The state forest system of Pennsylvania, approximately 2.2 million acres of forest land, comprise 13 percent of the forested area in the commonwealth. The Bureau of Forestry is the steward of this land, and part of the bureau’s mission is to manage state forests under sound ecosystem management, to retain their wild character and maintain biological diversity while providing pure water, opportunities for low-density recreation, habitats for forest plants and animals, sustained yields of quality timber, and environmentally sound utilization of mineral resources. In 2016, the bureau revised its State Forest Resource Management Plan (SFRMP), which is the primary instrument that the bureau uses to plan, coordinate, and communicate its management of the state forest system. The SFRMP sets forth broad policies, as well as more focused goals and objectives about state forest resources and values, to ensure that the overarching goal of state forest management – ensuring sustainability – is achieved.

State forest management is a coordinated effort involving central office program areas and field staff in 20 forest districts located throughout Pennsylvania. Each district is responsible for managing wildland fire, destructive insects, and disease on all lands throughout the district – public and private. The district staff promote wild plant conservation and private forest land conservation and stewardship. The staff also provide for the protection, administration, and management of state forest lands within the district.

This Clear Creek State Forest Resource Management Plan provides an overview of the district and its operations on state forest land and sets forth a framework for future management of Clear Creek State Forest. The planning horizon for this District SFRMP is approximately 5-10 years, after which time it will be revised to reflect changing conditions and priorities.

The bureau also creates District Activity Plans that describe the management activities the bureau will take within each district that may affect the public’s use of state forest land. These are implementation plans that address how goals and objectives in the SFRMP and District SFRMPs are being achieved. The District Activity Plans are written at the start of each calendar year and revised mid-way through the year. They are posted on District webpages so that the public may review and comment upon them.

This Clear Creek SFRMP is comprised of a District Overview, a listing of District Priority Goals, and a collection of landscape management unit (LMU) plans, which are described further below.
District Overview

1) Location and Description

![Map of Clear Creek Forest District with state forest land.](image)

**Figure 1-1.** Location of Clear Creek Forest District with state forest land (dark green).

The Clear Creek State Forest is comprised of 16,526 acres. The name of this Forest District is derived from the crystal-clear stream that flows through the Clear Creek Landscape Management Unit (LMU).

The Resource Management Center is located in Clarion at 158 South 2nd Ave and the Clear Creek Maintenance Division is located just outside of Sigel on Rte. 949. The District covers seven and a half counties including Armstrong, Beaver, Butler, Clarion, Jefferson, Lawrence, Mercer, and part of Venango County with State Forest located in Clarion, Jefferson, Mercer, and Venango counties. A large portion of Clear Creek State Forest is located within the Pennsylvania Wilds Area.

The District interacts with many recreational user groups and includes two major hiking trail systems – The North Country Trail and the Baker Trail. The State Forest borders the Allegheny and Clarion Rivers which creates a multitude of recreational use on the State Forest. Interstate 79 and Interstate
provide convenient access to the State Forest in a short period of time from different population centers; including Pittsburgh and Youngstown. Much of the State Forest is near different tracts of State Game Lands, Clear Creek State Park, Cook Forest State Park, and the Allegheny National Forest.

Clear Creek State Forest is known for the high-quality oak and other species that grow very well on the different soil types throughout the District. Species diversity is prevalent due to the fertile river valleys and dry plateaus where the State Forest is located. The land and forest within the Clear Creek Forest District has been utilized for different resources and has been impacted by many different disturbances over the last two centuries. These include: iron ore (1850), large timber operations (mid 1800’s to 1900), oil extraction (late 1800’s to present), gas extraction (early 1900’s to present), large wildfires (early 1900’s), chestnut blight (early 1900’s), and vast areas of gypsy moth defoliation (1980’s-1990’s).

The Clear Creek Forest District covers approximately 2,917,120 acres with a population of 738,551 or 6% of the state’s population. Below is the breakdown by county.

### Table 1-1. Acres of Land and Population acquired from the United States Census Bureau

<table>
<thead>
<tr>
<th>County</th>
<th>Acres of Land</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armstrong</td>
<td>424,960</td>
<td>68,941</td>
</tr>
<tr>
<td>Beaver</td>
<td>284,160</td>
<td>170,539</td>
</tr>
<tr>
<td>Butler</td>
<td>508,800</td>
<td>183,862</td>
</tr>
<tr>
<td>Clarion</td>
<td>390,400</td>
<td>39,988</td>
</tr>
<tr>
<td>Jefferson</td>
<td>420,480</td>
<td>45,200</td>
</tr>
<tr>
<td>Lawrence</td>
<td>232,320</td>
<td>91,108</td>
</tr>
<tr>
<td>Mercer</td>
<td>437,120</td>
<td>112,913</td>
</tr>
<tr>
<td>½ of Venango</td>
<td>218,880</td>
<td>26,291</td>
</tr>
</tbody>
</table>

2) **District Organization**

The Clear Creek State Forest is one of the 20 state forest districts administered by the Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry. It comprises about .75% of the 2.2 million-acre state forest systems. Within the bureau, the administrative responsibility of the Clear Creek State Forest is delegated to the District Forester, whose office is located at 158 South Second Avenue, Clarion, PA 16214. The District Forester is responsible for executing all the sections of the State Forest Resource Management Plan and works with an Assistant District Forester and their staff to achieve the goals and objectives. There is one Maintenance Supervisor who reports to the Assistant District Forester and the Clear Creek Maintenance Division is located at 12622 Rt. 949, Sigel, PA 15860.
The following is an organizational chart of the Clear Creek Forest District staff:
3) Acquisition History

Prior to Europeans settling Pennsylvania, dense forests nearly covered the entire state, with the exception of a few natural meadows in the lowlands and scattered rocky areas in the highlands. These seemingly inexhaustible timber tracts provided the early settlers with raw materials to produce charcoal for the iron and steel industries, ties for railroads, fuel wood and chemical distillation wood, as well as lumber for homes, buildings, furniture, barrels and boxes. The settlers never envisioned that such forests could ever disappear. However, as Pennsylvania’s increasing population turned forest land into farms, and as expanding industries consumed more and more wood, the amount of standing timber grew smaller. Then, in the late 1800s, awareness began to grow that the forests were not inexhaustible. Large tracts of land once covered with virgin forests had been cut over and abandoned by the owners. Forest fires burned uncontrolled throughout much of the cut over area. Between 1860 (when Pennsylvania led the nation in lumber production) and 1900, (when it had to import lumber to fill its needs) various efforts were made to halt the depletion of the forests. The future wood supply and the restoration of once-forested areas greatly concerned conservation-minded citizens.

In 1887, the Pennsylvania General Assembly authorized the governor to appoint a committee to examine and consider the subject of forestry in Pennsylvania and report its findings at the next regular session of the legislature. In 1888 a Governor’s Commission was appointed to study the forest situation. Authorized by the legislature once again, the governor appointed a second commission in 1893. As a result of these studies, in 1895, Dr. J. T. Rothrock was appointed Commissioner of Forestry in the newly created Division of Forestry in the Pennsylvania Department of Agriculture.

In 1897 the legislature passed an act authorizing the purchase of unseated lands for forest reservations, thus marking the beginning of the Pennsylvania State Forest System. This act provided for the acquisition of not less than 40,000 acres in the headwaters of each of the main rivers of Pennsylvania, mainly the Delaware, Susquehanna, and Ohio, providing the land selected shall be of a character better suited to the growth of trees than to mining or agriculture, and that 50% of the area have an elevation of not less than 600 feet above sea level. In 1898, 7,500 acres of land in Clinton County became the first land purchased under this new act.

The Clear Creek State Forest was founded on September 1, 1920, with the district office in Clarion where it has remained. The office occupied two small rooms in the present Crooks building at the corner of Main and Sixth Avenue. In 1948, the office was moved into a two-story frame house at 401 Wood Street. This same year the state was divided into four regions. The western region comprised the Clarion, Warren, Johnstown, Uniontown and Ligonier Districts. Regional offices occupied the first floor and the district office occupied the second floor of the Wood Street Building. Secretary Samuel Lewis abolished the regions in 1953. The following
year, the office was moved to 58 S. 7th Avenue, and in October 1965, it was moved to the present location formerly occupied by the Western Pennsylvania Artificial Breeders Association.

The Clear Creek State Forest lands are located in four counties. The 16,526-acre holdings include 9,800-acres in northern Jefferson, 1,016-acres in southeastern forest, 2,481 acres in Clarion, and 3,184-acres in southern Venango County.

R. Y. Stuart, Deputy Commissioner, suggested the name Kittanning after an American Indian settlement along the Allegheny River. Since the city of Kittanning lies more than 40 air miles southeast of the forest, the name is somewhat misleading. Most local residents are familiar with the two largest tracts in Jefferson County, which comprise the earliest purchases. They have referred to the area for years as the "Clear Creek State Forest," after a stream flowing through one of these holdings. Because of this, on July 2, 1980, all of the publicly-owned forest lands in the Kittanning District were officially given that name. At that time, the tract in Venango County had not yet come under Bureau of Forestry administration.

The first section of the forest purchased was the 3,200-acre Frazier tract, bought for $6,880 in January 1919. Most of compartments 6, 7, and 8 came from this purchase.

The next acquisition was the 2,481-acres purchased from Reuben Baughman in 1920. All of compartment 2 and all of compartment 3 lying in Polk Township came from this purchase.

Two tracts totaling 673-acres were purchased from M. M. Fisher et. al. in 1928. One tract makes up the southernmost section of compartment 6. The other is now part of compartment 7.

All of compartment 4 and 5 were obtained through the 2,419-acres purchased from J. M. Buzard in 1928. A small part of this purchase lying just south of the Spring Creek Road is now part of compartment 3. In 1929, two small tracts were added. One hundred six acres were purchased from Wallace and Hughes and another 133-acres from John M. Wallace. The latter piece lies in compartment 8 along Pine Run.

Three hundred sixty-three acres were purchased from the Susquehanna Chemical Co. in 1949. This tract lies in compartment 7 and includes the area commonly called the Corbett fields.

The 1,012-acre tract in Forest County that makes up compartment 1 was purchased in 1952 from Walter S. Haskell, et. al.

About 1963, 998-acres of the Clear Creek State Forest were set aside for the establishment of Clear Creek State Park. Sometime after 1964, the area was expanded when the Bureau of Parks purchased 210 acres of land from H. W. Miller. The Bureau of Forestry was responsible for the operation of the Park until about 1965.
In 1970, an interior holding of 105-acres was purchased from Howard Gaydosh. It is now part of compartments 3 and 4.

A 433-acre tract originally obtained in 1949 from the Cook Forest Association was transferred from the Bureau of State Parks to the Bureau of Forestry in 1971. This tract is now compartment 9.

The Lewis Painter exchange, completed on April 10, 1980, added two acres to the southeastern corner of compartment 8.

On July 18, 1980, an area of 3,184-acres, which was originally proposed for a state park, was also transferred to the Bureau of Forestry from the Bureau of State Parks. Purchase of the 22 parcels making up this tract was done by DER through direct settlements with the landowners, and took place from October 28, 1970, to November 7, 1973. The total cost to the Commonwealth was $392,275. This tract comprises compartments 10 and 11.

The previous owners are:

W. L. Harris
Harold A. Workman
Wm. J. Thompson
Charles E. Myers
The 863 Laurel Fields acquisition in August 2006 consisted of two separate parcels in Heath and Polk townships, Jefferson County. The first parcel is 722 acres that shares two miles of contiguous boundary with existing State Forest lands in Compartment 2. The second parcel is a 141-acre in-holding known locally as the “Laurel Fields” because of the large native mountain laurel plants growing in an abandoned field in the southern end of the property. The Department provided The Conservation Fund $1,232,838.00 from the Growing Greener II Bond to purchase the land from the Headwaters Investments Group managed by Forest Investments Associates. Additional funding for the purchase was provided by the King Mellon Foundation. The Conservation Fund then transferred the property to the Bureau of Forestry.

In February 2008 the Clarion River Tract acquisition of 1,600 acres of land and an additional 1,700 acres of Timber Rights was purchased from the Lyme Timber Company through the Western Pennsylvania Conservancy. The funding for the purchase was provided again by GGII and the King Mellon Foundation.

On 24 June, 2010 a land exchange with the Pennsylvania Game Commission was finalized that transferred 4,753 acres of Game Land 283 along the Clarion River for 4,248 acres of State Park land at Pymatuning State Park. The exchange consolidated the previous Lyme Timber Company Tracts. An agreement between State Parks and the Bureau of Forestry designated management responsibility of the Clarion River Corridor lands below the 1400-foot contour to Cook Forest State Park with the above lands to the Clear Creek State Forest.
4) Historical Land Use and Disturbance

Early Timbering:

According to Kate M. Scott’s "History of Jefferson County, Pa." published in 1888, the first sawmill in Heath Township was built in 1833. Another source puts the first Polk Township mill as 1844. The early mills were generally located on streams and cut white pine and hemlock nearly exclusively. Most of the timbers were then made into rafts and floated down the Clarion River to Pittsburgh. Records show that at least three logging railroads existed on what is now the Clear Creek State Forest.

In the spring of 1864, the firm of Wright and Pier began hauling logs by rail. The line ran from a point in southeastern Heath Township to the firm’s sawmill at the mouth of Callen Run on the Clarion River, a distance of four miles. This railroad is reported to be the first one in Pennsylvania built specifically for hauling timber and lumber using a steam locomotive. It was Mr. Wright’s idea to use a locomotive in place of horses, and he employed "Brush" Baxter, one of the foremost millwrights of that time, along with Silas Miller of Brookville to help him design and build the locomotive. Apparently, none of the men had any knowledge of steam power.

A small portable boiler and engine of about eight horsepower was purchased in Pittsburgh, shipped to the mouth of Red Bank Creek, and from there it was hauled on a wagon to its destination, a distance of almost 60 miles. Construction must have been makeshift and rather crude. According to Mr. Baxter’s description, "When completed, it is safe to say, it was the queerest looking locomotive the world had ever seen."

The railroad was built of cribbing and stringers having wooden rails. It is interesting to note that the rails were bored and pinned to the stringers with wooden pins. The locomotive was built to run in one direction, and traveling in reverse, could push only one car to the work site because of the steepness of the grades. On the run to the mill, which was made much of the way by gravity, braking was done solely from the rear end of the log car.

David Stiles from Brookville performed the various tasks of locomotive engineer, brakeman, and log loader by himself. To make matters even more difficult, the run to the mill was made at night without the aid of any kind of light!

Between 1864 and 1866, the Frazier Railroad was built. Following Clear Creek in the western part of Heath Township, it covered a distance of two and one-half miles, ending at the steam sawmill of S & W Burns in Barnett Township, Jefferson County. It is not known what type of rail was used or whether or not a locomotive did the hauling. Horse trams were then in common use.

The Brookville Railway began operating on January 1, 1897, mainly between the band mill of Heidrick, Matson, and Co. in Brookville, to a location named "Hays Lot" in southern Heath Township, a distance of 13.1-miles. Records on the exact location are not clear, but the main line to the Hays tract probably passed close to what is now the boundary separating compartments 2 and 3. A section of logging spur
track appears to have followed the headwaters of Clear Run, and if so, part of this line would have been located in the northwestern corner of compartment 2.

The Brookville sawmill closed in July of 1905, but the Brookville Railway remained in place for several years under the control of the Pennsylvania Railroad.

Charles Lucas states that by 1905 cutting of the virgin forest from present state forest land was nearly finished. It is believed that a mill was still operating on the M. M. Fisher tract near the headwaters of Trap Run about 1913.

The second growth forests that followed the lumbering operations contained many more hardwoods than the original stands. Red, white, black, chestnut and scarlet oaks, chestnut, and smaller amounts of red maple, cherry, birch, beech and tulip poplar made up most of the new growth.

Mr. Lucas recalls a large fire that burned several thousand acres and killed one person about 1905. He believes that most of the present state forest burned over at that time. The fire apparently started near the present Sigel Hotel in the morning and spread north and east jumping the Clarion River near Heath Pump Station in the afternoon and spreading nearly to Lolita before it was extinguished by rain. Butt rot and old fire scars found in many stands today could probably be traced to this blaze, which undoubtedly contributed to the present-day lack of sizeable white pine, hemlock, and red maple on any but the wetter and otherwise protected sites in the forest.

Scattered groups of pitch pine and aspen now found in the forest may owe their existence to this fire.

As the timber business was dying in Jefferson County, a new industry appeared. On October 22, 1895, the first oil strike in Jefferson County was made on the Lathrop property on Callen Run in Heath Township. Much of the Lathrop tract is now state forest, being part of the purchase made in 1928 from Buzard. Drilling for oil and gas has continued to the present time in the area. Various oil and gas companies own the majority of the rights to these resources under the present Clear Creek State Forest.

This industry has left the forest dotted with well site clearings and traversed with an extensive network of "lease" roads and cleared pipelines. Some damage to trees near wells and along rod lines has resulted and consideration of unburied pipelines has to be made in laying out timber sales.

**Insect and Disease**

Chestnut blight appeared in the area about 1912. By 1918, most of the chestnut was dead, although some large trees were reported present as late as 1924. Much of the dead chestnut was utilized for signposts and firewood in Clear Creek State Park. Some posts are still occasionally sold by permit although most of the useable material is now gone. White and chestnut oak apparently replaced the chestnut in most of the stands.
The Clear Creek State Forest has mostly escaped the insect outbreaks that have plagued other state forests over the years. The pit making oak scale has killed some trees in compartment 6 and oak leaf rollers caused a light defoliation in 1970. The gypsy moth, a major threat to Pennsylvania’s forests in recent years, began to be noticed on public land in Jefferson County during the summer of 1980. Within three years, the infestation had reached levels high enough to justify a spray program. In May 1984, 6,450-acres of the Clear Creek State Forest were sprayed, involving compartments 2 through 8.

Six hundred thirty-five acres are proposed for 1985, covering all of compartment 9, and a part of compartment 6 near the Beartown Rocks vista, which was missed the previous year.

Based on present trends, this pest is expected to continue its westward and southern movement through the state, and could pose a serious problem for the district’s publicly owned forests.

White-tailed Deer

The deer herd, statewide, and in the Clear Creek Forest District began its buildup in 1915 after the original virgin timber had been harvested and burned and the cutover areas were developing into hardwood stands. Prior to the lumbering in this area, deer were relatively scarce. Severe winters and heavy winter mortality in the late 1970’s reduced the deer herd temporarily, but populations rebounded and remained too high for the landscape through to the early 2000’s. However, since the early 2000’s, deer numbers have dropped back to somewhat manageable levels and there has been an observed reduction in deer browse on desirable tree seedlings on the Clear Creek State Forest.

The historic over-browsing of tree seedlings by deer has been a major problem in the Clear Creek State Forest. Heavy browsing before and after regeneration timber harvests delays the establishment of the new hardwood stands. Over browsing caused many areas to become open areas of grass and ferns. The survival of tree reproduction on regeneration cuts is related to the number of deer per unit area. The heavy browsing in regeneration cuts reduces both the height and density of commercial reproduction. Browsing adds years to the rotation period, and the longer the delay in regenerating a stand the greater the risk of further reduction in the density of stems and diversity of species. Quality of the reproduction is also affected. Repeated browsing on the commercial tree growth has resulted in multiple sprouting from the root collar and the browsing non-preferred species like beech, birch, and striped maple has encouraged these species to occupy the area formerly occupied by more valuable cherries and oaks. These impacts play heavily on the health, compositions and stocking of forest stands for decades to come, and have led to the whole sale loss of native herbaceous and shrub communities throughout much of the forest, as well as the seed source for these populations to become re-established naturally.

The Clear Creek Forest District has approximately 50 deer fence enclosures to keep deer out of recent timber sale areas to temporarily protect young desirable tree seedlings from deer browse until they get out of the reach from deer.
Storms

Storms have also had their influence on the forest. Old records describe a sleet storm breaking down a large number of trees in the state forest in March of 1936. This timber was not salvaged until 1939 when it was sold "on a selective cutting basis for chemical wood and small dimension stock." No record of the exact location of this storm damage or the volume of timber salvaged has been found. However, it is known that a sawmill was operating along the McNeil Station Road in compartment 3 about 1939, and old planting records show 35-acres of red pine and Japanese larch having been planted in the storm damaged area at the junction of Spring Creek and the Brookville-Munderf Road in 1937. In this latter area, the conifers have been suppressed, and the stand is now essentially a two-story one with an over story of red oak saw timber and an under story of oak and red maple poles.

Timber on about 45-acres was wind thrown near Burkett Road and PA 949 in November 1965. This timber was later salvaged.

In August 1970, a windstorm damaged approximately 250-acres of compartment 3. One hundred twenty-five acres of this area was clear-cut. On the remainder, the damaged timber was removed as part of an improvement cut.

More damage was done again by wind in September 1984, when several areas in compartment 3 were hit. In all but one of these, the damage was slight. The worst, a shelter wood timber sale area on which cutting had been completed just a month earlier, saw 114 crop trees uprooted over most of its 63-acres.

Wildfire

By 1905, nearly all the virgin forest had been cut from the present State Forest Land and most of the area was burned over. The fire apparently started near the present Sigel Hotel and spread north and east, jumping the Clarion River near Heath Pump Station and spreading nearly to Lolita before it was extinguished by rain.

Probably the first job in managing the Clear Creek State Forest was providing adequate fire protection. Late in 1921, the forest’s first fire tower, which overlooks all the forest except compartment 1, was built in the southern part of Heath Township, Jefferson County. Named Seneca after an Indian tribe, it was later renamed Hays Lot, the local name of the state forest land over which it commanded an excellent view. Because of faulty footers, the tower was blown over on March 9, 1942, but was repaired.

Seven years later, Strattanville Tower was built by popular subscription. Local contributions totaled
$100. An acre of ground was purchased from the Eureka Mining Co., thus becoming the first acre of state forest land in Clarion County. The tower was named after the village of its location, about three miles east of Clarion.

Cook Forest Tower was erected in August of 1929. The structure was part of a development plan after the purchase of Cook Forest State Park by an act of legislation. Site selection was difficult since there was no ideal high spot and big timber blocked the view in certain areas. Unlike the others, this tower’s primary purpose was sightseeing. In December of 1973, the tower was turned over to the Bureau of State Parks.

Norris Hill near Reynoldsville was the site of the next fire tower added to the Forest’s growing organization. Owners of a local estate deeded an acre of land for this purpose. Local industries, a sportsman’s club, a utility, and other citizen donated money to pay for the construction costs. The tower was named H. B. Elliott in honor of a former member of the Pennsylvania Forestry Commission and resident of Reynoldsville. It was dedicated on August 18, 1932.

Purchased through federal ECW funds in 1935, Kahle Tower was not erected until the summer of 1937. A five-acre tract of land was secured at the junction of Clarion, Venango, Butler, and Armstrong Counties. The tower was named after Senator I. Dana Kahle who helped in securing the site and material. In 1939, the name was changed to St. Petersburg Tower to conform to accepted usage.

Today, Hays Lot Tower is the only one remaining and is used every year. St. Petersburg Tower was removed in 1983 and Elliott Tower in 1984. Smoke detection is done district-wide by the combined use of the fire tower and aircraft reconnaissance.

**Tree Planting and Facilities Construction**

Some tree planting was done as early as 1926. However, extensive tree planting and road building was not started until a CCC camp was established in what is now Clear Creek State Park in 1933.

Other work done by the 150 men there included the construction of vacation cabins, a swimming pool, bath house, springs, trails, and the cabin now used as the superintendent’s residence. Some improvement cutting was also done.

Although considerable tree planting was done by the CCC, many of these plantations were failures, some because they were under planted and never released, and some, according to the records, because of drought or deer damage. The camp was in operation until 1937.

In the early 1950’s, 32-acres were planted in the Corbett fields, and during the following decade, 545-acres of white pine in compartment 1 by welfare workers. Of the latter, only 137-acres have survived.

The last large-scale plantings took place in 1970 and 1980 when the 123-acre clear-cut (wind damaged in 1970) in compartment 3 was interplanted with white pine to boost its unsatisfactory stocking level and the compartment’s evergreen cover component for wildlife.
5) Physiography and Geology

The Clear Creek State forest is located near the southern edge of the High Plateau Section of the Appalachian Plateau Province in Northwestern Pennsylvania. The area is characterized by rounded to flat uplands with deep angular valleys and dendritic drainage patterns. The underlying rock strata are composed of sandstone, siltstone, shale, and conglomerate rock. There are coal deposits in this area of Pennsylvania, but there is no known coal deposit located on the State Forest.

A main attraction to Clear Creek State Forest is Beartown Rocks. Beartown Rocks is a rock city with a view. Large blocks of rock, separated by narrow to wide “streets,” occupy a wooded knoll on the state forest land. The rocks are erosion resistant, mostly light-olive gray, coarse-grained sandstone of the Pennsylvanian-age Pottsville Formation, approximately 320 million years old. The rocks have shifted and tilted after detaching from the bedrock during the last glacial period (although glaciers did not reach Jefferson County). Some of the blocks have become widely separated, probably first from jointing, then frost or ice wedging, and then from downslope sliding under near-glacial conditions. The sandstone is thin to medium bedded, and some sandstone layers display prominent crossbedding. Other layers show a distinct honeycomb weathering pattern. The site is less than a mile north of the Kellersburg anticlinal axis, which is oriented approximately N50°E. The viewing platform is at an elevation of about 1,884 feet. Additionally, in fall of 2018, another rock city, Pine Run Rocks, will be accessible to the public via the Pine Run Loop Trail.

A large number of gas and oil wells have been drilled on the State Forest in all compartments. The wells in the northeastern part of the District range in depth from 1,700 feet to 3,100 feet deep and are extracting oil and gas from various Upper Devonian sandstones. The wells in the Allegheny River Tract located in Venango County are accessing the Upper Devonian Venango sandstones and range in depth from 400 feet to 1,100 feet deep.

Most of the oil has been extracted from these reserves leaving only a few active oil wells. There are approximately 100 active gas wells on State Forest lands in the District. There are many more wells that have been plugged or are no longer productive.

The Callen Run area in northeastern Jefferson County contains 3,200 acres of potential gas storage fields.

With the exception of Compartment 9, where the Commonwealth has 1/8 ownership of seven active wells, the oil and gas rights on all other State Forest Lands in the District are privately owned. The hard minerals are also owned privately, on most of the State Forest.
6) Eco-regions

Following is a detailed description developed by the Bureau of Topographic and Geologic Survey of the Eco-regions (Physiographic Sections) contained in the Clear Creek State Forest. This information is located on the Bureau of Topographic and Geologic Survey’s website, indicated by the links below.

**High Plateau Eco-Region:**

The High Plateau Section consists of broad, rounded to flat uplands cut by deep angular valleys. Flat-lying sandstones and conglomerates underlie the uplands. Local relief between valley bottoms and adjacent uplands can be as much as 1,000 feet, but is generally in the area of half that amount. Elevations in the Section range from 1,080 to 2,500 feet. Drainage of the area has a dendritic pattern. The western boundary of the Section is the Late Wisconsinan glacial border. Pre-Wisconsinan glaciers glaciated the area between this border and the Allegheny River a few miles to the east. Trees of the Allegheny National Forest cover a large part of the Section. There are a number of Federal Recreation Areas within the forest, mainly associated with Allegheny Reservoir.

The Section occurs in northwestern Pennsylvania and includes all of Forest County, most of Venango, Warren, McKean, and Elk Counties, and small parts of Potter, Jefferson, and Clarion Counties.

**The Pittsburgh low Plateau Eco-Region:**

The Pittsburgh Low Plateau Section consists of a smooth undulating upland surface cut by numerous, narrow, relatively shallow valleys. The uplands are developed on rocks containing the bulk of the significant bituminous coal in Pennsylvania. The landscape reflects this by the presence of some operating surface mines, many old stripping areas, and many reclaimed stripping areas. The local relief on the uplands is generally less than 200 feet. Local relief between valley bottoms and upland surfaces may be as much as 600 feet. Valley sides are usually moderately steep except in the upper reaches of streams where the side slopes are fairly gentle. Elevations range from 660 to 1,700 feet. Some of the land surface in the southwestern part of the Section is very susceptible to landslides.

The Section covers much of western and southwestern Pennsylvania. It includes all of Greene, Washington, and Armstrong Counties, most of Beaver, Butler, Clarion, Jefferson, Clearfield, Westmoreland, and Indiana Counties, and parts of Lawrence, Venango, Elk, Cambria, and Fayette Counties.
Figure 6-1. Eco-regions of Pennsylvania with state forest districts overlaid.

7) Conservation Landscapes

Throughout Pennsylvania, seven large regions are working together to drive strategic investment and actions around sustainability, conservation, community revitalization, and recreational projects. Known as conservation landscapes (Figure 7-1), these collaborations are found in regions where there are strong natural assets, local readiness and buy-in, and state-level investment and support. Founded on the regions’ sense of place and resource values, conservation landscapes motivate citizens and elected...
officials to take on the challenge of effective land use planning, investment, civic engagement, and revitalization.

**Figure 7-1:** The seven Conservation Landscapes in Pennsylvania. The Pennsylvania Wilds is situated in the northcentral part of the state.

Driven by the values of conservation, sustainability, and community revitalization, DCNR’s Conservation Landscapes are built on several ingredients:

- **Presence of DCNR-owned lands** -- Large blocks of state parks and forests provide the foundation for the landscape and a staffing presence

- **Sense of place** -- Regions with a sense of place and identity in many cases are based on shared landscape not political boundaries

- **Readiness** -- Often driven by opportunity or threats such as changes in the economic base, depopulation, or sprawl
• Engagement -- Civic engagement process that brings people of the region together to identify common values and concerns

• Strategic investments -- State agencies with regional and statewide partners provide high-level leadership, financial support, and technical assistance to build better communities, to conserve identified values and to invest in “sustainable” economic development

There are currently seven conservation landscape partnerships within Pennsylvania, and the Clear Creek State Forest is within the Pennsylvania Wilds Conservation Landscape. There are 12 counties in the PA Wilds, and Clear Creek State Forest is situated on the western side of the PA Wilds.

The Pennsylvania Wilds heralds the significant outdoor experiences and rural community character found in a 12-county region in northcentral and northwestern Pennsylvania. The Pennsylvania Wilds Conservation Landscape offers:

• Tremendous outdoor adventures
• Abundant wildlife
• Hundreds of miles of land and water trails
• Rich lumber and oil history
• Charming small towns
• “Authentic” experiences

For more than a decade, the partners in the area have worked to:

• Ensure stewardship of the public lands and character of the region’s communities
• Support and grow private businesses such as accommodations, services, and locally-made products
• Promote the renewal of the region’s communities and appropriate community planning
• Invest in public infrastructure to enhance the visitor experience

More information about the PA Wilds Conservation Landscape can be found here: http://pawilds.com/. The Pennsylvania Wilds has been guided by a group of 40 organizations representing federal, state, and county government; tourism and cultural interests; education, economic development and the private sector.
The Clear Creek Forest District covers such a vast area and differing topography that all different types of land cover can be found within the District. Deciduous forests make up the large majority of the District but the flora and fauna are unique due to the Allegheny and Clarion rivers flowing through the District.

If you travel from east to west, you will see vast tracts of forested land, reverting strip mines, swamps and farmland with small wooded areas that were not ideal for agriculture. Within that range you will also notice the urban/suburban areas increase; as you get closer to Pittsburgh and Youngstown.
The Clear Creek Forest District is almost evenly split between forest and non-forest. The counties of Venango, Northern Mercer, Jefferson, and Clarion have a large amount of forested land. Beaver, Butler, and Lawrence have a mix of farmland, forested land, and suburban developed areas due to their proximity to Pittsburgh. Armstrong has a mix between agriculture and forest land.
Most of the forest land in the district is owned by private non-commercial landowners but there are large tracts of forestland which are open to the public that include state parks, state game lands, Allegheny National Forest, Army Corps of Engineers, commercial timber companies, and the Clear Creek State Forest.

**Figure 8-3.** Public lands within entire district.
Figure 8-4. Gross forest loss and forest gain 2011-2016 (based on US Forest Service FIA plot data: https://www.fia.fs.fed.us/) by land-use categories for (a) the entire state; and (b) within Clear Creek Forest District. The colors in forest gain represent the type of land cover from which the forestland came (e.g. agricultural could be an old farm field that gained enough tree cover in that period to now be classified as forest). Similarly, colors in forest loss represent the categories TO WHICH forestland was converted (e.g. agricultural could be a forest that was cut and converted to pasture).

The forest land gain and loss within the District, is similar to the statewide trend. The District is gaining forestland due to strip mine reclamation and reverting agriculture land while losing forest land to development. There is a high importance placed on conserving forest land due to the loss of forest land progressing faster than the gain, within the District.
9) **Population Centers**

![Map of public lands, population centers, and land use types (aggregated from National Land Cover Database).](image)

**Figure 9-1.** Map of public lands, population centers, and land use types (aggregated from National Land Cover Database).

The majority of the population within the District is located in the western half; while the majority of state forest land is located in the eastern half. The population percentage by county within the District is as follows:

- Beaver – 25%
- Butler – 23%
- Mercer – 15%
- Lawrence – 12%
- Armstrong – 9%
- Jefferson – 6%
Clarion – 5%
Venango – 4%

10) Forest/Plant Community Types

Figure 10-1. Acreage of state forest land in this district by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

Red oak and mixed oaks including white, chestnut, scarlet, and black make up the majority of the forest types of the Clear Creek State Forest. Even though the oaks make up the majority of the composition, there is still a large amount of acreage that consists of red maple, eastern hemlock, black cherry, sugar maple, white ash, white pine, and American beech as well as other species.

The District is rich in species diversity due to the quality of the soils, flood plains, ravines, and river corridors.
11) Oil, Gas, and Mineral Rights – Ownership and Development

Figure 11-1. Acres of subsurface ownership/status on state forest land within the district. Acreage figures are derived from bureau GIS data, not acreages specified in lease or subsurface agreements. Severed Gas Rights Acres include only severed rights lands where the subsurface ownership has been verified. Partially severed areas that have been leased are counted as DCNR Issued Lease Acres, as opposed to Severed Gas Rights Acres.

A large number of gas and oil wells have been drilled on the state forest in all compartments. The wells in the northeastern part of the District range in depth from 1,700 feet to 3,100 feet deep and are extracting oil and gas from various Upper Devonian sandstones. The wells on the Allegheny River Tract located in Venango County are accessing the Upper Devonian Venango sandstones and range in depth from 400 feet to 1,100 feet deep.

Most of the oil has been extracted from these reserves leaving only a few active oil wells. There are approximately 100 active gas wells on State Forest lands in the District. There are many more wells that have been plugsed or are no longer productive.

The Callen Run area in northeastern Jefferson County contains 3,200 acres of potential gas storage fields.

There are four active stone pits on the State Forest. Two sandstone pits are located in Jefferson County and two sandstone pits are located in Venango County. Three of the pits have been used for logging road construction and maintenance on State Forest Lands. National Fuel Gas Supply Corp. owns the
mineral rights to the other pit and occasionally uses the stone for road maintenance. The mineral rights to the Stone pits in Venango County are owned by Charles Meyers.

With the exception of Compartment 9, where the Commonwealth has 1/8 ownership of seven active wells, the oil and gas rights on all other State Forest Lands in the District are privately owned. The hard minerals are also owned privately, on most of the State Forest.

There is potential for future natural gas extraction on the Clear Creek State forest from deep Ordovician-age formations and for the activation of the Gas storage field at Callen Run as the demand for natural gas increases.

Currently Seneca has one Marcellus Well on the state forest that is drilled but not in production. At this time, we do not know what the future will bring for the development of this resource.

12) Water

a) Major Watersheds

![Map of major (Hydrologic Unit Code 4) and minor (Hydrologic Unit Code 8) watersheds within entire district.](image)

**Figure 12-1.** Map of major (Hydrologic Unit Code 4) and minor (Hydrologic Unit Code 8) watersheds within entire district.
The Clear Creek State Forest lies primarily within the Ohio Basin. No municipalities are dependent on the Clear Creek State Forest for their water supply at present, and future use is doubtful because of the remote location of the Forest. However, the Forest makes up much of the watershed for Clear Creek, which flows through a Clear Creek State Park. An impoundment on this creek is presently being used as a swimming area in the park.

Water rights along Callen Run for 1,000 feet upstream from the State Forest boundary line crossing the Callen Run Road are deeded to the United Natural Gas Co., now the National Fuel Gas Supply Corp. This company has a small impoundment on Callen Run within the State Forest and uses the water in the operation of their Heath Pump Station.

A small portion of southern Jefferson County falls within the Susquehanna Watershed; which flows into the Chesapeake Bay. The rest of the District falls within the Upper Ohio and Allegheny Watersheds; which ultimately flow into the Ohio River Basin. Two major rivers flow through the District that include the Allegheny and Clarion River. The Clarion is denoted as a wild and scenic river and the Allegheny was the “River of the Year” in 2017.

b) Fish and Boat Commission Stream Habitat Prioritization

![Figure 12-2](image)

**Figure 12-2.** Streams within the district prioritized for aquatic habitat improvement projects based on PFBC Stream Habitat Improvement Prioritization Tool.
No in-stream habitat improvement projects have been completed to date but the District is open to possible projects that can increase the habitat in these streams. The District is looking at options of an existing dam on Callen Run to allow trout movement while providing access for handicapped fishermen.

c) Acid Mine Drainage

Acid mine drainage (AMD) has contaminated many streams throughout the Clear Creek Forest District. The District works with the Department of Environmental Protection when these areas are identified to try and mitigate the issue.

d) River Islands

The District has 2 river islands that are located on the Allegheny River. The islands are not developed but they are open to explore and see the different flora and fauna that exist in that specific ecosystem.
13) Harvest Allocation

The bureau created a harvest allocation model that sets timber harvest schedules for state forest land in each district. The goals of the model are to promote and maintain desired landscape conditions, create a diversity of successional stages and native forest communities, balance the age class distribution, and provide a sustained yield of quality timber. The model uses the bureau’s forest inventory data, economic information, bureau policies, and desired ending target forest conditions to develop timber harvest schedules that best meet the bureau’s silvicultural and timber management goals. A detailed discussion of the harvest allocation model can be found in the 2016 SFRMP, beginning on page 93.

The bureau is presently in the second harvest allocation period of the model. The district’s timber harvest goals for the second period are shown in the table below.

**Table 13-1.** Target shelterwood (Shelt), overstory removal (OR), intermediate (Int), and buffer treatment acreages for the second decade of the timber harvest schedule, aggregated by forest type, site class, stocking level, and treatment. Additional shelterwood treatments for 3 or more stage shelterwoods are not represented in these targets.

<table>
<thead>
<tr>
<th>Aggregated Forest Community Type</th>
<th>Site 1 Fully-stocked</th>
<th>Site 1 Under-stocked</th>
<th>Site 2 Fully-stocked</th>
<th>Site 2 Under-stocked</th>
<th>Site 3 Fully-stocked</th>
<th>Site 3 Under-stocked</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shelt</td>
<td>OR</td>
<td>Shelt</td>
<td>OR</td>
<td>Shelt</td>
<td>OR</td>
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<tr>
<td>Northern Hardwoods</td>
<td>94</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Allegheny Hardwoods</td>
<td>33</td>
<td>125</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
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<td>Red Oak</td>
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<tr>
<td>Other Oaks</td>
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<td>6</td>
<td>0</td>
<td>89</td>
<td>232</td>
<td>0</td>
</tr>
<tr>
<td>Red Maple</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other Hardwoods</td>
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<td>0</td>
</tr>
<tr>
<td>Conifers</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>36</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
14) Economy and Timber Products Industry

The timber and wood manufacturing industry has an positive impact in the seven counties of our Forest District, but not as great as it used to be. The recession in 2008 was hard on the loggers, mills, and manufacturers. Some have survived, and some thrived, but others were not so fortunate.

In 2013 we conducted a Timber Products Output survey across the state. It was the first such survey we had done in many years. In 2013 we had a list of 39 mills in our Forest District. Twenty-three (59%) of these mills were willing to participate in the survey. In addition, there were numerous other, small mills in operation, mostly run by the Amish. Many of them did not wish to participate in our survey, so we did not get information from them. Based on the information we did get from the 23 mills, we can state the following, for the year 2012:

Table 14-1:

<table>
<thead>
<tr>
<th>County</th>
<th># Mills Reporting</th>
<th>Million Board Feet Harvested In 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jefferson</td>
<td>10</td>
<td>7.7</td>
</tr>
<tr>
<td>Clarion</td>
<td>9</td>
<td>7.4</td>
</tr>
<tr>
<td>Armstrong</td>
<td>1</td>
<td>5.2</td>
</tr>
<tr>
<td>Butler</td>
<td>5</td>
<td>4.9</td>
</tr>
<tr>
<td>Beaver</td>
<td>0</td>
<td>---</td>
</tr>
<tr>
<td>Lawrence</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Mercer</td>
<td>11</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Statewide, about 250 mills reported their total production for 2012. They reported that they sawed about 650 million board feet of lumber, and produced about 2.5 million tons of wood chips. They employed about 4400 people. Unfortunately, the survey results didn’t give a breakdown by Forest District, so we don’t know the total production for our seven-county area. Most of the timber statewide comes from the counties in the north-central part of the state, and most of the wood manufacturing facilities are in the south-eastern part of the state.

In the five years since the survey, some more mills have shut down. In addition, the market had shifted to a much larger percentage of exported logs, with most of them going to China. In the summer of 2018, that market slowed down because of the Trade War with China. We have no way of knowing where this trend will go, or how long it will last. Markets are always changing, and these changes continue to occur.
All in all, the revenues from timber sales are important to the woodland owners of our area, and the jobs are still an important part of our economy. However, the impact is not as large as it once was, and the future is uncertain.

We have an active timber sale program on our State Forest. Most of this land is in Jefferson County, with small parcels in Forest and Venango Counties. In total, we manage 16,526 acres. Since 2010, we have harvested a total of 10,495,000 board feet of timber from these lands. A significant percentage of this was high quality, high value red oak. The total value from executed contracts over the last eight years was $6,325,968.00.
15) Wildlife

Policy Statement

The state forests will be managed to ensure the conservation of a diversity of native wild forest animals and the provision of suitable habitats for these creatures.

History

The first comprehensive management plans for State Forest lands were developed in 1949. Most forest resources were adapted to fit in with timber management as time and money allowed. In the early 1960's it became apparent that there must be a formal plan for the protection, development and use of all forest resources.

Between 1965 and 1970, work was completed on Forest Resource Plans for the 1970-1984 management period. These plans established objectives for all forest resources and coordinated their use and development. For the first time, the plans specifically addressed wildlife and fisheries resources. Matters pertaining to wildlife and fisheries were considered under the Recreation Section of the Forest Resource Plan.

In the 1970-84 Plan, habitat guidelines were developed in cooperation with the Pennsylvania Game Commission to promote a diversified forest suitable for all wildlife. Fisheries guidelines were also developed with assistance from the Pennsylvania Fish Commission (now Pennsylvania Fish & Boat Commission) to address such topics as in-stream restoration and improvement and wilderness trout stream management. Also, the coordination of the wildlife and fishery resources was accomplished through the consideration and integration of these values into the management of the other forest resources.

The 1985-2000 State Forest Resource Plan acknowledged that animals and plants are distinct forest resources and should be managed as such. Thus, a new section of the Plan was developed, the Fauna and Flora Management Section.

The 1985-2000 plan recognized that the forest is a complex ecosystem composed of animal and plant communities integrated with the physical environment. Animals in this ecosystem range from large mammals such as the black bear and white-tailed deer to invertebrates such as native bees and other pollinators. Animals, plants and physical environment integrate to form a multitude of combinations all of which form the whole, the forest. The management of these organisms is predicated on both protection and use to meet man's needs and wants.

The current plans recognize wildlife as an integral part of the forest ecosystem that are highly valuable and that should be sustained. The Bureau of Forestry Conservation Science and Ecological Services Division now watches over our forest ecosystem, monitoring State Forest, as well as some private lands.
Hunting

Hunting is a recreational activity, but in many cases, it also plays a key role in sustainable forest management. Forests can only be sustainably managed if balanced populations of wildlife are maintained. This is particularly true for herbivores, such as deer. If left to multiply unchecked, deer will eat the entire next generation of understory plants in a given area. If generations of new seedlings are lost, the forest soon loses its ability to renew itself following disturbances.

Fishing

Clear Creek and Callen Run in northern Jefferson County and Maple Creek in southern Forest County are popular trout streams within the State Forest and are heavily fished. A number of area streams support native brook trout populations. Those within or near the State Forest in Jefferson County include Pine Run, Dice Run, Clear Run, Hetrick Run, and Mammy Hi Run. At the Kennerdell Tract, brook trout reproduce naturally in Dennison Run. It is not stocked, and gets moderate use by fishermen.

Birding/ Nature Observation

Bird watching and nature observation are uses that occur throughout the 2.1 million acres of state forest land. The best locations for these activities depend on the habitat requirements of the species involved. The Audubon Society has designated certain areas of state forest land with unique or unusual bird species as Important Bird Areas. These parts of the state forest have particularly large and unique habitats for some unusual bird species. Most state forest lands have diverse habitats and support great numbers of birds. More information on important bird areas can be found at www.audubon.org/bird/iba

State forest land with its many roads and trails and generally quiet environment is ideal for nature observation. A public use map of the roads and trails is available from each district to aid nature observers. Natural Areas and Wild Areas are managed with this objective in mind, but the entire state forest system is maintained in a largely natural system. Nature photographers and artists also find an abundance of natural settings on state forest land.

The local chapter of the Audubon Society, the Seneca Rocks chapter, did a bird survey at the Clear Creek State Forest in mid-May of 2005. They found 84 species of birds without ever leaving the roads.

Species of Special Concern

The National Resource Conservation Service (NRCS) has designated areas of the state as priority areas to do forestry practices on private lands to enhance habitat for certain Species of Special Concern. These include the Golden Winged Warbler and the Cerulean Warbler. Only a very small part of our
Forest District is included in these target areas, so the program has had little impact on private landowners in our 7-county area. These programs are due to expire soon, and it is not known if they will be funded again in the future.

The PA Game Commission currently has funding for their Hunter Access Program. In exchange for a 10-year commitment from private landowners to open their land for some public hunting, the PGC will pay 100% of the cost for certain pre-approved practices on privately owned woodlands. This is available state-wide, including in our seven-county area. It is not known how much longer they will have funding for this program, but it is a valuable option for woodland owners for as long as it continues.

**Deer Management**

Deer continue to be one of our biggest challenges to sustainable forest management in Pennsylvania. The goal is to balance the deer population with the available habitat. This is a very elusive, moving target, which varies from area to area, and changes over time, depending on many factors. It is hard to achieve this goal, and even harder to maintain it.

Historically high deer populations had decimated the understory of the woods across most of the state for decades. Realizing that something had to be done, the PA Game Commission introduced several measures in the early 2000’s to bring the deer herd into better balance with the habitat. These included concurrent buck/doe seasons for rifle season, increased anterless tag allocations for much of the state, and Deer Management Assistance Program (DMAP) tags for private landowners, including State Forest lands. DMAP tags are additional anterless tags that landowners can apply for based on acreage owned.

These tools were effective, and the forest did start to recover in health, with tree seedlings surviving to grow into saplings in some areas. With the deer population in better balance with the available food supply for the past decade, we have seen significant improvement in tree seedling survival in some areas, on both public and private lands in our Forest District.

However, in about 2013, the PGC responded to pressure from some hunters and elected officials, and started backtracking on their commitment to a reduced deer herd. The concurrent buck/doe season was restricted to only the second week of rifle season, greatly reducing its effectiveness. In addition, the doe tag allocations were reduced in most areas. We continued to get DMAP tags for the State Forest, but that one tool alone has not been adequate to maintain suitable numbers of deer. The population has rebounded to the same level as it was before 2003.

We do not yet know how much impact the increased population will have on the areas that did start to recover. However, the areas that were not able to grow seedlings into saplings during the time of lower deer density will certainly not be able to recover now that the numbers are back up. This is a great concern, especially on private woodlands. We can put deer exclosure fences around areas where we harvest timber on State Forest, but this is unrealistic for private woodland owners. The cost of building the fence is prohibitive, but the real challenge is to adequately maintain that fence for the 10 to 20 years required to successfully establish young trees that are safely above the reach of the deer.
Also, since private woodland owners practice some form of uneven-aged management, they want to harvest timber periodically, perhaps every 15 years or so. Realistically, this means they would have to permanently fence their property, maintaining the fence forever. This cannot and will not happen for numerous reasons. The only realistic option is to balance the deer population with the food supply so that tree seedlings are able to grow on their own.

Another issue directly related to deer impact is that of non-native invasive plants. These plants inherit a competitive advantage over native plants because of “preferential browsing” by deer. Simply put, the deer like to eat most native plants, including most tree seedlings, but they don’t like most non-native plants. Since these non-natives don’t get eaten as much, or not at all, they are allowed to grow and reproduce, while the native plants are kept in check by hungry deer.

We have seen a dramatic increase in the spread of invasive plants in the past decade. They make it difficult or impossible for tree seedlings to grow in many areas. This is especially true on privately owned woodlands. It is simply not possible, or desirable, to attempt to use herbicide on the millions of acres of woods that is being overrun by these undesirable plants. Common ones in our Forest District include multi-flora rose, Japanese stiltgrass, Oriental bittersweet, and Japanese barberry. There are other species here and there, but these are the ones with the most wide-ranging impact at this time.

The spread of invasive plants, and the loss of desirable tree seedlings to deer are a difficult challenge for us, but private woodland owners don’t have the expertise or resources available that we do on State Forest lands. The future health and sustainability of many privately-owned woodlands across our Forest District is in serious question at this time. If private woodland owners continue to cut trees without growing new ones to replace them, the day will come when they simply run out of trees. The once proud Penn’s Woods could be reduced to a giant multi-flora rose patch. The Bureau’s challenge going forward is to try to prevent this from happening.

In 2018, a new deer-related challenge arrived on our State Forest at Clear Creek. Chronic Wasting Disease had been spreading around the state for about five years. In 2017 a new Disease Management Area was formed near our State Forest, in Jefferson County, south of Interstate 80. Based on another disease-positive deer found near Brookville, the DMA was then expanded to include our State Forest in the summer of 2018. If history holds true, all the DMA’s, including this one, will continue to expand as more positive deer are found. This will certainly complicate deer management in many ways. We will monitor the situation very closely, and cooperate in whatever ways we can with the PGC and hunters to ensure that hunters continue to have a safe and enjoyable experience. We need hunters to assist us in our efforts to balance the deer population with the available food supply. We cannot afford to lose them, and will do what we reasonably can to encourage them to make the Clear Creek State Forest the destination for their hunt. We are also concerned with the potential impact CWD may have on the deer/habitat balance on private lands in our Forest District. There are many unknowns about this issue, and we will also monitor this very closely. We have already started having educational events for the public on CWD in September 2018, and will continue to do this in appropriate ways as new developments emerge.
16) Wildland Fire

a) Wildfire Suppression

The Clear Creek state Forest is divided in two divisions. The East (Clarion, Jefferson, Armstrong and ½ Venango counties) and the West (Beaver, Butler, Lawrence, Mercer counties). In each division, there is a Fire Forester who is responsible for their own division and wildfire operations within. Each division is equipped with a brush truck which meets the national Type 6 standard for fire engines. The fire foresters are responsible for prevention, suppression and investigation in their respective areas. The entire staff is trained with the basic training required by the Division of Forest Fire Protection and some of the staff continues advancement in wildfire training opportunities, including pump, chainsaws, and leadership.

When the fire season is in effect, the fire foresters are assisted by the rest of the staff based on the staffing guidelines. Depending on the Wildfire Danger Level, there may or may not be additional personnel staffing that day after normal operating hours.

In addition to the brush trucks, a Fire Tool supply cache is maintained at the Clarion District office. The cache includes, hand tools (shovels, rakes, combi tools, pulaskis, axes), a supply of fire hose to supplement the district needs, and three wildfire pump kits which are utilized for hose lays when access to the fire is limited and/or large amounts of water are needed for supplying apparatus on the fire. These kits and entire supply cache are inventoried and the pumps run each year, prior to the spring fire season and then winterized following the fall season.

Major suppression efforts

There have been two large fire incidents in recent year, one being the Snake Run Fire which was in Lawrence County and totaled 106 acres in 2013 and the Henderson Station fire in Mercer County which totaled 47 acres in 2016. While many fires are kept to a smaller size due to the timely response by local fire departments, each fire is treated the same as far as cause determination and investigation.

b) Prescribed Fire

Prescribed fire is used for several reasons within the Clear Creek State Forest. When used in the forest, it is used to control competing vegetation in oak stands, to reduce the non-desirable vegetation such as mountain laurel and birch to promote the growth of more desirable species, such as oak. Often the USFS has research and study areas in which we implement Prescribed Fire.

Another reason prescribed fire is utilized in the district, is to reduce invasive species to promote the growth the growth of wildlife habitat. This technique is implemented when we conduct burns at M.K. Goddard State Park and at the Kennerdell Tract of state forest. When we utilize this approach, the warm season grasses from the previous year as well with the non-desirable invasive are burned, which allows for the new growth of warm season grasses to regrow ahead of the invasive and produce habitat for wildlife within the fields.
17) Major Forest Health Issues

A healthy forest is an association of species interacting in various ways with biotic and abiotic factors over time to create a mix of components that coexists and reacts to changing conditions in order to support forest cover, a functional equilibrium between supply and demand of essential resources, and diversity of seral stages and stand structures. A healthy forest is one that can sustain itself ecologically. Processes leading to forest and tree decline are countered through processes of resilience, recovery, and rejuvenation. Retention of ecosystem integrity and function enables a healthy forest to respond to destructive agents through repair, replenishment, and regeneration of affected areas within a forest.

Non-native invasive insects and diseases are very serious threats and can have devastating impacts on the long-term health and sustainability of state forest ecosystems. Diseases, such as chestnut blight and Dutch elm disease, and insect pests, such as gypsy moth and hemlock woolly adelgid, already have significantly changed forest landscapes. Many of the invasive insects and pathogens threatening forest ecosystems first became established in urban forests. Oaks continue to be at risk from gypsy moth defoliation, while beech bark disease continues to expand and threaten beech populations. Threats to oaks and beech are especially important because they are the largest remaining sources of hard mast for wildlife. Additionally, hemlock woolly adelgid, introduced into Pennsylvania in 1967, continues to spread westward and is affecting the hemlock resource. Similarly, the emerald ash borer was detected in the Clear Creek State Forest District in 2007 and has decimated the Ash population in the district. The Spotted Lantern Fly is an exotic pest from northern China that was recently detected in eastern Pennsylvania and is a threat to fruit trees, ornamental trees, and various other woody trees and vines. Finally, other tree species, such as walnut and butternut, are threatened by other invasive insects and diseases that are established in North America.

In addition to exotic insects and diseases, intense outbreaks of native insect pests and disease, such as forest tent caterpillar and anthracnose disease, can cause severe defoliation and mortality in localized areas. The risk of mortality increases when these outbreaks occur in conjunction with other stressors, such as drought or acid deposition. Climate change adds an additional level of uncertainty to future impacts of both native and exotic forest pests. Secondary pests that attack stressed trees may become more prevalent if their tree hosts are exposed to pressures associated with climate change.

The Clear Creek State Forest District has been involved with preserving White Ash both on State Forest Land as well as some other public lands in the District. The long-term goal is to provide a viable ash seed source for repopulating the forest.

Perhaps the longest-standing effort to manage forest pests on state forest lands has been through the bureau’s gypsy moth program. The gypsy moth has been causing significant forest damage in Pennsylvania since the 1970s. The most recent outbreak occurred between 2013 to 2016. A total of
4.3 million acres were defoliated in the state during the historical peak year of 1990. As with other pest populations, gypsy moth outbreaks have been cyclic over time, and the bureau uses an integrated pest management approach to monitor and treat gypsy moth populations to lessen tree mortality. Suppression programs have been carried out by the bureau since 1972 to minimize its impacts on the forests.

Plant species are considered invasive when they are not native to an ecosystem and their establishment causes or is likely to cause economic, environmental, or human harm. Exotic invasive plants are one of the most serious threats to native plant communities and biodiversity. An overarching Invasive Species Management Plan exists for lands managed by DCNR. The bureau recognizes invasive plants as a serious problem to state forest lands and is developing strategies to more effectively manage them.

In a forested landscape, the effects of invasive plants on native plant communities are numerous and may include alterations to nutrient cycling, hydrology, natural fire regimes, light levels, regeneration of native tree species and understory species, and physical habitat structure. Especially critical is the direct competition with native plants for available resources, such as space and sunlight. Invasive plants, by definition, outcompete native vegetation for these resources, ultimately leading to minimization of native species on the landscape. The long-term effects of all these changes are largely unknown, but the increasing occurrence of invasive plants on state forest land raises concern about the ability of native plant communities to adapt or remain resilient to additional threats.

Invasive plants also impact a range of human activities and values. Some invasive plant species, such as kudzu, mile-a-minute and Japanese knotweed, can grow into tangled thickets that impede human use of an area. One may also encounter diminished access to waterways for recreation or increased costs of right-of-way maintenance due to invasive plants. Extensive infestations of invasive plants can decrease habitat quality for important wildlife species, and others, such as giant hogweed and poison hemlock, can cause skin inflammations on people who encounter them. Japanese barberry thickets enhance cover and habitat for mice, which could bolster tick populations and the instances of Lyme disease in an area. Treatment of Japanese barberry is a priority in many areas, and the best way to limit populations is by treating it along roadsides to stop or slow its spread into interior forests.

The bureau follows Integrated Pest Management (IPM) that utilizes a combination of prevention, monitoring, and control methods to deal with invasive plants. Strategies may include directly attacking an invasive plant population for eradication, using preventive measures for invasive plant introduction and spread, or mapping and evaluating invasive plant risks across the landscape. Among the various control methods, biological controls are used when available. As new invasive plant species continue to migrate into Pennsylvania, and existing species spread further, the impact of invasive plants, coupled with the expense of controlling them, is a continuing challenge and requires a coordinated effort within the bureau and with other agencies or landowners.
The department recognizes 92 plant species as invasive on DCNR lands and has placed an additional 22 plant species on a “watch list” to monitor their impact on natural communities. Of the 92-recognized species, 56 are known to occur on state forest lands. Different plant species pose varying degrees of threats to ecosystems and forest management operations. The invasive plant species with the greatest negative impacts on timber and regeneration operations in the Clear Creek State Forest include Japanese barberry and Japanese Stiltgrass.

Acid deposition, pollution, lack of adequate forest regeneration, forest fire, and overabundant white-tailed deer populations also impact forest ecosystems on state forest lands.

18) Major Recreational Uses

The Clear Creek State Forest is made up primarily of 4 tracts of forested land. Each tract offers many diverse recreational opportunities. Listed below are several of the dominant recreational uses.

Clear Creek State Forest has roughly 60 miles of trails, primarily located in the Clear Creek tract in Jefferson County and the Kennerdell Tract in Venango County. These trails are designated as hiking only or shared use. The shared use trails can be used for hiking, biking, or horseback riding where designated. All the trails offer scenic views of our State Forest and range in all levels of difficulty.

Our State Forest offers several interesting sightseeing destinations. A few of the more notable in the Clear Creek Tract are the Beartown Rocks area and the Laurel Fields. Beartown Rocks is home to some of the largest rocks and boulders around. There are trails that meander through the rocks and allow you to look at some of Mother Nature’s finest work. The Laurel Fields showcase the Pennsylvania State Flower. Originally home to the Tillotson family in the late 1800’s, today the Laurel Fields comes to life every June for a magnificent display of mountain laurel. The one-mile auto loop gently winds through the heart of this area, allowing for optimal views of our State Flower.

Western Pennsylvania is home to some spectacular views. We have two vistas on State Forest Land that showcase some of the best views. Beartown Rocks Vista is in the Clear Creek Tract and provides a view of up to 25 miles of the scenic Allegheny Plateau. The Dennison Point Overlook is in the Kennerdell Tract. This vista can be reached form either the Kennerdell bridge or the State Game Lands No. 39 parking lot. Either approach offers a pleasant hike of about 1.6 miles, ending at Dennison Point Overlook high above the Allegheny River Valley.

A unique recreational opportunity is the Auto-Tour through the Clear Creek Tract. The nine-mile auto tour loop covers three points of interest and begins at the intersection of Rt. 949 and Corbett Road across from the Clear Creek State Park office. The points of interest include interpretive panels showcasing resource management activities, Beartown Rocks and the Laurel Fields.
A popular form of recreation on our State Forest is camping. Here in the Clear Creek State Forest, we have several options for campers. Primitive backpack camping is permitted along most trails and throughout the district, however a permit from the district office is required to stay more than one night at one site. Our State Forest also offers four motorized camping sites located along Clear Run Road, Spring Creek Road, and McNeil Station Road. These sites are designated with motorized camping signs. A third type of camping, group camping, is defined by the Bureau of Forestry as more than 10 people at the same site. This requires a Letter of Authorization or in some cases a Special Activities Agreement issued through the District Forester. Located in the Kennerdell Tract is the Danner Campground along the Allegheny River. This campground offers fire rings and picnic tables for primitive and group campers. All camping policies can be found in the State Forest Rules and Regulations. There are currently 12 leased campsites on the Clear Creek State Forest. A colony area containing four camps is located along Burkett Road in compartment 8. Three camps are located in one corner of the Corbett fields in compartment 7. The remaining camps are widely scattered throughout the forest. The leasing of new campsites was suspended state-wide in 1970. The last new lease in our State Forest was in 1953.

Clear Creek State Forest offers a wide variety of opportunities for sportsmen. All our State Forest Land is open to public hunting and fishing and is regulated by the Pennsylvania Game Commission and Fish and Boat Commission, respectively. Clear Creek offers a variety of both big and small game animals for hunting and trapping. We are also home to sections of the Allegheny and Clarion Rivers which are known for smallmouth bass, trout and walleye. There are also several small streams throughout the forest that are known for their trout including Dennison Run, Bullion Run, Callen Run, Maple Creek, and Clear Creek.

The Clear Creek Forest District has two extensive trails that pass through its boundaries, The Baker Trail and The North Country National Scenic Trail.

The Baker Trail is a 133-mile hiking and backpacking trail, following forest paths, old jeep trails, paved roads and dirt roads through woods, farmlands, and along rivers and creeks. The Baker Trail traverses six counties (Armstrong, Jefferson, Clarion, Indiana, Forest, and Westmoreland), is a state-designated hiking trail, and is included on the trails map of Pennsylvania. This trail has a number of Adirondack shelters located on side trails that offer through hikers’ overnight accommodations.

The Baker Trail was established in 1950 and named for the late Pittsburgh attorney Horace Forbes Baker, who was instrumental in the re-establishment of the Pittsburgh Council of the American Youth Hostels after World War II. The trail originally extended from Aspinwall to Cook Forest State Park. However, extensive development along the Allegheny River caused the Aspinwall-Freeport section to be abandoned. In 1971, the trail was extended northward from Cook Forest Fire Tower to near the Allegheny National Forest.

The North Country National Scenic Trail, generally known as the North Country Trail, is a footpath stretching approximately 4,600 miles from Crown Point in eastern New York to Lake Sakakawea State Park in central North Dakota. Passing through the seven states of New York, Pennsylvania, Ohio, Michigan, Wisconsin, Minnesota, and North Dakota, it is the longest of the eleven National Scenic Trails authorized by Congress. As of early 2017, 3,009 miles of the trail is in place.
In Pennsylvania, the North Country Trail enters along the New York and Pennsylvania border above the Allegheny National Forest and travels in a southwest direction. As the trail makes its way through the Clear Creek Forest District, parts of the trail cross the Maple Creek Tract and the Clarion River Tract of our State Forest. In these sections of trail, two Adirondack shelters offer through hikers’ overnight accommodations. As the trail exits State Forest Land, it continues through our District coverage area and into Ohio near State Game Lands 285 located in Beaver County.

Figure 18-1. Acres of state forest land in this district by Recreation Opportunity Spectrum (ROS) classifications (2012). ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.
19) Cultural and Historic Resources

<table>
<thead>
<tr>
<th>Cultural</th>
<th>38</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC Camp</td>
<td>1</td>
</tr>
<tr>
<td>Homestead</td>
<td>2</td>
</tr>
<tr>
<td>Logging Camp</td>
<td>11</td>
</tr>
<tr>
<td>Logging RR Grade</td>
<td>10</td>
</tr>
<tr>
<td>Mill Site</td>
<td>9</td>
</tr>
<tr>
<td>Old Building Foundation</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ecological</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Chestnut &gt; 10 dbh</td>
<td>1</td>
</tr>
<tr>
<td>Archeological Site</td>
<td>1</td>
</tr>
<tr>
<td>Furnace</td>
<td>1</td>
</tr>
<tr>
<td>Quarry</td>
<td>4</td>
</tr>
<tr>
<td>Spring</td>
<td>12</td>
</tr>
<tr>
<td>Vernal Pool</td>
<td>15</td>
</tr>
<tr>
<td>Wetland &lt;1 acre</td>
<td>2</td>
</tr>
</tbody>
</table>

**Grand Total** | **74**

Bullion Iron Furnace

Built in 1843 and operated until 1857 this furnace was also known as Cross’s Furnace. Iron furnaces were typically built near a hillside so that the raw materials (iron ore, charcoal and lime) could be “charged” into the open top from a charging platform. The nearby stream provided waterpower to operate a bellows that forced air into the furnace. The furnace is only accessible by hiking trail.

Historic Logging Sites

The first use of a steam powered locomotive in Pennsylvania was on Callen Run in 1864. Numerous sawmills, logging camps, and other rail road grades dot the landscape as a reminder of the influence logging had on the forest then and now.

20) Special State Forest Designations

a) High Conservation Value Forests

**Table 20-1. Acres of High Conservation Value Forest by category.** To comply with Principle 9 of the FSC U.S. Forest Management Standards, the bureau evaluated and assessed areas for inclusion as
HCVFs. While the BOF believes that all state forest lands are of highest conservation value, areas not designated as such are still of equal importance and are protected through law and best management practices. The areas which have been identified as HCVFs are mapped and managed in a manner that will maintain and/or enhance the values for which they have been designated. More information about HCVFs can be found in the SFRMP, p. 64.

<table>
<thead>
<tr>
<th>HCVF Category</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1, areas legally protected or managed primarily for concentrations of biodiversity values that are significant at the ecoregion or larger scale</td>
<td>868</td>
</tr>
<tr>
<td>1.2, areas with significant concentrations of rare, threatened or endangered species or rare ecological communities, endemic</td>
<td>868</td>
</tr>
<tr>
<td>4.1, areas providing a source of community drinking water</td>
<td>3</td>
</tr>
<tr>
<td>6.2, areas with cultural features created intentionally by humans</td>
<td>10</td>
</tr>
</tbody>
</table>

The District currently has one HCVF area on the Clear Creek State Forest. This area contains important ecological communities and high-quality streams that we try to perpetuate through our management approach.

b) Wild Plant Sanctuary

The District has one wild plant sanctuary. This area is within the Kennerdell LMU and is important due to the plant communities that exist in the low fertile river bottoms.

21) Interpretive Plans

The Clear Creek Forest District’s Interpretive Plan outlines the recreational goals for the District and provides guidance where our recreational focus is headed. The plan can be found in Appendix A.

In summary, the District will be promoting low impact recreation; while increasing the recreational usage to the Clear Creek State Forest. Clear Creek Forest District will be trying build and foster relationships in the local community to create a connection to the resource; as well as providing information and education to the history of the local community.

The Clear Creek State Forest interpretive goals are as follows:
• Encourage exploration and participation in low impact recreation within the Clear Creek State Forest

• Foster an awareness and encourage sustainable use of resources by communicating, promoting and modeling good stewardship and best management practices

• Support effective partnerships with local communities that benefit the community, the resource and the visitor

• Develop engaging experiences that promote intellectual and emotional connections between the resource and visitors

• Communicate the ongoing challenges of balancing natural resource use with society’s needs, wants and desires

• To foster an appreciation and understanding of the history of Pennsylvania’s forests and their role in our lives

**District Priority Goals**

The 2016 SFRMP set forth Principles, Goals, and Objectives that focus on the variety of resources, uses, and values of state forest land. These Principles, Goals, and Objectives were organized around 12 Resource Chapters:
The Principles, Goals, and Objectives in the SFRMP apply universally across all of state forest land. Due to their broad application, they were written in relatively general terms. This District SFRMP provides an opportunity to prioritize goals that are more specifically applicable at the district level. The District Priority Goals that follow provide points of emphasis for state forest land management within Clear Creek State Forest over the next 5-10-year planning horizon.

Cultural Resources

The Clear Creek State Forest has a long history of resource utilization and conservation. Examples of this include logging camps, an oil pumping station, and the Bullion Iron Furnace. Our goal is to preserve and interpret these features.

Communications

A lot of people recreate and utilize the Clear Creek State Forest. Some of these individuals do not know that they are on State Forest Land. Our goal is to create more waysides within the State Forest; as well as marketing the State Forest regionally through local business and media outlets.

Wildland Fire

Ensure staff and cooperators are well trained and prepared for wildfire through training. We use prescribed fire to help gain or enhance regeneration in our forested stands. Our goal is to continue this practice while researching the most effective and efficient use of prescribed fire.

Recreation

The current trail system on the Clear Creek State Forest functions well but a lot of the trails have areas that can be improved to allow for a better experience and require lower maintenance. Our goal is to assess the current trail system and look for areas of improvement or areas where we need more or possibly less trails to increase the quality of the experience. Connecting the local heritage and the community to the recreational opportunities on Clear State Forest is very important. Our goal is to effectively communicate all the recreational opportunities available on the State Forest and build and foster local and regional relationships.
**Forest Health**

There are many different invasive plants and insects that threaten the health of the Clear Creek State Forest. We will utilize early detection and rapid response to eradicate or control these issues.

**Timber and Forest Products:**

The District will continue to strive to reach our allocation model while staying current with the research and conditions of the ecosystems within the Clear Creek State Forest. We will also continue and strengthen our partnerships with other research organizations to obtain acceptable regeneration while reaching our harvest allocation.
Landscape Management Unit Plans

With the 2016 revision of the SFRMP, the bureau introduced the LMU concept to facilitate consistent, structured, and integrated resource management and planning across large landscape units on state forest and adjoining lands. LMUs were delineated for all state forest land in 2016-2017. The LMU, which complements other ecological delineations, now serves as the primary unit for landscape-level planning and management on state forest lands. LMUs help the bureau facilitate planning on a landscape scale that has ecological context, incorporate multiple forest uses and values, and promote ecological analysis. The units also serve as a tool to facilitate cooperative management with adjoining forest districts, landowners, and agencies. An explanation of how LMUs were delineated is found in the 2016 SFRMP on page 62.

The bureau has developed LMU Plans for every LMU containing state forest land. The LMU Plans for LMUs within Clear Creek District are found below. Each LMU Plan contains three elements:

- Abstract – a 1-2-page narrative describing the LMU and its important features;
- LMU Priority Goals – a list of points of emphasis for state forest land management within the LMU, similar to the District Priority Goals, but at the LMU level; and
- Profile – tables, charts, and accompanying text that more fully describe the LMU’s characteristics.
Clarion River

Landscape Management Unit
Overview

The Clarion River Land Management Unit (LMU) straddles the boundaries of Clarion, Forest, and Jefferson Counties. The DCNR lands in this LMU were acquired in 2010 by purchasing land from the Lyme Timber Company, and a land swap with the Pennsylvania Game Commission. The LMU contains a total of 26,159 acres. The DCNR land is divided between the Clear Creek State Forest (1,922 acres) and Cook Forest State Park (2,572 acres). The Bureau of Forestry owns the land above the 1400-foot elevation contour, and State Parks owns the land below that elevation. To avoid confusion for the public, State Parks Rules and Regulations apply to the entire property, and their rangers patrol all of it.

The LMU also includes parts of Cook Forest State Park, and parts of State Game Lands 74 and 283, with most of the land being privately owned. The LMU is almost completely forested, with the bulk of the timber being either dry oak or hemlock types. Some of the private properties in the LMU were farmed in the past and are still cleared. However, there is very little agriculture in the area now. Some private lands were strip mined decades ago, and old shallow gas wells are plentiful in the area. There is no Marcellus gas activity in this area at this time.

The entire DCNR property was high-graded in the past, but a significant amount of oak remains in the small and medium size classes. Because of the past cutting practices, a few sections on very steep north-facing slopes are now almost pure stands of eastern hemlock and black birch.

The hemlock woolly adelgid was found in Cook Forest in 2013, and is slowly expanding its range here. Cook Forest has 2,300 acres of old growth hemlock, and the overall LMU has many thousands of acres of second growth hemlock. Numerous stream corridors and sections of the Clarion River are dominated by large stands of second growth hemlock. The Bureaus of Forestry and State Parks have been treating hemlocks in Cook Forest old growth areas since 2013. The emerald ash borer has gone thru the area, ravaging all the ash trees. As of this writing in 2017 the ash trees are dead, or nearly so. Forest District 8 is treating a small number of ash trees in the LMU in Cook Forest and at a Fish and Boat Commission parking lot on the Clarion River.

The DCNR lands border both sides of the Clarion River almost continuously for about 12 miles, with only two significant sections of private land interrupting it. About half of the property is in the viewshed of the Clarion River, which is designated a “Wild and Scenic River”. Access is very limited. This limits opportunities for both recreation and timber management. We do not plan on doing timber management on the State Parks land, but could do some on the State Forest sections.

The primary use for this land is recreation. The North Country Trail and the Baker Trail both pass thru sections of the tract. State Parks has a Commercial Activities Agreement with a nearby equestrian campground. They utilize trails in the Highland and Maxwell sections of the tract, including two river crossings. The trails cross both State Forest and State Park lands, but they all follow Parks regulations and are patrolled by Parks rangers. Hunting is good, but public access is very restricted by lack of rights of ways across private lands.

There are many small streams that drain the DCNR property and other LMU lands, emptying into the Clarion River. Some are degraded by acid mine drainage, and some are seasonal. Blyson Run, near the southern end of the LMU, is a Wilderness Trout Stream, and supports natural reproduction of trout.
Priority Goals

1. Coordinate with State Park personnel to improve public awareness of and access to recreational opportunities.
2. To pursue opportunities for land acquisition with adjacent landowners to further protect the Wild and Scenic River corridor
3. Utilize early detection and rapid response on Hemlock Wooly Adelgid
4. To preserve the Clarion River watershed by rehabilitating degraded tributaries and protecting High Quality and Exceptional Value streams like Blyson Run
5. Prioritize the maintenance and promotion of core forest conditions and values
6. Create more wildlife openings for recreational users

Profile

Table 1. LMU acreage: total and state forest land only.

<table>
<thead>
<tr>
<th>Land Cover Category</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Forest Land</td>
<td>1922</td>
</tr>
<tr>
<td>LMU Total</td>
<td>26,159</td>
</tr>
</tbody>
</table>

Ecoregion: Pittsburgh Low Plateau

Figure 1. LMU acreage by land cover categories from the National Land Cover Dataset for the entire LMU.
This is a landscape that is dominated by forest land. It contains a continuum of deciduous, evergreen, and mixed forest landscapes. Management strategies are to maintain a healthy and sustainable forest while increasing the less common native habitats.
Table 2. Miles of roads by category on state forest land in this LMU. Road categories are described on p. 199 of the 2016 SFRMP.

<table>
<thead>
<tr>
<th>Road Category</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z1 - Public Use Road</td>
<td>1</td>
</tr>
<tr>
<td>Z3 - Administrative Road</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
</tr>
</tbody>
</table>

Developed parking areas are located on the edge of the state forest land and accessed by township roads. Highland Drive is the only state forest public use road that is interior.

Table 3. Miles of trails on state forest land in this LMU open to various types of recreational use.

<table>
<thead>
<tr>
<th>Trail Category</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td>8</td>
</tr>
<tr>
<td>Biking</td>
<td>6</td>
</tr>
<tr>
<td>Equestrian</td>
<td>6</td>
</tr>
<tr>
<td>X-Skiing</td>
<td>6</td>
</tr>
<tr>
<td>ATV I</td>
<td>0</td>
</tr>
<tr>
<td>ATV II</td>
<td>0</td>
</tr>
<tr>
<td>Snowmobile/ Joint Use Road</td>
<td>0</td>
</tr>
</tbody>
</table>

Multiple use trails provide for hiking, biking, horseback riding, and cross-county skiing. Numerous loop trails provide for a variety of experiences including the Blyson, Highland, and Finkbinder Loops. The North Country Trail, a national scenic trail, is designated for hiking only.
**Figure 2.** Acreage of state forest land in this LMU by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

Oaks dominate the forested landscape due to past disturbance regime of widespread logging, wildfires, and extremely low deer population.
Figure 3. Acreage of state forest land in this LMU by site class. Site classes denote the potential quality of the growing site. “Site 0” indicates non-forested lands or forested lands where the vegetation has not yet been typed. Other site classes are described on p. 53 of 2016 SFRMP.

Medium to high quality sites found on most of this forest is are capable of growing a merchantable forest product.
M&C = multiple resource zone, commercial
L = limited resource zone
N = natural area
W = wild area

M&N = multiple resource zone, non-commercial

M C, 1,207
Figure 4. Acreage of state forest land in this LMU by management zone. Management zone is dictated by primary land use and land capability. Further descriptions of commerciality and zoning are found on p. 54 of the 2016 SFRMP.

Restricted access or steep slopes contribute to most of the limited resource acres.

Figure 5. Acres of state forest land in this LMU by forest age classes.

With no recent timber harvesting the forest is even aged. Management will focus on balancing the age class distribution by created young forests through harvesting mature forest.
Table 4. Miles of stream by classification within entire LMU. Department of Environmental Protection stream classifications are described in Chapter 93 Water Quality Standards of Title 25 in the Pennsylvania Code.

<table>
<thead>
<tr>
<th>Class</th>
<th>Total (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undesignated</td>
<td>18</td>
</tr>
<tr>
<td>High Quality Waters</td>
<td>30</td>
</tr>
<tr>
<td>Perennial Cold Water Streams</td>
<td>7</td>
</tr>
<tr>
<td>Exceptional Value Waters</td>
<td>8</td>
</tr>
<tr>
<td>Scenic Rivers</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81</strong></td>
</tr>
</tbody>
</table>

Water resources are predominating in this landscape. Numerous named and unnamed waters abound. Maxwell Run and Cathers Run are High Quality Cold Water Fisheries. Blyson Run has a higher designation as an Exception Value Water. Balancing recreational opportunities and protecting water resources is very important.
Figure 6. Acres of state forest land in this LMU by Recreation Opportunity Spectrum (ROS) classifications. ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.

Although access is limited there is an established road network making almost half semi-developed.
Table 5. Core forest index value for state forest land in this LMU. The core forest index is a rating value out of 100 that expresses the proportion of the area within the LMU that is increasingly far away from dense areas of fragmenting features.

<table>
<thead>
<tr>
<th>LMU Name</th>
<th>Core Forest Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarion River</td>
<td>98.58</td>
</tr>
</tbody>
</table>

This score is the highest within the district. The score falls within the 97th percentile of all state forest LMUs, making it among one of the most least fragmented areas relative to other portions of state forest land.
Clear Creek
Landscape Management Unit
Overview

The Clear Creek LMU is located in northern Jefferson County. The Clear Creek LMU combines both the Callen Run and the Clear Creek drainages which formed the Clear Creek State Forest when it was founded in 1920. The LMU contains a total of 40,417 acres with 9,876 acres of state forest land. The state forest land originally included an additional 1,444 acres that is now Clear Creek State Park which was formed in 1963. The name is derived from the crystal-clear stream that flows through the tract and Callen Run is equally impressive. Both streams are listed as high quality and stocked with trout and Callen Run contains a small fish hatchery.

The state forest portion of the LMU us dominated by a mixed-oak forest and has only a small percentage of non-forest openings. The exception is the Laurel Fields which is a unique area that attracts visitors during the Brookville Laurel Festival and the Fat Tire Challenge mountain bike race. The current forest’s origin can be traced back to 1903 when a fire spread through the area after the virgin forest had been harvested. The current forest shaped by its past, is predominately oak with hemlocks common in mesic areas. Today’s forest management focuses on creating young forests to diversify the age, structure, and species composition of the forest. The increased diversity will improve forest health and resiliency to insect and disease threats. Oil and gas developments have also influenced the landscape with numerous shallow wells and one new deep gas well.

Clear Creek State Park serves as a recreational hub that expands into the LMU. Bear Town Rocks is a scenic vista and boulder field that is an extremely popular attraction. It is located within an 8-mile trail network. There is also an auto tour highlighting the history and ecology of the tract.

Priority Goals

1. To diversify the age classes and species composition through timber harvesting with an emphasis on perpetuating the oak species in continuum of young forest through old growth forest
2. To provide and maintain healthful, low-density recreational opportunities and experiences across the landscape. Explore opportunities to expand recreation in the Pine Run and Callen Run areas while mitigating the high-use in the Beartown Rocks area
3. To pursue opportunities for improving wildlife habit through geologic and timber management, fruit and chestnut orchards, and herbaceous openings.
4. To foster relationships with subsurface owners in the management of geologic resources to minimize surface disturbances, forest fragmentation, and the introduction or spread of invasive species while optimizing potential benefits through cooperation.
5. To evaluate forest health for all threats, including native and non-native plants, insects, diseases, and declines especially glossy buckthorn.
6. Develop the Callen Run Dam to provide handicap fishing access
Profile

Table 1. LMU acreage: total and state forest land only.

<table>
<thead>
<tr>
<th>Land Cover Category</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Forest Land</td>
<td>9,880</td>
</tr>
<tr>
<td>LMU Total</td>
<td>40,417</td>
</tr>
</tbody>
</table>

**Ecoregion:** Pittsburgh Low Plateau

Figure 1. LMY acreage by land cover categories from the National Land Cover Dataset for the entire LMU.

Table 2. Miles of roads by category on state forest land in this LMU. Road categories are described on p. 199 of the 2016 SFRMP.

<table>
<thead>
<tr>
<th>Road Category</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z1 - Public Use Road</td>
<td>19</td>
</tr>
<tr>
<td>Z3 - Administrative</td>
<td>41</td>
</tr>
<tr>
<td>Road</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
</tr>
</tbody>
</table>

Select administrative roads are opened seasonally for hunter access.
Table 3. Miles of trails on state forest land in this LMU open to various types of recreational use.

<table>
<thead>
<tr>
<th>Trail Category</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td>11</td>
</tr>
<tr>
<td>Biking</td>
<td>11</td>
</tr>
<tr>
<td>Equestrian</td>
<td>0</td>
</tr>
<tr>
<td>X-Skiing</td>
<td>8</td>
</tr>
<tr>
<td>ATV I</td>
<td>0</td>
</tr>
<tr>
<td>ATV II</td>
<td>0</td>
</tr>
<tr>
<td>Snowmobile/ Joint Use</td>
<td>0</td>
</tr>
<tr>
<td>Road</td>
<td>0</td>
</tr>
</tbody>
</table>

Clear Creek State Park is adjacent and serves as a recreational hub primarily for hiking.
Figure 2. Acreage of state forest land in this LMU by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

Oaks dominate the forested landscape due to past disturbance regime of widespread logging, wildfires, and extremely low deer population.
Figure 3. Acreage of state forest land in this LMU by site class. Site classes denote the potential quality of the growing site. “Site 0” indicates non-forested lands or forested lands where the vegetation has not yet been typed. Other site classes are described on p. 53 of 2016 SFRMP.

High quality site 1 oak forest are valuable for timber and wildlife

Figure 4. Acreage of state forest land in this LMU by management zone. Management zone is dictated by primary land use and land capability. Further descriptions of commerciality and zoning are found on p. 54 of the 2016 SFRMP.

Most of the land base is accessible and commercial.
Figure 5. Acres of state forest land in this LMU by forest age classes.

Balancing the age class distribution through timber harvesting is a priority goal.

Table 4. Miles of stream by classification within entire LMU. Department of Environmental Protection stream classifications are described in Chapter 93 Water Quality Standards of Title 25 in the Pennsylvania Code.

<table>
<thead>
<tr>
<th>Class</th>
<th>Total (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undesignated</td>
<td>7</td>
</tr>
<tr>
<td>High Quality Waters</td>
<td>109</td>
</tr>
<tr>
<td>Exceptional Value Waters</td>
<td>0</td>
</tr>
<tr>
<td>Scenic Rivers</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>118</strong></td>
</tr>
</tbody>
</table>

This LMU derives its name from the High Quality Clear Creek watershed that flows Scenic Clarion River. Undesignated streams are also known to hold populations of native Brook Trout.
Figure 6. Acres of state forest land in this LMU by Recreation Opportunity Spectrum (ROS) classifications. ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.

Due to extensive shallow gas well, infrastructure most of the area falls into other zones as semi-developed.

Table 5. Core forest index value for state forest land in this LMU. The core forest index is a rating value out of 100 that expresses the proportion of the area within the LMU that is increasingly far away from dense areas of fragmenting features.

<table>
<thead>
<tr>
<th>LMU Name</th>
<th>Core Forest Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear Creek</td>
<td>93.73</td>
</tr>
</tbody>
</table>

This score is the second highest within the district. The score falls within the 33rd percentile of all state forest LMUs, making it among the most fragmented among the most fragmented areas relative to other portions of state forest land.

Kennerdell
Landscape Management Unit

Overview

The Kennerdell LMU is in southern Venango County. It is in Mineral and Victory Townships, and borders the Allegheny River. The Bureau of Forestry acquired the majority of this tract in 1981 from the Bureau of State Parks. This LMU contains a total of 11,498 acres with 3,243 acres of state forest land.
The majority of state forest land within this LMU is forested. It includes two small sections of State Game Lands 39, with the remaining acreage in private land. The different types of forest include oak stands, river flood plain species, hemlock stands, and northern hardwood stands with an oak component[PA1]. We have done some timber management as part of the Bureau of Forestry’s effort to balance the age classes of State Forest. About 350 acres of mature forest has been converted to early successional habitat in the last 20 years, including a 100-acre Overstory Removal in 2016. This contributes to the diversity of the habitat in the area, and is especially important since most of the LMU is forested and does not include young forest.

The LMU contains a few old fields, but there is very little agriculture in the area. There is also an abandoned 20-acre strip mine on the State Forest tract. Part of this has converted to a small but beautiful wetland with our help. It is now home to many species of wetland plants and animals. Dennison Run is designated as a High-Quality Stream that has native brook trout and runs through the middle of the tract. Bullion Run is a major drainage that runs through the southern end of the tract[TS2].

This area has a long history of land use with many abandoned oil wells throughout, and gas wells that are still active today. There is an abandoned oil pumping station that is taken care of to preserve the history of the area on the northern end of the tract. Iron ore was a major resource in the area from 1840 to 1860, which can be seen by a standing iron furnace on Bullion Run. There are two main pipelines that run through the tract as well as small lines that support the town of Kennerdell.

This LMU has an invasive species issue because of all the different types of land use. The private lands surrounding the State Forest have many ornamental landscape plants that have spread from homes to the State Forest and Game Lands. These include Japanese barberry, honeysuckle, Japanese knotweed, and other shrubs and herbaceous plants. These are especially troublesome in the designated Wild Plant Sanctuary area along the Allegheny River. Knotweed fragments float down the river from upstream sources, making it impossible to try to eradicate. In addition, the emerald ash borer has killed the ash in the area, and the hemlock woolly adelgid is nearby.

An unusual feature is a small stand of pawpaw. It is right along the river, and is perhaps an acre in size. We don’t know of any other pawpaw in the area, and the origin of this one is uncertain. It probably was planted many years ago by oil field workers when they lived there.

The tract has 26 miles of trails that are maintained by the district as well as a local Equestrian group. Recreation is a major land use for the State Forest due to the proximity of the Allegheny River. In fact, this is the heaviest used tract of State Forest for recreation in Forest District 8.
Priority Goals

1. To communicate with recreational user groups to foster relationships that better serve them and utilize their resources.
2. To conserve and enhance the rich diversity of plant species in the Wild Plant Sanctuary and other unique area across the landscape.
3. Increase the recreational experience on this tract by installing a new pit toilet and making improvements and assessment of the current trail system.
4. To pursue opportunities for improving wildlife habit through timber management, fruit and chestnut orchards, and herbaceous openings.
5. To evaluate forest health for all threats, including native and non-native plants, insects, diseases, and declines. Prioritize and respond to those threats in efficient and effective manner.

Profile

Table 1. LMU acreage: total and state forest land only.

<table>
<thead>
<tr>
<th>Land Cover Type</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Forest Land</td>
<td>3,243</td>
</tr>
<tr>
<td>LMU Total</td>
<td>11,498</td>
</tr>
</tbody>
</table>

Ecoregion: Pittsburgh Low Plateau

Figure 1. LMU acreage by land cover categories from the National Land Cover Dataset for the entire LMU.
Deciduous forests dominate making increasing diversity a priority. However, areas near the Allegheny River contain the richest plant species diversity in the district.
Table 2. Miles of roads by category on state forest land in this LMU. Road categories are described on p. 199 of the 2016 SFRMP.

<table>
<thead>
<tr>
<th>Road Category</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z1 - Public Use Road</td>
<td>0</td>
</tr>
<tr>
<td>Z2 - Drivable Trail</td>
<td>1</td>
</tr>
<tr>
<td>Z3 - Administrative</td>
<td></td>
</tr>
<tr>
<td>Road</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 3. Miles of trails on state forest land in this LMU open to various types of recreational use.

<table>
<thead>
<tr>
<th>Trail Category</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td>24</td>
</tr>
<tr>
<td>Biking</td>
<td>13</td>
</tr>
<tr>
<td>Equestrian</td>
<td>13</td>
</tr>
<tr>
<td>X-Skiing</td>
<td>23</td>
</tr>
<tr>
<td>ATV I</td>
<td>0</td>
</tr>
<tr>
<td>ATV II</td>
<td>0</td>
</tr>
<tr>
<td>Snowmobile/ Joint Use</td>
<td></td>
</tr>
<tr>
<td>Road</td>
<td>0</td>
</tr>
</tbody>
</table>

Recreation is the primary focus in this LMU and attracts a variety of user groups.
**Figure 2.** Acreage of state forest land in this LMU by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

The oak forest type dominates the landscape and is the focus of management activities.
Figure 3. Acreage of state forest land in this LMU by site class. Site classes denote the potential quality of the growing site. “Site 0” indicates non-forested lands or forested lands where the vegetation has not yet been typed. Other site classes are described on p. 53 of 2016 SFRMP.

Medium to high quality sites found on most of this forest is are capable of growing a merchantable forest product.
Figure 4. Acreage of state forest land in this LMU by management zone. Management zone is dictated by primary land use and land capability. Further descriptions of commerciality and zoning are found on p. 54 of the 2016 SFRMP.

Commercial operations on approximately 1/3 of the area has been restricted to preserve other values.
Figure 5. Acres of state forest land in this LMU by forest age classes.

Balancing the age class distribution is important for the health and diversity of the forest.

Table 4. Miles of stream by classification within entire LMU. Department of Environmental Protection stream classifications are described in Chapter 93 Water Quality Standards of Title 25 in the Pennsylvania Code

<table>
<thead>
<tr>
<th>Class</th>
<th>Total (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undesignated</td>
<td>14</td>
</tr>
<tr>
<td>High Quality Waters</td>
<td>1</td>
</tr>
<tr>
<td>Perennial Cold Water Streams</td>
<td>6</td>
</tr>
<tr>
<td>Exceptional Value Waters</td>
<td>9</td>
</tr>
<tr>
<td>Scenic Rivers</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>43</strong></td>
</tr>
</tbody>
</table>

Water based recreation is highlighted by Dennison Run, an exceptional value stream, and the Allegheny River which forms the eastern state forest boundary.
Figure 6. Acres of state forest land in this LMU by Recreation Opportunity Spectrum (ROS) classifications. ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.

A variety of recreational opportunities and experiences can be had in this LMU.

Table 5. Core forest index value for state forest land in this LMU. The core forest index is a rating value out of 100 that expresses the proportion of the area within the LMU that is increasingly far away from dense areas of fragmenting features.

<table>
<thead>
<tr>
<th>LMU Name</th>
<th>Core Forest Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennerdell</td>
<td>94.08</td>
</tr>
</tbody>
</table>

This score is the lowest within the district. The score falls within the 36th percentile of all state forest LMUs, making it among the most fragmented areas relative to other portions of state forest land.
Maple Creek
Landscape Management Unit
Overview

The Maple Creek LMU is located in southern Forest County at the northeast corner of Clarion County. The LMU contains a total of 16,162 acres with 1,012 acres of state forest land that was acquired in the 1960’s. Large private tracts of land border the area, and Cook Forest State Park is in close proximity. The name is derived from the scenic stream that meanders through the LMU and the maple trees that abound.

This LMU is mostly forested but does contain several wetlands that are slowly succeeding into forest. The area was completely logged by the end of the 1800’s and still had unforested areas when acquired. At that time, white pine, spruce, and larch were planted in the open areas while northern hardwoods. Presently, red maple, sugar maple, and black cherry, continued to mature. Native and stocked trout benefit from the hemlocks lining maple creek, while deer, grouse, and squirrels find cover in dense spruce plantings. Current management has further enhanced the LMU by creating young forest habitat through regenerating hardwoods and white pine plantations. The combination of these diverse habitats makes this LMU exceptional for wildlife habitat, providing water, food, and shelter needed to thrive.

Recreational opportunities are also numerous with hunting, fishing, and hiking being primary. The abundance of wildlife draws many hunters to the area especially for deer season. Maple Creek is a stocked trout stream with good access and heavy use. A segment of the North Country Trail (a national hiking trail) crosses over Maple Creek twice, with a shelter located along the trail for backpack camping.

Priority Goals

1. To diversify the age classes and species composition through timber harvesting with an emphasis on improving wildlife habitat and preserving palustrine communities
2. To establish and maintain perpetual young forest areas though frequent harvesting to sustain their benefits to wildlife over a longer period
3. Explore opportunities to develop a trail network to dovetail into the North Country Trail.
4. To pursue opportunities for land acquisition with large adjacent landowners such as Collins Pines and Seneca Resources.
5. To evaluate forest health for all threats, including native and non-native plants, insects, diseases, and declines. Prioritize and respond to those threats in efficient and effective manner.
6. Increase opportunities for handicap hunters through the maintenance of shooting lanes and wildlife openings.
Profile

Table 1. LMU acreage: total and state forest land only.

<table>
<thead>
<tr>
<th>Description</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Forest Land</td>
<td>1,012</td>
</tr>
<tr>
<td>LMU Total</td>
<td>16,162</td>
</tr>
</tbody>
</table>

Ecoregion: Pittsburgh Low Plateau

Figure 1. LMU acreage by land cover categories from the National Land Cover Dataset for the entire LMU

A variety of habitats makes this LMU excellent for wildlife of all kinds.
Table 2. Miles of roads by category on state forest land in this LMU. Road categories are described on p. 199 of the 2016 SFRMP.

<table>
<thead>
<tr>
<th>Road Category</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z1 - Public Use Road</td>
<td>1</td>
</tr>
<tr>
<td>Z3 - Administrative</td>
<td>0</td>
</tr>
<tr>
<td>Road</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
</tr>
</tbody>
</table>

A centrally located township road provided good access to this LMU.

Table 3. Miles of trails on state forest land in this LMU open to various types of recreational use.

<table>
<thead>
<tr>
<th>Trail Category</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td>2</td>
</tr>
<tr>
<td>Biking</td>
<td>0</td>
</tr>
<tr>
<td>Equestrian</td>
<td>0</td>
</tr>
<tr>
<td>X-Skiing</td>
<td>1</td>
</tr>
<tr>
<td>ATV I</td>
<td>0</td>
</tr>
<tr>
<td>ATV II</td>
<td>0</td>
</tr>
<tr>
<td>Snowmobile/ Joint Use</td>
<td></td>
</tr>
<tr>
<td>Road</td>
<td>0</td>
</tr>
</tbody>
</table>

Developing more recreational trails is a goal in this LMU.
Figure 2. Acreage of state forest land in this LMU by aggregated forest type. The forest types are described on p. 108 of the 2016 SFRMP.

There is excellent diversity with only the oak forest type being under represented.
**Figure 3.** Acreage of state forest land in this LMU by site class. Site classes denote the potential quality of the growing site. “Site 0” indicates non-forested lands or forested lands where the vegetation has not yet been typed. Other site classes are described on p. 53 of 2016 SFRMP.

Medium to high quality sites found on most of this forest is are capable of growing a merchantable forest product.

---

**Figure 4.** Acreage of state forest land in this LMU by management zone. Management zone is dictated by primary land use and land capability. Further descriptions of commerciality and zoning are found on p. 54 of the 2016 SFRMP.
Wetland habitats and limited access is evident with almost half of the acres being non-commercial.

**Figure 5.** Acres of state forest land in this LMU by forest age classes.

Recent timber management practices have created young forest and started to balance the age classes

**Table 4.** Miles of stream by classification within entire LMU. Department of Environmental Protection stream classifications are described in Chapter 93 Water Quality Standards of Title 25 in the Pennsylvania Code.

<table>
<thead>
<tr>
<th>Class</th>
<th>Total (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undesignated</td>
<td>7</td>
</tr>
<tr>
<td>High Quality Waters</td>
<td>32</td>
</tr>
<tr>
<td>Exceptional Value Waters</td>
<td>1</td>
</tr>
<tr>
<td>Scenic Rivers</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>43</strong></td>
</tr>
</tbody>
</table>

Maple Creek is a stocked high-quality trout stream and Toms Run is an exceptional value stream.
Figure 6. Acres of state forest land in this LMU by Recreation Opportunity Spectrum (ROS) classifications. ROS is an inventory system developed by the U.S. Forest Service, to characterize land by types of recreation experiences. ROS is described on p. 42 of the 2016 SFRMP. “Other Zones” refers to Semi-Developed and Developed zones.

Due primarily to its small size and improved roads, the entire area is considered other zones.

Table 5. Core forest index value for state forest land in this LMU. The core forest index is a rating value out of 100 that expresses the proportion of the area within the LMU that is increasingly far away from dense areas of fragmenting features.

<table>
<thead>
<tr>
<th>LMU Name</th>
<th>Core Forest Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maple Creek</td>
<td>95.84</td>
</tr>
</tbody>
</table>

This score is one of the highest within the district. The score falls within the 63rd percentile of all state forest LMUs, making it among the least fragmented areas relative to other portions of state forest land.
Appendix A - District Interpretive Plan

Clear Creek State Forest District: Interpretive Plan

Date Completed: 14 September 2016

Planning Team Members:
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- District Interpretive Goals

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- Outputs, Outcomes & Impacts

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Theme & Subthemes

Current Interpretation
- Personal
- Non-personal

Issues, Challenges and Opportunities

Recommendations
- Personal
- Non-personal

Evaluation Strategies

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References
Introduction

It is the intent of the Bureau of Forestry to have an interpretive plan in place within each state forest district. Once completed, this plan can stand alone or be placed as an addendum to the District Resource Management Plan. This plan is directly linked to the State Forest Resource Management Plan through key messages and guiding principles.

Interpretation is defined as a mission-based communication process that forges emotional and intellectual connections between the interests of the audience and the meanings inherent in the resource. The interpretive plan is a goal driven process that helps us achieve our mission, protect the resource and provide visitors with the best possible interpretive service.

This State Forest District Interpretive Plan uses a thoughtful planning process to identify the stories, management issues and resources that are specific to each state forest district. Completed plans will help us determine which communication strategies are best suited for achieving our goals and setting priorities will help allocate funds for interpretive projects. Resource conservation requires public understanding and support. Interpretation is one tool to help us achieve that goal.
DCNR and Bureau of Forestry Missions and Key Messages

Both the department and bureau missions and key messages should be present in our interpretive efforts. Keep these in mind as you plan your interpretive projects. If an interpretive project does not address our mission or contain a key message, it should not be considered.

The Bureau of Forestry’s Mission…

…is to ensure the long-term health, viability and productivity of the commonwealth’s forests and to conserve native wild plants.

Bureau of Forestry’s Key Messages:

The Bureau of Forestry has developed a set of forest-related key messages that complements the department’s communications efforts. The bureau considers and uses these key messages when developing communications products.

Natural resources are critical to our health, economy, and quality of life.

- Forests are Pennsylvania’s principal land use.
- Forests provide vital services to society. They clean our air, purify our water, provide habitat for plants and animals, and support key ecological processes.
- Forests provide a renewable source of wood products to society.

Everyone uses and has the opportunity to enjoy Pennsylvania’s vast natural resources.

- Healthy forests benefit all citizens, no matter where they live.
- Forests provide nearly boundless opportunities for healthful recreation.
- Forests serve as a source of inspiration and wonder.
- There is a forest to explore near you.

DCNR leads everyday efforts to conserve Pennsylvania’s natural resources and connect people to the outdoors.

- DCNR Bureau of Forestry leads Pennsylvania in forest and native wild plant conservation and stewardship.
- DCNR Bureau of Forestry seeks to foster an awareness of the forests’ many uses and values and inspire people to conserve them.

The future of Pennsylvania’s natural resources depends on you.

- People and communities every day shape the future of Pennsylvania’s forests.
- Sustaining our forests and associated values depends on wise stewardship.
- We have a responsibility to manage our forests for current and future generations.
State Forest Resource Management Plan: Communications Management Principle

This guiding principle for Communication Management is established in our State Forest Resource Management Plan and should assist in setting the direction of interpretive efforts.

<table>
<thead>
<tr>
<th>Goals</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To provide education and interpretive opportunities regarding the values, services, and benefits of sustainable forest management.</td>
<td>1.1 Promote Project Learning Tree with Pennsylvania educators and youth leaders through workshops and material support.</td>
</tr>
<tr>
<td></td>
<td>1.2 Promote forestry and conservation through public education and outreach such as the statewide Envirothon, natural gas tours, ECO Camp, and other public programming partnerships.</td>
</tr>
<tr>
<td></td>
<td>1.3 Provide forest demonstration areas throughout the state forest system that show forest management practices.</td>
</tr>
<tr>
<td></td>
<td>1.4 Create statewide and district interpretive plans and increase the use of interpretive resources.</td>
</tr>
<tr>
<td></td>
<td>1.5 Promote a public stewardship ethic regarding the commonwealth's forests and wild plant resources.</td>
</tr>
<tr>
<td></td>
<td>1.6 Develop state-of-the-art resource management centers to house educational displays and stimulate interest in forest conservation.</td>
</tr>
<tr>
<td>2. To provide customer service and information that promote the use and enjoyment of the state forest system.</td>
<td>2.1 Maintain a steady and available supply of our public use maps, guides, and printed materials.</td>
</tr>
<tr>
<td></td>
<td>2.2 Continually update and utilize electronic media, providing information in an engaging format on the bureau and its work.</td>
</tr>
<tr>
<td>3. To engage the public and consider input in state</td>
<td>3.1 Utilize advisory committees to engage stakeholders.</td>
</tr>
<tr>
<td></td>
<td>3.2 Provide information on forests, forest issues, and native wild plants.</td>
</tr>
<tr>
<td>forest management decisions.</td>
<td>3.3 Plan and coordinate public meetings on specific bureau topics including the SFRMP process and shale-gas management as well as issues of local interest at the district level.</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>3.4 Monitor and respond to social media questions and comments.</td>
</tr>
<tr>
<td></td>
<td>3.5 Coordinate responses to public inquiries on state forest management topics.</td>
</tr>
</tbody>
</table>
Overview of the Clear Creek State Forest

Introduction
The Clear Creek State Forest, 16,526 acres, is located principally in Jefferson, Forest, Clarion and Venango Counties. The state forest contains 9,800 acres in Northern Jefferson County, 3,184 acres in Venango County, and 1,016 acres in southern Forest County. The district manages a 45 acre tract in Mercer County. The acquisition of 1,600 acres from Lyme Timber Company in 2008 and the exchange with the Pennsylvania Game Commission in 2010 for lands along the Clarion River in located in Clarion County added an additional 2,481 acres.

History
Prior to Europeans settling Pennsylvania, dense forests nearly covered the entire state, with the exception of a few natural meadows in the lowlands and scattered rocky areas in the highlands. These seemingly inexhaustible timber tracts provided the early settlers with raw materials to produce charcoal for the iron and steel industries, ties for railroads, fuel wood and chemical distillation wood, as well as lumber for homes, buildings, furniture, barrels and boxes. The settlers never envisioned that such forests could ever disappear. However, as Pennsylvania’s increasing population turned forest land into farms, and as expanding industries consumed more and more wood, the amount of standing timber grew smaller. Then, in the late 1800s, awareness began to grow that the forests were not inexhaustible. Large tracts of land once covered with virgin forests had been cutover and abandoned by the owners. Forest fires burned uncontrolled throughout much of the cutover area. Between 1860 (when Pennsylvania led the nation in lumber production) and 1900, (when it had to import lumber to fill its needs) various efforts were made to halt the depletion of the forests. The future wood supply and the restoration of once-forested areas greatly concerned conservation-minded citizens.

In 1887, the Pennsylvania General Assembly authorized the governor to appoint a committee to examine and consider the subject of forestry in Pennsylvania and report its findings at the next regular session of the legislature. In 1888 a Governor’s Commission was appointed to study the forest situation. Authorized by the legislature once again, the governor appointed a second commission in 1893. As a result of these studies, in 1895, Dr. J. T. Rothrock was appointed Commissioner of Forestry in the newly created Division of Forestry in the Pennsylvania Department of Agriculture.

In 1897 the legislature passed an act authorizing the purchase of unseated lands for forest reservations, thus marking the beginning of the Pennsylvania State Forest System. This act provided for the acquisition of not less than 40,000 acres in the headwaters of each of the main rivers of Pennsylvania, mainly the Delaware, Susquehanna, and Ohio, providing the land selected shall be of a character better suited to the growth of trees than to mining or agriculture, and that 50% of the area have an elevation of not less than 600 feet above sea level. In 1898, 7,500 acres of land in Clinton County became the first land purchased under this new act.

The Clear Creek State Forest was founded on September 1, 1920, with the district office in Clarion where it has remained. The office occupied two small rooms in the present Crooks building at the corner of Main and Sixth Avenue. In 1948, the office was moved into a two-story frame house at 401 Wood Street. This same year the state was divided into four regions. The western region comprised the Clarion, Warren, Johnstown, Uniontown and Ligonier Districts. Regional offices occupied the first floor and the district office occupied the second floor of the Wood Street Building. Secretary Samuel Lewis abolished the regions in 1953. The following year, the office was moved to 58 S. 7th
Avenue, and in October 1965, it was moved to the present location formerly occupied by the Western Pennsylvania Artificial Breeders Association.

R. Y. Stuart, Deputy Commissioner, suggested the name Kittanning after an American Indian settlement along the Allegheny River. Since the city of Kittanning lies more than 40 air miles southeast of the forest, the name is somewhat misleading. Most local residents are familiar with the two largest tracts in Jefferson County, which comprise the earliest purchases. They have referred to the area for years as the "Clear Creek State Forest," after a stream flowing through one of these holdings. Because of this, on July 2, 1980, all of the publicly-owned forest lands in the Kittanning District were officially given that name. At that time, the tract in Venango County had not yet come under Bureau of Forestry administration.

The first section of the forest purchased was the 3,200-acre Frazier tract, bought for $6,880 in January 1919. Most of compartments 6, 7, and 8 came from this purchase.

The next acquisition was the 2,481-acres purchased from Reuben Baughman in 1920. All of compartment 2 and all of compartment 3 lying in Polk Township came from this purchase.

Two tracts totaling 673-acres were purchased from M. M. Fisher et. al. in 1928. One tract makes up the southernmost section of compartment 6. The other is now part of compartment 7.

All of compartment 4 and 5 were obtained through the 2,419-acres purchased from J. M. Buzard in 1928. A small part of this purchase lying just south of the Spring Creek Road is now part of compartment 3. In 1929, two small tracts were added. One hundred six acres were purchased from Wallace and Hughes and another 133-acres from John M. Wallace. The latter piece lies in compartment 8 along Pine Run.

Three hundred sixty-three acres were purchased from the Susquehanna Chemical Co. in 1949. This tract lies in compartment 7 and includes the area commonly called the Corbett fields.

The 1,012-acre tract in Forest County that makes up compartment 1 was purchased in 1952 from Walter S. Haskell, et. al.

About 1963, 998-acres of the Clear Creek State Forest were set aside for the establishment of Clear Creek State Park. Sometime after 1964, the area was expanded when the Bureau of Parks purchased 210 acres of land from H. W. Miller. The Bureau of Forestry was responsible for the operation of the Park until about 1965.

In 1970, an interior holding of 105-acres was purchased from Howard Gaydosh. It is now part of compartments 3 and 4.

A 433-acre tract originally obtained in 1949 from the Cook Forest Association was transferred from the Bureau of State Parks to the Bureau of Forestry in 1971. This tract is now compartment 9.

The Lewis Painter exchange, completed on April 10, 1980, added two acres to the southeastern corner of compartment 8.

On July 18, 1980, an area of 3,184-acres, which was originally proposed for a state park, was also transferred to the Bureau of Forestry from the Bureau of State Parks. Purchase of the 22 parcels making up this tract was done by DER through direct settlements with the landowners, and took place from October 28, 1970, to November 7, 1973. The total cost to the Commonwealth was $392,275. This tract comprises compartments 10 and 11.

The 863 acre Laurel Fields acquisition in August 2006 consisted of two separate parcels in Heath and Polk townships, Jefferson County. The first parcel is 722 acres that shares two miles of contiguous boundary with existing State Forest lands in Compartiment 2. The second parcel is a 141 acre in-holding known locally as the “Laurel Fields” because of the large native mountain laurel plants growing in an
abandoned field in the southern end of the property. The Department provided The Conservation Fund $1,232,838.00 from the Growing Greener II Bond to purchase the land from the Headwaters Investments Group managed by Forest Investments Associates. Additional funding for the purchase was provided by the King Mellon Foundation. The Conservation Fund then transferred the property to the Bureau of Forestry.

In February 2008 the Clarion River Tract acquisition of 1,600 acres of land and an additional 1,700 acres of Timber Rights was purchased from the Lyme Timber Company through the Western Pennsylvania Conservancy. The funding for the purchase was provided again by GGII and the King Mellon Foundation.

On 24 June, 2010 a land exchange with the Pennsylvania Game Commission was finalized that transferred 4,753 acres of Game Land 283 along the Clarion River for 4,248 acres of State Park land at Pymatuning State Park. The exchange consolidated the previous Lyme Timber Company Tracts. An agreement between State Parks and the Bureau of Forestry designated management responsibility of the Clarion River Corridor lands below the 1400 foot contour to Cook Forest State Park with the above lands to the Clear Creek State Forest.

Key Resources and Events

Beartown Rocks Vista in Jefferson County off Corbett Road is a popular destination. The Kennerdell Tract along the Allegheny River in Venango offers recreational opportunities and historical sites. There are 25 miles of hiking, equestrian, and mountain bike trails on the 3,000 acre tract. The Dennison Run Vista offers a scenic view of the river valley. There is an iron furnace at Bullion Run and old oil well site along the river. Danner Campground offers a stop for canoeists.

Joint management of the Clarion River Tract in Clarion County, to promote recreational opportunities by the improvement and maintenance of public access and trail system.

Purpose and Goals

Purpose

District Interpretive Goals

- Encourage exploration and participation in low impact recreation within the Clear Creek State Forest.
- Foster an awareness and encourage sustainable use of resources by communicating, promoting and modeling good stewardship and best management practices
- Support effective partnerships with local communities that benefit the community, the resource and the visitor.
- Develop engaging experiences that promote intellectual and emotional connections between the resource and visitors.
- Communicate the ongoing challenges of balancing natural resource use with society’s needs, wants and desires.
- To foster an appreciation and understanding of the history of Pennsylvania’s forests and their role in our lives.
Objectives (outputs, outcomes and impacts)

The objectives provide a measurable way in which the goals will be accomplished.

**Outputs:** What Clear Creek State Forest will do for the visitor: “What we do”

Link them back to the goals.

1. Interpret and communicate to the visitor our resource management efforts while maintaining the wild character of the state forest. (Goal 2, 4, 5, 6)
2. Develop at least one program or project with the Jefferson County Conservation District to promote forest stewardship. (Goal 2, 3, 4, 5)
3. Work cooperatively with Brookville Historical Society to interpret the history at the Clear Creek State Forest and Clarion River. (Goal 2, 3, 4, 6)
4. Work cooperatively with Venango Historical Society/Oil Alliance to interpret the history at the Kennerdell Tract and Allegheny River. (Goal 2, 3, 4, 6)
5. Provide and maintain historic, cultural and natural history waysides at Beartown Rocks. (Goal 2, 4, 5, 6)
6. Work with State Parks to increase the variety or recreational program offerings (Goal 1 and 4)
7. Increase the visibility of the state forest by attending one community event where the state forest is promoted. (Goal 1, 3, 4, 5)
8. Work cooperatively with local school districts and universities to serve as an outdoor classroom/laboratory (Goal 2, 3, 4, 5)
9. Develop at least one additional volunteer opportunity. (Goal 3, 6)
10. Develop Volunteer Days for Clear Creek State Forest (perhaps in conjunction with Clear Creek State Park). (Goals 1,3,6)
11. Develop a map pamphlet for hunters showing fences in different Silviculture treatments, OSR, SHWD. (Goals 1,2,4,5,6)
12. Work cooperatively with the American Chestnut Foundation to interpret the American Chestnut. (Goals 1,2,4,6)
13. Interpret and communicate activities through Social Media (Goals 1,2,3,4,5)
14. Increase Interpretive Panels to express the history of Clear Creek State Forest (Goals 2,4,6)
15. Recondition the Iron Furnace and Oil Pumping Station and add Interpretive Panels (Goals 2,4,6)
16. Rehabilitate a Silvicultural Wayside for landowners on the Clear Creek State Forest (Goals 2,3,4)
17. Develop at least one additional Motorized campsite (Goals 1,2,4,5)
Outcomes: The anticipated short-term action resulting from the above outputs – “What the visitor will do.” Link them to the outputs.

1. Volunteerism will increase by 1% at Clear Creek State Forest (Outputs 1, 7, 9).
2. Litter will decrease by 15%.
3. School group visitation will increase by 2%.
4. Visitation will increase by 5%.
5. User groups will be more active by 10%.
6. Public education of Silviculture will increase by 5%.
7. Increase deer harvest by 5% (Output 11).

Impacts: The long-term benefits to the state forest as a result of the above outputs and outcomes – What happens long-term. Link these to outcomes.

1. Reduced litter will add to aesthetics across Clear Creek State Forest (Outcome 2).
2. Volunteer efforts increase which promotes more recreational opportunities within and surrounding Clear Creek State Forest (Outcomes 1, 5).
3. Support towards State Forest Operations will increase (Outcomes 8, 9, 10).

Audiences and Market Considerations
Who makes up your current audience/visitors? Who are the players involved in the use and stewardship of your state forest? Are there any groups not serviced that you would like to include? Have you provided interpretation for all of your audiences?

• Current Visitors
• Current Web Visitors
• Key Audiences
• Future Markets and Trends

Theme and Subthemes
The theme is a central statement that is the guiding message for all interpretation at the state forest. It defines the approach that interpretation will take. If this theme is correctly interpreted through a variety of media, it is the message that a visitor takes home. Sub-themes further develop the theme and are the logical progression into storylines. These are the stories that are important to your district. What do you want the visitor to know about your forest district? What message do you want the visitor to take home?
Central Theme: Clear Creek State Forest connects the past with the present and will connect the future through sound management of its forest resources. Legacy Tree theme- Recreation, Climate, Water, Green, Youth and Forest and interrelationships between them.

Subthemes:
Clear Creek State Forest resources will survive for future generations’ use and enjoyment through sound resource management and active stewardship.
- Conservation efforts built on the past set the stage for today’s use and enjoyment of Clear Creek State Forest using sound Silviculture, pest management and invasive species management
- Clear Creek State Forest is part of a larger landscape influenced by surrounding communities, State Parks, National Forest and State Game Lands.
- Creating a sense of belonging for visitors will be passed on to future generations.
- Youth Engagement provided by outdoor opportunities.
- Water Protection provided by forests or RFB
- Recreational opportunities on SFL

Current Interpretation (personal and non-personal)
Create an inventory and overview of the programs, waysides, exhibits, brochures, maps, etc., currently offered by this state forest.
- Personal
- Non-personal

Issues, Challenges and Opportunities
Key issues and challenges to interpretation/operations at the site and a list of possible solutions to each of these concerns. Interpretation is a management strategy.

How can you use interpretation to resolve some of your key management issues?
**Recommendations for Personal (P) and Non-personal (NP) Media**

This section includes the specific descriptions for personal (staffing, programs) and non-personal (exhibits, publications, waysides, etc.) media as well as costs for each recommendation.

This is how you accomplish the objectives and prioritize your interpretive projects and funding.

This section is linked to the Project Request Sheet/Share Point Site. Your priorities become our priorities.

<table>
<thead>
<tr>
<th><em>Priority</em></th>
<th>*Rec Number</th>
<th>Recommendations (in priority order)</th>
<th>Corresponding Objectives</th>
<th>Estimated Cost</th>
<th>Project Lead</th>
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<td><strong>Personal Services (P):</strong></td>
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<td>P1</td>
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*The Priority number and Recommendation Number are needed when requesting an interpretive project from the Communication Section.

**Evaluation Strategies**
- How did we do?
- These are the methods that will be used to measure the effectiveness in meeting the objectives.
- Is that wayside effective?
- Are there less complaints?
- Review this plan every cycle in conjunction with the District Management Plan and SFRMP to discuss updates and changes needed.

**Implementation Plan**
For this section, you can take the recommendations and group them into “Ongoing Efforts”, “Phase I” and “Phase II” projects, if that is helpful in planning.

**References**
Plans, studies, maps and resources used in developing your interpretive plan.