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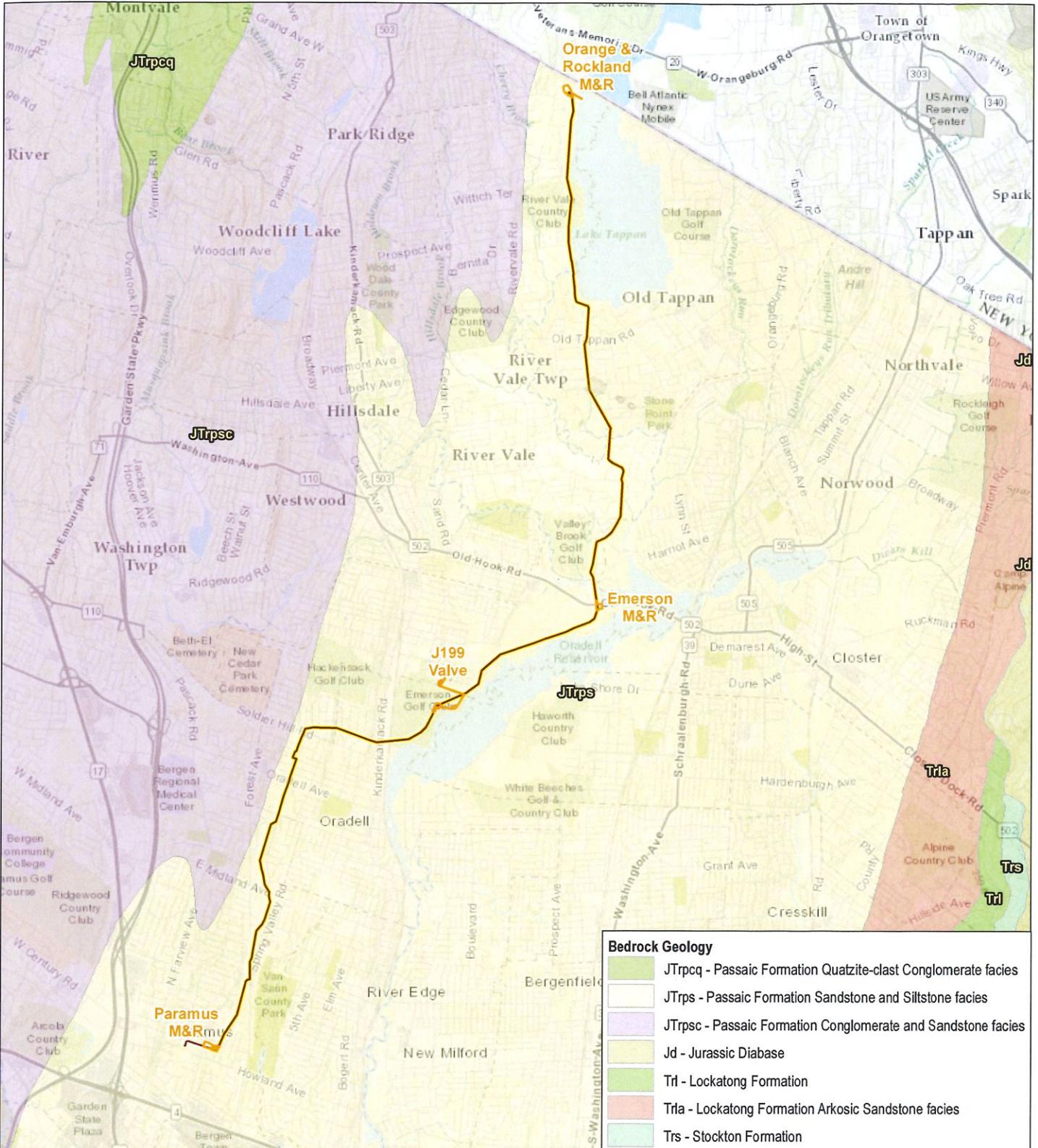
<ul style="list-style-type: none"> Proposed Facility North New Jersey Extension Proposed Update Bergen Loop County Boundary 	<p>Abandoned Mines</p> <ul style="list-style-type: none"> Copper Graphite Iron <p>Sand, Gravel and Rock Surficial Mining Operations</p> <ul style="list-style-type: none"> Abandoned or Inactive Registered 	
<p>Data Source: NJ DEP, NJ Geological Survey Base map: Esri and its contributors</p>		



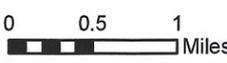
Rivervale South to Market Project

FIGURE 6.5-1
MINERAL RESOURCES

R:\Projects\GIS_2017\269666_Rivervale\mxd\Figures\RR6\Fig 6.3-1 Bedrock Geology 2017-08-11b.mxd



- Proposed Construction Limits
- North New Jersey Extension Proposed Uprate
- North New Jersey Extension



Rivervale South to Market Project

FIGURE 6.3-1
SURFICIAL GEOLOGY



**Table 8.1-2
Land Use Acreage Affected by Construction and Operation of the Rivervale South to Market Project**

Workspace Type/ Facility	Commercial / Industrial Land ^a		Open Upland ^b		Wetlands ^c		Upland Forest ^d		Residential Land ^e		Open Water ^f		Agricultural Land ^g		Total	
	Construction ^h	Operation ⁱ	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation
Aboveground Facilities																
Orange and Rockland M&R	1.99	0.04	0.43	0.00	0.17	0.00	0.19	0.00	0.00	0.00	0.05	0.00	0.00	0.00	2.82	0.04
Emerson M&R	0.87	0.11	0.09	0.00	0.23	0.02	0.21	0.03	0.00	0.00	0.00	0.00	0.00	0.00	1.39	0.15
Paramus M&R	1.75	0.14	0.71	0.02	0.02	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.97	0.16
Central Manhattan M&R	7.44	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.44	0.20
J199 Valve	0.53	0.00	1.03	0.01	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.84	0.01
new Pig Launcher (Bergen Loop)	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13
new Pig Receiver (Bergen Loop)	0.07	0.07	0.04	0.04	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17
re-located Thermoelectric generator (Bergen Loop)	0.00	0.00	<0.01	<0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Contractor and Pipe Yards																
Linden Yard	8.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.16	0.00
Bergen Yard	1.04	0.00	3.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76	0.00



facilities associated with the Project. These facilities are depicted on the USGS quadrangle maps and aerial photo-based drawings provided in Resource Report 1, Appendix 1C.

Construction and operational impacts on existing land uses from the Project's aboveground facilities are included in Table 8.1-2 above. All temporary workspaces and ATWS areas associated with the Project will be restored to pre-existing conditions in accordance with the FERC Plan and FERC Procedures.

None of the aboveground facility sites associated with the Project are currently in agricultural use. None of the sites have been identified from database searches or agency and organization consultation as participating in the Sustainable Forestry Initiative program (FSC, 2017). The aboveground facility sites do not contain any sugar maple stands, orchards, nurseries, or land in active agricultural use.

8.1.2.1 M&R Stations

Orange and Rockland M&R

Aboveground modifications at the Orange and Rockland M&R will be located entirely within the footprint of the existing facility; therefore, no permanent conversion of land use is proposed and no new permanent easement or land acquisition is required. Temporary workspace is necessary to construct these modifications and for the uprate of the North New Jersey Extension. These temporary workspaces will be required both within and outside Transco's existing easements on the station properties. The temporary workspace is largely located within existing maintained areas of lawn, a maintained overhead electric transmission line corridor, and the graveled natural gas M&R station facilities. A portion of the temporary workspace is located on parcels with existing conservation restriction easements (see Table 8.3-1). No temporary or permanent tree clearing is proposed as part of this work. Transco is in the process of coordinating with the landowner regarding the use of parcels encumbered by the deed restrictions during construction.

The Orange and Rockland M&R is located in the vicinity of residential neighborhoods; however there are no residences located within 50 feet of the construction workspace limits. Section 8.2 provides additional detail relative to existing and planned residences within the Project area, as well as measures to be implemented by Transco to minimize impacts where the workspace is located on land in active residential use. No special land uses were identified within 0.25 mile of the Orange and Rockland M&R. Additional information on Transco's activities on conservation restricted land is provided in Section 8.3.

Emerson M&R

Modifications at the Emerson M&R require a permanent expansion of the facility fence line to accommodate additional equipment. The permanent modifications expand the facility fence line to the south, and will be located entirely within Transco's property. The expansion will require the conversion of 0.03 acre of upland forest and 0.02 acre of forested wetland to commercial / industrial use. Temporary workspace for construction at the Emerson M&R will be located within upland forest and wetland land use types. Transco will rely mainly on limbing trees with only limited tree clearing or removal as needed for equipment to travel and operate in the PFO wetland to access the facilities to be modified. Temporary workspace areas will be allowed to revert to pre-construction land uses. Portions of the temporary workspaces required for the Emerson M&R station modifications are located on conservation restricted land owned by others. Transco is in the process of coordinating with the landowner regarding the use of parcels encumbered by the deed restrictions during construction.



Special land uses within 0.25 mile of the Emerson M&R station include a certified organic farm identified by the USDA (2017) located across Old Hook Road, and the Valley Brook Golf Club, located 0.20 mile to the north. No impacts to these special land uses are anticipated as a result of construction or operation of the Emerson M&R station modifications.

Paramus M&R

Modifications at the Paramus M&R involve a permanent expansion of the existing facility footprint to accommodate additional equipment; this expansion will be sited on property owned by Transco within maintained lawn surrounding the existing facility. Temporary workspace for construction at the Paramus M&R will be located within upland forest and wetland forest areas requiring tree clearing. Temporary workspace areas will be restored post-construction and allowed to revert to pre-construction land uses.

The Paramus M&R abuts residential land parcels, and six occupied residences are located within 50 feet of the construction work area for the proposed modifications. Residences and buildings within 50 feet of construction work areas are identified in Table 8.2-1 in Section 8.2 below. Residential Construction Plans for locations where residences are located within 50 feet of the proposed workspace are provided in Resource Report 1, Appendix 1C. Special land uses identified within 0.25 mile of the Paramus M&R station include Paramus High School, approximately 0.05 mile to the west, and Saint Matthew's Episcopal Church, approximately 0.20 mile to the north.

Central Manhattan M&R

A portion of the proposed temporary workspaces at the Central Manhattan M&R are located outside Transco's existing property or easement. Due to the limited space available on the existing property, ATWS for parking and staging are required on nearby commercial / industrial lands owned by others. Transco is in the process of coordinating with landowners regarding the use of lands outside of Transco's property for construction the station modifications. The Central Manhattan M&R is located within a heavily developed urban, commercial / industrial area. No long-term direct or indirect impacts to this area will result from these facility modifications. No special land use areas were identified within 0.25 mile of the Central Manhattan M&R.

8.1.2.2 Additional Aboveground Facilities

J199 Valve

The existing J199 Valve site and the temporary workspace areas for the proposed removal are located across an existing golf course property and a conservation restricted parcel. All aboveground structures and piping associated with the valve setting will be removed from the site and disposed of at an approved facility in accordance with Transco's Waste Management Plan (see Resource Report 1, Appendix 1B) and applicable state and local regulations. The valve site is located within Transco's existing easement on land owned by a public golf course. Following removal of these facilities, the land will be restored in accordance with the FERC Plan and FERC Procedures and applicable landowner agreement, and will be allowed to permanently revert from commercial / industrial use to open land associated with the golf course. Transco will continue to retain its current easement at this property as part of the existing North New Jersey Extension ROW.

Effects on the golf course and its members will be limited to temporary visual and noise disturbance related to construction activities. Transco is coordinating with the property owner to minimize effects on the golf course operation during removal of the valve. Temporary workspace and ATWS areas associated with this



work will be required outside of Transco's existing easement on the golf course parcel and on the conservation restricted parcel. Transco is coordinating with these property owners regarding use of these properties during construction. Additional information on Transco's activities on conservation restricted land is provided in Section 8.3.

New Pig Launcher, New Pig Receiver, and Re-located Thermoelectric generator

The proposed new Pig Launcher, new Pig Receiver, and re-located Thermoelectric generator on the Bergen Loop will be located on land owned by Transco. No impact on existing land use from construction and operation of the new Pig Launcher is anticipated. The new Pig Launcher site is located on an existing industrial site occupied by Transco's Station 240; therefore, no change in land use will result from this minor aboveground facility.

The new Pig Receiver and re-located Thermoelectric generator will be partially located within wetland areas, requiring the permanent conversion of wetlands to commercial / industrial land use. Work within wetland areas is further described in Resource Report 2. Transco has requested a deviation from the FERC Procedures for construction of the new Pig Receiver in Wetland W-01 (see Resource Report 1, Table 1.3-1) and re-location of the Thermoelectric generator in Wetland W-600.

The operational area associated with the proposed receiver and launcher sites will be kept free of trees to ensure operational safety and to allow for routine maintenance. Land used as temporary workspace and ATWS will be allowed to revert to its pre-construction condition. Transco will utilize standard construction techniques to construct the Pig Launcher and Pig Receiver facilities, and work will be conducted in accordance with the Project Compliance and Mitigation Plans (see Resource Report 1, Appendix 1B).

8.1.3 Contractor and Pipe Yards

Transco has identified two contractor and pipe yards for the Project. The Linden Yard is located in the City of Linden, Union County on property owned by Transco for the Linden Station. The Bergen Yard is an existing developed site that is located partially within East Rutherford Borough (approximately 3.76 acres) and partially within Carlstadt Borough (approximately 1.00 acre), Bergen County, on land owned by a private landowner. The contractor yards are depicted on the USGS quadrangle maps and aerial photo-based drawings in Resource Report 1, Appendix 1C. As discussed in Resource Report 1, Transco will use these areas for equipment, pipe and material storage, temporary field offices, parking, and pipe preparation/field assembly. The Linden Yard is located in a previously disturbed area with existing paved parking areas, dirt/gravel areas, and buildings. No conversion of land use is proposed, and the property has been used as a contractor / pipe yard in the past. The Bergen Yard currently consists of a former driving range facility and disturbed open land. Formerly a commercial / industrial property, it is currently zoned for Watershed Residential, but is not yet developed as such (see Section 8.2.1 below). Transco is in the process of acquiring landowner agreement for temporary use of the yard. The yard area will be returned to pre-construction conditions following construction. The location, size, and dominant land use type for the contractor and pipe yards are provided in Table 1.2-2 in Resource Report 1.

8.1.4 Access Roads

Transco will require use of three existing access roads for the Project. Two existing, permanent access roads are associated with the Bergen Loop and a third existing access road will be used during construction



for the removal of the J199 Valve. Table 8.1-4 below identifies the access roads for the Project including access road locations, length, existing surface type, and existing land use.

The J199 Valve workspace will be accessed by PAR-201, which is a private road with an entrance located in a residential area, and workspace is within 50 feet of one residence. Residences and buildings within 50 feet of construction work areas are identified in Table 8.2-1 in Section 8.2 below. Residential Construction Plans for locations where residences are located within 50 feet of the proposed workspace are provided in Resource Report 1, Appendix 1C.

Transco will use the existing site driveways to the Orange and Rockland M&R, Emerson M&R, Paramus M&R, and Central Manhattan M&R for construction and operation of the proposed modifications at those facilities. Therefore, no new temporary or permanent access roads are required as part of the aboveground facility modifications.



**Table 8.1-4
 Permanent and Temporary Access Roads associated with the Rivervale South to Market Project**

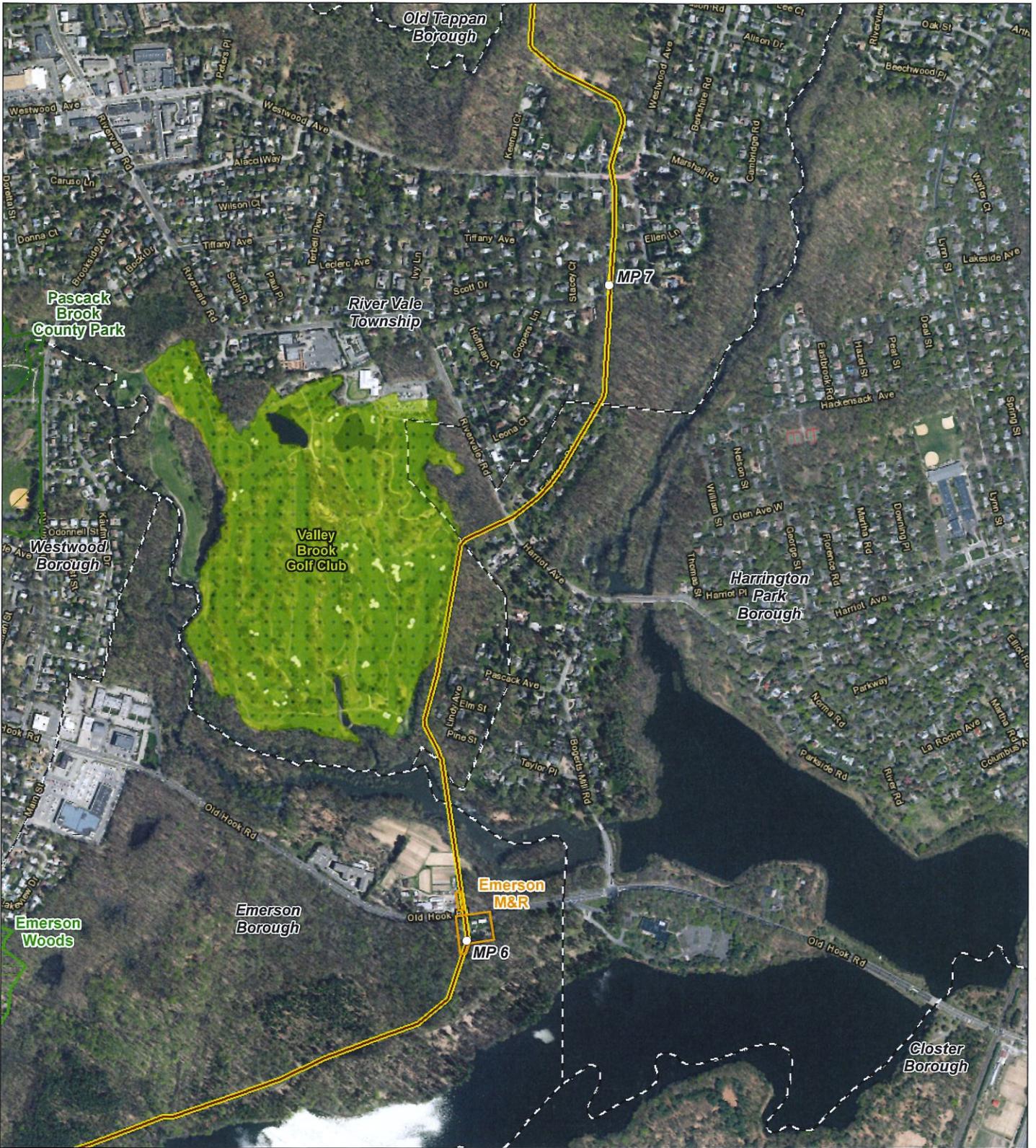
Access Road ID	Reference MP	Temporary/Permanent	Existing / New	Existing Surface	Land Use Type ^a	Proposed Modifications	Length (feet)	Width (feet)	Construction Area (acres)	Operation Area (acres)
Bergen Loop^b										
PAR-001	BL 0.00 - 0.61	Permanent	Existing	Pavement with small portion gravel/dirt	CI	Grading and sub-base in small portion currently gravel/dirt	7,862	20 - 40	4.87	4.87
TAR-002	BL 0.61	Temporary	Existing	Gravel/dirt	CI	None	4,855	20	2.29	0.00
J199 Valve										
PAR-201	NNJE 4.60	Permanent	Existing	Pavement and gravel/dirt	CI, OL, RL, UF	None	3,130	20 - 35	1.91	1.91
PROJECT TOTAL:									9.07	6.78

Notes: ID = Identification; MP = Milepost; PAR = Permanent Access Road; TAR = Temporary Access Road; BL = Milepost on the Bergen Loop; NNJE = Milepost on the existing North New Jersey Extension.

a: AG = Agricultural Land; CI= Commercial / Industrial Land; OL = Open Land; RL = Residential; UF = Upland Forest.

b: Including new Pig Launcher, new Pig Receiver, and re-located Thermoelectric generator.

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- Mileposts
- North New Jersey Extension
- North New Jersey Extension Proposed Uprate
- Proposed Construction Limits
- - - Municipal Boundary
- Green Acres Parcels
- County-Owned Open Space
- Golf Courses

Data Source: NJ DEP; ACOE, 2017
Base map: NJ Office of Information Technology/USGS, 2015

0 500 1,000 Feet



Rivervale South to Market Project
FIGURE 8.3-1
PARKS AND RECREATIONAL AREAS

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- Mileposts
- North New Jersey Extension
- North New Jersey Extension Proposed Uprate
- Proposed Construction Limits
- - - Municipal Boundary
- ▨ Green Acres Parcels
- ▨ Golf Courses

Data Source: NJ DEP; ACOE, 2017
Base map: NJ Office of Information Technology/USGS, 2015

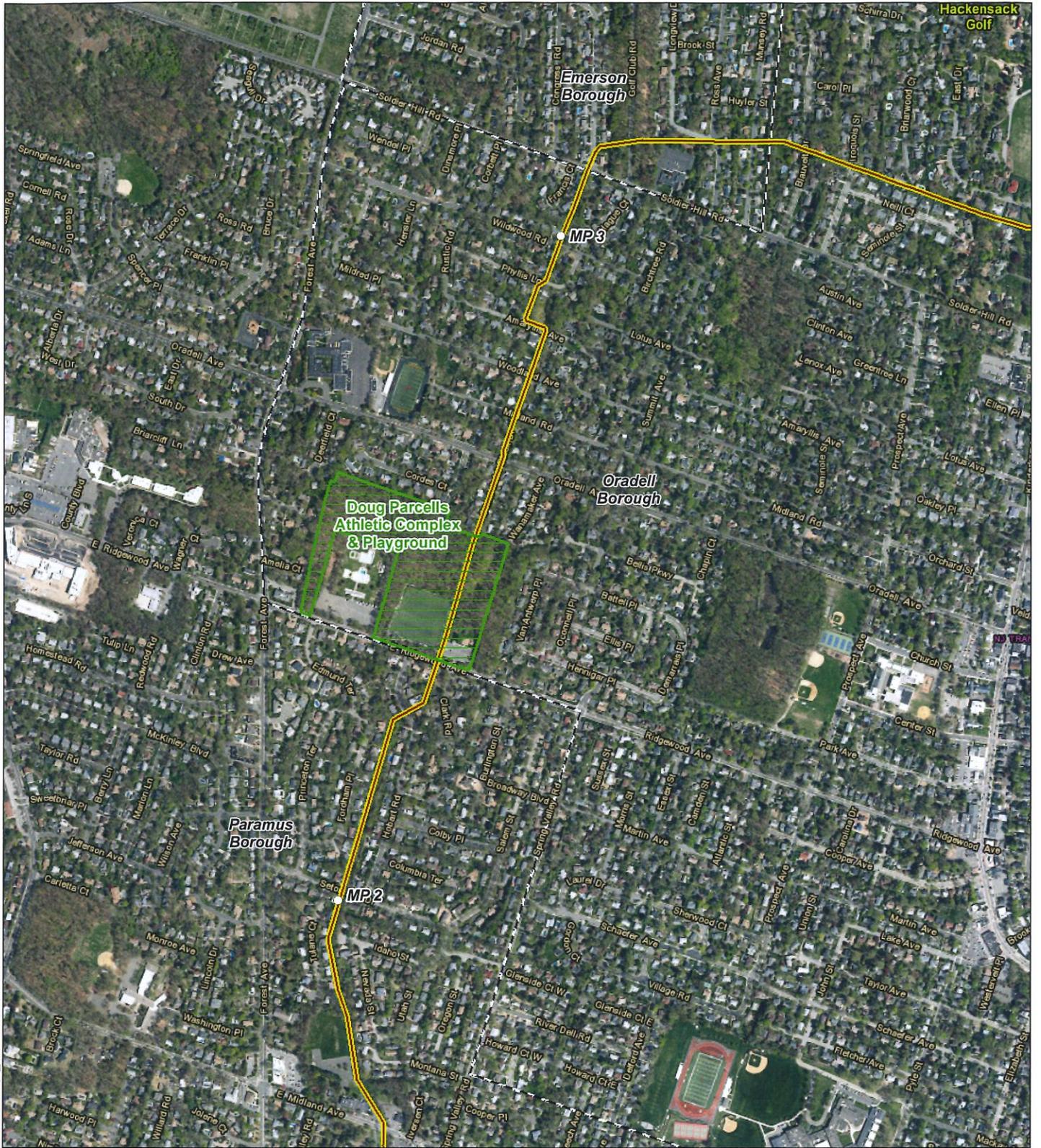
0 500 1,000 Feet



Rivervale South to Market Project

FIGURE 8.3-1
PARKS AND RECREATIONAL AREAS

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- Mileposts
- North New Jersey Extension
- North New Jersey Extension Proposed Uprate
- - - Municipal Boundary
- ▨ Green Acres Parcels
- ▨ Golf Courses

Data Source: NJ DEP; ACOE, 2017
Base map: NJ Office of Information Technology/USGS, 2015

0 500 1,000 Feet



Rivervale South to Market Project

**FIGURE 8.3-1
PARKS AND RECREATIONAL AREAS**

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