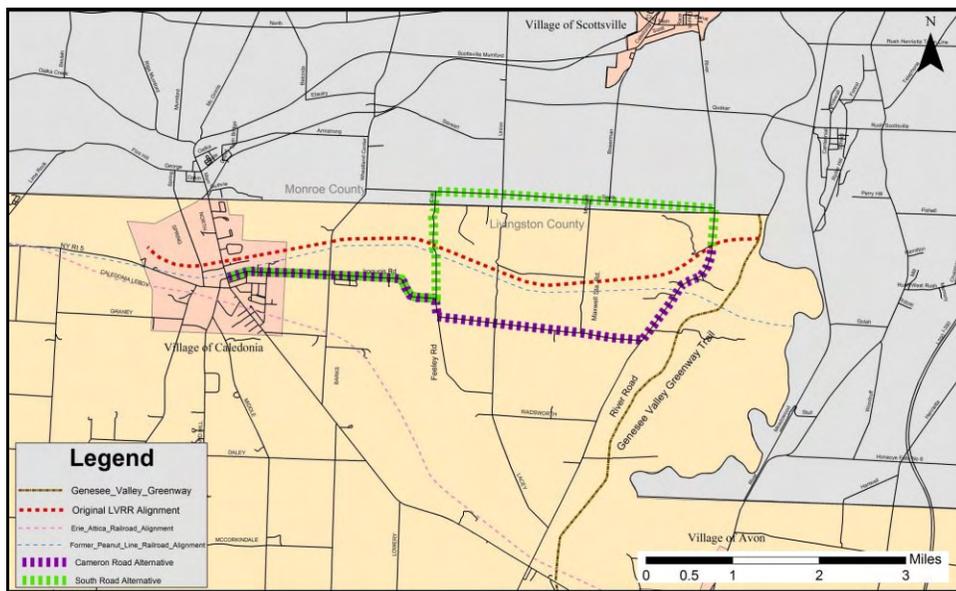


Feasibility Study

FOR

The Former Lehigh Valley Railroad Multi-Use Trail (Genesee River to Village of Caledonia Connector) Village and Town of Caledonia Livingston County, New York



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I. Executive Summary

This report evaluates the feasibility of a multi-use trail utilizing the former Lehigh Valley Railroad (LVRR) alignment from the intersection of the Genesee Valley Greenway Trail to the Village of Caledonia. This trail link was recommended for further study as part of the Regional Trails Initiative, a comprehensive regional trails plan developed by the Genesee Transportation Council for its nine-county service area. The original goal of the project was to link the Genesee Valley Greenway and an existing section of the Lehigh Valley Multi-Use Trail with the Village of Caledonia. Study sponsors include Livingston County, the Town of Caledonia and the Mendon Foundation, a private trail advocacy group. The relationship of the Genesee River to Caledonia segment of the Lehigh Valley Trail to the overall Regional Trails Initiative is shown in Figure 1.

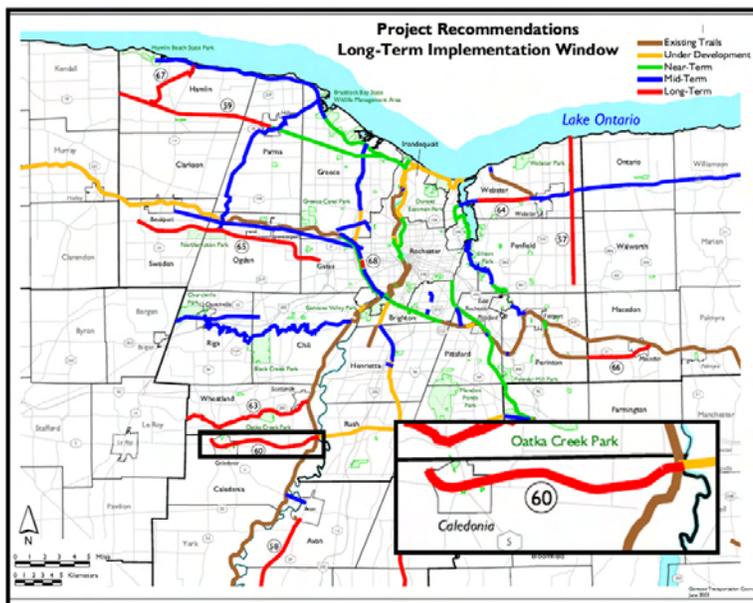


Figure 1. Relationship of Original Lehigh Valley Multi-Use Trail to Regional Trail Network

The relationship of the Genesee River to Caledonia segment of the Lehigh Valley Trail to the overall Regional Trails Initiative is shown in Figure 1.

Summary of Alternatives

Numerous constraints to the original LVRR alignment were identified at the initial public meeting and at a special property owners' meeting. As a result of the issues raised, several alternatives to the original LVRR alignment were evaluated as part of this study. These included two off-road alternatives (the Peanut Line and the Erie-Attica Line), two shared-road alternatives (Cameron Road and South Road) and two shared-use path alternatives (paralleling Cameron Road and South Road), a combination shared-road/shared use path alternative (modified Cameron Road alignment), and a preferred alternative consisting of an abbreviated section of the original LVRR alignment. The locations of the evaluated alternatives are shown in Figure 2. A detailed view of the preferred alternative is shown in Figure 3.

Original Lehigh Valley Railroad Alignment. The original alignment of the former Lehigh Valley Railroad generally follows the valley of Dugan Creek through the Village and Town of Caledonia to the Genesee River for a distance of 7.3 miles. The original alignment passes through a scenic and unique Class I cedar swamp wetland and offers sweeping views of pastures, woods and fields.

The majority of the former LVRR alignment between the Village of Caledonia and the Genesee River is privately owned and is not accessible to the public. The former rail bed has been removed by gravel mining operations in two locations and includes a chemical manufacturing facility considered sensitive by the U.S. Department of Homeland Security. Property owners along the original LVRR alignment west of River Road universally indicated their objection to using their properties for trail purposes.

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Cameron Road Alternative. The 6.6 mile Cameron Road alternative would route the trail south on River Road to Cameron Road, west on Cameron Road to Feeley Road, north on Feeley Road to Iroquois Road and west on Iroquois Road to North Avenue (NY Rt. 36) in Caledonia. The Cameron Road alternative was determined to be infeasible due to high traffic speeds and heavy truck traffic on River Road. The Town of Caledonia also indicated that it would be unable to make needed improvements to the shoulder of Cameron Road at this time.

South Road Alternative. From the Mendon Foundation property on River Road, the trail would continue north on River Road to South Road just over the Monroe County line, a distance of 0.4 mile. The trail would turn west on South Road, continuing 3.2 miles to Cox Road (Feeley Road in Livingston County); then turn south on Cox (Feeley) Road a distance of 1.3 mile; turning west on Iroquois Road for a distance of 2.5 miles, terminating at North Avenue (NY Rt. 36) in the Village of Caledonia.

The South Road alternative would require the removal of large mature trees, acquisition or easements across private property, and placement of fill in a Class I wetland. This alternative was deemed to be infeasible at this time due to property owner opposition, extensive project permitting requirements, and environmental impacts.

This alternative would also require shoulder improvements and a commitment from the Town of Caledonia to maintain road shoulders for recreational use. As previously stated, the Town is unable to make this commitment at this time.

Erie-Attica Railroad. Possible use of the former Erie-Attica Railroad alignment from Avon to Caledonia was proposed at a special meeting with property owners along the former LVRR alignment. A segment of the former Erie-Attica Railroad alignment was recently donated to the State of New York to connect the Village of Avon to the Genesee Valley Greenway. The Erie-Attica alignment was evaluated briefly using aerial photography, parcel ownership maps, and windshield survey. With the exception of a few parcels in Village ownership, most of the former Erie Attica alignment is privately owned. Cooperation of more than forty property owners would be required to create a multipurpose trail on the former Erie-Attica alignment. With community support, this alternative may become feasible at some point in the future; however, it does not meet the original project objective of connecting the Lehigh Valley trail with the Village.

Former Peanut Line. National Grid owns a large segment of land that formerly belonged to the New York Central's "Peanut Line". This alignment was located immediately south of the Lehigh Valley alignment and paralleled that alignment from the Village of Caledonia to Maxwell Station Road. East of Maxwell Station Road, the LVRR diverges to the north, away from the Peanut Line. The Peanut Line continues east and crosses the Greenway Trail east of River Road. National Grid maintains an electric transmission line along this alignment.

The use of the alignment along the segment owned by National Grid would require approval by adjacent property owners, which is not expected to be forthcoming. In addition, the Peanut Line alignment is privately owned from Maxwell Station Road east to the Genesee River. Cooperation of the landowner and adjacent landowners along the privately-owned segment would also be required for this to be a viable alternative trail route.

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Preferred Alternative: The recommended alternative would extend the LVRR Trail from its existing terminus at the Genesee Valley Greenway to River Road along the former LVRR alignment. The alternative will include a 10 ft. wide, stone dust trail approximately 3100 ft. in length, a gravel parking area for 5-6 cars, trailhead and directional signage. Significant grading and filling will be required to bring the trail profile up to its original grade near the west end of the trail because the railroad alignment was affected by gravel mining. Grading will be required to achieve a stable slope. The anticipated cost for the preferred alternative is \$261,425.

While this alternative does not meet the overall project objective of connecting the Lehigh Valley Trail to the Village of Caledonia, it is the only feasible and readily implementable alternative. It also provides the existing LVRR trail with a readily accessible western access point and parking area at River Road.

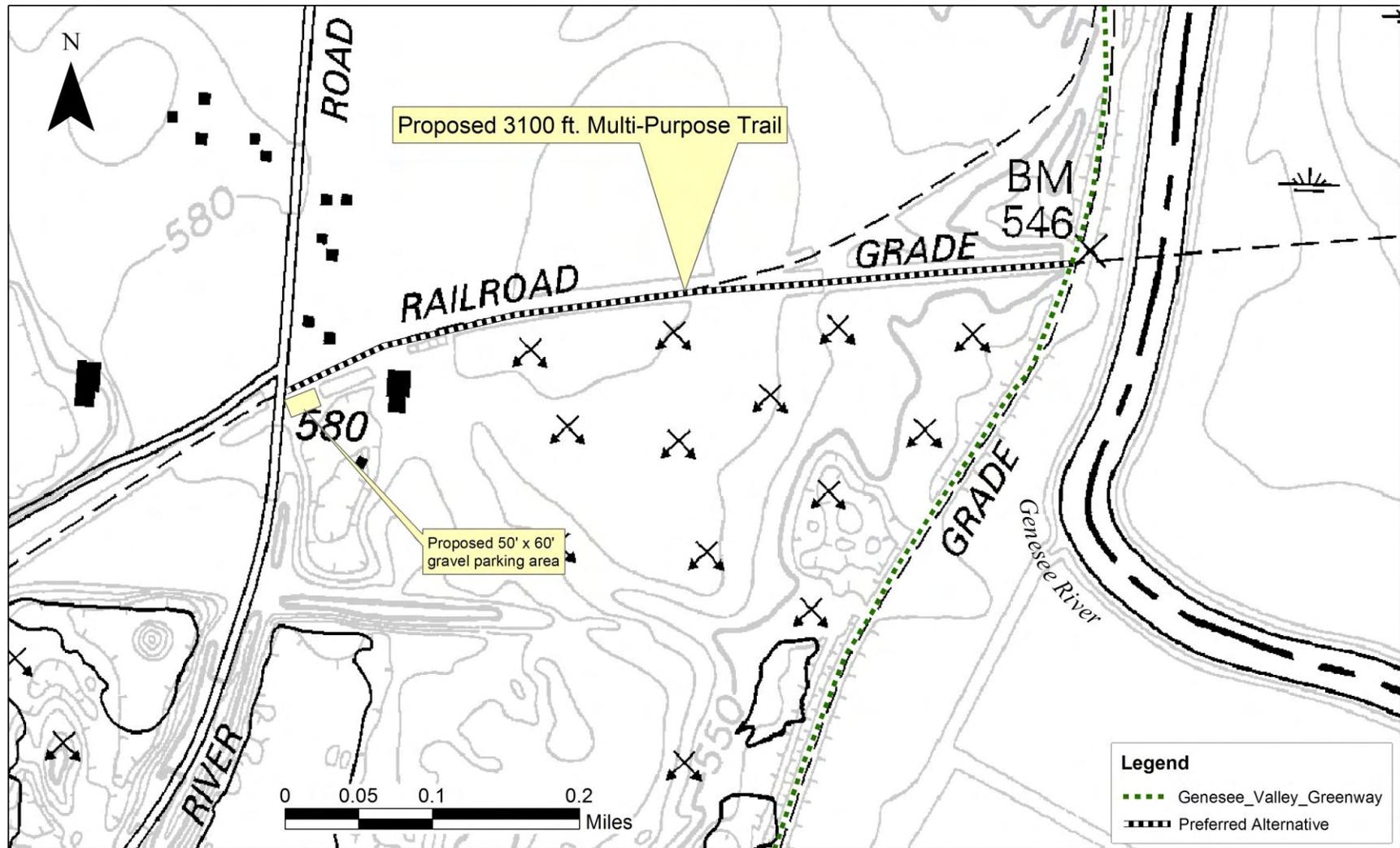


Figure 3. Preferred Alternative Alignment

II. Project Introduction

A. Study Objectives

This project is being completed as part of the Genesee Transportation Council's Regional Trails Initiative. Funding for the project is provided by the Genesee Transportation Council on behalf of the project sponsors Livingston County, the Town of Caledonia, and the Mendon Foundation. The Village of Caledonia has supported the study by providing meeting space.

The overall study objectives are as follows:

- Evaluate and define alternative conceptual multi-use trail designs, including trail use, trail surface, parking areas, signing, bollards, gates (access control), at grade and below grade crossings and motor vehicle regulations.
- Look at potential trail alignments utilizing existing roads and access points to provide connections to nearby parks, trails, amenities and services.
- Prepare an estimate of engineering, construction and maintenance costs.
- Prepare an environmental assessment which evaluates the social, economic, and environmental impacts of the trail, both positive and negative.
- Determine the legal and legislative actions necessary to implement the trail's development.
- Take into advisement the recommendations of the residents of the communities, the GTC, the Steering Committee, Town and County agency staff.

B. History of Lehigh Valley Railroad Property

The Lehigh Valley Railroad was originally incorporated as the Delaware, Lehigh, Schuylkill and Susquehanna Railroad Company in 1846. In 1853, the name was changed to the Lehigh Valley Railroad. The railroad was originally incorporated to haul anthracite coal from mines in Pennsylvania to customers located on the Great Lakes, in New York and the Hudson River valley. The segment between Manchester and Buffalo, NY was used to haul freight and passengers from approximately 1890 to 1961.

On June 24, 1970, the Lehigh Valley Railroad declared bankruptcy, just three days following the bankruptcy of the Pennsylvania Railroad's successor, Penn Central. Penn Central's bankruptcy relieved it from paying fees to various Northeastern railroads, including the Lehigh Valley, for the use of their railcars and other operations. The non-payment of these fees was fatal to the Lehigh Valley's finances.

The Lehigh Valley remained in operation during the 1970 bankruptcy, as was the common practice of the time. In 1972, the Lehigh Valley assumed the remaining track located in Pennsylvania, owned by the Central Railroad of New Jersey, a competing anthracite railroad which declared bankruptcy as well. In 1976, the assets of the bankrupt Lehigh Valley Railroad were acquired by Conrail.

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The Lehigh Valley Railroad corridor consisted of a double set of tracks extending from the Genesee River west to the Village of Caledonia. West of Spring Street in the Village of Caledonia, the alignment curves north toward Flint Road and continues westward to the Village of LeRoy in Genesee County. This segment of the Lehigh Valley Railroad was active until the mid-1970s. Figure 2 shows an overview of the former railroad alignment between the Genesee River and the Village of Caledonia.

The line between Buffalo and New York City became known as the “Black Diamond Line.” After the line was abandoned in the late 1970s, efforts began to convert the former railroad corridor into a trail system. A completed section of the “Black Diamond Line” is located from the Genesee River to the Town of Victor. The completed segment is referred to as the Lehigh Valley Trail. The segment from the Genesee River to Caledonia would be a direct extension of this line.

A portion of the former rail right of way was acquired by the Mendon Foundation for the purpose of creating a trail connection between the existing Genesee Valley Greenway trail and River Road. Sections of the former right of way, particularly west of River Road and between Wheatland Center Road and Spring Street in the Village of Caledonia, have been acquired by private individuals or companies.

III. Site Analysis

A. Land Uses

Land uses adjacent to the former Lehigh Valley Railroad corridor consist of cedar swamps and emergent marsh wetlands, pastures, cultivated fields, rural residential development, active and abandoned gravel mines, power transmission lines, and industrial properties in the Village of Caledonia and west of River Road. The former LVRR alignment abuts the south side of the former Livingston County Landfill and includes a portion of the Jones Chemical industrial site. It also abuts the McKay Nature Preserve in the Village of Caledonia which is accessible from Spring Street. The alignment also abuts the Center Point Waste Transfer Station on the south side of the private driveway entrance off River Road, opposite the entrance for the Livingston County Office Park. Figure 4 shows a map of land uses in the Town of Caledonia.

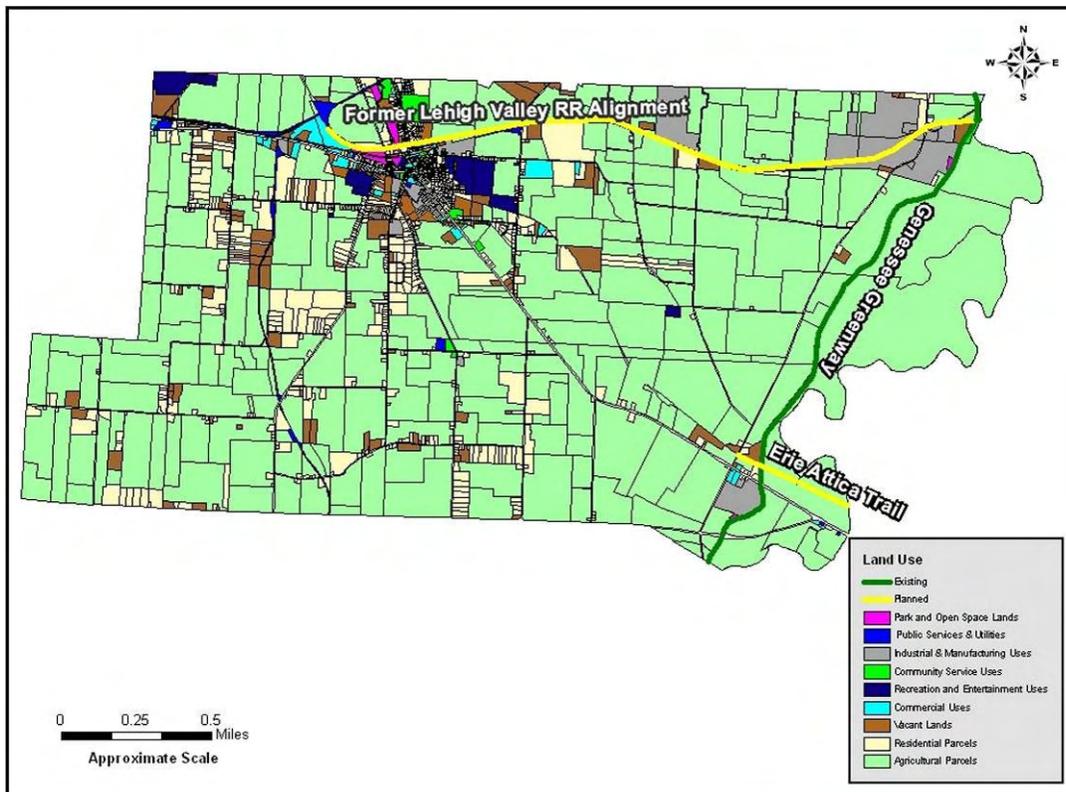


Figure 4. Generalized Land Use Map

A detailed review of property ownership and land uses along the former alignment was completed as part of the feasibility analysis. Ownership of the former Lehigh Valley Railroad alignment is fragmented among several owners, including one private foundation, three industrial businesses, a private club, Livingston County, and two agricultural properties. Table 1 presents a summary of properties and specific land uses on the former Lehigh Valley right of way. Figures 5 through 9 show the locations of these properties.

Feasibility Study for the Former Lehigh Valley Railroad Multi-Use Trail

Table 1. Ownership of Former Lehigh Valley Railroad Alignment

| Tax Account Number | Size (acres) | Parcel Address | Type of Owner | Comments |
|---------------------------|---------------------|--|--|--|
| 5.-1-15.123 | 7.5 | River Road | Private Foundation | Donated for trail use. |
| 5.-1-15.112 | 11 | 90 River Road Town of Caledonia | Private - Industrial – gravel mine | Right of way not accessible due to active gravel mining operations |
| 4.-1-15 | 84.2 | Lacey Road | Private - agricultural | Accessible but posted “No Trespassing”. Agricultural equipment stored on premises. |
| 5.-1-15.111 | 38.30 | Lacey Road | Private - agricultural | Accessible but posted “No Trespassing”. Agricultural equipment stored on premises. |
| 3.-1-16.1 | 10.80 | Wheatland Center Road | Private – Industrial – Major chemical manufacturer | Accessible from Wheatland Center Road, but heavily overgrown. |
| 3.-1-16.21 | 18.60 | 143 Wheatland Center Road | Private – Industrial – gravel mine and lumber yard | Portion of alignment between Feeley Road and Wheatland Center Road not safely accessible. Ballast has been removed from former RR alignment. |
| 7.8-2-101.2 | 3.94 | North Street Caledonia, NY | Private – Social Club | Not readily accessible. Former alignment overgrown with trees and shrubs; embankment still in place; bridges over Rt. 36 and Spring St. removed. Bridge over Spring Creek remains. |
| 8.5-1-20.1 | 53 | 3307 Iroquois Road Caledonia, NY 14423 | Private – Industrial – Major chemical manufacturer | Access restricted to authorized persons only. Industrial property with chemical plant. |
| 7.8-2-101.3 | 8 | North Street Caledonia, NY | Private - Railroad | Railroad embankment present. Bridge over Rt. 36 removed. Embankment overgrown. |
| 7.7-1-59.1 | 42.07 | Main Street Caledonia, NY | Public – Livingston County IDA | Includes portion of active track serving industrial development on Main Street |

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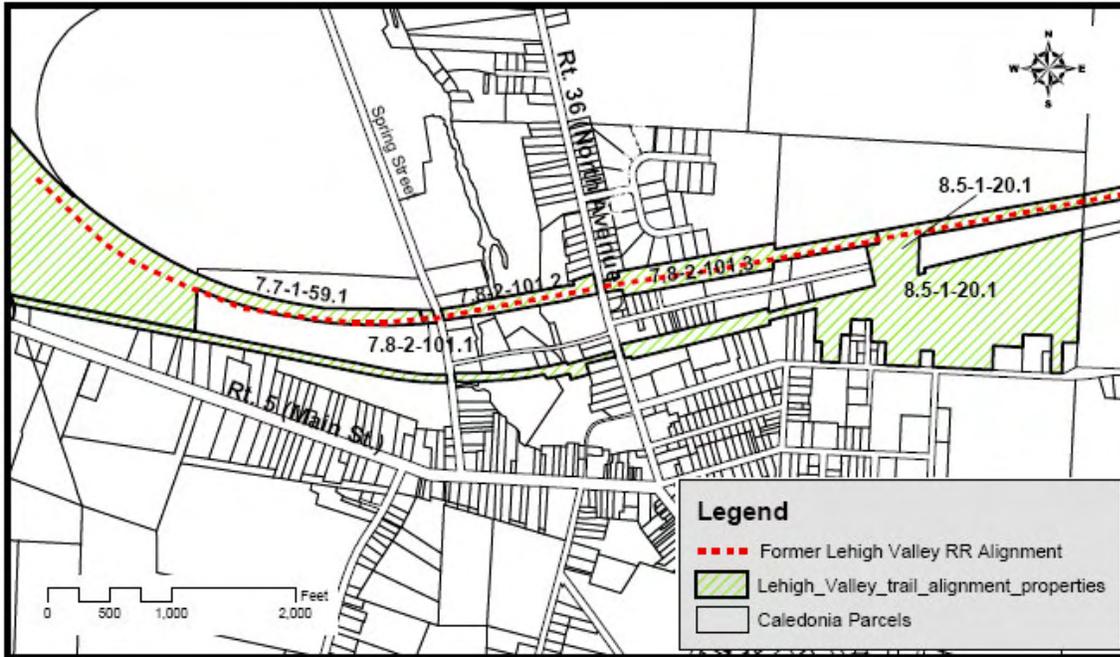


Figure 5. Properties along former Lehigh Valley Railroad alignment

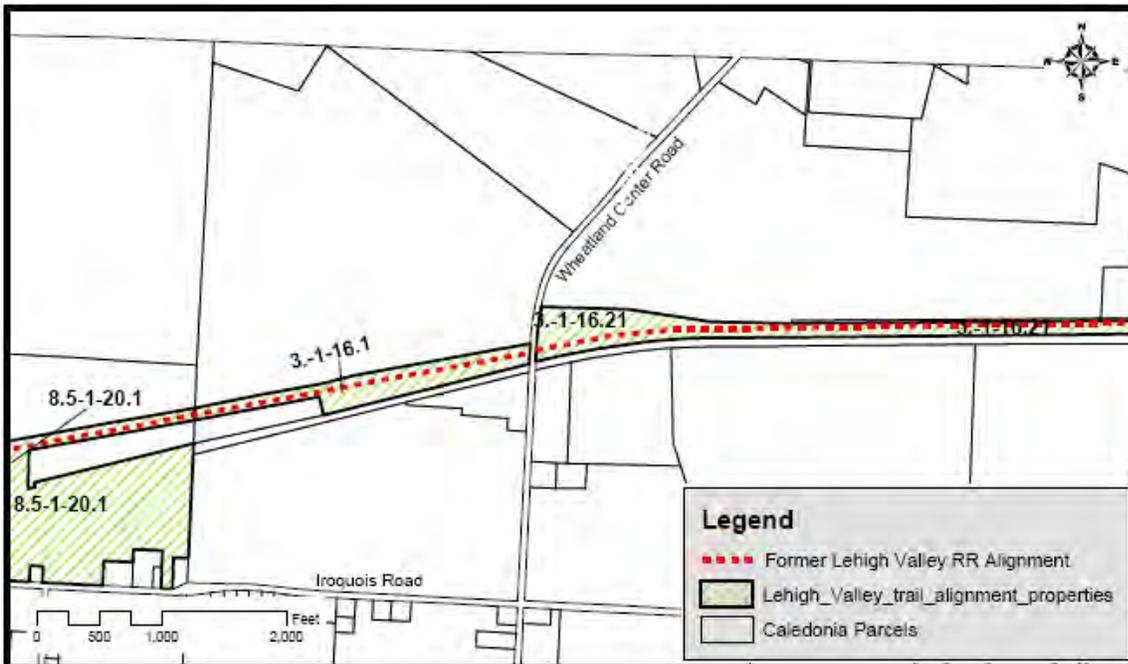


Figure 6. Properties along former Lehigh Valley Railroad alignment

Feasibility Study for the Former Lehigh Valley Railroad Multi-Use Trail

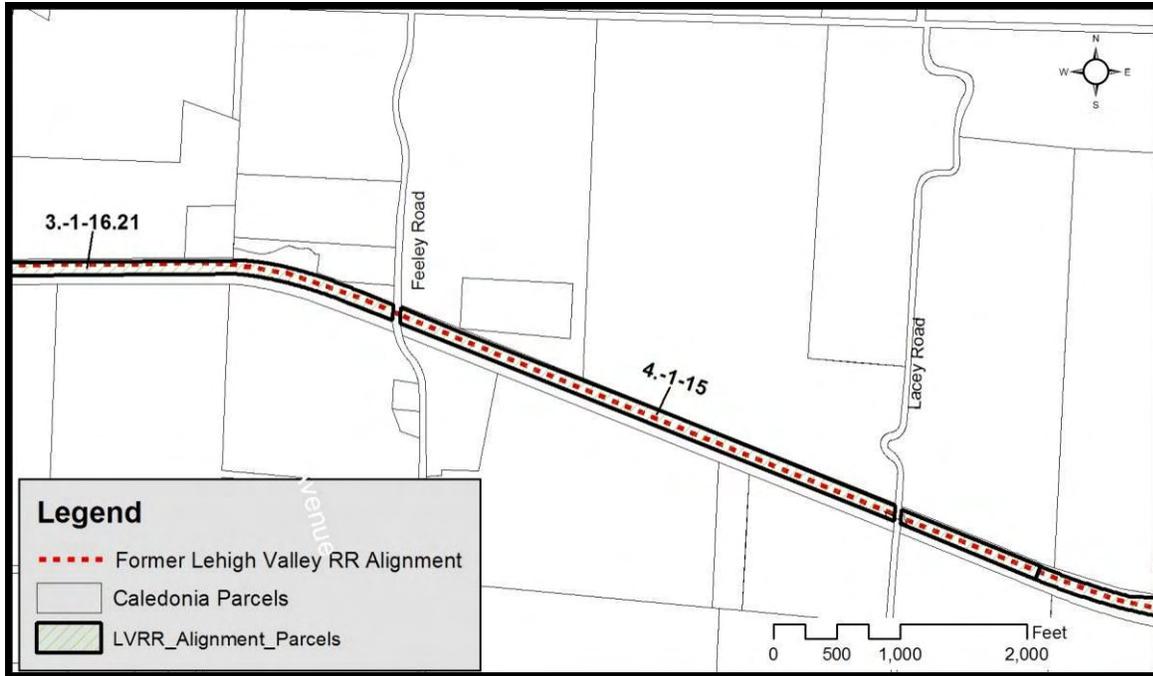


Figure 7. Properties along former Lehigh Valley Railroad

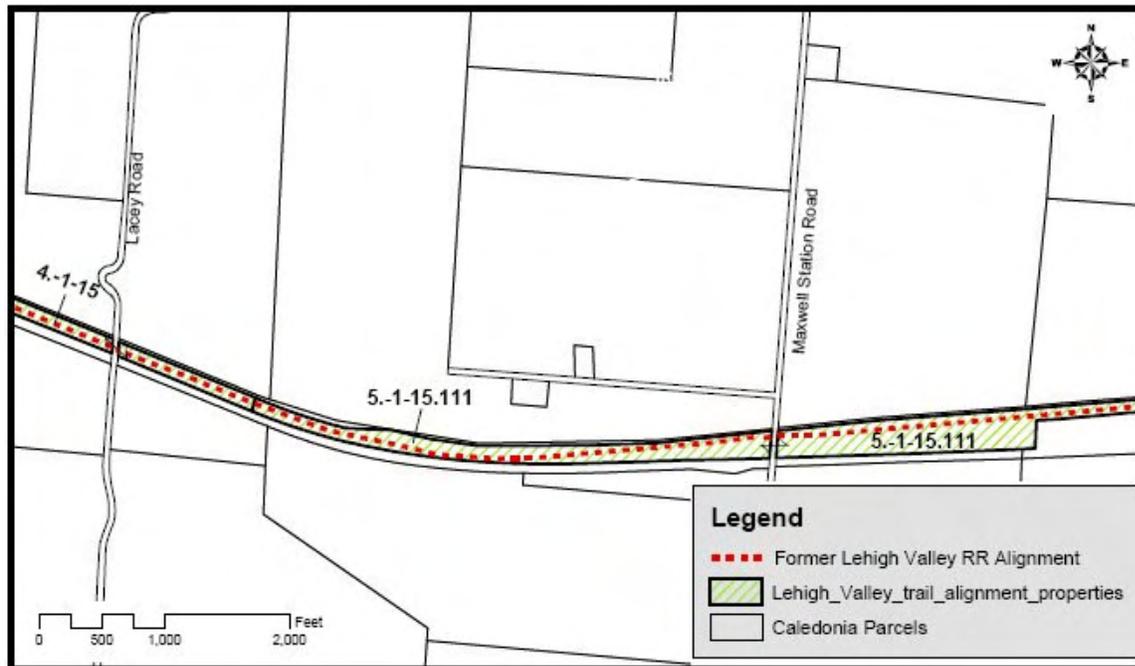


Figure 8. Properties along former Lehigh Valley Railroad

Feasibility Study for the Former Lehigh Valley Railroad Multi-Use Trail

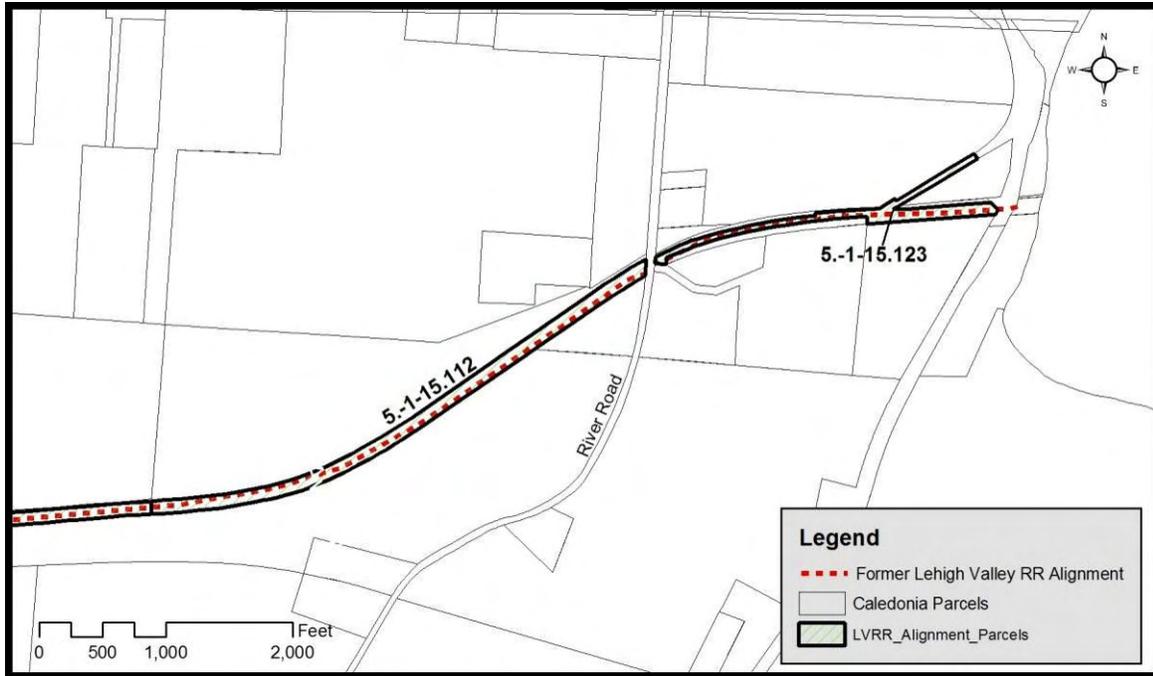


Figure 9. Properties along former Lehigh Valley Railroad

B. Physical Attributes

The physical attributes of the former LVRR alignment are described from east to west beginning at the Genesee River to the Village of Caledonia. The alignment of the former Lehigh Valley Railroad from the Genesee River to the Village of Caledonia is shown in Figure 2.

The existing Lehigh Valley Trail ends at the Genesee Valley Greenway. From the existing trail terminus to West River Road, the former alignment is owned by the Mendon Foundation. The Mendon Foundation purchased this property from a gravel pit owner in 2005 specifically for trail use. The surface is rough and overgrown with shrubs and tall herbaceous plants. The railroad alignment is approximately 45 feet wide on the east side of River Road. It is bordered on the north side by a power line right of way owned by National Grid. The adjacent power line parcel ranges from 20 to approximately 30 feet in width. The length of the alignment between the Genesee Valley Greenway and River Road is approximately 3100 feet. Based on site reconnaissance and review of parcel maps, a portion of the original alignment was mined away. A steep embankment 15-20 feet in height is located adjacent to the power line east of River Road. Figure 10 shows the alignment at the Genesee River bridge.



Figure 10. Existing Lehigh Valley Trail at Genesee River Crossing



Figure 11. Lehigh Valley alignment at River Road. Note mined out area along south side of original alignment (photo center).

Between West River Road and Maxwell Station Road, the alignment has been converted to an access road for the Livingston County Industrial Park for a distance of approximately 1200 feet. This road provides access to the Valley Sand and Gravel Mine and several businesses. Inside the limits of the gravel mine, the railroad alignment continues as an unpaved road or has been mined away.

From the edge of the gravel pit property to Maxwell Station Road, the former railroad alignment is at-grade and intact. The tracks have been removed, but the cinder surface is present. The railroad bed is used as a farm access road by its owner. Between River Road and Maxwell Station Road, the former alignment is posted “No Trespassing”. A power transmission line is located immediately south of the right of way.



Figure 12. Mined out portion of Lehigh Valley Railroad alignment on Valley Sand and Gravel property. Note proximity and alignment of former Peanut Line.

Between Maxwell Station Road and Lacey Road, the former railroad bed is intact. The trail surface consists of cinders and some ballast. This section is generally at-grade or slightly elevated with drainage channels on either side. Some areas of standing water were noted on the trail in this section, particularly in areas adjacent to streams or wetlands. Adjacent land uses included horse pastures, farmsteads, an electric transmission line, and flood plain woods. An electric fence limits access to the south. Two metal horse troughs block access to the railroad bed from the west side of Maxwell Station Road. Miscellaneous farm equipment and vehicles are also present on the alignment. The property between Maxwell Station Road and Lacey Road is privately owned. Access to this section is restricted.

Between Lacey Road and Feeley Road, the former railroad bed is intact with a gravel and cinder surface. The grade of the bed is flat or slightly elevated, with embankments and four to eight foot deep ditches and wetlands on either side. Extensive areas of cattail marsh and some cedar swamp are located along the former alignment in this section. This section also borders the south side of the former Monroe-Livingston Landfill. A former railroad siding leading into the landfill property is located north of the alignment east of Feeley Road. Areas of poor drainage are located east of Feeley Road and at scattered locations. Figure 13 shows the former LVRR alignment at Feeley Road with a portion of the old railroad siding.



Figure 13. Lehigh Valley alignment at Feeley Road. Note old railroad siding at photo lower right.

The former LVRR alignment crosses Feeley Road approximately 2215 feet west of Lacey Road. A 2-3 car informal parking area is located on the east side of Feeley Road at the former LVRR crossing.

The former LVRR property is accessible in a westerly direction from Feeley Road for a distance of approximately 2350 feet. A fifteen foot deep pit has been excavated in the railroad embankment. This pit cannot be safely crossed by pedestrians or bicyclists. Review of aerial photographs indicate that the former railroad embankment has been affected by mining and grading activities for a distance of 3100 feet west of an unnamed tributary of the Cement Plant Pond. The former LVRR alignment is owned by the G & K Land LLC from Wheatland Center Road west to Feeley Road. The property has been used for mining and production of timber.



Figure 14. View of G & K Land segment of former LVRR alignment. Note mined out area in proximity to stream channel.

The former alignment crosses Wheatland Center Road approximately 6265 feet west of its intersection with Feeley Road. From Wheatland Center Road west to the Village of Caledonia, the former railroad bed is owned by the Jones Chemical Corporation. This section was not accessible. Review of aerial photographs show that two buildings have been constructed on the former railroad alignment on the Jones Chemical Property.

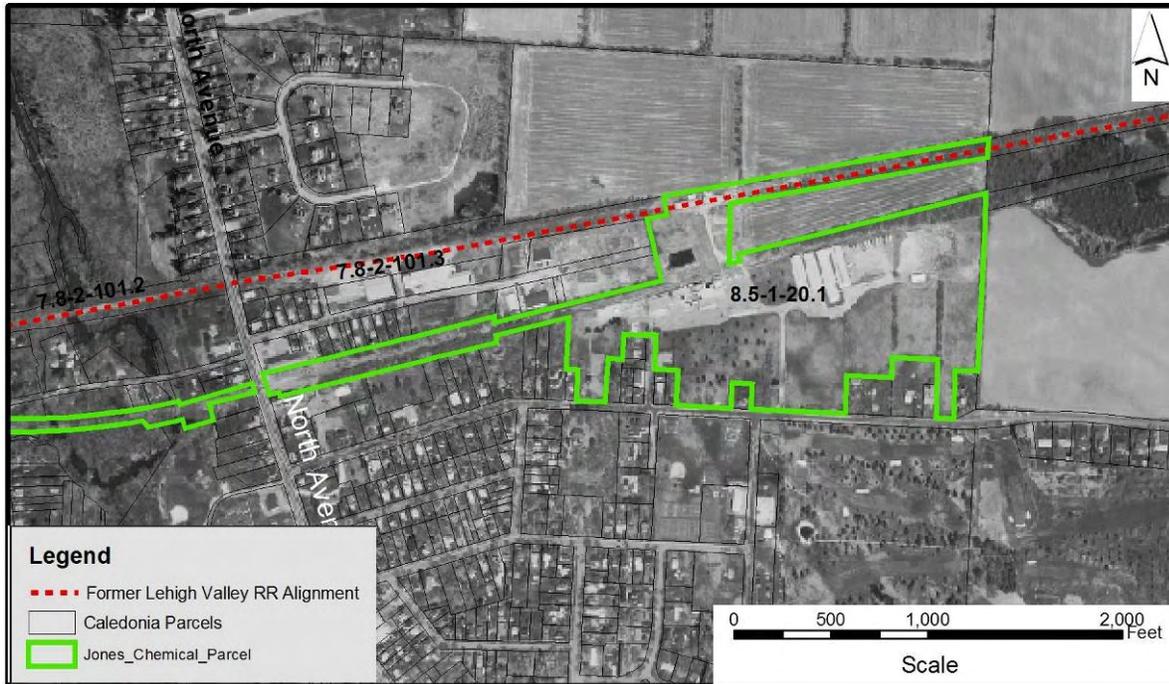


Figure 15. Jones Chemical Site

The Pennsylvania Railroad owns the former Lehigh Valley right of way from North Avenue (NY Rt. 36) to the end of the Jones Chemical Property. This portion of the former right of way is intact. It consists of an above grade segment gradually rising to a point about 20 feet above the pavement of Rt. 36. The bridge over Rt. 36 has been removed. The embankment is overgrown with trees and shrubs in spots. Clearing and grubbing would be required to make it passable.

The former alignment crosses Rt. 36 approximately 6675 feet west of Wheatland Center Road. From Rt. 36 west to Spring Street, the right of way is privately owned. It is not easily accessible. The raised embankment section is too steep to be safely accessed on foot from Rt. 36 or Spring Street. The railroad bed is heavily overgrown with trees and shrubs. The trestle bridge over Spring Creek remains in place.

From Spring Street west, the alignment is actively used. Railroad ties and rails remain in place. New ballast was observed along the tracks, indicating that this section is being actively maintained. This section of track was not further investigated. Based on aerial photo interpretation and interviews with Town representatives, it appears that approximately 4000 feet of active line separates the end of the Lehigh Valley right of way from a connecting inactive section leading to the Genesee Country Museum.

C. Environmental Attributes

1. Topography

From the Genesee River to the Village of Caledonia, the former railroad alignment is located in an area of glacial kames and eskers, with outwash forming economically valuable sand and gravel deposits. The railroad alignment generally follows the valley of Dugan Creek between the Genesee River and Wheatland Center Road. From its eastern terminus at the Genesee River Greenway Trail, the alignment rises from an elevation of 546 feet above mean sea level to an elevation of approximately 650 feet on the east side of the Village of Caledonia. The grade is very gradual. Mining activities have created an uneven surface on the section between the Greenway Trail and West River Road.

2. Soils

Soils along the alignment generally consist of well drained sands and gravelly soils between the Genesee River and Maxwell Station Road and poorly drained alluvial and organic soils between Maxwell Station Road and Feeley Road. From Wheatland Center Road west to Caledonia, soils along the former alignment consist of better drained sands and gravels.

3. Streams and Water Bodies

The former railroad alignment is located in the watersheds of the Lower Genesee River (HUC 04130003060), and Oatka Creek (HUC 04130003070). From its eastern terminus at the Genesee Valley Greenway, the alignment crosses four streams. These streams are identified in Figure 16.

Maxwell Creek crosses the former rail alignment approximately 160 feet east of Maxwell Station Road. Dugan Creek crosses the alignment approximately 3550 feet west of Maxwell Station Road. An unnamed tributary of Dugan Creek that originates in the Cement Plant Pond crosses the alignment approximately 2490 feet west of Feeley Road. Spring Creek, a tributary of Oatka Creek, crosses the alignment approximately 850 feet west of North Avenue (NY Rt. 36). Dugan Creek parallels the former railroad alignment closely between Maxwell Station Road and Feeley Road.

All stream channels crossed by the existing alignment have a water quality classification of "C". The highest and best use of Class C waters is for fishing. These streams are not protected under Article 15 of the Environmental Conservation Law.

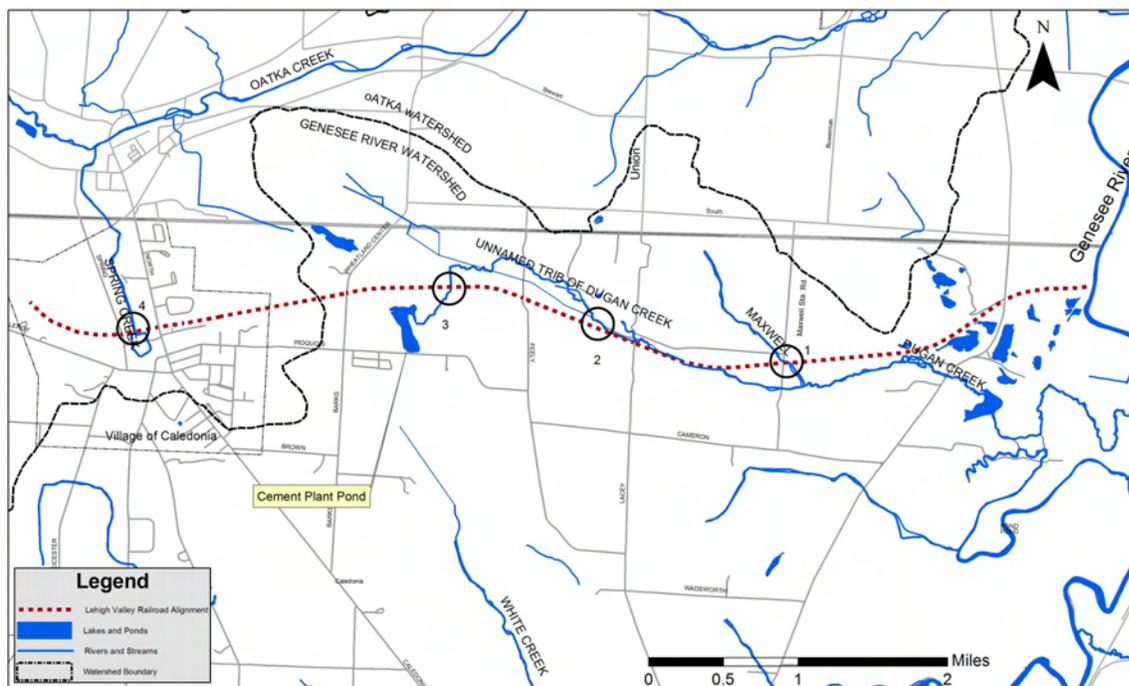


Figure 16. Streams and Water Bodies

4. Wetlands

The Lehigh Valley alignment passes through and adjacent to two New York State freshwater wetlands. The State of New York regulates activities within and adjacent to freshwater wetlands over 12.4 acres in size under Article 24 of the Environmental Conservation Law. Mapped New York State wetlands are shown in Figure 17.

The CA-4 wetland is a 687-acre, Class 1 wetland that generally parallels the alignment from Maxwell Station Road to a point approximately 1200 feet east of Wheatland Center Road. The CA-4 wetland is reported to provide habitat for one or more rare plants. The former alignment offers many views of this diverse wetland community. Wetland cover types visible from the road included cedar swamp, emergent marsh, floodplain scrub-shrub, red maple swamp wetlands and open water. This wetland is associated with Dugan Creek, a tributary of the Genesee River. It also includes at least two marl ponds, identified by NYS Department of Environmental Conservation as significant natural communities.

The alignment is carried through the CA-1 wetland between Rt. 36 (North Avenue) and Spring Street in the Village of Caledonia on a raised embankment. This New York freshwater wetland is an 88 acre, Class 2 wetland, dominated by a floodplain swamp cover type. This wetland is associated with the stream channel of Spring Creek, a tributary of Oatka Creek. The New York State Department of Environmental Conservation has identified this wetland as a waterfowl winter concentration area.

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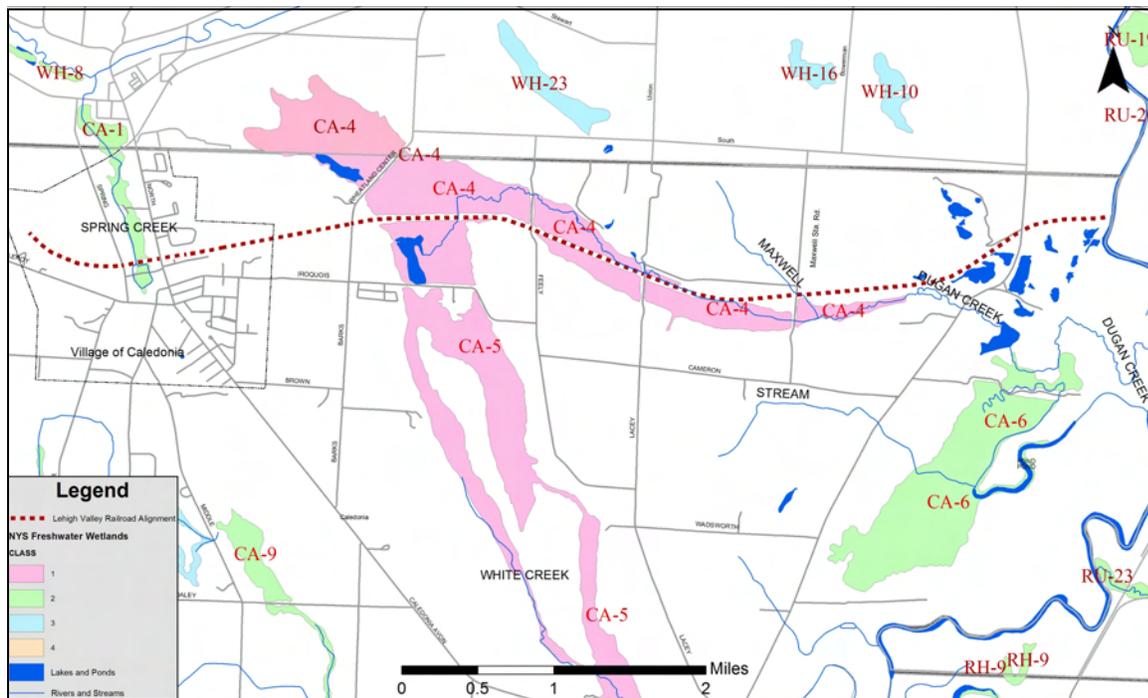


Figure 17. New York Freshwater Wetlands

Wetlands smaller than 12.4 acres were mapped by the U.S. Fish and Wildlife Service from the mid-1970's to the present as part of the National Wetland Inventory. Wetlands mapped on the National Wetland Inventory are shown in Figure 18. Predominant cover types associated with these wetlands include cedar swamp, emergent marsh, upper perennial stream, ponds, and flood plain swamp.

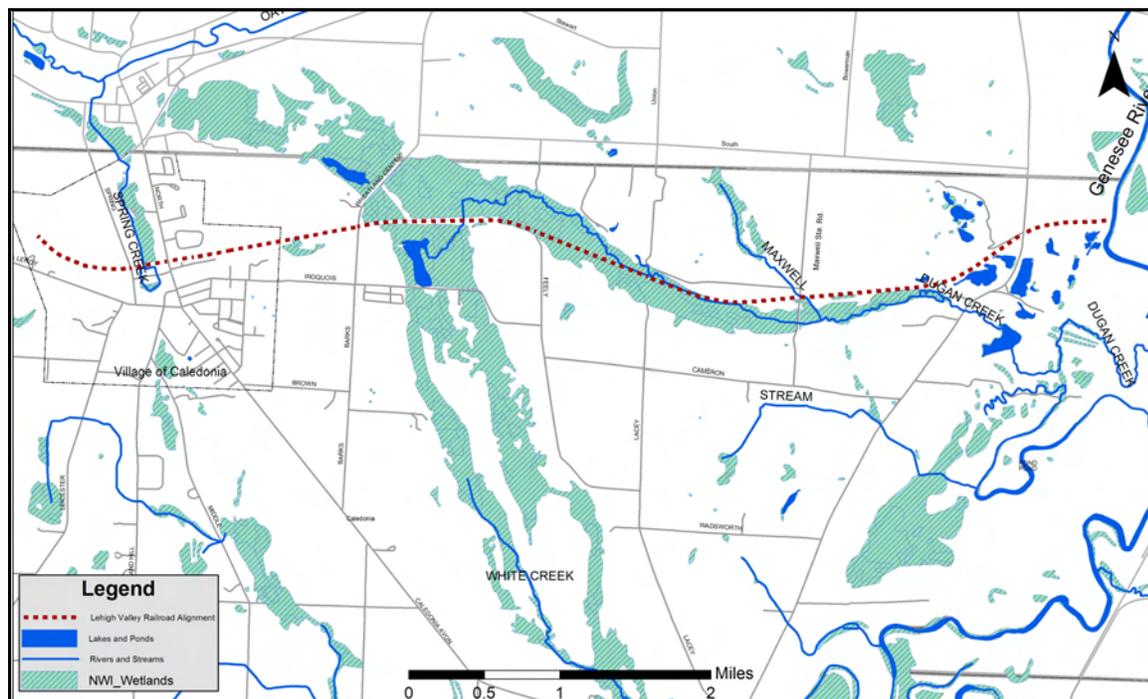


Figure 18. National Wetland Inventory Map

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5. Flood Plains

The Lehigh Valley corridor is located in and adjacent to the 100-year flood plain of Dugan Creek. Figure 19 shows the location of 100-year flood plains in the vicinity of the former LVRR alignment.

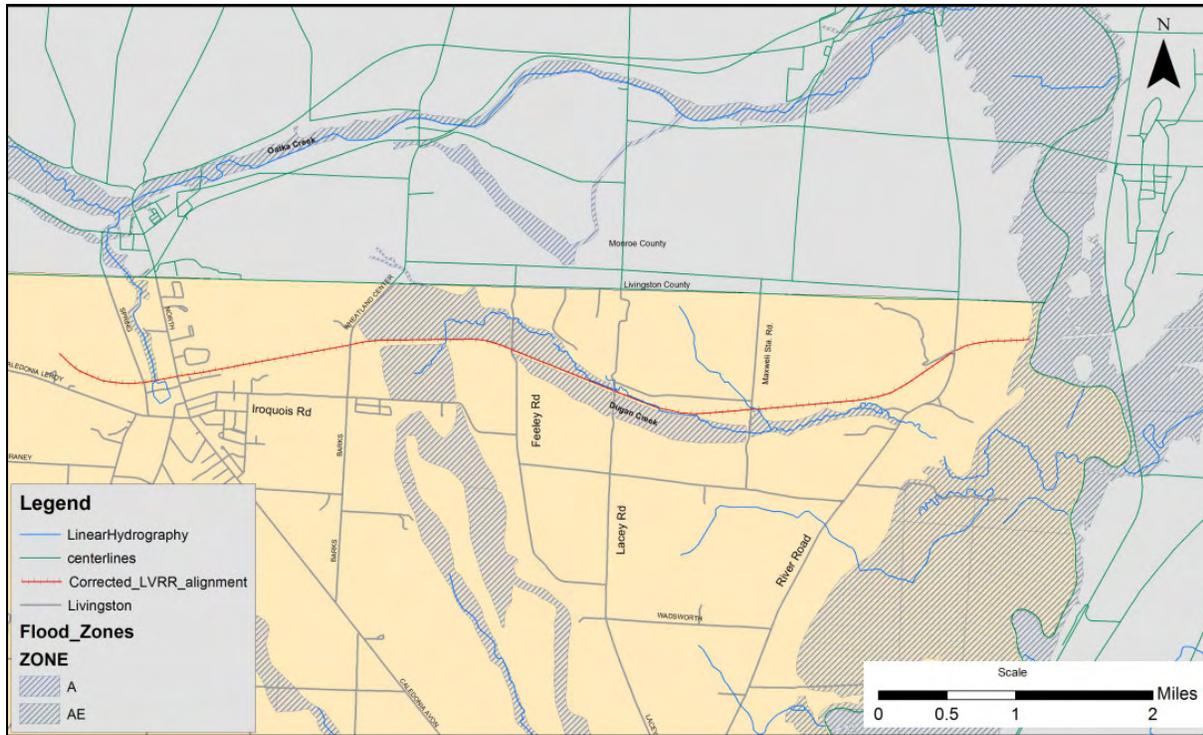


Figure 19. 100 Year Flood Plains

6. Potential Contaminated Sites

Two potential contaminated areas were identified from a records review of properties along the LVRR right of way. The Jones Chemical Incorporated (JCI) property is listed as a State Inactive Hazardous Waste Site (Site ID No. 826003). This site is classified as a Class 2 site (disposal of hazardous waste has been confirmed and the presence of such hazardous waste or its components or breakdown products represent a significant threat to the environment or to health). The state has placed groundwater use restrictions and a deed restriction on the property to minimize public exposure to groundwater contamination. The former railroad alignment appears to be located directly along or within the area impacted by contamination from operations at Jones Chemical.

The property formerly used as the Monroe-Livingston Landfill abuts the former railroad alignment north of the alignment between Lacey Road and Feeley Road. Field reconnaissance showed that this facility is now used to generate natural gas for energy production. Based on interpretation of aerial photography, visual observation, and evaluation of vegetation cover types, no waste disposal appears to have occurred immediately adjacent to the former railroad alignment.

Site reconnaissance has shown that asphalt millings, gravel and other materials from road paving projects have been deposited on the former alignment at the end of Lehigh Street.

IV. Bicycle Facilities Standards and Recommendations

Standards and recommendations for bicycle safety and facilities are historically dictated by the AASHTO guidelines stated in the “Guide for the Development of Bicycle Facilities,” dated 1999, and the NYSDOT “Highway Design Manual - Chapter 17, Bicycle Facility Design,” dated 3/30/06.

A. AASHTO and NYSDOT Guidelines

1. Rail- Trail Design Guidelines

AASHTO guidelines do not specifically address rail-trail design. Standards for rail-trails fall under the shared use path guidelines, without a need for consideration of the separation between path and roadways. Recommendations are as follows:

- Path width (two-way): 10’ min. recommended.
- Reduced trail width of 8’ when: low bicycle usage, pedestrian traffic occasional and good horizontal/vertical alignment for safe and frequent passing opportunities.
- 2’ wide (3’ preferred) trail shoulder width for each side.
- 5’ wide trail shoulder adjacent to slopes greater than 3H:1V.
- Vertical clearance of 8’ (10’ preferred).
- 3% grade maximum recommended for crushed stone paths.
- Hard, all weather pavement surface cover recommended over crushed aggregate, due to lower service and higher maintenance requirements.
- Provide 10’ pavement each side of road and driveway crossings for crushed aggregate trails to prevent stone spillage into road/drive.
- Shared use of a recreational trail by motorized vehicles (e.g, ATVs), bicycles and pedestrians is not recommended. Motorized vehicles diminish the “quiet experience” and generally operate at speeds that are much higher than that of bicycles and pedestrians. Trail use by ATV riders may require additional law enforcement and may increase the potential need for emergency vehicle access.
- Shared trail use by horse riders and bicycle traffic is not recommended. Bicycle riders are generally not aware of horse operating space needs. Horses can become startled easily and become unpredictable if they perceive cyclists or pedestrians as threats.
- Trail use by cross country skiers, snowshoer and snowmobiles may be acceptable if trails are not plowed during the winter months.

2. Shared Use Path Design Guidelines

In addition to the guidelines in Section IV.A.1, consideration must be given to separation of the shared use path and the roadway. Road and driveway crossings also present additional concerns, due to the proximity to the adjacent parallel roadway. Additional recommendations are as follows:

- A minimum Path to edge of pavement separation distance of five feet is recommended. A 42 inch high physical barrier should be placed when pavement separation is >5'. Path to barrier minimum separation of 2' (3' preferred) recommended.
- Operational problems are likely to occur with two-way shared use paths immediately adjacent to a roadway. Potential issues/problems are:
 - ◆ One direction of bicycle traffic would be required to travel against traffic.
 - ◆ At path end, cyclist continuing travel would be on the wrong side of the street. Wrong way travel is a major cause of bicycle/automobile crashes.
 - ◆ Motorists at intersections will not notice bicyclists approaching from the right side, not expecting contra-flow vehicles.
 - ◆ Road signs will be backwards to contra-flow bike traffic.
 - ◆ Limited right-of-way may require reduction of path features, which should be supported by documented engineering analysis.
 - ◆ Motorists will falsely expect bicycle traffic to yield or stop at cross streets and driveways.
 - ◆ Stopped cross-street motor vehicle traffic may block shared use path at intersections and driveways.
 - ◆ Barriers may be required to separate path and roadway. Barriers may present an obstruction to bicyclists and motorists.

Shared use paths should not be considered a substitute for street improvements. For the above reasons, other types of bikeways are likely to be better suited to accommodate bicycle traffic along highway corridors.

Feasibility Study for the Former Lehigh Valley Railroad Multi-Use Trail

3. Shared Roadway Design Guidelines

- Paved shoulder width of 4' recommended (5' width at inlet locations)
- 12' wide curbed road lane for shared use (14' preferred), when full width paved shoulder not available.
- Pavement improvements to provide smooth, even, level riding surface.
- Additional pavement or shoulder width recommended at inclines (5' shoulder, 15' road).
- Dedicated Bike lane requires 5' width, outside of white line.

4. General Bicycle and Shared Use Path Design Guidelines

- Federal aid requirement (23 CFR 652.7(b)(3)(ii) states that unauthorized motor vehicles are banned from bicycle or shared-use paths.
- Provision of rest areas should be considered on long, uninterrupted bicycle and shared use paths.

V. Trail Design Alternatives

Eight design alternatives were evaluated for this feasibility study. They include:

- The former Lehigh Valley Railroad Alignment
- Former Peanut Line Alignment
- Former Erie-Attica Alignment
- South Road Shared Use Path Alternative
- South Road Shared Roadway Alternative
- Cameron Road Shared Use Path Alternative
- Cameron Road Shared Roadway Alternative
- Cameron Road Mixed On-Road and Shared Use Path Alternative

The locations of these alternatives are shown in Figure 2.

A. Former LVRR Alignment Trail

Field reconnaissance of the former Lehigh Valley Railroad alignment showed that portions of the former railroad bed had been removed by mining activities west of River Road and between Feeley Road and Wheatland Center Road. Active mining continues in both of these areas, making use of the former alignment infeasible in these sections.

The ownership of the former alignment is divided among several private individuals and companies. Several of these owners were present at the initial public meeting and at a special meeting for property owners. All of the property owners expressed opposition to the use of their property for a multi-use, public recreation trail. They indicated that they would not be willing to allow an easement across their properties for trail purposes, or to allow the property to be purchased. Livingston County, Town of Caledonia and Village of Caledonia officials have stated that eminent domain will not be used to acquire property for trail purposes.

Jones Chemical representatives were present at the special meeting with property owners. They indicated at that meeting that access to the JCI facility in Caledonia is restricted under the federal Homeland Security Act, and that no public recreational use of their property would be allowed. Additionally, the site is known to have contaminated soils. Construction of a recreational trail through a contaminated site is not recommended.

Based on this information, use of the former Lehigh Valley alignment for a multi-use trail does not appear to be advisable, except for that portion between the Genesee Valley Greenway and River Road, currently owned by the Mendon Foundation.

B. Former Peanut Line Alignment

The Peanut Line was a six-foot gauge railroad from Canandaigua to Niagara Falls. Historical accounts differ on whether the line was acquired by the New York Central Railroad in 1855 or 1857. It became known as the "Peanut Line" after Dean Richmond, a company vice-president, referred to the acquisition as "only a peanut of a line." The official New York Central designation for the line was the "Batavia Branch." The line was used for freight and passengers until the 1930s.

From the Village of Caledonia to Maxwell Station Road, the Peanut Line alignment generally parallels the former Lehigh Valley alignment. East of Maxwell Station Road, it diverges from the Lehigh Valley alignment and continues to follow the Dugan Creek valley.

The alignment ownership is relatively intact from the eastern Village limit to Maxwell Station Road. It is owned by National Grid, and includes a power transmission line. The alignment varies in width but averages about 30 to 45 feet in width. Ballast and rails have been removed from the alignment. From Maxwell Station Road to River Road, the alignment is owned by a private party and is adjacent to a gravel mine.

National Grid was contacted regarding the possibility of using the former Peanut Line alignment as a multi-use trail. A sample trail use agreement and summary of National Grid's Recreational Trails Policy were provided to the Steering Committee for review. A review of the sample agreement and Trail Policy indicates that the concerns of abutting property owners must be fully addressed. This alternative is infeasible because property owners west of River Road indicated that they would not approve of a recreational trail on their property. Another constraint is obtaining the cooperation of the private property owner from Maxwell Station Road to West River Road. Air photo review also shows the alignment passing through an active gravel mine. The alignment is protected from mining activity by the National Grid easement, but the proximity of mining activity is not compatible with recreational trail use.

Based on these factors, it was determined that use of the Peanut Line alignment as a multi-use trail was not feasible.

C. Former Erie-Attica Railroad Alignment

The feasibility of connecting the Erie-Attica alignment to the Genesee Valley Greenway (GVG) from the Village of Avon is currently under development. A representative of the New York State Office of Parks, Recreation and Historic Preservation commented at the first public meeting that land is being donated to the State of New York to facilitate conversion of that portion of the former Erie-Attica railroad alignment to a multi-use recreational trail.

Use of the former Erie-Attica railroad alignment as a recreation trail alternative was suggested.

Property record review indicates that ownership of the former Erie-Attica alignment is fragmented among forty to fifty individual property owners. Cooperation of these property owners would be required to establish a viable trail alternative using this alignment.

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From limited field reconnaissance, it appears that the bed of the rail line is relatively intact. Investigators were unable to walk the alignment due to access restrictions.

This alternative does not meet the project objective of connecting the existing Lehigh Valley trail with the Village of Caledonia. Further evaluation and demonstration of community and property owner support for the alternative would be necessary before this could be considered a viable alternative.

D. Shared-Use Path Alternative

Two shared-use path alternatives were evaluated. These include the Cameron Road Shared-Use Path Alternative and the South Road Shared-Use Path Alternative.

1. Cameron Road Shared-Use Path Alternative

The Cameron Road Shared Use Path would utilize the existing LVRR alignment from the Genesee Valley Greenway to River Road. From River Road, a shared-use path would be constructed on the west side of River Road from the driveway opposite the Livingston Office Park to Cameron Road. The path would cross River Road at the intersection of Cameron Road and follow the south side of Cameron Road to Feeley Road. At Feeley Road, the shared-use path would continue north for a distance of 0.2 mile on the east side of the road to the intersection of Iroquois Road. At Iroquois Road, the shared-use path would cross Feeley Road and continue west on the south side of Iroquois Road to the corporate limit of the Village of Caledonia. Within the Village of Caledonia, signage would direct pedestrians to use existing village sidewalks while bicyclists would be directed to stay on the street.

This alternative would require the following improvements:

- Fee simple acquisition or an access easement of a strip of land approximately fourteen feet wide across thirty or more properties.
- Clearing and grubbing, including removal of mature trees.
- Placement of fill in approximately 1.5 acre of the CA-4 wetland on the south side of Iroquois Road.
- Grading to match the existing road elevation.
- Drainage improvements to maintain flow patterns.
- Construction of a stone dust path on easement or acquired property.

An Article 24 Freshwater Wetland Permit would be required for any fill placed on the CA-4 wetland. An Individual Section 404 Clean Water Act permit would also be required for this project because it exceeds the 1/3 acre threshold allowable under a Nationwide Permit. It is likely that mitigation would be required, adding to project costs.

Comments received at the initial public meeting indicated that property owners along Cameron Road were not in favor of a shared-use path alternative, and that the Town of Caledonia was not prepared to commit financial or in-kind resources to support this alternative at this time.

Based on these comments and the fact that wetland mitigation may be required, it appears that the Cameron Road Shared-Use Path Alternative is not advisable at this time.

2. South Road Shared-Use Path Alternative

The South Road Shared-Use Path Alternative would utilize the existing LVRR alignment, owned by the Mendon Foundation, from the Genesee Greenway trail to River Road. This alternative would then continue as a shared-use path on the west side of River Road to South Road. At South Road, the alternative would utilize a shared-use path on the south side of South Road, continuing west to the intersection of Wheatland Center Road. At Wheatland Center Road, the alternative would continue south on the east side of the road to Iroquois Road. The alternative would then turn west on Iroquois Road, continuing into the Village of Caledonia, following the alignment described for the Cameron Road Alternative.

The South Road shared-use path alternative would also require similar improvements to those described for the Cameron Road Alternative. Wetland fills would be required along Wheatland Center Road to accommodate a shared-use path. A Section 404 Clean Water Act permit and an Article 24 Freshwater Wetland Permit would be required.

At the initial public meeting, members of the audience noted that sight distance is limited along South Road, particularly at the intersection of Bowerman Road. In addition, the shared-use path would have to cross a portion of the former Livingston-Monroe Landfill. Further investigation would be required to determine the limits of waste disposal and potential contamination. The shared-use path would also cross a historic cemetery property. Further investigation would be required to determine potential impacts to historic and cultural resources. Consultation with the NYS Office of Historic Preservation would be required. Further consultation would also be required with affected property owners, the Monroe County Department of Engineering and the Town of Wheatland.

Based on comments received at the initial public meeting, the cost and complexity of wetland permitting and mitigation, and the need for further consultation, the South Road shared path alternative is not considered a feasible alternative at this time.

E. Shared Roadway Alternative

1. Cameron Road Shared Roadway Alternative

The Cameron Road Shared Roadway Alternative would proceed west from the existing terminus of the Lehigh Valley trail at the Greenway along the original LVRR alignment to River Road. At River Road, the bicycles and pedestrians would share the roadway with motorized vehicle traffic. The trail alignment would continue south along River Road to Cameron Road. At Cameron Road, the trail would continue west as a shared roadway alternative to Feeley Road. At Feeley Road, the trail would turn north to Iroquois Road. At Iroquois Road, the trail would turn west on Iroquois Road, continuing into the Village of Caledonia, terminating at North Avenue (NY Rt. 36).

This alternative offers the following advantages:

- Cameron Road is a lightly traveled Town road.
- Cameron Road has fewer sight distance limitations than South Road.

Disadvantages to the Cameron Road Shared Road Alternative include:

- Trail users must use River Road to access the more lightly traveled Cameron Road. River Road is heavily traveled by commuters and heavy trucks.

Some improvements would be required including, but not limited to:

- Shoulder widening to minimum shared road standards;
- Lane marking; and
- Signage.

Based on a review of available information, it is not likely that additional right of way would be required to implement this alternative as an on-road alignment. Shoulder improvements to Cameron Road may require extension of existing culverts. Permits may be required for culvert and shoulder improvements.

The Town of Caledonia representative indicated that the Town would be unable to commit financial resources to making the necessary improvements to Cameron Road to support this alternative. In addition, the speed and heavy volume of truck traffic on River Road make this alternative infeasible.

2. South Road Shared Road Alternative

The South Road Shared Road Alternative is described as follows: from the existing terminus of the Lehigh Valley Trail at the Genesee Valley Greenway, the trail alignment would follow the former railroad alignment to River Road. At River Road, the trail would continue on existing roads, following River Road north to South Road; South Road west to Wheatland Center Road; Wheatland Center Road south to Iroquois Road; and Iroquois Road west to North Avenue (NY Rt. 36) in the Village of Caledonia.

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South Road is in Monroe County, and is owned and maintained by the County. Consultation with Monroe County Engineering staff indicated that this road has some sight distance limitations at the intersection of Bowerman Road. Bowerman Road forms a T-intersection at South Road. Shoulder width ranges from 2.5 to 3 feet.

The terrain on South Road is rolling, with many of the hills offering a challenge for bicyclists. The posted speed limit on South Road is 45 mph, but many vehicles exceed the posted limit. The road is also used by gravel trucks traveling to nearby quarries.

Comments received at the initial public meeting indicated concern for bicyclists using the road due to high travel speeds and limited sight distances.

Wheatland Center Road is also heavily used by gravel trucks and commuters. The posted speed limit is 45 mph. Sight distances appear to be adequate on Wheatland Center Road. The shoulder width is approximately three feet on Wheatland Center Road. The road is in good condition.

Iroquois Road is owned and maintained by Livingston County. Outside of the Village of Caledonia, this road is asphalt paved with 12 ft. travel lanes and three foot wide paved shoulders. The posted speed limit is 45 mph. The intersection of Wheatland Center/Barks Road and Iroquois Road is controlled by a stop sign for Wheatland Center and Barks Road.

Within the Village of Caledonia, the posted speed limit is 30 mph. Parking is permitted on the street and sidewalks are located on either side of the road.

Public comments did not support this on-road alternative at the public meeting. Limited sight distances, high traffic speeds, heavy truck volumes and the lack of community support also make this alternative infeasible at this time.

F. Cameron Road Combination Shared-Use Path and Shared Road Alternative

This combination alternative is described as follows: from the terminus of the Lehigh Valley trail at the Greenway, the trail follows the former LVRR alignment to River Road. At River Road, the alternative becomes a shared-use path located on the east side of River Road to Cameron Road. The trail then follows Cameron Road to Feeley Road to Iroquois Road to the Village limit as a shared road alternative. These roads are relatively lightly traveled, have adequate sight distances, and offer numerous pleasant views of farms and wetlands. No additional right of way would be required. Some improvements to road shoulders would be required on Cameron Road and Feeley Road to provide adequate width for bicycle riders.

At the Village limit, pedestrians would be directed to use existing Village sidewalks and bicyclists would continue to use the street. Some improvements would be needed to Village sidewalks to bring them up to current ADA design standards.

One commenter offered a suggestion to utilize an existing utility right of way from the Genesee Valley Greenway to River Road. This utility right of way already exists as a gravel roadway and is used by NYS Parks staff and utility workers to access the Greenway from River Road.

The Town of Caledonia, which owns and maintains Cameron Road, stated at the first public meeting that it does not have the financial resources to make improvements along Cameron Road to support the on-road alternative. Further evaluation of this alternative may be justified if community support for the project develops. At the present time, this alternative does not appear to be feasible.

VI. Public Involvement

A. Steering Committee

Steering committee members included elected and appointed representatives from the Town and Village of Caledonia, Livingston County Planning Department, New York State Department of Environmental Conservation, New York State Office of Parks, Recreation and Historic Preservation, the Mendon Foundation, property owners and interested members of the public. A complete list of Steering Committee members is included in the Acknowledgment section of this report.

A Steering Committee meeting was held on February 15, 2007, to discuss the project and obtain input from local representatives.

Steering Committee members were consulted by telephone and electronic mail communication regarding the need for follow up meetings, the property owner meeting, and report recommendations.

At the suggestion of the Steering Committee, a separate meeting was held with potentially affected property owners on July 24, 2007. These individuals were contacted by mail by the Mendon Foundation with a special invitation to attend the meeting. Representatives from Jones Chemical Incorporated, G & K Land Company and a few others attended this meeting.

B. General Public

Due to the sensitivity of property owners in the Caledonia community, property owners along the former Lehigh Valley Railroad alignment were invited to a special meeting on July 24, 2007. This meeting was specifically held to inform potentially affected property owners about the study and to invite their participation and cooperation. The meeting was attended by several representatives of Jones Chemical Incorporated, as well as members of the Livingston County Sheriff's Department, the State Emergency Management Office, and the federal Department of Homeland Security. Jones Chemical representatives stated that their land could not be used for recreational trail purposes because access is restricted. Their facility is a chemical manufacturing business which is closely regulated under the Homeland Security regulations. Representatives from the County Sheriff's office also stated their opposition to having a recreational trail across this property.

It was noted at this meeting that several invited property owners chose not to attend the meeting. In addition, Lu Engineers was contacted by a representative of one of the agricultural owners expressing opposition to the proposed use of their land for recreational trail purposes.

A representative of the G & K Land property also spoke at the property owners' meeting. She expressed interest in having a recreational trail, but not in the location proposed. She suggested that the former Erie-Attica Railroad right of way be considered as an alternative route to connect the Genesee Valley Greenway with the Village of Caledonia. She also commented that the proposed on-road alternatives each had significant drawbacks. The Cameron Road alternative would require an improved road surface to make it safe for bicyclists. She commented that South Road receives a lot of heavy truck traffic and may not be safe for bicyclists or pedestrians. She noted that the sight distances on South Road were limited in some areas.

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A newspaper article about the project was published in the Livingston County News on November 29, 2007. The initial public information meeting for the feasibility study was held on December 5, 2007 at the Caledonia Village Hall. This meeting was attended by a number of Steering Committee members, property owners and interested citizens. After a general presentation on the project and a discussion of the feasibility of the original alignment, and the project alternatives, meeting attendees were invited to comment and ask questions.

Comments were received on the following points:

1. Look at an option to avoid traffic on River Road. Cameron Road meets River Road, to avoid the traffic on River Road. There is a driveway that connects River Road to the Greenway trail about 300 feet north of the intersection of Cameron Road and River Road. If a shared use path could be created along River Road to the intersection, that would bring the trail out to Cameron Road without a lot of problems along River Road which is a high traffic, high speed roadway.
2. A trail connection to the Genesee Country Museum would be more desirable than a connection to the Lehigh Valley Trail at this time.
3. All of the trail alternatives are dangerous and the community is opposed to them as well as the original alignment.
4. The Town of Caledonia representative stated that the Town is not interested in working on the trail right now. They may be interested in the future if financial conditions change.
5. What impact would trail construction have on the Town's budget?
6. Could the Peanut Line be used?
7. A Tennessee Pipeline Company employee commented that his company maintains several pipelines in the project vicinity. Depending upon which alternative is selected, one or more of these pipelines may have to be crossed.
8. Can utilities be charged to maintain a right of way across the trail?
9. Who would be responsible for law enforcement?
10. How many people might use the trail if it was constructed?
11. No one except bicyclists will use either of the on-road alternatives.
12. I would be in favor of the Erie-Attica alternative.
13. There's no way they'll get a trail into Caledonia along the existing alignment. They won't get the Cameron Road alternative either. The Erie-Attica alternative and the South Road alternative should be considered.

A majority of remaining attendees favored the concept of a trail; however, there was no support from community representatives or property owners at this time. Several attendees favored the idea of a trail connection between the Village of Caledonia and the Genesee Country Museum. They also stated that the Genesee Country Museum owned a significant section of the former Lehigh Valley right of way between Caledonia and the museum.

VII. Preferred Alternative

The original alignment of the Lehigh Valley Railroad between River Road and the Village of Caledonia was found to be infeasible due to property owner opposition and incompatible land uses.

The Cameron Road shared path alternative was found to be infeasible due to property owner opposition, permitting costs, and lack of community support.

The Cameron Road shared road alternative was found to be infeasible at this time due to traffic concerns on River Road and lack of community support.

The South Road shared path alternative was found to be infeasible at this time due to permitting costs, permitting issues, and lack of community support.

The South Road shared road alternative was found to be infeasible at this time due to traffic and safety concerns.

The Peanut Line alternative was found to be infeasible at this time due to property owner concerns on trail use, incompatible adjacent land uses and lack of community support.

The Erie-Attica alternative received favorable public comments from several individuals, but alternative does not meet the project objective of connecting the Lehigh Valley Trail with the Village of Caledonia. In addition, the ownership of the former Erie-Attica alignment is more fragmented than that of the Lehigh Valley alignment. Cooperation would be required from thirty or more property owners to complete a trail from the Greenway to the Village of Caledonia. Should community support be developed for this alternative, further evaluation may be warranted.

The preferred alternative is that the Lehigh Valley Trail be completed along its original alignment from the existing terminus at the Greenway to River Road on land owned by the Mendon Foundation. The Mendon Foundation is a project sponsor and an active advocate for trails. They would be responsible for trail construction and maintenance. Project funding can be obtained independent of the Town and Village of Caledonia.

The alternative will include a 10 ft. wide, stone dust trail approximately 2900 ft. in length, a gravel parking area for 5-6 cars, trailhead and directional signage. Significant grading and filling will be required to bring the trail profile up to its original grade near the west end of the trail because the railroad alignment was affected by gravel mining. Grading will be required to achieve a stable slope.

While this alternative does not meet the overall project objective of connecting the Lehigh Valley Trail to the Village of Caledonia, it is the only feasible and readily implementable alternative. It also provides the existing LVRR trail with a readily accessible western access point.

VIII. Project Implementation

The Mendon Foundation will seek funding from sources that may include but are not limited to the Transportation Enhancement Program (TEP), and other alternative sources to complete the recommended trail segment.

Once the project is funded, final design will be completed and will include detailed survey and engineering design.

The Mendon Foundation will partner with a private contractor or public entity to construct the trail.

The Mendon Foundation property is zoned Heavy Industrial¹. Consultation will be required with the Town of Caledonia Code Enforcement Officer and Planning Board to determine the need for a conditional use permit and site plan approval prior to trail construction. Public parks and non-commercial recreational facilities are conditionally permitted uses within the Town of Caledonia.

The Mendon Foundation property can be accessed directly from River Road or from an existing private driveway on the east side of River Road. This private driveway is utilized by a number of businesses, including the Center Point Transfer Station. Construction of a driveway entrance from River Road would require a driveway access permit from the Livingston County Highway Department.

It is anticipated that funding, design and construction can be achieved within a five year time frame.

¹ Telephone communication with Kevin Quinlan, Assessor, Town of Caledonia, July 1, 2008.

APPENDIX

**Exhibit 1: Conceptual Trail Alignment Plan, Profile
and Details**

Exhibit 2: Cost Estimate

Feasibility Study for the Former Lehigh Valley Railroad Multi-Use Trail

**LEHIGH VALLEY TRAIL
GENESEE VALLEY GREENWAY TRAIL TO RIVER ROAD
COST ESTIMATE
Revised May 29, 2008**

Genesee Valley Greenway Trail to River Road (3,000 LF)

| Quantity | Units | Description | Unit Price Bid | Amount |
|----------------------|-------|---|----------------|---------------|
| 75,000 | SF | Clearing Brush | \$ 0.25 | \$ 18,750.00 |
| 10 | EA | Tree Removal (8" or greater) | \$ 1,000.00 | \$ 10,000.00 |
| 5,000 | CY | Earthwork (Fill placement) | \$ 25.00 | \$ 125,000.00 |
| 574 | CY | Gravel subbase (DOT Item # 304.12) | \$ 40.00 | \$ 22,960.00 |
| 191 | CY | Crushed Limestone Surface (DOT Item # 3040701 12) | \$ 125.00 | \$ 23,875.00 |
| 4 | CY | Asphalt driveway transition (DOT Item # 608.020101) | \$ 150.00 | \$ 555.00 |
| 2 | EA | Easement (surveying & legal) | \$ 4,000.00 | \$ 8,000.00 |
| CONSTRUCTION COST: | | | | \$ 209,140.00 |
| Engineering (10%) | | | | \$ 20,914.00 |
| Contingency (15%) | | | | \$ 31,371.00 |
| ESTIMATED TOTAL COST | | | | \$ 261,425.00 |
| 1 | mi | ANNUAL MAINTENANCE: | \$ 1,600.00 | \$ 960.00 |

Technical Assumptions:

1. Gravel subbase (DOT Item # 304.12) is 6 in. thick.
2. Crushed limestone (DOT Item # 3040701 12) is 2 in. thick.
3. Asphalt driveway transition assumed 2 in. thick