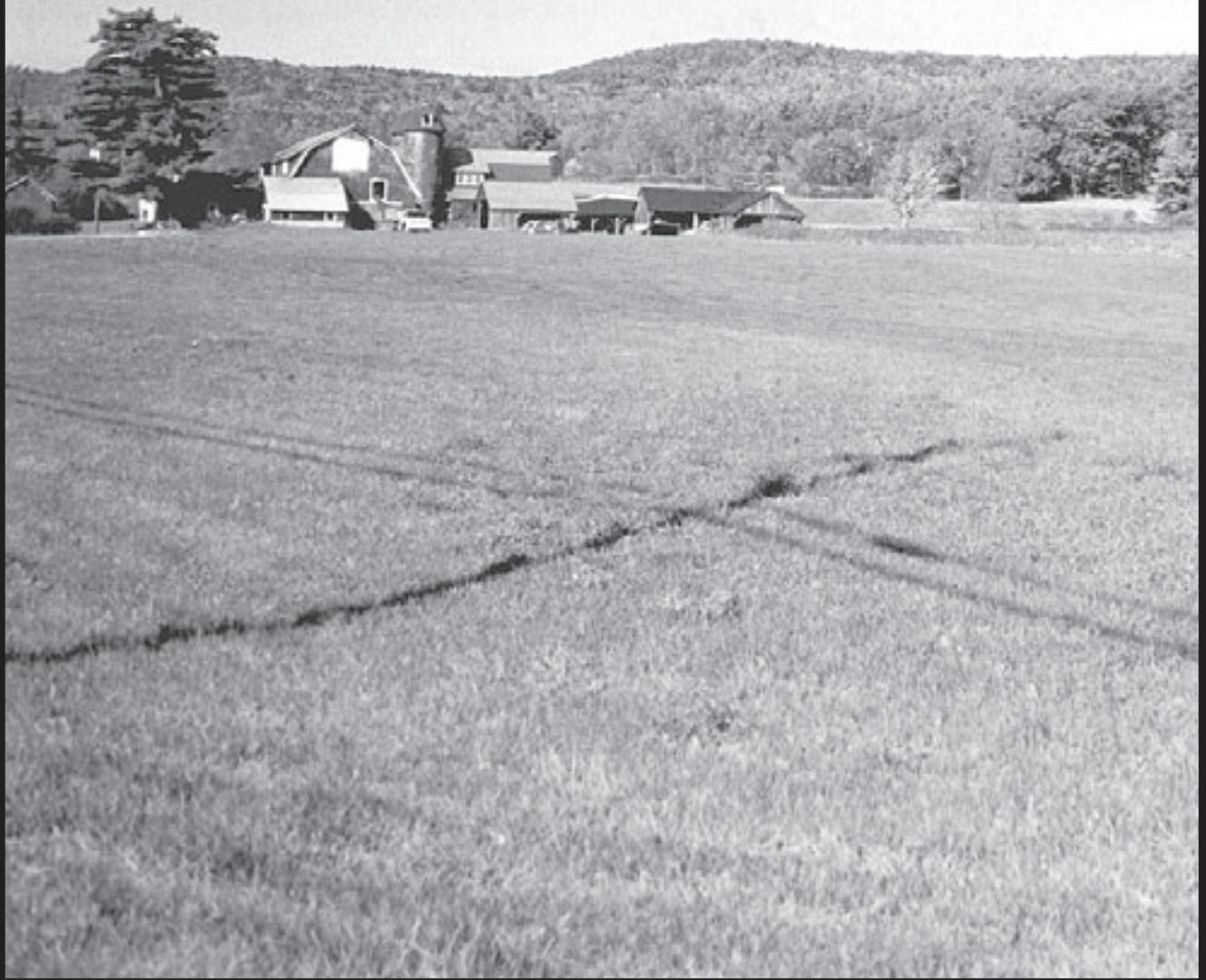


Natural Resources



Along the Mohawk Trail Scenic Byway lies a wealth of important natural resources. Among these resources are: the Deerfield and Hoosic Rivers, which contain important trout habitat; the Glacial Potholes in Shelburne Falls, one of the largest collection of such potholes in the country; the Natural Bridge in North Adams, the only bridge in North America created by the erosive forces of water; and miles of northern hardwood forests along the Byway corridor, including old growth forests in the Mohawk Trail State Forest. The Byway also includes other geologic, flora and fauna, water resources that help make the Mohawk Trail Scenic Byway experience unique. The corridor's natural resources contribute to the dramatic scenery viewed from the Byway, and attract recreational tourists seeking to experience the corridor's wildness.

This chapter of the Corridor Management Plan provides a general inventory and overview of the Byway's natural resources, including its geology, soils, water resources, and rare species habitat areas. The purpose is to highlight the Byway's primary natural and environmental assets. The chapter also discusses potential issues that could affect the quality of these resources over time, especially if the Byway experiences an increase in tourist and vehicle traffic. The chapter closes with a series of recommendations for protecting, maintaining, and enhancing the Byway's natural resources.

Geologic Resources

Geologic History

The formation of the Byway landscape began approximately six-hundred million years ago. During that time, the region now occupied by Berkshire and Franklin Counties was located south of the equator, and lay submerged at the tropical edge of North America under the warm sea that preceded what is now the Atlantic Ocean. Over the next several hundred million years, the processes of plate tectonics pushed several land masses into the eastern edge of North America, creating new mountains with each impact. Beginning approximately 500 million years

ago, a period of mountain building (also known as an orogeny) called the Taconic Orogeny created the Taconic Hills of western Berkshire County. During this period, bedrock and sediment deposits of the warm sea were pushed westward and inland.

During a second period of mountain building, the Acadian Orogeny, the earth's crust was thrust westward ever further, creating the northern Appalachian Mountains. Rocks from a distance away were folded up against the already existing rocks, buckling like a rug. Entire rock formations fractured and cracked, creating shear zones running north-south along Berkshire County. Older ocean bedrock was thrust upward over younger rocks also derived from ocean sediments. The ef-

fect of these stresses was to transform the tropical marine sedimentary layers into metaphoric rocks, including gneisses, schists, and slates.¹ Today, caps of phyllite² and schist protect the Taconic Hills, and caps of schist and gneiss cover the Berkshire Highlands. Softer limestones, marble, and dolomites (which resemble limestone) are folded in amongst these harder rocks.

The Connecticut River Valley, to the east of the Berkshire Hills, was formed approximately 200 million years ago, after the Taconic and Berkshire Hills. The Connecticut River Valley was created as preexisting rocks in the region stressed and pulled apart, opening up a fault between the rocks. Rivers washed large amounts of sediment into the Connecticut River Valley; in the Greenfield–Montague part of the Valley, about 6,000 feet of sediment remain today. As with the hills to the west, the Connecticut River Valley ridges initially grew as stresses pushed rocks upward, and then softened as glacial movements and weathering eroded the Valley’s edges. The mountain ranges created during the ancient mountain building periods are believed to have once been 20,000 feet high. However, the combined effects of weathering, river systems, and glacial movement have softened these mountains into hills that are now generally 2,000 to 3,000 feet high. Also, over time, mountain streams have carved sharp ravines through bedrock faults running down the harder metaphoric rocks (phyllites, schists and gneisses) that make up the ridges along the Byway.

¹ Gneiss is a light and dark, medium to coarse-grained metamorphic rock characterized by compositional banding of light and dark minerals. Schist is a light, coarse to very coarse-grained, strongly to very strongly layered metamorphic rock whose layering is typically defined by parallel alignment of micas. Slate is a slightly metamorphosed shale or mudstone that breaks easily along parallel surfaces (Skehan, 2001).

² Phyllite is a metaphoric rock intermediate in grade (and grain size) between a slate and a schist (Skehan, 2001).

Geology Today

Traveling along the Mohawk Trail today, the region’s varied geology can be seen from a number of locations. Leaving Greenfield, traveling west, the Byway begins a long ascent around Greenfield Mountain. The man-made Longview Tower, located along this climb, provides scenic views of the Connecticut River Valley and its geologic past. To the east of the tower, lies ridges of dark grey volcanic rock in the valley, and near the tower, roadcuts reveal an outcrop of schist. West of the tower, the Mohawk Trail travels around the north side of Greenfield Mountain, which is comprised primarily of gray Gile Mountain schist and metamorphic amphibolites, made up of minerals rich in iron, calcium, and sodium (Skehan, 2001).

Between Greenfield and Charlemont, the Mohawk Trail crosses over complex, folded schists. Gneiss forms the core of the Shelburne Falls dome, and of the glacial potholes located below the Salmon Falls. The potholes in Shelburne Falls are one of the largest known concentrations of glacial potholes in the country. The more than fifty potholes, ranging in size from six inches to thirty-nine feet, were formed by the whirlpool action of water and gyrating stones during the glacial age. They were created beginning 14,000 years ago, when flooding and receding waters of the Deerfield River eroded the underlying gneiss rocks, and have continued to form and change ever since.

Traveling from east to west along the Byway between the Charlemont fault and Whitcomb Summit, one passes through three distinct geologic formations, all of which can be seen from the roadway. They are the dark green Hawley volcanic rocks, the gray Moretown schist, and the emerald green Rowe schist (Skehan, 2001).

Moving further west along the Scenic Byway, one sees Hoosac schist from the West Summit Overlook, and at the



Ice clings to the Hoosac schist seen at the Hairpin Turn, Florida.

Hairpin Turn on the Clarksburg-North Adams town border. To create the roadway here, several hundred feet of bedrock were blasted open, exposing the thin layers of schist with scattered veins of quartz. This rock was formed from sediment deposits laid upon the continental shelf of ancient America.

The ancient Hoosic River carved a valley through the softer marbles and limestones at the western end of the Byway. Glacial ice smoothed the hills and widened the river valley, grinding, mixing and depositing debris as successive ice sheets advanced and retreated in a north-south direction over many thousands of years. Shore deposits from a large glacial lake that once submerged the Hoosic and Green River Valleys, and from more recent flood deposits from the rivers themselves, have left rich alluvial soils along the valley floors. A patchwork of agricultural fields still exists along the wavy hills and lowlands of the valleys, as one can see from several vantage points along the Byway.

The softer deposits that once lay on the floor of the ancient warm sea later

provided numerous opportunities for the mining of marble and limestone. Several marble and limestone quarries once thrived throughout Berkshire County, and Specialty Minerals Inc. continues to mine limestone in Adams today. One fine example of an abandoned marble mine can be seen at Natural Bridge State Park, in North Adams. The quarry is adjacent to the Natural Bridge, a geological formation which is the only bridge in North America created by the erosive forces of water. The exposed bedrock near the bridge is Stockbridge marble, a light grey stone that was formed over 500 million years ago. The bridge itself, however, is estimated to be only 10,000 years old, and was created during the last Ice Age. In the past, Hudson Brook, which previously ran higher and stronger, carved out a 475-foot long by 60-foot deep chasm through the marble. The brook flows easier now, having carved only about one extra foot deeper in the last 8,000 or 9,000 years (Plante, 2000). The brook also sculpts potholes in the marble as the water swirls downward. The 30-foot Natural Bridge and associated walkways offer “an intimate

yet safe look at the tremendous power of flowing water” (Laubach, 1992).

Soils

The characteristics of the different types of soils along the Mohawk Trail Byway dictate the type of activity and development that can reasonably take place there. The soil types found along the Byway corridor occur in natural groups known as soil associations. This section provides an overview of the soil associations found along the Byway, traveling from east to west.

The Colrain-Buckland Association is the major soil group along the segment of the Byway between Greenfield and the Deerfield River. These soils are generally shallow to bedrock, rocky, and moderately acidic. They are present on rolling to steep hills, are moderately to very permeable and loamy, and are often stony. These soils are most suited for recreational development and wildlife habitats. More intensive development in this section is limited by steep slopes and the soil’s rocky, stony characteristics.

The soils change in the Deerfield Valley, along the Deerfield River. Along the river, the predominant soil group is the Merrimac-Ondawa Association. These soils are strongly acid and loamy. They are found on level to gently sloping land, in terraced areas, including the floodplain, and are very permeable.

Development on these soils is limited in floodplain areas. Because of their characteristics, these soils are well suited as potential sources of water for commercial, residential, or municipal uses. However, due to the soils’ permeability, any wells in this area must be located far enough away from potential sources of pollution, including septic systems, to avoid contamination.

Colrain, Buckland, Merrimac, and Ondawa soils have all been identified as being prime farmland soils, which are ideal for growing crops. Since, as discussed above, the Colrain-Buckland and Merrimac-Ondawa Associations are the predominant soil groups along



A view of the Hall Tavern Farm located on the Mohawk Trail Scenic Byway in Charlemont

the Franklin County portion of the Byway, compared with other sections of the Byway, this segment has a moderately high concentration of prime farmland soils. Prime farmland soils are those soils that have the best combination of physical and chemical characteristics for producing food, feed, and fiber crops. They also have the soil quality, growing season, and moisture supply needed to economically and sustainably produce high crop yields.

According to a U.S. Department of Agriculture map of the *Important Farmlands in Franklin County* (1979), the greatest concentration of prime farmland soils in the Byway corridor occurs along the Deerfield River in Buckland and Charlemont, within a quarter-mile of the Scenic Byway (Route 2). Within the Franklin County portion of the Byway corridor, much of the land with prime farmland soils is currently used for agriculture. Overall, 15 percent of the Shelburne section of the Byway corridor, 12 percent of the Buckland portion, and 13 percent of the Charlemont section presently has agricultural land uses. Some of the current farmland has prime farmland soils. It is

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The soils along the Deerfield River in Franklin County are prime agricultural resources.

important that the areas with high quality farming soils are identified and protected for future agricultural use.

The Agricultural Preservation Restriction (APR) program is one mechanism for permanently protecting prime farmland from development. The APR Program is a statewide program run through the Massachusetts Department of Food and Agriculture that purchases the development rights of farmland on a voluntary basis. Under this program, landowners retain ownership of the land and the right to farm the land, while receiving payments for the difference between the “fair market value” and the “agricultural value” of their farmland in exchange for permanently restricting the land from development.

Another mechanism for protecting farmland is the statewide Chapter 61A program, which temporarily restricts development on land in the program in exchange for reduced property taxes. The APR and Chapter 61A programs, and the importance of protecting farmland from development, are discussed further in the Land Use and Zoning chapter.

As the Byway separates from the Deerfield River and heads into Berkshire County, the predominant soil characteristics change. The Tunbridge-Lyman Association is the major soil group found along the highlands of the Byway in the communities of Florida and eastern North Adams. These soils are shallow to bedrock and extremely stony, with frequent rock outcrops. Permeability in these soils is moderate to moderately rapid, and on south-facing slopes, the soils tend to be prone to drought. Depending on the type of forest cover, the acidity of the soil can be moderate to extreme. This area has large amounts of recreational and state forest lands. However, recreational development in this section of the Byway corridor is constrained by soil and slope constraints: the area’s shallow depth to bedrock and steep slopes restrict septic system locations and areas

for camping, and the steep slopes restrict trail creation.

There is a change in soils once again with the descent into the lower elevations of the Hoosic River Valley. Copake-Urban land soils, which are fine sandy loams, predominate along the river in North Adams. These soils are deep, excessively drained soils on glacial outwash terraces, with few limitations on development. Moving farther west, the Stockbridge Association soils, which are gravely silty loams on drumloids or glacial till, predominate along the river in Williamstown. The permeability of these soils is moderate in the upper layers and slow in the lower layers, which may impede septic system function. These soils are well suited to cultivated crops and, except for permeability, pose few limitations to development.

Water Resources

The Mohawk Trail region is blessed with an abundance of relatively clean and clear water resources. These valuable resources provide water for drinking and for energy production, and also offer communities a source of revenue by attracting outdoor recreational tourism. The Scenic Byway travels through both the Deerfield River and Hoosic River Watersheds, and crosses these rivers and their tributaries several times. Going from east to west, the Byway first runs along the Deerfield River in Shelburne, Buckland and Charlemont, then along the Cold River in Charlemont, Savoy and Florida. In Florida, the Byway crosses into the Hoosic River Watershed and parallels the river through North Adams and Williamstown.

Rivers and streams

The Scenic Byway corridor contains a number of significant water resources, including rivers and tributaries. The Deerfield River is generally considered



*A view of the Deerfield River
in Charlemont*

to be one of the most pristine rivers in Massachusetts, and is home to a large variety of aquatic and wildlife species. There is an Atlantic Salmon restoration program that annually stocks almost 1 million Salmon Fry (baby Salmon) into many tributaries of the Deerfield River. Further, a number of streams and stretches of river in both the Deerfield River and Hoosic River Watersheds are known for their excellent trout fishing opportunities. With the exception of the Main Stem Hoosic River, all of the main streams and rivers crossed by the Byway are classified as cold water fisheries. Trout require cold, clean water to survive and are especially sensitive to pollution. It is essential that the coldwater streams be protected from the negative impacts associated with development, roadway runoff and ill-managed woodland clearing. More generally, it is important that all activities along the Byway corridor, including recreation, tourism, and development, occur in a manner than minimizes any

potentially adverse impacts on the Byway's natural resources.

Starting from Greenfield, the Mohawk Trail maintains a steady ascent around Greenfield Mountain. Near the beginning of this climb, the Byway passes over Wheeler Brook, a tributary of the Green River that drains into the Deerfield River. Traveling past Greenfield Mountain, the Byway crosses over Allen Brook, a tributary to the Green River and subsequently, a major tributary to the Deerfield. The Byway then drops into the Deerfield River Valley.

Once in the Deerfield River Valley, the Byway corridor first runs parallel to the Deerfield River in Shelburne, and then crosses the river twice near Shelburne Falls. It then travels along the river for eight miles through Charlemont. Most of the section of the Byway along the Deerfield River is relatively flat and has only a few rolling hills. While traveling along the river, the Byway crosses over a number of streams and through a number of small wetland areas.



Cold River in Florida.

Many of the recreational and fisheries resources of the Deerfield River are influenced by the 10 hydro-power generating facilities that are located along the section of the river that is in northern Massachusetts. Nine of these facilities are now owned and operated by PG &E National Energy Group. Con Ed. owns the generating facilities located at Gardner Falls, just above Wilcox Hollow in Shelburne and Buckland. Through a series of reservoirs, dams, power stations and one pumped storage facility, the water in the Deerfield is managed to generate power.

In 1994, an agreement was reached between the power company (that owned the facilities at the time) and twelve separate organizations, representing environmental, recreational, and government agencies. Although Con. Ed. did not participate in the negotiations, they have had to comply with the flow requirements, and fish passages specified in the settlement agreement. The agreement called for the power company to take a number of actions to enhance recreational activities and wildlife preservation along the Deerfield River. These actions include providing minimum flows below all of the dams and reservoir management to protect aquatic and shoreline habitats, installing fish passageways at various sites along the river, implementing a program

to protect area wildlife, and scheduling water releases at agreed upon times for kayakers, canoeists, and other boaters.

The Recreation Section of the Corridor Management Plan contains further details on the agreement with the power companies, and the whitewater rafting opportunities created by the scheduled water releases. Fly fishermen have expressed concern regarding maintaining some periods with lower river flows to allow them to enjoy the river's resources as well. In addition, concerns have been expressed regarding safety issues and ensuring that people are aware of the fluctuation in the river flows. There are signs posted warning of the fluctuations in river flow but they are not in all locations along the river. Some people have complained that the water comes up too quickly when it is released, and creates a danger.

The Byway leaves the Deerfield River just west of downtown Charlemont, and follows one of the river's western tributaries, the Cold River, towards the town of Florida. Here the road begins its ascent through the Hoosac Range within a deep and winding gorge carved out by the river. This area is rich in wildlife, and supports native trout and rare and endangered species of vertebrates, invertebrates, and plants.

At the end of a winding ascent, the Western Summit sits upon the watershed divide between the Deerfield and the Hoosic River Watersheds. As the Byway continues traveling west, it descends into the Hoosic River Watershed. The descent is steep, and just beyond the Western Summit is the Hairpin Turn. The road changes its direction from north to south along the side of the mountain and in doing so twice crosses four unnamed tributaries to the North Branch of the Hoosic River.

As the Byway descends into the City of North Adams, it runs along the North Branch Hoosic River. The fast-flowing water of the North Branch and the Main Branch of the river once provided hydropower to several mills in the City of North Adams. One such example is the Eclipse Dam located on the North Branch near the intersection of Routes 2 and 8. The dam provided power to the Eclipse Mill, which is situated between the river and the Byway. The mill is no longer in operation, but the dam is currently being considered as a potential source for renewable energy and revenue generation.

The North Branch flows into the Hoosic River, which runs through the heart of North Adams. Once in the city, the Byway intersects with the river five times, giving the traveler an opportunity to view the river in both man-made and natural settings. The North Branch is a Class B cold water fishery up to its confluence with the main stem of the Hoosic River, which is a Class B warm water fishery.

Threats to Water Quality

As stated earlier, most of the rivers and streams along the Mohawk Trail are cold water fisheries. These fisheries support trout, which require cold, clean water to survive and which are especially sensitive

HOOSIC OR HOOSAC?

The terms *Hoosic* and *Hoosac* are attributed to a great many features in northern Berkshire County, including a river, a mountain range, a regional school system and countless roads and businesses.

The spelling of the river and the mountain range is inconsistent in historic records and often greatly debated among locals.

For the purposes of this report, the river system that flows along the Mohawk Trail is the Hoosic River and the mountain range that the Trail traverses is the Hoosac Range.

to pollution. It is therefore essential that the cold water streams be protected from the negative impacts associated with development and roadway runoff. One specific issue of concern is the pollution caused by stormwater runoff from the road surface of the Byway. “Country drainage,” where stormwater runoff is channeled through man-made ditches and culverts and discharged into the nearest waterway, is the most prevalent drainage management system along the Byway. The main priority of these systems is to redirect stormwater off and away from the road in the quickest manner possible. These drainage systems were constructed in the early days of the Byway, and continue to be used today. The good news is that these systems clear water off the road quickly to prevent crashes; the bad news is that they do not treat or remove the pollutants carried by the water before discharging it into nearby waterways. It is now known that non-point source pollution from roadways is similar to that of urban runoff (Barrett et al, 1995), and is a major source of sediment, salt, petrochemicals, and heavy metals. Future roadway improvements should incorporate upgrades to the current stormwater management systems to treat or remove



The Hoosic River in Williamstown.

pollutants from stormwater runoff before it is discharged into nearby waterways.

One area where stormwater runoff is potentially an issue is the Deerfield River section of the Byway. Within that part of the Byway, there are two designated picnic areas, one parking area, and close to ten formal and informal areas where vehicles can pull over. Most of these areas are on the river-side of the Byway, and a number are located very close to the river, within fifty yards from its banks. Only a few of these areas have any drainage mechanisms or pavement curbing to stem runoff discharge into the river. One example of an area with such curbing is the parking lot just west of the Buckland-Shelburne Bridge. Consideration should be given to improving drainage, and limiting runoff in the other pull-over areas and redirecting runoff

away from waterways. sections of the Byway closest to the river, as well.

Another part of the Byway where runoff is a concern is the Byway's highland section in Berkshire County. Where roads cross mountain streams and natural drainage areas, stormwater is routinely channeled through man-made ditches and culverts and discharged into the nearest waterway. The intent of this drainage pattern is to remove stormwater from the road as quickly as possible. Along the highland stretch of the Byway, road runoff is typically collected in paved swales and diverted through a series of catchments and pipes before it is discharged. Some of the catchments have catch basins to pre-treat runoff by capturing a portion of settleable solids, but many catchments are merely the confluence of two or more drainage swales and do not treat runoff.

To avoid degrading the quality of the water in these mountain streams, stormwater runoff should be directed away from waterways, not discharged directly into them. It should be treated or discharged into gently sloping fields or woodlands to allow sediment deposition and infiltration. Highway studies have shown that directing road runoff through grassy swales before discharge is an effective yet relatively simple and inexpensive way to reduce the concentrations of most pollutants carried by the runoff. The mechanisms for removing pollutants in runoff are 1) filtration of sediment by grass blades or other vegetation, 2) infiltration of water and attenuated pollutants into the soil, and 3) biological activity within the grass and soil media (Walsh et al, 1997).

In areas where treatment is impossible and grassy swales or other mitigation measures are not appropriate, (such as steeply sloped area), road "country drainage" systems can be redirected to discharge road runoff through heavily forested areas, allowing the water to filter through vegeta-

tion and duff layers and filtrate through the soil to mainly discharge into the receiving water as subsurface or groundwater flow. One example of where road runoff is being discharged into a wooded area is just above the Cold River bridge at the Florida/Savoy town line. Runoff is collected through swales and diverted into a wooded area between the road and the river. As the stormwater is discharged into the forest floor, the roughness of the duff layer spreads the flow out and decreases the velocity, filtering out much of the sediment and sand. The cleaner stormwater then flows overland or infiltrates into the soil before it is discharged into the river. Although this stormwater management pattern is often seen in rural dirt roads, it is seldom used along paved roads. Where possible, it should be investigated as a passive stormwater pretreatment method. It should be noted that the sand that accumulates on the forest floor should be removed periodically to prohibit it from eventually reaching the river.

Aside from the environmental impacts of sand and salt, the velocity of the water can cause its own problems. Serious erosion can occur at the discharge end of stormwater pipes, culverts, and swales, carving deep gullies down the mountainside. These gullies eventually work their way back towards the road and can undermine the discharge system and eventually the stability of the stream bank. In addition, the soil that is eroded during the creation of these gullies is washed into the nearest waterway.

Another section of the Byway where runoff is an issue is along the Main Stem of the Hoosic River. The Land Use Activities and Nonpoint Source Pollution Assessment of the Hoosic River Watershed, completed by the Berkshire Regional Planning Commission (BRPC) in 1998, identified urban runoff as detrimental to water quality in the Hoosic River and recommended that treatment of urban

runoff receive the highest priority. Urban runoff in the City of North Adams detrimentally affects the natural hydrologic flow, resulting in accelerated and higher peak flood flows and lower drought flows. In addition, heated runoff from roads, parking lots and the concrete chutes within the city elevate the temperature of the flowing water, resulting in lower dissolved oxygen levels and higher levels of stress for aquatic species. The City of North Adams and the Massachusetts Museum of Modern Art (MASSMoCA) are each owners of large impervious areas along the river. Both have buildings and parking lots adjacent to the river and both have indicated an interest in implementing stormwater mitigation measures on their respective properties. However, to date, neither has fully pursued the implementation of any stormwater mitigation projects.

Future road maintenance and improvement project are excellent opportunities to upgrade and/or improve stormwater control measures to protect the natural resources that exist in the waterways along the corridor. A second study, the Stormwater Assessment of the Hoosic and Housatonic River Watersheds, noted that stormwater management projects are most likely to occur when incorporated into priority improvement projects such as roadway construction, wellhead protection, or public park upgrades. This finding is applicable to the Deerfield and Cold Rivers as well. Therefore, it is critical that state and local transportation agencies work to ensure that all road projects incorporate measures to minimize their potentially adverse impacts on the rivers' water quality. Mohawk Trail Scenic Byway advocacy groups should encourage best management practices to preserve and improve water quality of the rivers along the Byway. The BRPC and the FRCOG can support the use of best management practices through their roles in regional

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Cold water fisheries in the Deerfield, Cold and Hoosic Rivers face threats from stormwater runoff and increased use by recreationists.

TABLE 3.1
Water Systems within the Byway Corridor that Serve the Public

Well	Map ID	Private or Public	County Location
The Wizard	1	Private	Franklin
Shelburne Falls Coffee Roasters	2	Private	Franklin
Well #2 Fire System	3	Public	Franklin
Strawberry Field Antiques	4	Private	Franklin
Well #1	5	Public	Franklin
Well #2	6	Public	Franklin
Well #3	7	Public	Franklin
Well #1 Hill Top	8	Public	Franklin
Well #3 Woodland	9	Public	Franklin
Goulds Sugarhouse	10	Private	Franklin
Deuce Bar & Grill	11	Private	Franklin
Mohawk Trail Regional HS	12	Public	Franklin
Buckland Recreation Area	13	Public	Franklin
Crab Apple White Water Rafting	14	Private	Franklin
Crab Apple White Water Rafting	15	Private	Franklin
Hill Top Motel	16	Private	Franklin
Country Air Campground	17	Private	Franklin
The Oxbow	18	Private	Franklin
The Oxbow	19	Private	Franklin
Red Rose Motel	20	Private	Franklin
Olde Willow Motor Inn and Restaurant	21	Private	Franklin
The Academy at Charlemont	22	Private	Franklin
Neighbors Convenience Store	23	Private	Franklin
Hawlemont Regional School	24	Public	Franklin
Hawlemont Regional School	25	Public	Franklin
The Charlemont Inn	26	Private	Franklin
Charlemont Pizza House	27	Private	Franklin
Berkshire East Ski Area	28	Private	Franklin
Zoar Outdoors	29	Public	Franklin
Mohawk Park Corp.	30	Private	Franklin
The Rebels Restaurant	31	Private	Franklin
Mohawk Trail State Forest	32	Public	Franklin
Mohawk Trail State Forest	33	Public	Franklin
Whitcomb Summit Motel	34	Private	Berkshire
Lilstugen Ice Cream Shop	35	Private	Berkshire
Abbott Memorial School	36	Private	Berkshire
Golden Eagle	37	Private	Berkshire
Greylock Well	38	Public	Berkshire
Green River Well #1	39	Public	Berkshire

transportation planning activities. Future road maintenance and improvement projects are also excellent opportunities to upgrade and/or improve stormwater control measures to protect the natural resources that exist in the waterways along the corridor. In addition, the regional planning agencies can apply for grants to implement stormwater management improvements provided by the EPA and DEP through the 319s Non-Point Source Pollution Grant Program.

A final issue involving river water quality concerns the possibility of a hazardous materials spill along the Byway. The Byway is used by trucks that transport hazardous materials, and accidents and spills of these materials can occur. Hazardous spill management in Massachusetts is coordinated by the Massachusetts Department of Environmental Protection (DEP). In addition, recognizing the serious effects that a hazardous materials spill could have on water quality and animal and plant species in the area, the Massachusetts Executive Office of Environmental Affairs (EOEA) has made developing a regional Emergency Hazardous Materials Spill Plan one of its top priorities for the Deerfield River Watershed Association. A process to create a regional local emergency planning committee (LEPC) and emergency response plan for Franklin County is currently underway. The parties involved in this process include the Deerfield River Management Team, the FRCOG, and the local communities.

Public Drinking Water Resources

As with the quality of rivers and streams along the Scenic Byway, the public drinking water resources within the Byway corridor can also be threatened or degraded by nearby land uses, roadway runoff and the use of salt and sand for road maintenance during winter months. There are thirty-nine public water systems located

within one mile of the Byway. The systems identified within the corridor study area are all groundwater wells. The Natural Resource Maps at the end of this chapter indicates the location of these water resources. By definition, a public water system has 15 or more service connections, or regularly serves water for 60 days or more per year. Those systems can be publicly owned and maintained, such as city and town wells, or can be privately owned and maintained, such as those for mobile home parks, factories, rest stops, motels, and restaurants.

The public water systems within the Byway corridor are listed in Table 3.1 below and are shown on the Natural Resources Maps at the end of this chapter. In the Franklin County portion of the Byway corridor study area, there are 33 public water systems. Six of the wells are for municipal drinking water supplies, seven are for schools, parks, or recreation areas, including the Mohawk State Forest, and the remainder are for private businesses, including Berkshire East and various restaurants, bars, motels, and retail establishments. In the Berkshire County section of the Byway corridor study area, there are six public water systems. One is the Greylock Well, which is the municipal well for the city of North Adams, one is the Green River Well #1, three are for private businesses, and one is for the Abbot Memorial School.

Plant and Animal Species

The Byway is graced with miles of forestlands that support a host of wildlife. Forests that were once cleared for farms, timber and charcoal have recovered and again grown into productive northern forests. Also, healthy populations of animals that were once diminishing in the area, such as white tailed deer, black bear, bobcat, fisher cat, and turkey, have begun to return. There are

even rumors that the elusive catamount, or mountain lion, has been seen roaming these forests once again.

The vegetation along the Byway varies distinctively as one travels from Greenfield to Williamstown. Generally, the Franklin County section of the Byway is characterized by a mixture of farmland and forests. The forests are predominantly “Transition Forests,” a combination of plants and deciduous trees from Middle Atlantic Forests and Northern Forests. Middle Atlantic Forests contain oak, chestnut, and many other tree species. Northern Forests are comprised of hemlock, maple, beech, birch, northern red oak, ash, and pine. West of the Connecticut River Valley, the Byway corridor contains large stands of Northern Hardwood Forests. Large tracts of these forests are found in the northern uplands of Franklin County and in the Berkshires. Traveling through the higher elevations of the Byway in eastern Berkshire County, the soils are thin and the weather conditions are harsh. Trees along rocky outcrops along the roadway, where conditions are especially harsh, appear gnarled and dwarfed. This is an adaptation for survival, where the trees grow laterally rather than vertically to avoid damage to branches and foliage from the icy winds of winter and the severe winds of summer storms. This same growing pattern can also be observed in the Mt. Greylock State Reservation, the gateway to which is in the City of North Adams.

These lush forestlands contribute to the local economy in a variety of ways, including revenues from timber production. They also support maple syrup production to outdoor recreational activities, such as hiking, camping, fishing, hunting, boating, skiing, snowshoeing, and snowmobiling. Maple sugar producers near and in the Byway region include Fog Hollow Farm, Spring Farms, Davenport Maple Farm, and Gould’s and Graves Sugarhouses in Shelburne, Blue Heron Farm and Wilder

MAJOR FINDING



Rare and endangered species habitats exist along the Byway corridor.

Brook Farm in Charlemont, and Circle J Maple Syrup in Florida.

Recreational opportunities along the Byway are further discussed in the Recreational Resources chapter. It is important that recreational activities and the harvesting of forest-based resources within the corridor occur in a sustainable way that ensures the long-term viability of the plant and animal species in the area.

Rare and Endangered Species and Significant Natural Communities

The Natural Heritage and Endangered Species Program (NHESP), which is administered by the Massachusetts Division Fisheries & Wildlife, collects and maintains information on over 400 rare and endangered species around the Commonwealth. The goal of the NHESP is to protect biological diversity in the state through biological research and the inventorying of species, data management, environmental impact review, restoration and management of rare species and their habitats, land acquisition, and education.

Approximately 18 miles of the Byway travels through or is adjacent to habitat that has been documented by the NHESP as supporting some of the most important natural communities and state-listed rare species in Massachusetts. These sections of the Byway contain endangered species habitat, as well as important natural communities that are categorized as being moderately to highly significant. The NHESP reviews and comments on certain development proposals within these habitat areas on a case-by-case basis to ensure their protection.

The sites shown on the Natural Resources Maps represent two distinct categories of habitats regulated under Massachusetts law. Estimated Habitat areas delineate the approximate geographical extent of the habitats of state-protected rare wildlife for use with the Wetlands Protection Act (310 CMR 10.00) and the Forest Cutting Practices Act (304 CMR 11.00). Rare

wildlife data for these areas were collected from 1974 through 1998. If a construction or development project is located within an Estimated Habitat and requires the filing of a Notice of Intent (NOI) under the Wetlands Protection Act, then the NOI and supporting materials must be forwarded to the NHESP for review before the project can proceed.

Priority Habitat areas delineate habitats for rare plant and animal populations protected under the Massachusetts Endangered Species Act (321 CMR 10.00). These areas indicate the approximated geographic extent of rare species populations taken from the NHESP database. These areas should also be used in conjunction with the Rare Species Threshold in the Massachusetts Environmental Policy Act (301 CMR 11.03(2)). Under this review process, all projects two acres in size or larger and occurring in a Priority Habitat should be reviewed by the NHESP. Priority Habitat areas are also used in conjunction with the Forest Cutting Act Practices Act. It is important for decision-makers to understand the requirements of each NHESP designation as promotional and improvement projects for the Scenic Byway are developed.

The NHESP has documented a total of 39 significant species, including 11 rare and endangered species of animals and 28 rare and endangered species of plants, have been documented within the Byway corridor. The identity of the rare and endangered species found within each specific habitat area is not publicized in order to protect the individual plants and animals living there.

Each of these species has been assigned a rating by the NHESP that reflects the rarity and threat of that species within Massachusetts. There are three categories for rare and endangered communities: Endangered, Threatened, and Species of Special Concern. Endangered species are na-

TABLE 3.2*Documented Rare Animals and Plants found along the Scenic Byway*

Species	Taxon	Rating
Appalachian Brook Crayfish (<i>Cambarus bartonii</i>)	Crustacean	Special concern
Brindle Shiner (<i>Notropis bifrenatus</i>)	Fish	Special concern
Early Hairstreak (<i>Erora laeta</i>)	Insect	Threatened
Elderberry Long-horned Beetle (<i>Desmocerus palliatus</i>)	Insect	Special concern
Jefferson Salamander (<i>Ambystoma jeffersonianum</i>)	Amphibian	Special concern
Longnose Sucker (<i>Catostomus catostomus</i>)	Fish	Special concern
Mourning Warbler (<i>Oporornis philadelphia</i>)	Bird	Special concern
Spring Salamander (<i>Gyrinophilus porphyriticus</i>)	Amphibian	Special concern
Tule Bluet (<i>Enallagma carunculatum</i>)	Insect	Special concern
Twelve-spotted Tiger Beetle (<i>Cicindela duodecimguttata</i>)	Insect	Special concern
Wood Turtle (<i>Clemmys insculpta</i>)	Reptile	Special concern
Bartram's Shadbush (<i>Amelanchier bartramiana</i>)	Plant	Threatened
Black Maple (<i>Acer nigrum</i>)	Plant	Special concern
Bristly Black Currant (<i>Ribes laclustre</i>)	Plant	Special concern
Broad Waterleaf (<i>Hydrophyllum canadense</i>)	Plant	Endangered
Bush's Sedge (<i>Carex bushii</i>)	Plant	Endangered
Crooked-stem Aster (<i>Aster prenanthoides</i>)	Plant	Special concern
Dwarf Scouring-rush (<i>Equisetum scirpoides</i>)	Plant	Special concern
Foxtail Sedge (<i>Carex alopecoidea</i>)	Plant	Threatened
Gattinger's Panic-grass (<i>Panicum gattingeri</i>)	Plant	Special concern
Hairy Honeysuckle (<i>Lonicera hirsuta</i>)	Plant	Endangered
Hairy-fruited Sedge (<i>Carex trichocarpa</i>)	Plant	Threatened
Hemlock Parsley (<i>Conioselinum chinense</i>)	Plant	Special concern
Hitchcock's Sedge (<i>Carex hitchcockiana</i>)	Plant	Special concern
Intermediate Spike-Sedge (<i>Eleocharis intermedia</i>)	Plant	Special concern
Large-leaved Sandwort (<i>Moehringia macrophylla</i>)	Plant	Threatened
Long-styled Sanicle (<i>Sanicula odorata</i>)	Plant	Threatened
Mountain Alder (<i>Alnus viridis</i> ssp.cCrispa)	Plant	Special concern
Muskflower (<i>Mimulus moshatous</i>)	Plant	Threatened
Northern Bog Violet (<i>Viola nephrophylla</i>)	Plant	Threatened
Purple Clematis (<i>Clematis occidentalis</i>)	Plant	Special concern
Roundleaf Shadbush (<i>Amelanchier sanguinea</i>)	Plant	Special concern
Sandbar Cherry (<i>Prunus pumila</i> var. <i>depressa</i>)	Plant	Special concern
Showy Lady's Slipper (<i>Cypripedium reginae</i>)	Plant	Special concern
Slender Blue-eyed Grass (<i>Sisyrinchium mucronatum</i>)	Plant	Threatened
Sweet Coltsfoot (<i>Petasites frigidus</i> var. <i>palmatus</i>)	Plant	Threatened
Tradescant's Aster (<i>Aster tradescantii</i>)	Plant	Special concern
White Adder's-mouth (<i>Malaxis brachypoda</i>)	Plant	Threatened
Woodland Millet (<i>Milium effusum</i>)	Plant	Threatened

Source: Natural Heritage and Endangered Species Program, April 2001.

tive species that are in danger of extinction throughout all or part of its range, or which are in danger of extirpation from the state. Threatened species are native species that are likely to become endangered in the foreseeable future, or which are declining or rare. Special Concern species are native species that either have suffered a decline that could threaten the species if allowed to continue unchecked, or occur in such small numbers, or with such restricted distribution or specialized habitat requirements, that they could easily become threatened within the state. Table 3.2 lists the 39 documented rare and endangered species within the Byway corridor and gives the NHESP sensitivity rating for each.

The NHESP is currently in the process of updating its maps of both Estimated Habitat areas for state-protected rare wildlife and the Priority Habitat areas for rare plants and animals. These new maps will be released sometime in 2003. Though few changes are expected in terms of the location and extent of these habitats within the Byway corridor, it will still be important to verify that this is the case and to adjust the discussion and analysis of these habitats within the Byway corridor to reflect the updated information.

Within these more rural communities, the single greatest threat to these habitat areas, and to the forested roadway in general, is sprawling single-family residential development. The permitting process for single-family houses is relatively simple and proposals receive the least amount of local review. In Massachusetts, legally buildable lots can be created relatively easily through the Approval Not Required, or “ANR” process, in which the local permitting authority has little review powers. This is the type of development that is most prominently “sprawling” along our rural roadways, and it can fragment sensitive environments, such as those identified in the Scenic Byway

region. Because it receives little review from the local authorities, those developing the properties are almost certainly unaware of its ecological value. In some cases, these concerns could be addressed through the creation of a Corridor Overlay District, which would require that the developer provide a basic site sketch of the property. This procedure would allow the local permitting authority to alert the developers that the property is in rare species habitat and make suggestions on ways to lessen the impacts. This procedure will also give the town the opportunity to encourage property owners to maintain trees and other vegetation along the roadway to screen development.

Summary of Important Natural Resources and Features along the Scenic Byway Corridor

Of the natural and geologic resources along the Mohawk Trail Scenic Byway that were discussed earlier in this chapter, there are several features that deserve specific mention again. These sites of natural, environmental, and geological significance contribute considerably to the scenic value of the Byway, and also offer important recreation and tourism opportunities. However, at the same time, some of these resources are very sensitive, and could be degraded by development or tourism occurs along the corridor. Public access to areas that are particularly fragile should be managed to ensure the preservation of natural assets. The significant natural resource sites within the Scenic Byway corridor are listed below by county with a brief description of each location. Many of these sites are also described in greater detail in the

Recreational Resources or Tourism chapters of the Corridor Management Plan.

Franklin County

- **Salmon Falls Potholes**, Shelburne Falls. Located about half a mile from the Mohawk Trail, these geologically formed potholes lie below Salmon Falls. These potholes, numbering more than 50, range from 6 inches to 39 feet in diameter. They began forming more than 14,000 years ago, as the melt from the receding glaciers reclaimed its riverbed and eroded the underlying gneiss rocks (Little, 2001), and have continued to form and change ever since.
- **Deerfield River**, along the Byway in Shelburne, Buckland, and Charlemont. The Deerfield River meets the Scenic Byway in Charlemont, parallels it along the Charlemont-Buckland border, and then parts from it again in Shelburne as the river moves south towards Deerfield. The Deerfield River runs unimpeded for

seventeen miles between Florida and Buckland, a characteristic that makes it particularly popular for recreational rafting, canoeing, and fishing. Regular scheduled dam releases by PG&E National Energy Group help create rapids and whitewater conditions. In addition, this section of the Deerfield is home to a large variety of trout and bird species, including ospreys, bald eagles, and blue herons, as well as other animals. A Salmon restoration project is also underway.

- **Mohawk Trail State Forest**, Charlemont. Mohawk Trail State Forest, comprised of over 6,400 acres, is one of the most scenic woodland areas of Massachusetts, and is home to or adjacent to much of the old growth forest in Massachusetts.

Berkshire County

- **Cold River**, Charlemont, Savoy and Florida. This cold water fishery offers opportunities to catch the elusive trout, some of which are stocked and some of which are native.

ISSUES AND RECOMMENDATIONS

Issues

- Sections of the Byway corridor, particularly along the Deerfield River, have been identified as containing prime farmland soils. Prime farmland soils have the best combination of physical and chemical characteristics for economically and sustainably producing high crop yields. It is essential that farms be preserved in these areas and development limited. Although some of the farmland within the Byway corridor is presently protected from development through the Chapter 61A program, this protection is only temporary and could be lost when a landowner ceases to participate in the program or when the property changes ownership.
- Much of the Byway corridor is forestland, which gives the corridor a wild feel. As with farms, development

pressures on forested properties is likely to increase over time. Some of the forestland within the corridor is enrolled in the Chapter 61 tax abatement program, which, like the 61A program, is a temporary protection program.

- Although the Scenic Byway travels along several miles of cold water fisheries and sensitive habitat areas, few stormwater mitigation measures have been so far implemented to treat road runoff or direct it away from these sensitive areas.
- Urban runoff degrades water quality of the Hoosic River as it flows through the densely developed city center of North Adams.
- Approximately 18 miles of the Byway corridor have been designated as Estimated Habitat or Priority Habitat for rare and threatened animal and plant

species. These habitats need to be protected from the potentially adverse impacts of increased vehicle traffic, tourism, and development along the Byway.

- Increased recreational and tourism-based access to the Byway's natural resources, including its rivers, streams, forests, and sensitive wildlife areas, could threaten the quality of these resources if access to these assets is not properly managed.
- There is the potential for growing conflicts between wildlife (such as bear, deer and coyotes) and humans if development, recreation, and tourism continue to expand within the Byway corridor.

Recommendations

- Explore public and privately-based options for protecting open space,

forests, and agricultural land along the Byway. These options include expanding the use of conservation restrictions, encouraging interested farmers to participate in the Agricultural Preservation Restriction (APR) program, identifying desirable properties for permanent open space protection, and raising the funds to help non-profit land trusts or State environmental agencies acquire these parcels.

- As discussed in the Land Use and Zoning Section of this report, ANR development is the most serious threat to the natural resources along the Byway corridor. Communities on the Byway may want to consider zoning changes which would restrict ANR development in order to protect sensitive habitat, preserve natural and scenic resources, and to focus new development into existing village center areas.
- Ensure that future Scenic Byway road improvements incorporate mitigation techniques to treat road runoff before it is discharged into sensitive habitat areas or waterways.
- At a minimum, improvement projects should comply with the Massachusetts Stormwater Policy and road runoff should be directed away from nearby waterways and sensitive habitats. In areas with endangered or rare species, additional pollutant removal may be warranted.

- Managers of state and local road improvement projects should work cooperatively with local Conservation Commissions, the Deerfield and Hoosic River Watershed Teams, and the Natural Heritage and Endangered Species Program to ensure that priority habitat and sensitive waterways are properly identified and protected.
- Actively pursue opportunities to reduce or eliminate urban runoff in the densely developed city center of North Adams.
- Expand the ways in which visitors can become more aware of the natural resources that can be enjoyed along the Byway. The Byway can become a vehicle to introduce the natural resources within the forests and parks system.
- Develop an educational campaign on the potentially negative impacts of hiking, boating, and motoring in natural resource areas, especially in areas with rare and endangered species habitat and sensitive waterways.
- Develop an educational campaign on the bountiful natural resources located along the Byway. This campaign should include ways to minimize the potential negative impacts of visiting the great outdoors, by respecting the land and “treading softly.” This is important if the Byway becomes a way to introduce nature to those who are not normally “the outdoor type” and may never have hiked,

bicycled, or snowmobiled in forested areas before.

- To minimize conflicts between humans and wildlife, remind visitors to control food waste and not to purposely feed the animals. Remind local residents to locate garbage bins and bird feeders so that bear, raccoons, skunks and other animals cannot get into them. Animals that become accustomed to people food can become pests and may need to be relocated or destroyed.
- The campaign should especially focus on the erosion of the banks of the Deerfield River, and what all recreational users (paddlers, boaters, swimmers and fishermen/women) of the Deerfield River can do to protect the river banks and habitats.
- Establish educational signs reminding visitors to stay on marked trails.
- Incorporate this campaign into recreational tourism brochures and materials for the Mohawk Trail by suggesting ways to minimize visitor impacts to the environment. The campaign should especially focus on the erosion of the banks of the Deerfield River, which is exacerbated by whitewater recreationalists.
- Local conservation and recreational groups should coordinate this effort with the NHESP and the DEM.
- Once brochures and other materials are developed, tourism-oriented businesses and visitor centers could distribute them to customers.

- **Western Summit**, North Adams. Gnarled and dwarfed trees survive on the rocky hillside across the street from the observation station, despite harsh wind, snow and ice. Trees such as these can be observed in isolated patches on rocky outcrops along the higher elevations of the Byway.
- **Hairpin Turn**, Clarksburg - North Adams border. The roadside cut here exposes bedrock composed of thin layers of schist with scattered veins of quartz.
- **Eclipse Dam**, North Adams. This dam is currently being considered

as a potential option for renewable energy and revenue generation.

- **Natural Bridge State Park**, North Adams. Natural Bridge is the only bridge in North America created by the erosive forces of water. The 30-foot natural bridge and associated walkways of the park offer “an intimate yet safe look at the tremendous power of flowing water” (Laubach, 1992).
- **North Branch and Main Stem, Hoosic River**, Clarksburg through Williamstown. Sections of these rivers are cold water fisheries that support native trout.