek Watershed Boundary

Garrett County Watersheds

NORTH BRANCH POTOMAC RIVER

YOUGHIOGHENY RIVER
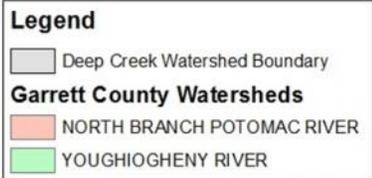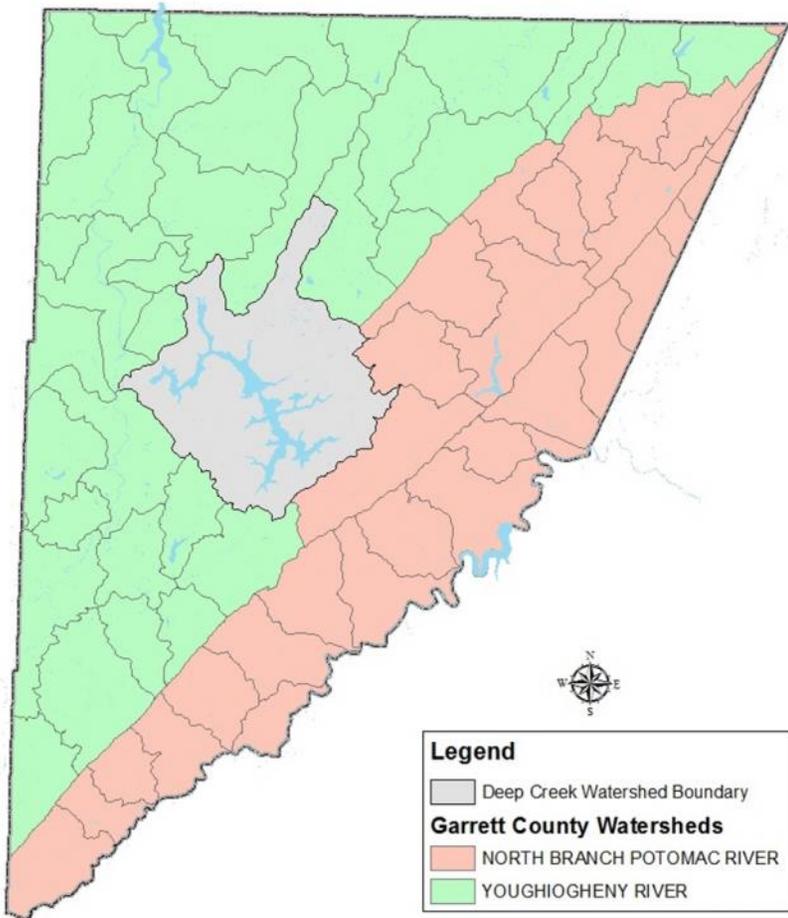
Deep Creek Watershed is approximately 10% off the County's total land area and 30% of the County's assigned addresses. Deep Creek Watershed does not drain into the Chesapeake Watershed.

- Comprises about 10% of the County's land area and about 30% of the County's assigned addresses – both residential & commercial

- According to the county tax rolls, for fiscal year 2014, District 18 (a subset of the DC watershed) represents 58.84% of the assessable base and real property tax revenue.

- Top 5 Land Use Categories:

County	%	DC Watershed	%
1. Deciduous Forest	52	Deciduous Forest	48
2. Cropland	17	Cropland	14
3. Brush	8	Low Density Residential	11
4. Mixed Forest	6	Water	9
5. Pasture	5	Pasture	4

Deep Creek Watershed
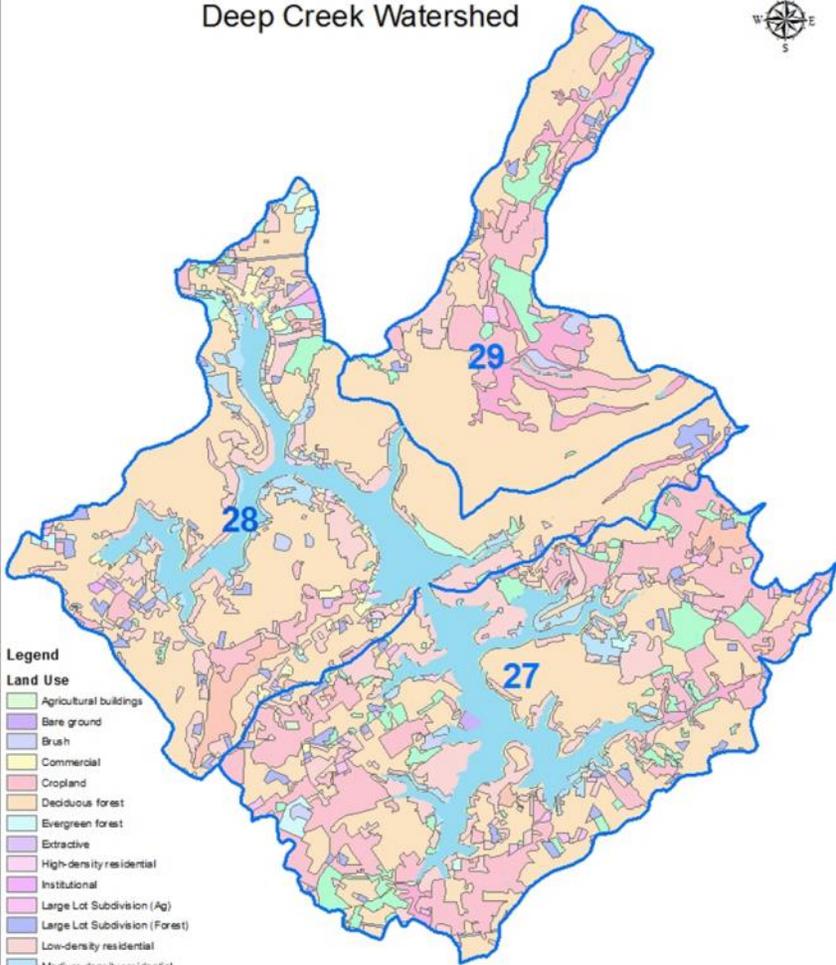
Legend
Land Use
- Agricultural buildings
- Bare ground
- Brush
- Commercial
- Cropland
- Deciduous forest
- Evergreen forest
- Extractive
- High-density residential
- Institutional
- Large Lot Subdivision (Ag)
- Large Lot Subdivision (Forest)
- Low-density residential
- Medium-density residential
- Mixed forest
- Open Urban Land
- Pasture
- Water
- Wetlands

Source: Maryland Department of Planning Land Use/Land Cover layer - 2010

- The watershed can be divided into 3 smaller watersheds

  - # 27 is the southern end of the lake (South)

  - #28 is the western and middle sections of the lake including McHenry & Thayerville (North)

  - #29 is Cherry Creek and the Deep Creek State Park area (Cherry Creek)

- A comparison of the top 5 land uses per subwatershed reveals:

SW 27 (South)	SW 28 (North)	SW 29 (Cherry Creek)
Deciduous Forest	Deciduous Forest	Deciduous Forest
Cropland	Low Density Residential	Cropland
Low Density Residential	Water	Wetlands
Water	Medium Density Residential	Pasture
Pasture	Cropland	Low Density Residential

South — Top 5 Land Use Categories Subwatershed 27
- Deciduous Forest: 36
- Cropland: 23
- Low Density Residential: 13
- Water: 11
- Pasture: 7
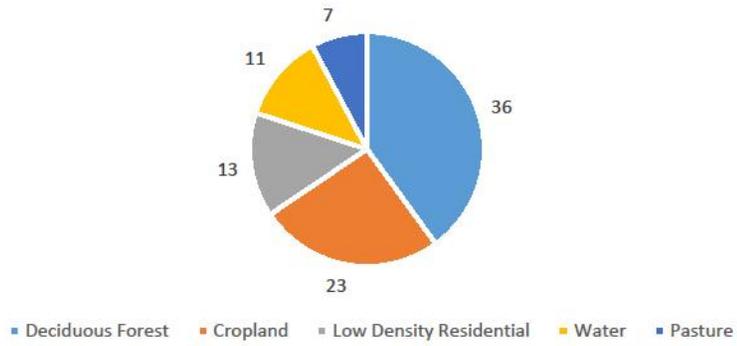
North — Top 5 Land Use Categories Subwatershed 28
- Deciduous Forest: 55
- Low Density Residential: 12
- Water: 11
- Medium Density Residential: 4
- Cropland: 4

Cherry Creek — Top 5 Land Use Categories Subwatershed 29
- Deciduous Forest: 59
- Cropland: 18
- Wetlands: 10
- Pasture: 6
- Low Density Residential: 3
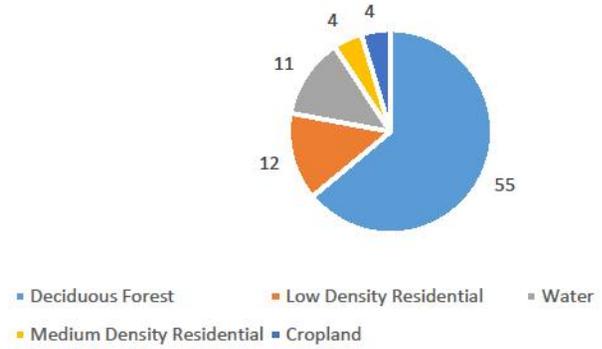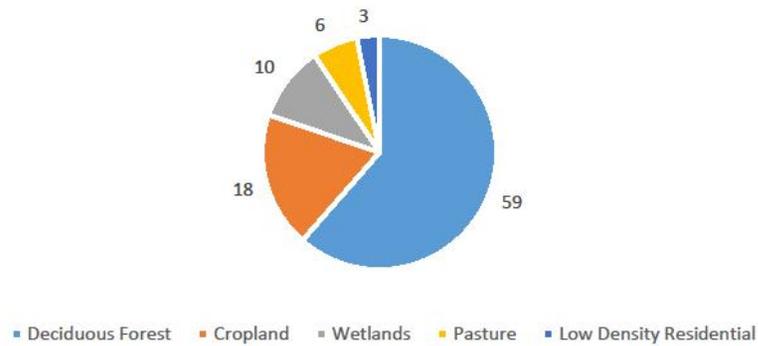
Residential Analysis as a Percentage of Watershed

	County	Deep Creek	SW 27 (South)	SW 28 (North)	SW 29 (Cherry Creek)
High Density Residential	<1	<1	<1	<1	0
Medium Density Residential	<1	3	2	4	0
Low Density Residential	4	11	13	12	3
Large Lot Subdivision (Agricultural)	1	<1	1	<1	<1
Large Lot Subdivision (Forest)	2	2	2	2	<1

- **High-density residential** - Attached single-unit row housing, garden apartments, high-rise apartments/condominiums, mobile home and trailer parks; areas of more than 90 percent high-density residential units, with more than 8 dwelling units per acre.

- **Medium-density residential** - Detached single-family/duplex, attached single-unit row housing, yards, and associated areas. Areas of more than 90 percent single-family/duplex units and attached single-unit row housing, with lot sizes of less than one-half acre but at least one-eighth acre (2 dwelling units/acre to 8 dwelling units/acre).

- **Low-density residential** - Detached single-family/duplex dwelling units, yards and associated areas. Areas of more than 90 percent single-family/duplex dwelling units, with lot sizes of less than five acres but at least one-half acre (.2 dwelling units/acre to 2 dwelling units/acre).

- **Large lot subdivision (forest)** - Residential subdivisions with lot sizes of less than 20 acres but at least 5 acres, with a dominant land cover of deciduous, evergreen or mixed forest.

- **Large lot subdivision (agriculture)** - Residential subdivisions with lot sizes of less than 20 acres but at least 5 acres, with a dominant land cover of open fields or pasture.

Streams
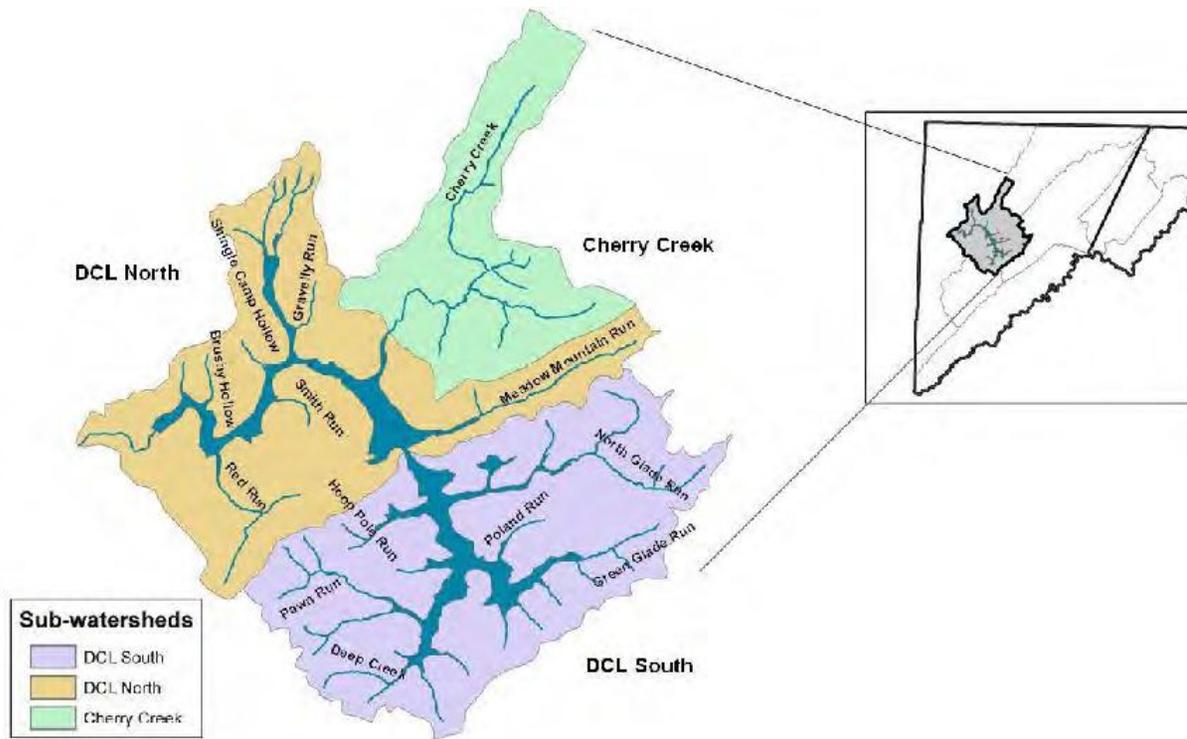
Source: DNR Report on streams found at
www.dnr.state.md.us/ccs/dcl_wmp.asp DNR Reports

- 49.4 miles of streams
  - 35.1 miles headwater
  - 11.8 miles 2nd order
  - 2.5 miles 3rd order

- 67 streams flow into Deep Creek Lake

- All streams in Deep Creek watershed are designated III-P, non-tidal coldwater

- Uses for III-P streams include growth and propogation of fish, other aquatic life & wildlife, leisure activities, and agricultural, industrial and public water supply

- The criteria used to rate the health of the streams is based on the standards applied to streams with this designation.

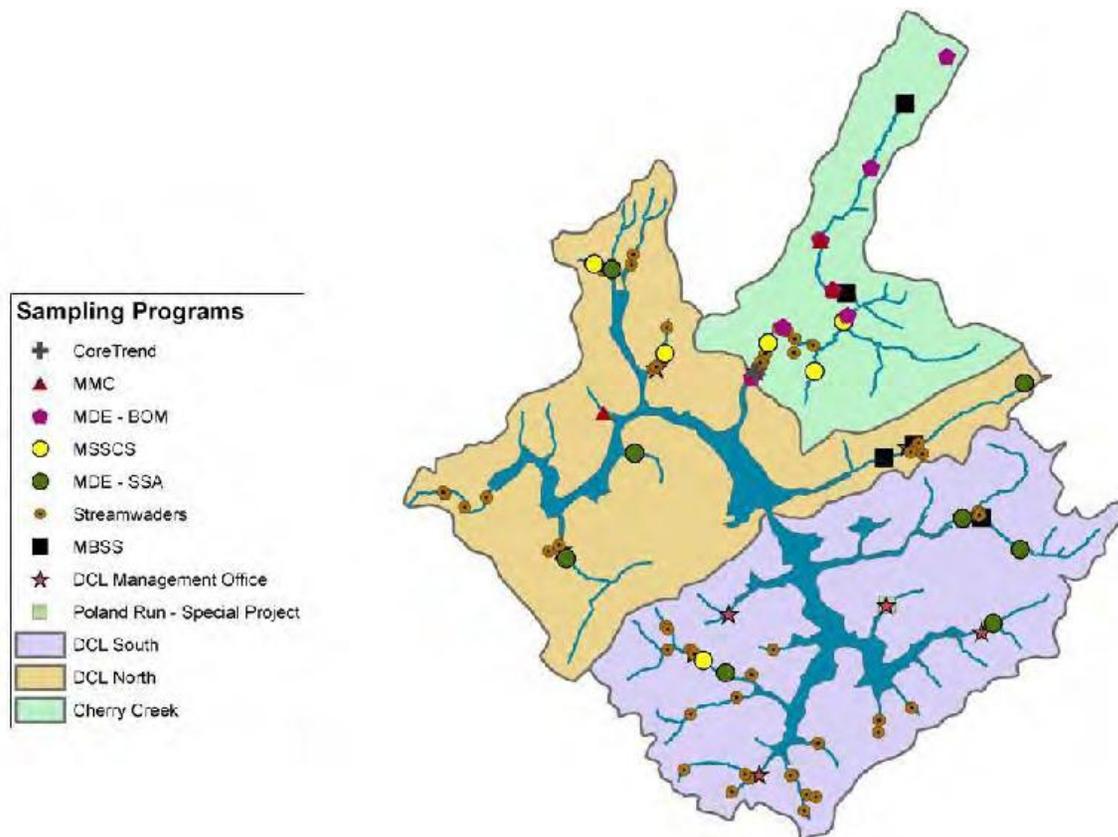# History by watershed – prior to 2000

Cherry Creek

• History of mining

• Created Acid Mine drainage issues – the major stressor in that subwatershed

• Remediation measures have been in place since 1986

Southern & Northern Subwatersheds

• Not much information collected prior to 2000

• From what DNR knows about these two watersheds none of the streams had been negatively impacted by acid mine drainage prior to 2000, although some MAY have been impacted by acid rain

• Prior to 2000 it's likely their status was at least partly the result of 'natural' conditions

Current Conditions – 2000 to present

Sampling Programs
- ✚ CoreTrend
- ▲ MMC
- ⬟ MDE - BOM
- ⬤ MSSCS
- ⬤ MDE - SSA
- ⬤ Streamwaders
- ■ MBSS
- ★ DCL Management Office
- ▨ Poland Run - Special Project
- ▨ DCL South
- ▨ DCL North
- ▨ Cherry Creek

Water Quality Conclusions

- Most water quality parameters fall within the expected ranges defined by the water quality criteria for Use III-P waters

- Violations of the water quality criteria occur primarily in Cherry Creek due to the impacts associated with acid mine drainage

- No issues related to nutrient enrichment are apparent

- These findings are consistent with conclusions presented in a 2010 MDE report stating that streams in the Deep Creek watershed do not display signs of nutrient over-enrichment

Water Quality Conclusions, con't.

- Stream Health as measured by numbers and types of fish, stream insects and other types of invertebrates

- Used MBSS fish, MBSS benthic macroinvertebrate and Stream Wader sampling information [MBSS – MD Biological Stream Survey]

Rating	MBSS Fish	MBSS Benthic	Stream Waders
Good	0	0	12
Fair	20	20	31
Poor	80	80	57

- Important footnotes: There were 5 MBSS sites, all in the eastern part of the watershed, two of which are in Cherry Creek. Stream Waders sites were scattered around the watershed fairly evenly and likely represent a more accurate picture of the current health of streams

Streamwaders IBI

- ● 1 - 2.99
- ○ 3 - 3.99
- ● 4 - 5
- ▢ DCL Wateshed
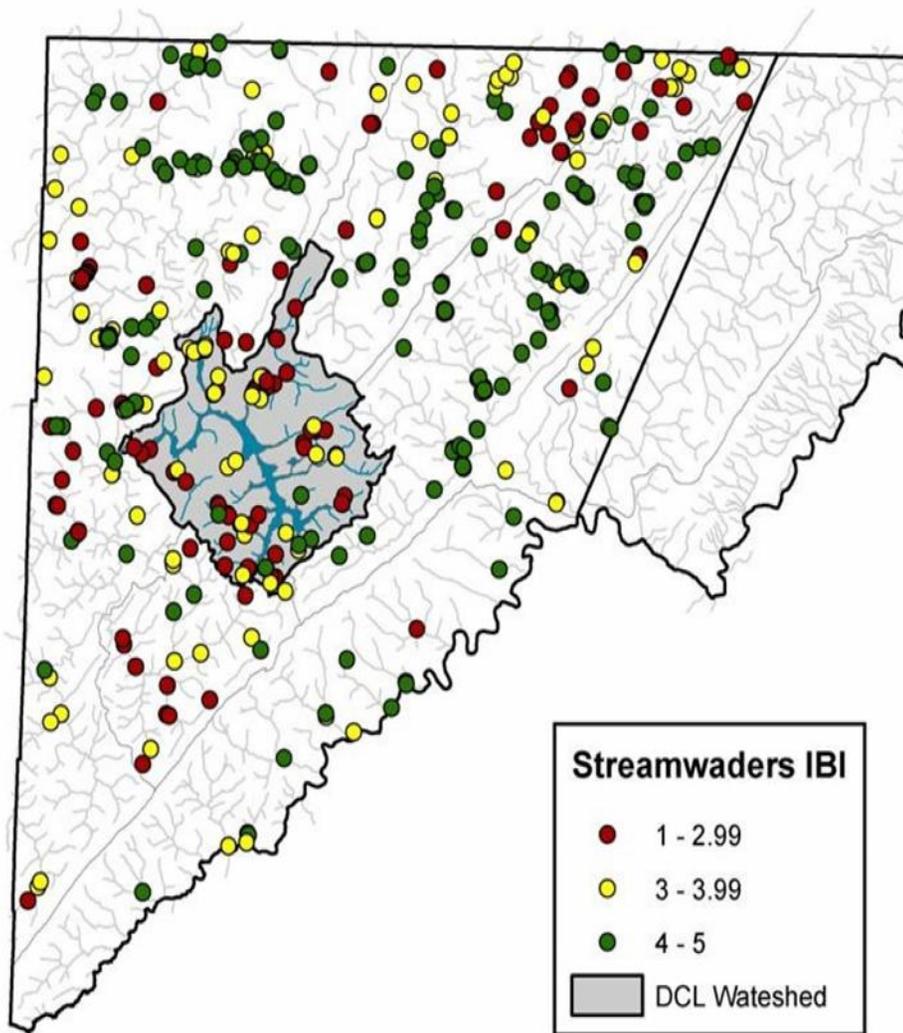
- In general, stream health conditions are consistent with conditions observed in the Little Youghiogheny River watershed, located in the southwest portion of Garrett County.

- In contrast, the most pristine streams in Garrett County are concentrated in heavily forested locations like the Savage River watershed in the northeast portion of the county.

- The ratings are based on a statewide standard that has been adjusted for the western Maryland region.

- Note: IBI – Index of Biotic Integrity

That's where we are in regard to
Land Use & Streams....

Where are we going?

The Future of Streams in the Watershed

- Based on DNR's MBSS data, MDE placed the Deep Creek watershed on Maryland's list of "Impaired" watersheds

- MDE concluded in their Biological Stressor Identification (BSID) Report that probable causes and sources of the biological impairment in the watershed are:
  - Acidity in Cherry Creek
  - Elevated sulfate concentrations (acid mine drainage is a potential source)
  - Stream morphology stressors including:
    - High embeddedness
    - Poor epifaunal substrate
    - Poor instream habitat
    - Poor riffle/run quality
  - Large and small scale human activities

The Future of Land Use in the Watershed
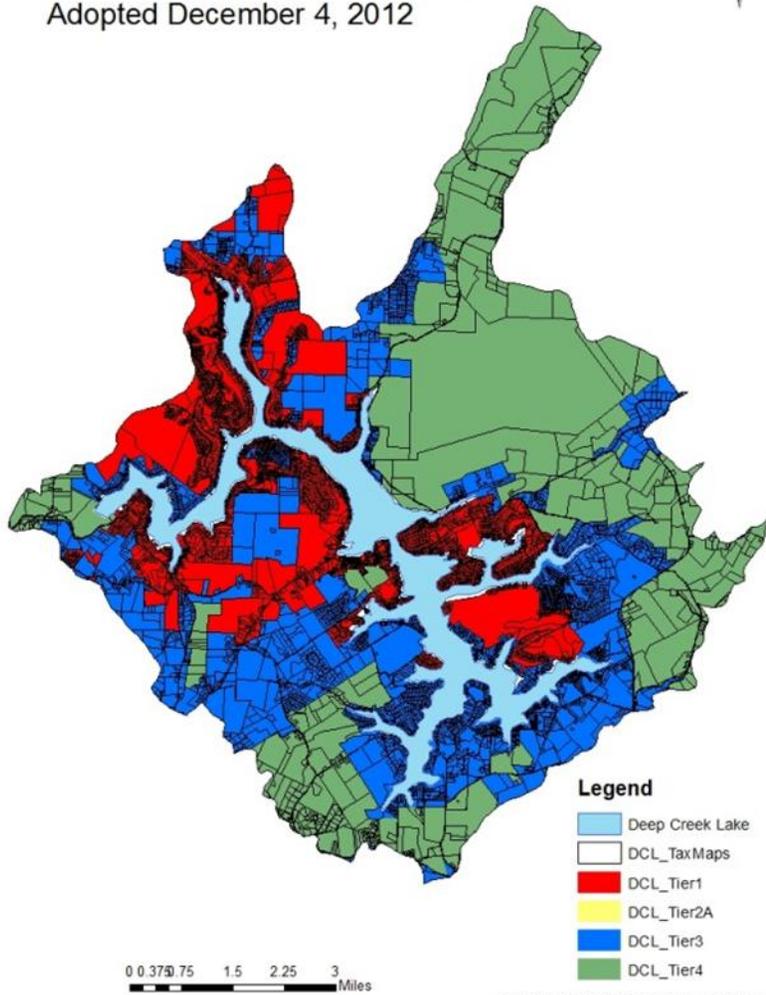

2009 - 2013 Total Housing Units
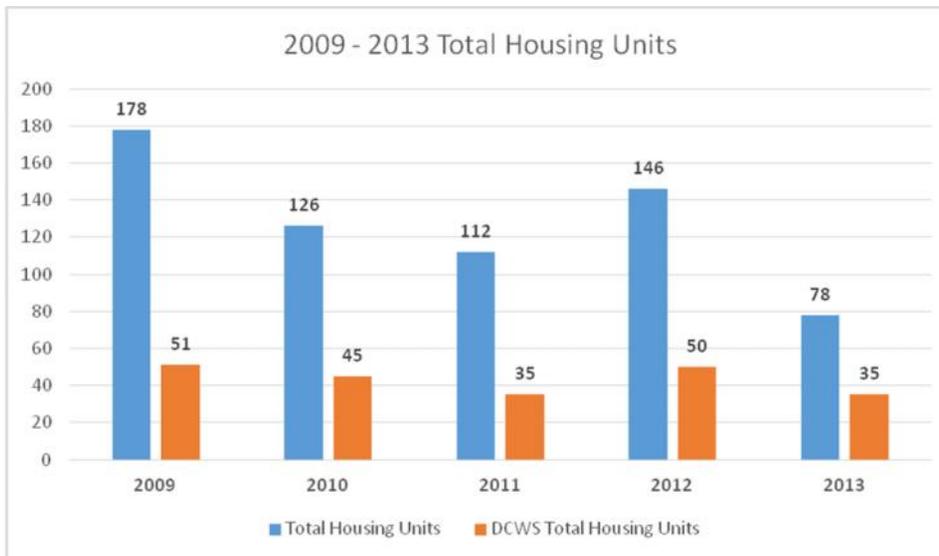
- Source: 2013 Annual Report
  - First done in 2010
  - On-line
  - Contains summaries of permitting and subdivision activities in the county
- Shows a decline in permit activity
  - 2007 294 permits countywide & 103 in the Deep Creek watershed
- Result of market decline and recession

How do we plan for projected growth?

- We don't just look at historical trends of population, land use, building and subdivision activity, and employment trends

- We also look at development capacity analysis (also called a "build-out analysis" or "buildable lot inventory")
  - MDP uses their growth simulation model to estimate the total amount of residential development that may be built in an area under a certain set of assumptions, including:
    - Land use laws (zoning & subdivision & impact of state legislation)
    - Environmental constraints (floodplains, steep slopes, etc)
  - Though more scientific on its surface it's important to remember that there are some natural constraints that cannot be accounted for in a model:
    - percolation tests – no public sewer system = no guarantee
    - Location, location, location – no guarantee those lots will sell
    - Cost to develop may outweigh the profit from the sale

MDP 2014 Development Capacity Analysis

- One of the most significant pieces of legislation to control growth in the state of Maryland has been the Sustainable Growth & Agricultural Preservation Act of 2012

  - Four Land Use Categories created to identify where major residential subdivisions may be located & what type of sewerage system will serve them.

    - **Tier I** – currently served by public sewerage systems
    - **Tier II** – planned to be served by public sewerage systems (Garrett County has no such areas until the Water & Sewer Master Plan is approved). Major subdivisions in this area must connect to the public sewer system.
    - **Tier III** – not planned to be served by public sewerage systems. Growth on septic systems can occur. Planning Commission must review and approve all proposed new major subdivisions via public hearing. Specifically the Commission will have to review them with respect to environmental impacts & adequate public facilities.
    - **Tier IV** – planned for preservation and conservation or dominated by agriculture or forest. Major residential subdivisions (more than 7 lots) are prohibited.

- The effect of this legislation, according to MDP's model, was to decrease potential growth by 56% in all areas of the county outside of priority funding areas

Garrett County Commissioners
Official Tier Map - Deep Creek Lake
Adopted December 4, 2012

Legend
- Deep Creek Lake
- DCL_TaxMaps
- DCL_Tier1
- DCL_Tier2A
- DCL_Tier3
- DCL_Tier4

Note: Garrett County has no Tier 2 areas to submit at this time.

0 0.375 0.75   1.5   2.25   3
Miles

What does this mean for Deep Creek?

• Do not assume that potential growth will decrease 56% because of the amount of unknown factors

• Safe assumption? Even if the market turns around the rate of growth that was seen in the last decade will not return due to this legislation

• All green areas on this map are no longer allowed to have major residential subdivisions

• All blue areas are allowed to have major subdivisions but only through a public hearing process and with environmental impact and adequate public facilities analysis

Land Use Summary

- In the past we have experienced a lot of growth but currently we are not seeing much

- In the future the most growth will be limited to those areas that have public sewer. Those areas are where a majority of our planning efforts need to be centered.
  - However there is a catch 22 – those areas planned for sewer are planned because of a need – areas of known failing or potentially failing septic systems

- There are positives and negatives to growth and good planning finds ways to enhance the positives while mitigating the negatives

- Looking ahead the county will be starting the process to review the Comprehensive Plan in FY2016. It is a public process, requiring the active participation of interested citizens. We welcome your input.