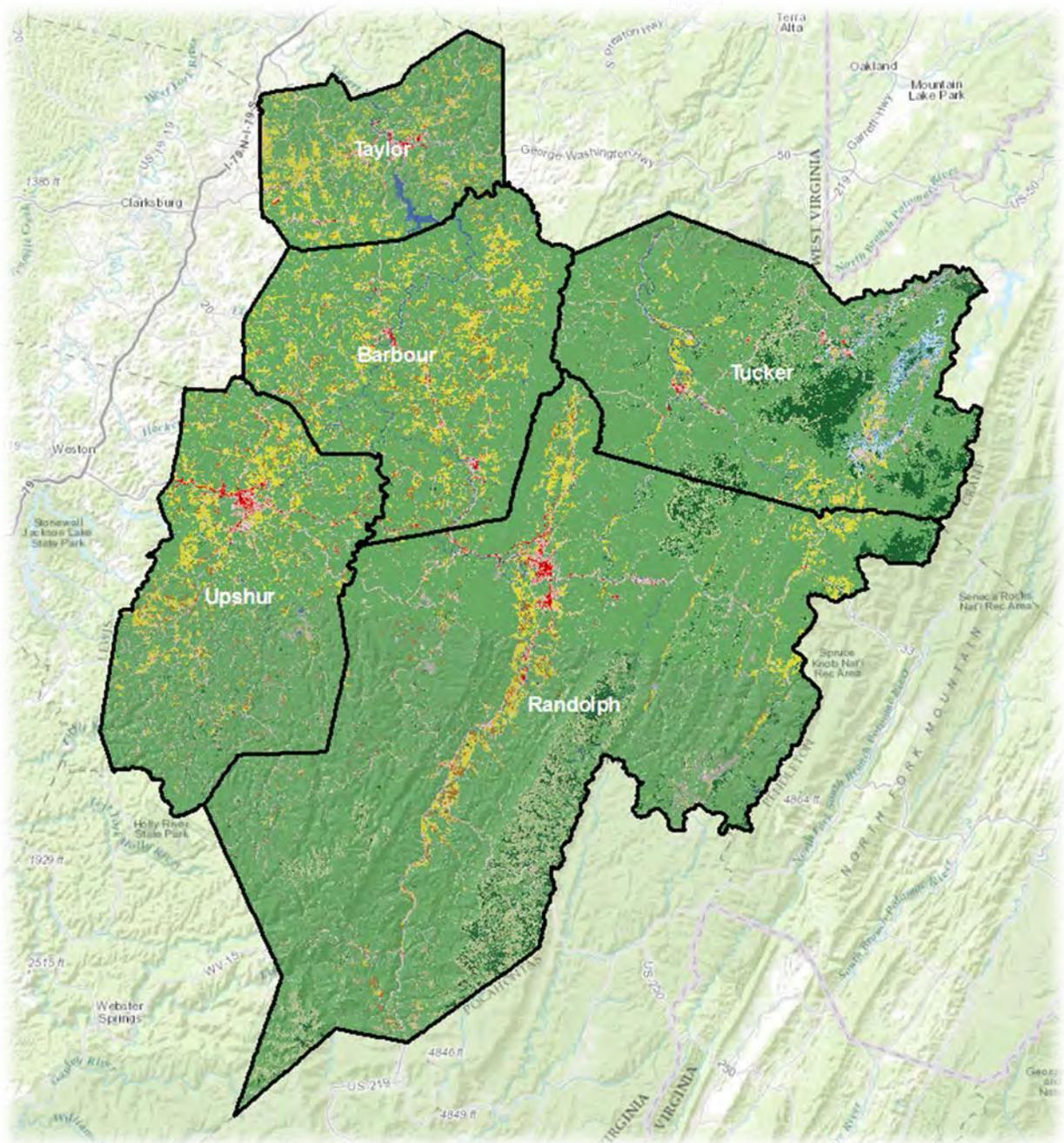


# Long Range Plan – Tygarts Valley Conservation District 2016 - 2021



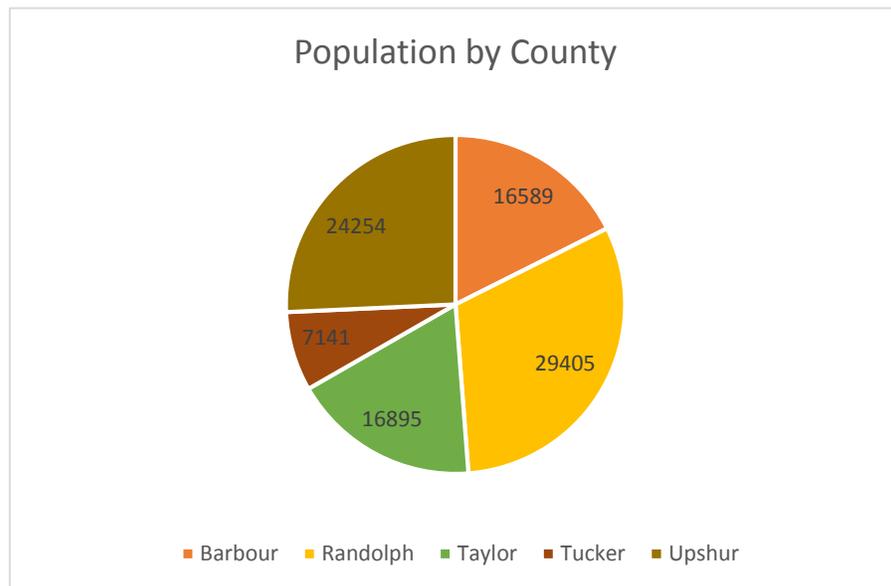
# 1. Introduction

## A. General Information –

The Tygarts Valley Conservation District is made up of five counties: Barbour, Randolph, Taylor, Tucker, and Upshur.

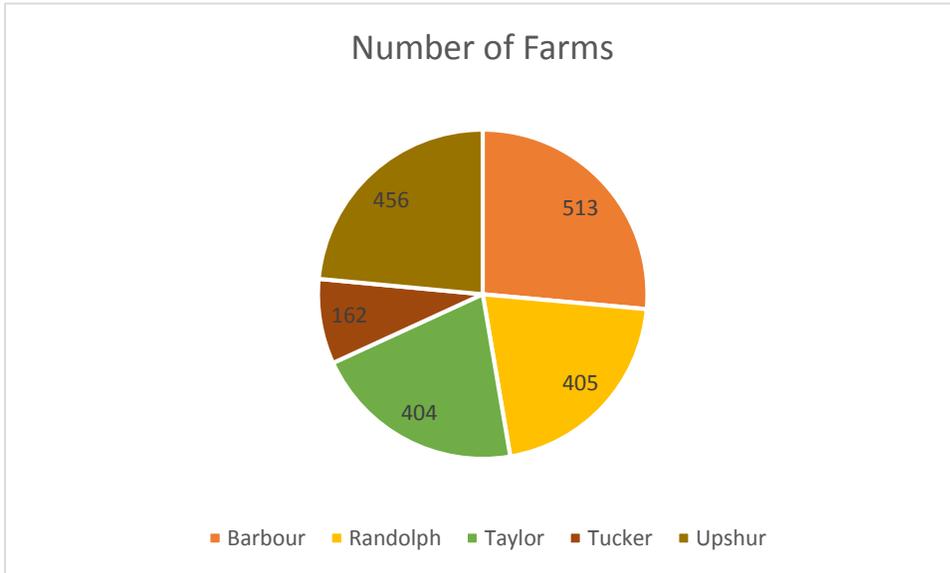
Population and economic characteristics in the Tygarts Valley Conservation District (Barbour, Randolph, Taylor, Tucker, and Upshur Counties) were derived from several references including the US Census and USDA National Agriculture Statistics Service.

Population: In 2014, there were approximately 94,922 people residing within the district. Randolph County has the largest population compared to Barbour, Taylor, Tucker, and Upshur Counties. District wide, there was a population increase of 0.2% since the 2010 Census.



Income: The average per capita income for the District in 2013 was \$20,038 while median household income is estimated at \$38,856. An estimated 19% of the district population are below the poverty rate. A comparison of Tygarts Valley income statistics compared to statewide averages indicate lower values for the District. Statewide, per capita income is \$23,237, median household income is \$41,576 and the poverty rate is 18.3%.

There are approximately 1,940 farms in the District. The farms span over 330,421 acres with the average farm size around 170 acres. The number of farms per county are fairly evenly distributed across the

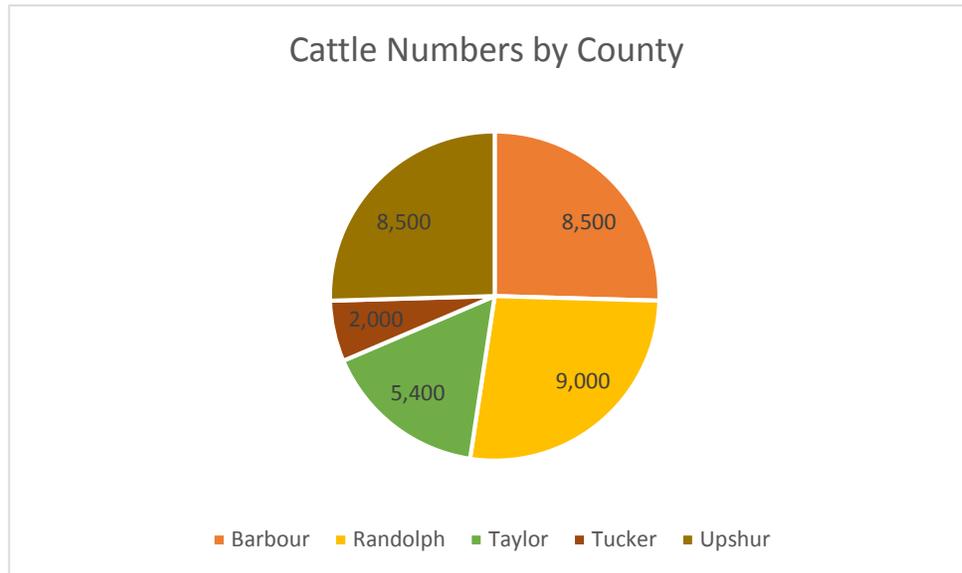


counties in the district.

The Tygarts Valley District contains about 9% of the total farmland in West Virginia.

Like most of WV, the majority of farmers in the District rely on off-farm income.

Cattle are the largest agricultural sector in the District with the majority of farms producing cattle for the beef industry.



Other Demographic Information:

1. Population % of WV – 5
2. Forest Acres:
  - a. Barbour County – 156,252
  - b. Randolph County – 565,464
  - c. Taylor County – 62,712
  - d. Tucker County – 212,010
  - e. Upshur County – 163,347
  - f. Total forest acres for district: 1,159,785

**B. Soils Information**

The Tygarts Valley Conservation District is located within two major land resource areas. Western portions of Taylor, Upshur and Barbour Counties are part of the Central Allegheny Plateau (MLRA 126). The eastern parts of these counties, and all of Randolph and Tucker Counties, are part of the Eastern Allegheny Plateau and Mountains (MLRA 127). While some soils may be mapped in both MLRAs, others may be restricted to one MLRA or the other.

The soils of the district's MLRA 126 area developed from relatively level bedded shale, siltstone, sandstone, and some limestone. Common soils in this area are the Gilpin, Westmoreland, Upshur, Culleoka, Ernest, and Clarksburg soils. Many times these soils were mapped as complexes and associations due to the bedrock complexity. Slopes range from 3 to 70 percent. Both Gilpin and Culleoka soils are moderately deep with loamy, medium textured subsoils. Westmoreland soils are deep with loamy, medium textured subsoils. Culleoka, Westmoreland, and Clarksburg soils tend to make better pasture and hayland due to forming in lime-influenced materials. Upshur soils are deep, with red, fine textured subsoils. Upshur soils have limited suitability to many uses due to their high clay content, erodibility, and high shrink-swell potential. Clarksburg and Ernest soils are very deep, moderately well drained soils with medium textured subsoils. These soils are found in foot slope positions, and are limited by a seasonal high water table due to a fragipan layer at around 24 inches deep.

The majority of cropland in this MLRA is located on bottomlands, terraces, and gently sloping foot slopes, with the Lindside, Monongahela (Monongahela Silt Loam is the WV State Soil), Clarksburg, and Ernest soils making up the most acreage. Slopes generally range from 0-15%. The bottomlands are generally loamy in texture, with low to moderate amounts of clay in the subsoil, and are very deep to bedrock. Occasional flooding can occur in most of these areas. Most areas are moderately well drained, but some bottomlands may have areas of somewhat poorly drained or poorly drained soils in areas away from the main stream channel. The nonflooding Monongahela, Clarksburg, and Ernest soils on terraces and footslopes are very deep moderately well drained soils with medium textured subsoils. All three soils are limited by a seasonal high water table due to a fragipan layer at around 24 inches deep.

The eastern area of the district, covering the eastern portions of Barbour, Taylor, and Upshur counties, and all of Randolph and Tucker Counties, is in MLRA 127. Soils in this area developed from tilted shale, siltstone, sandstone, and some limestone. Common soils are the Gilpin, Buchanan, Dekalb, Berks, and Calvin soils on ridges and mountains, and Cateache (Calvin, high base), Belmont and Meckesville soils on lower footslopes, valley floors, and some mountainous uplands. The MLRA 127 topography is quite rugged, with narrow ridges and steep and very steep side slopes. Sandstone rock outcrops and surface stones and boulders are common. Much of this MLRA is primarily used for timber production. However, areas developed from limestone or high base red shales remain cleared, and are still used for pasture. The Gilpin, Berks, Dekalb, Calvin, and Cateache soils are moderately deep, well drained, and contain low to medium amounts of clay in the subsoil. Berks, Dekalb, and Calvin soils have appreciable amounts of rock fragments in the soil profile, which may result in droughtiness during the summer months. Buchanan and Meckesville soils are very deep moderately well drained or well drained soils with medium textured subsoils. These two soils are limited by a seasonal high water table due to a fragipan layer at around 24 to 30 inches deep. Belmont soils are deep well drained soils, moderate to moderately high amounts of clay in the subsoil. They are highly fertile, but may be restrictive due to areas of limestone outcrop. Some areas may have sink holes, which will present water quality concerns.

The majority of cropland in this MLRA is located on bottomlands, terraces, and gently sloping foot slopes along the Tygarts Valley River and some areas on the lower Cheat River, with the Ernest, Monongahela, Philo, and Pope soils making up the most acreage. Slopes generally range from 0-15%. The bottomlands are generally loamy in texture, with low to moderate amounts of clay in the subsoil, and are very deep to bedrock. Occasional flooding can occur in most of these areas. Most areas are moderately well drained or well drained, but some bottomlands may have areas of somewhat poorly drained or poorly drained soils in areas away from the main stream channel. The nonflooding Monongahela and Ernest soils on terraces and footslopes are very deep moderately well drained soils with medium textured subsoils. These two soils are limited by a seasonal high water table due to a fragipan layer at around 24 inches deep.

Strip mine soils are common in parts of the district, both in reclaimed and unreclaimed phases. The Janelew and Fairpoint soils in MLRA 126 consist of a mixture of soil, rock, and coal fragments. Often soil pH and fertility levels are high on these strip mined soils, but forage production is somewhat limited due to soil characteristics. Reclaimed areas in MLRA 126 are suitable for both pasture and hay production. However, they may suffer from drought during the summer months mainly due to lack of topsoil, low organic matter content, and low available water capacity. In MLRA 127, common strip mine soils are the Cedar creek and Bethesda soils. These soils are restricted by high acidity levels, as well as droughtiness and low organic matter content. These soils are difficult to manage for grasslands, and are best used for tree production.

**C. Most Common/Most Important Agricultural Enterprises**

1. Beef Cattle – Cow/Calf
2. Beef Cattle – Stockers/Growing Animals
3. Timber/Forestry/Wildlife
4. Hay/Forage
5. Vegetable Production – high tunnels
6. Apiary/Bees/Honey Production
7. Sheep
8. Goats

**D. Most Common/Most Important Conservation Work/Historical Practices**

1. Fencing – Division and Exclusion (streams, ponds, woodland)
2. Water developments – Spring developments, pipelines, watering facilities (troughs)
3. Brush Management – Invasive species in pastures and woodland (Multiflora Rose, Autumn Olive, Tree of Heaven, Japanese Stiltgrass, Japanese Knotweed, Tartarian Honeysuckle, etc. )

USDA Plants Database – WV List of Noxious Weeds:

<http://plants.usda.gov/java/noxious?rptType=State&statefips=54>

WV DNR Invasive Plants List:

<http://www.wvdnr.gov/Wildlife/Handout%20Invasive%20Plants%20of%20WV%202009.pdf>

4. Stream Crossings (for livestock and agricultural traffic)
5. Heavy Use Area Protections (gravel and concrete)
6. Waste Storage Facilities
7. Frost Seeding/Re-seeding
8. High Tunnels
9. Nutrient Management – Lime/Fertilizer/Manure application

## **E. Established Partnerships**

1. Natural Resources Conservation Service, Tygarts Valley Conservation District, Farm Service Agency, West Virginia Conservation Agency, West Virginia University Extension Service, West Virginia Department of Agriculture, West Virginia Division of Forestry, United States Forest Service, United States Fish & Wildlife Service, Trout Unlimited, Tygart Valley Growers Association, The Nature Conservancy, WV Association of Conservation Districts, WV Department of Natural Resources, WV Department of Environmental Protection, WV Beekeepers Association, National Wild Turkey Federation, Landowners/Cooperators.

## **2. Evaluation of Resource Concerns**

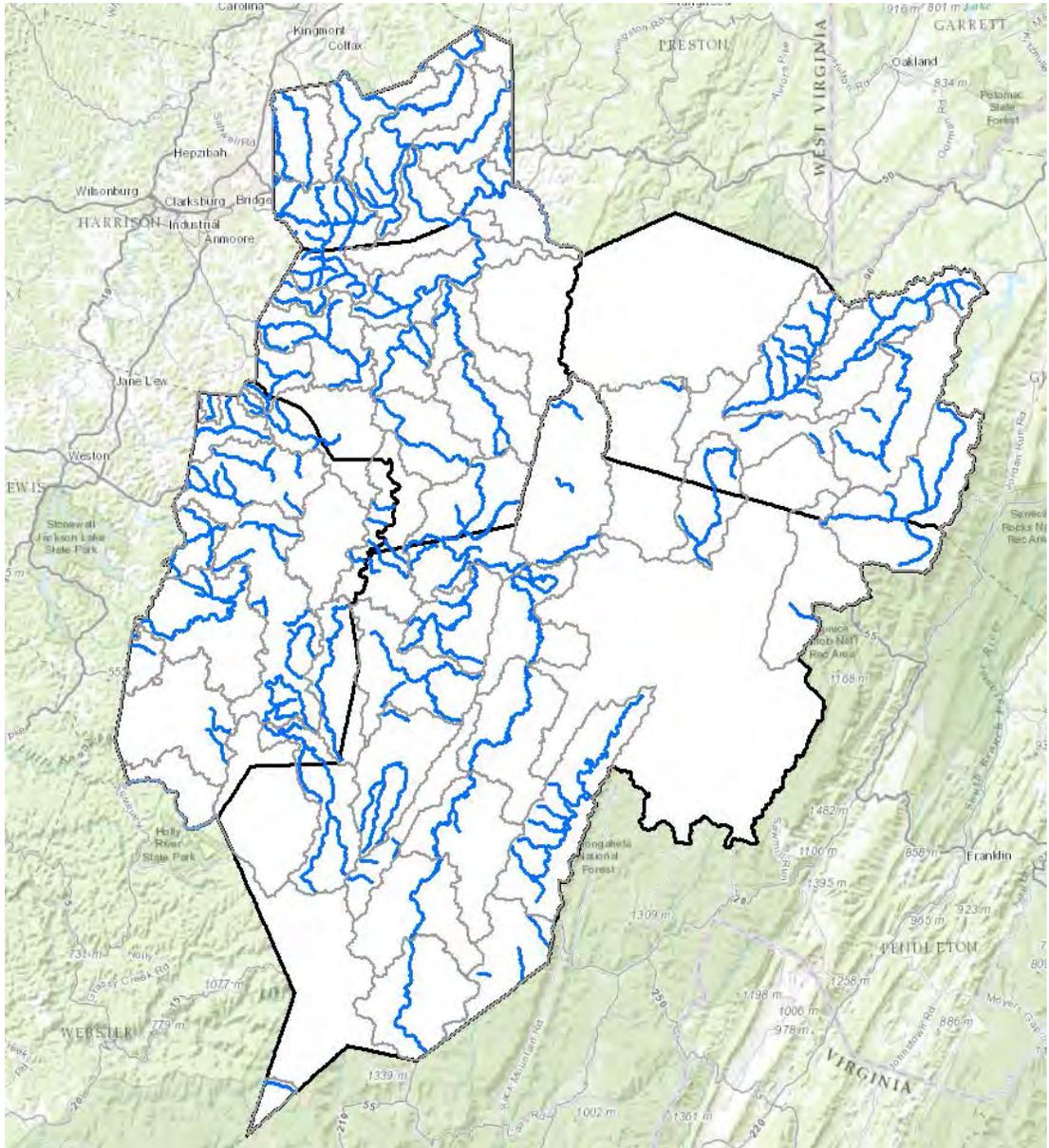
### **A. What are the greatest concerns and why?**

- 1) Water Quality Degradation – Excessive Nutrients and Organics in Surface Water: There are various concerns with livestock feeding/watering sites with accumulations of manure. Some of these sites are in low lying areas near small streams and rivers in the fall and winter months. Topography often limits access to upland areas during the winter months and as a result, winter feeding is often in areas with close proximity to surface water. Application of organic and inorganic nutrients in close proximity to streams may also be contributors to these concerns, especially on fields which have high erosion rates due to lack of adequate vegetation and ground cover. Also, lack of adequate livestock water sources results in water quality degradation as livestock drink water from streams and ponds.

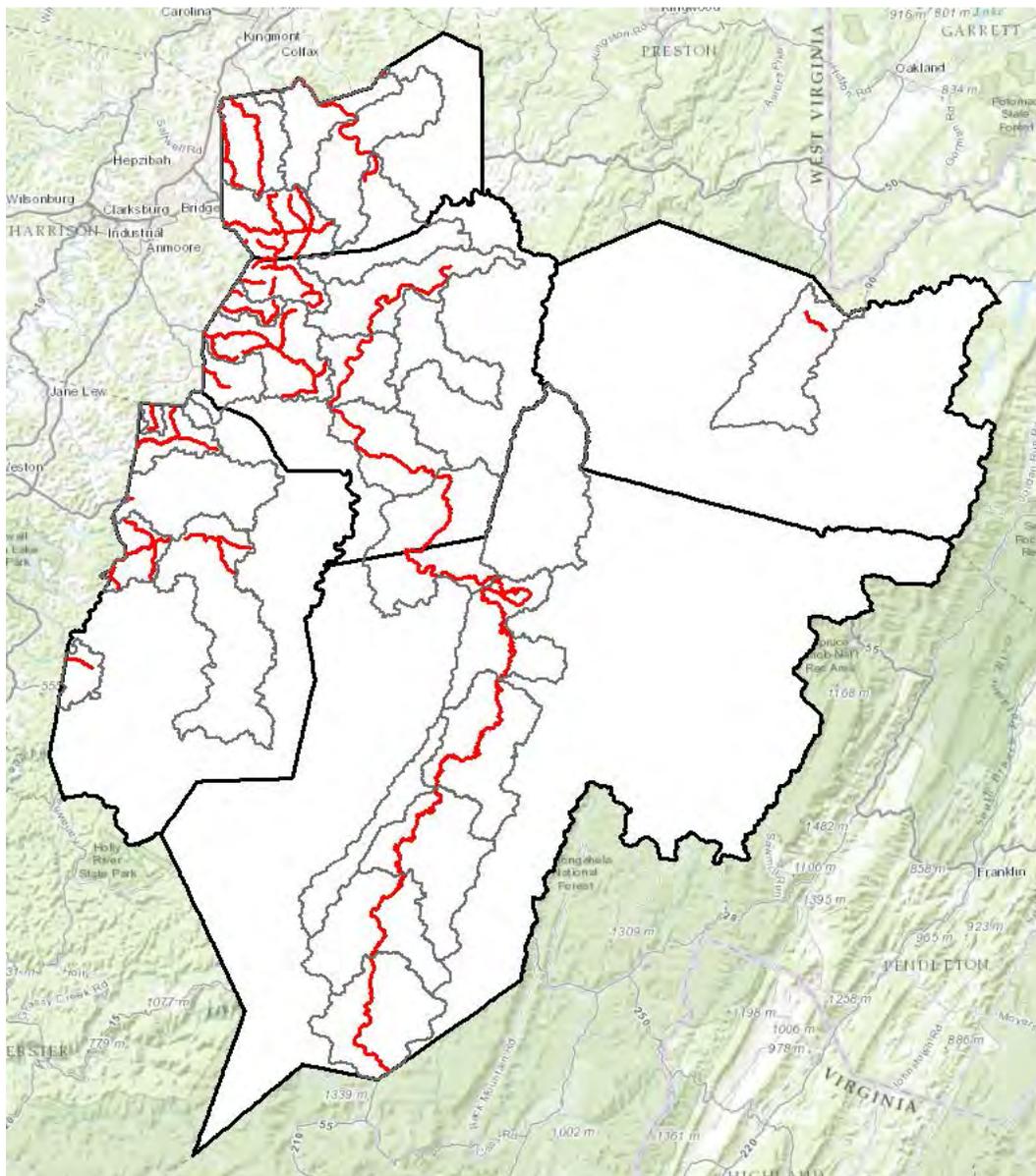
Water quality degradation is a problem all across the conservation district, with the highest concentration in the Tygart Valley River drainage area of Randolph, Barbour, and Taylor Counties. As shown on the following pages/maps, the WV Department of Environmental Protection (DEP) has determined impairment of streams throughout the state which are designated on the states 303d list of impaired streams. This list also notes the reasoning for impairment of each stream which includes pH, iron, fecal coliform, biological, aluminum, selenium, PCBs, dioxins, manganese, and CNA-algae. Of these impairments, fecal coliform is the impairment most attributed to agriculture. Referencing the map that shows the 303d list for fecal coliform impairment on streams, the map confirms the most streams/largest area for this is in the Tygart Valley River drainage in Randolph, Barbour, and Taylor Counties.

Fecal coliform concentrations could be measured periodically to determine if conservation practices are having a positive impact to reduce the fecal coliform concentrations of the streams. A limiting factor to determining effectiveness of conservation on agricultural land would be the unknown factor on the extent of contributions by all sources. However, a reduction, though maybe small, should be found if conservation is observed on a majority of the agricultural lands within a watershed.

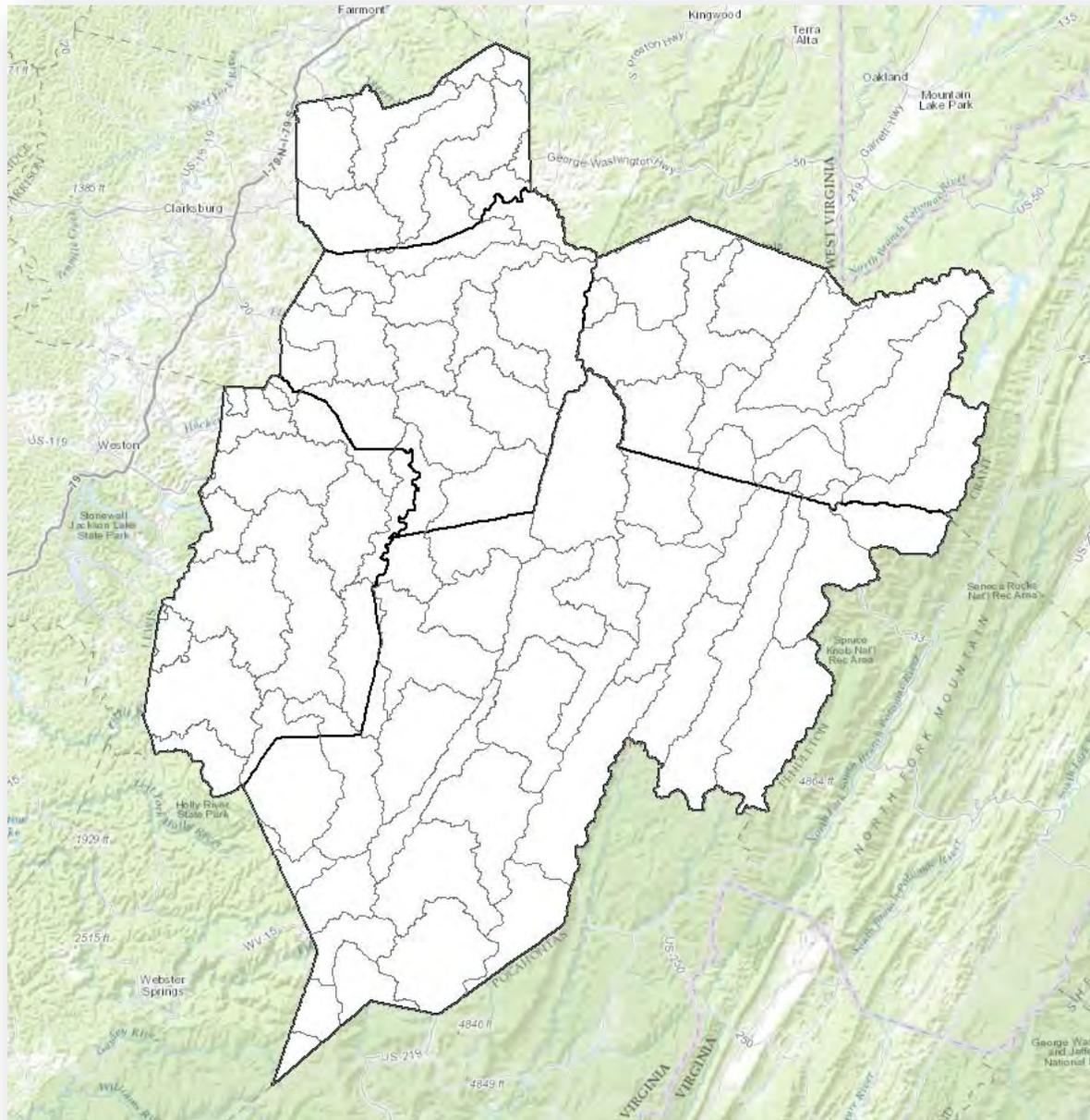
**WV 303d Stream List: Section 303(d) of the federal Clean Water Act requires a list of impaired streams in the state.**



**Fecal Coliform Streams and watersheds:**



## Watersheds:



- 2) Degraded Plant Condition – Excessive Plant Pest Pressure, along with Undesireable Plant Productivity and Health: Noxious and invasive plants are present throughout the conservation district on pastureland and forest. An abundance of Multiflora Rose and Autumn Olive are in pastures; Tree-of-heaven, Japanese Knotweed, Japanese Stiltgrass, Garlic Mustard, Multiflora Rose, and Autumn Olive are prevalent in forests throughout the district. These concerns are due to many factors including low fertility, overstocking of grazing lands, and lack of proper management on pastures and forestland. Many of the pasture and forest lands in this district are located on very steep topography which cannot be managed and treated adequately with normal farm machinery and techniques. Overgrazed lands and soils with low fertility often do not contain adequate amounts of desirable plant species for the intended use causing undesirable species, including invasive species, to flourish in these areas due to the lack of competition which reduces the quality and availability of desired species. Invasive species also are easily established and flourish in forest lands after timber harvests occur, due to the canopy being opened up and an existing seed source from the invasives being present to begin with.

The problems associated with degraded plant condition also play a major role in other resource concerns, including soil erosion. Soil erosion is a result of poor plant/forage health, and when adequate grazing plans are not in place on livestock operations, overgrazing occurs, good ground cover is lacking, and pasture forages do not grow well enough to keep the soil from eroding. And with the presence of noxious and invasive species on both pasture and forest land, these invasive species take the place of desirable forages on pastures, as well as trees and other vegetation in the forests. When this happens, especially on steeper slopes, erosion rates are much higher.

Plant condition is generally evaluated by NRCS staff using the Pasture Condition Scoring tool which identifies areas of grasslands with plant condition limitations. It is also evaluated on forest land with the help of our Forestry partners. Soil test results are also used to identify fertility deficiencies for the intended production and can be used to identify limitations to plant condition. Conservation planner observation is also used to determine the existence and extent of invasive species. Although the tools used to define degraded plant condition are site specific, the concepts of the tools could be used to evaluate the concern on a broader spectrum.

Control of noxious and invasive species on pasture and forest lands can be achieved by implementing brush management practices with related long-term maintenance. Chemical, mechanical, and a combination of these methods of brush management may be used to help solve/treat this concern.

As noted in an inventory of the forest land acres of the Tygarts Valley Conservation District, there are over 1.1 million acres of forest land within the district, and noxious and invasive species are occurring on these lands throughout all five counties.

Improvement of the undesirable plant productivity and health can be achieved through better pasture management with the help of implementing prescribed grazing, nutrient management, fencing, water developments, and forage and biomass seedings on pasture. In forest land, it can be improved through timber harvest management, tree plantings, and brush management.

**Autumn Olive:**



**Multiflora Rose:**



**Japanese Knotweed:**



**Japanese Stilt Grass:**



**Tree of Heaven:**



**Garlic Mustard:**



- 3) Plant Condition – Plants not adapted or suited: Healthy pollinator habitat is not abundant due to a lack of desirable species of flowering plants. This can be found throughout the Tygarts Valley Conservation District on most pasture fields and haylands. The condition most often manifests in pastures as undesirable grass species occur in places of higher quality grasses and legumes. It is also the result of a lack of adequate rotational grazing management. Good pollinator habitat requires blooming vegetation/plants throughout the entire growing season. Even though it takes special planning and implementation of conservation practices to make this happen, pollinator habitat can be improved on pastures and haylands with the implementation of nutrient management and the seeding of beneficial blooming legumes through the Forage and Biomass Planting practice.

- 4) Fish and Wildlife – Inadequate Cover/Shelter: Early successional habitat is lacking, which is required for a number of different wildlife species, such as turkey, grouse, various song birds, etc. Early successional habitat is very critical to good wildlife habitat. Much of our forest land is older/mature timber, and it does help when timber harvests occur to open up the forest canopy and allow new growth to occur, thus resulting in early successional habitat, but these harvests occur with timber sales in-mind, and the establishment of early successional habitat is often the unintended result. When this happens, the habitat occurs sporadically, but with good planner involvement with our forestry partners, early successional habitat can be developed through small clear cuts, cut-back borders, and tree/shrub plantings. When this happens, better wildlife habitat for deer, turkey, grouse, song birds, golden-winged warblers, and other wildlife species will occur.
- 5) Domestic Animals – Inadequate Stock Water: Livestock operations do not have adequate water sources available for livestock to drink from and sufficiently distribute grazing on the pastures. Many livestock herds drink from streams and existing ponds that are not fenced out, and when water sources are not developed and placed adequately, livestock concentrate close to the water that they do have. Topography is the limiting factor with many pasture/grazing operations as water sources are not easily developed, nor are existing water sources always present. Good clean drinking water can be developed through implementation of spring developments, ponds, and wells, in combination with livestock pipelines and watering facilities/troughs.

Lack of adequate livestock water can be found throughout the five counties of the Tygarts Valley Conservation District on pastures and grazed haylands. This can be evaluated through conservation planner observations, when watering facilities are not located within 800 feet of each other on grazing fields.

## **6) Evaluation of Program Suitability**

- A. EQIP can address all of the listed resource concerns, and in different ways. Forage and Biomass Seedings, Heavy Use Area Protection, Access Control/Fencing, Nutrient Management, Prescribed Grazing, Brush Management, Conservation Cover, etc. can all help address agricultural land concerns: water quality – excess nutrients in surface water; degraded plant condition – excessive plant pressure, plant productivity and health, and plants not adapted or suited; soil erosion – sheet and rill. Early Successional Habitat Management/Cut-back Field Borders and Patch Clear Cuts, Forest Stand Improvement, and Tree and Shrub Establishment are some of the conservation practices available that can help treat/solve resource concerns associated with forest land: water quality – excess nutrients in surface water; degraded plant condition – excessive plant pressure, plant productivity and health, and plants not adapted or suited; soil erosion – sheet and rill.

## **7) Local Work Group Input Summarized**

- A. In summary, the Tygarts Valley Conservation District is comprised of small livestock farms, mainly beef cattle, and many acres of forest land. Numerous environmental issues/resource concerns are present, and while all are important, water quality and soil, water, and plant health are all priorities of the local work group. The group would like to address all of these concerns in some way, and with specific project proposals, the forests and farms within the Tygarts Valley Conservation District will see great conservation benefits that will help treat the resource concerns.