5.0 PROBABLE ENVIRONMENTAL IMPACT OF THE PROJECT IF IMPLEMENTED

5.1 Natural Resources

The proposed development of the TPCR will have minimal impacts to existing natural resources, as long as proposed mitigation measures are implemented. A summary of the impacts are provided in Table 5-11 and discussed further below and in Section 6.0 - Methods of Mitigating Adverse Impacts.

5.1.1 Geology

The TPCR will not adversely alter the existing geology of the project area. The TPCR will be constructed primarily on structure (pile supported viaduct), with embankments used in approaches to support the roadway.

5.1.2 Soils

The soils in the TPCR vicinity are classified as Urban Land, Psamments, Sulfaquents and Sulfhemists in the Soil Surveys for Middlesex and Union Counties (see Figure No. 14). As additional soils will be needed for proposed embankments, suitable clean fill will be imported. All construction projects have the potential for soil erosion. As such, all proposed construction activities will include soil erosion and sediment control measures certified by the Freehold Soil Conservation District (Borough of Carteret) and Somerset-Union Soil Conservation District (City of Linden) to minimize the potential for erosion impacts. Prior to construction, environmental soil samples will be taken along the proposed route to identify any potential soil contaminants that may need to be remediated or require proper management/disposal requirements.

5.1.3 Land Form

Construction activities for the construction of the TPCR include pile driving, excavation, grading and fill to achieve the proposed roadway grades. Such earth moving activities result in roadway cuts and embankments similar to those previously constructed for Tremley Point Road, Industrial Highway and adjacent rail lines. A significant portion of the TPCR roadway and ramps will be pier/pile-supported structures, a construction technique which has minimal impacts to land form.

5.1.4 Hydrological Features

5.1.4.1 Surface Water

There are six surface watercourses in the vicinity of the TPCR that ultimately discharge into the Arthur Kill. These waterways include the Rahway River,

Marshes Creek, Rolph's Creek, Cross Creek, Deep Run and Rum Creek (see Figure No. 15). As the roadway/bridge will be a pile supported viaduct over these water bodies, no alterations to the natural flow of water within these watercourses are proposed.

5.1.4.2 Groundwater

No extraction of groundwater is proposed for the construction of the TPCR and the intersections with the associated roadways. There are no public water supply wells located in the vicinity of the TPCR due to salt water intrusion from the adjacent tidal water bodies. As the vast majority of the TPCR will be constructed on pile foundations, self-sealing piles will be used to minimize and/or eliminate potential impacts to existing groundwater flows.

5.1.4.3 Water Quality

During construction, surface water quality will be maintained through implementation of soil erosion and sediment control plans certified by the Freehold and Somerset-Union Soil Conservation Districts. Water quality control for the TPCR will be addressed for proposed drainage connections to existing drainage facilities with inadequate capacity or to address soil erosion stability issues at new outfalls. The primary method of addressing water quality will be the use of storm water treatment chambers and stormwater management basins, supplemented with under-ground water quality chambers if necessary.

There are three potential locations for the stormwater management basins. The alignments of the TPCR are oriented to avoid impacts to the existing and proposed development sites near Industrial Highway on the southern end of the roadway. This will result in the creation of several valley areas between the fill areas of the adjacent sites and the embankment or retaining walls of the TPCR. These otherwise unusable areas are potential locations for stormwater management basins. The second potential location for stormwater management basins is located in adjacent upland areas near the Tremley Point Road connection. The third option is that basins can also be constructed under the viaduct in the Cytec lagoon areas. The size and capacity of each of these basins will be related to the volume of water that the roadway grading will deliver to a particular basin location. In addition, the basin bottom elevation relative to the seasonal high groundwater elevation and the presence of soil or groundwater contamination will be key design issues.

To date, the preliminary geotechnical borings conducted in the western Cytec lagoon (in accordance with the NJDEP General Permit No. 12) have detected levels of lead and thallium in excess of NJDEP standards. Additional geotechnical borings within the approximate area of the TPCR have detected exceedances of Marine/Estuary Screening Guidelines for base neutral compounds, metals, pesticides and PCBs. In addition, groundwater samples noted

exceedances of the NJDEP Groundwater Quality Criteria for volatile organics, base neutral compounds and metals. Further soil and groundwater sampling and laboratory analysis is to be conducted to further identify the contaminant concentration necessary to substantiate appropriate re-use and/or disposal of these materials, as may be required.

5.1.4.4 Floodplain

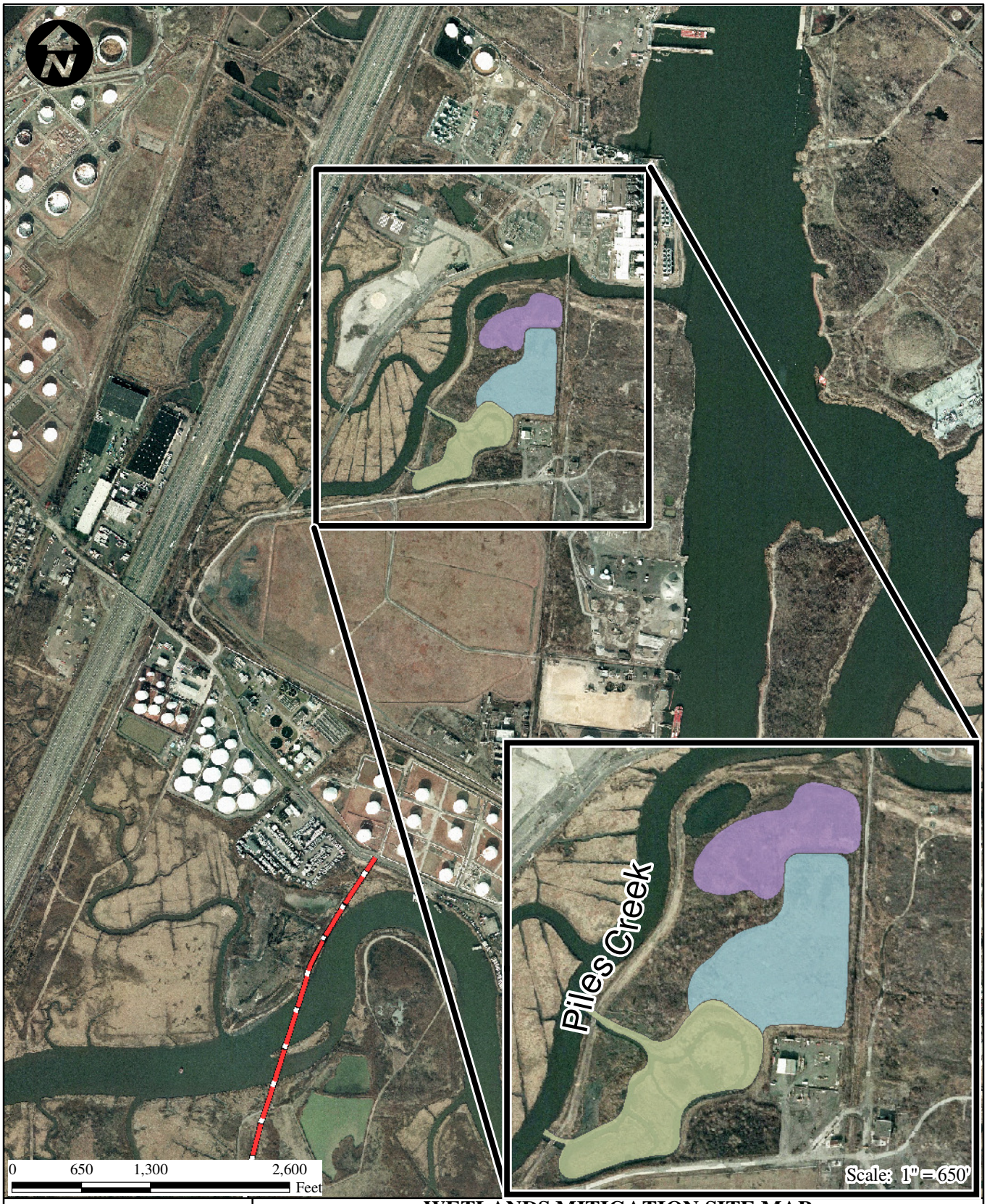
As discussed in Section 4.1.4.4, a portion of the project area is within the 100-year floodplain of the Rahway River and Arthur Kill. The majority of the TPCR itself will be a pile supported viaduct elevated above the 100-year flood elevation, however, portions of the improvements to construct the direct connection to Industrial Highway and Tremley Point Road are currently within the 100-year flood elevation. As all the watercourses within the project area are tidal, fluvial flooding, that which is caused entirely by runoff from rain fall, is not applicable to the project area.

5.1.4.5 Wetlands

Wetlands are described in Section 4.1.4.5. Construction of the TPCR potentially impacts up to 14.2 acres of wetlands (i.e., for the alternative with the greatest wetland impacts). The acreage of wetlands impacts for each alternative alignment is presented in Section 3.0 and Table 3-1.

The majority of the wetlands impacts will be due to shading from the elevated viaduct for the roadway and the remaining impacts will be the permanent loss of some of the wetlands due to filling activities for the roadway embankment used in the approaches. Due to constraints that require a certain width of the proposed four-lane roadway/bridge/parapets (i.e. 57 feet), there is no feasible means to raise the roadway/bridge high enough (and at the same time meet the elevations for intersection with Tremley Point Road/Industrial Highway) to further limit the shading effects of the TPCR on the existing wetlands. If the roadway/bridge was raised higher to limit shading impacts, both Tremley Point Road and Industrial Highway will have to be raised as much as 10 feet over existing conditions – this action by itself requires additional filling of wetlands. However, through the extensive use of a pile supported viaduct for the vast majority of the roadway/bridge, in accordance with USFWS recommendations, the areas under the roadway/bridge will allow for the continuation of animal passages, flow of water and not bifurcate the existing wetlands complex.

In order to mitigate/compensate for unavoidable wetlands impacts and night heron foraging areas, the Authority is proposing the enlargement of the Piles Creek Wetlands Mitigation site located on Tremley Point by creating additional tidally influenced wetlands from existing uplands (see Figure No. 22). The creation of wetlands is sufficient to reduce wetlands impacts of the proposed project



Legend

- Tremley Point Connector Road
- Existing Wetlands Creation Site (9 acres)
- Approximate Area Available For Creation (9.90 Acres)
- Approximate Area Available For Enhancement (5.54 Acres)

SOURCE:
Existing Wetlands Mitigation completed by PS&S.
Available Mitigation Areas approximated by PS&S.
Aerial Image from Aerials Express, 2006

WETLANDS MITIGATION SITE MAP
NEW JERSEY TURNPIKE AUTHORITY
TREMLEY POINT CONNECTOR ROAD
BOROUGH OF CARTERET, MIDDLESEX COUNTY
AND CITY OF LINDEN, UNION COUNTY, NEW JERSEY

PS&S
integrating design & engineering

Drawn By: JC	Scale: 1" = 1,300'	Project No. 02595.003.004
Chk'd By: IPD	Date: 8/15/08	Figure No. 22

Map Document: (P:\02595\003\Y\N\Maps\Fig22_WetlandsMitigation_TremleyPtConnectorRoad_101207_05.mxd)
10/12/2007 -- 4:47:47 PM

alternative to a non-significant level. The purchase of wetlands credits from a wetland mitigation bank will also be pursued as an additional remedy to compensate for the unavoidable impacts of the TPCR should an alternative alignment be selected that would require such.

Figure No. 22 also shows the locations of three small wetlands areas totaling 0.455 acres in size that are located in the brownfield redevelopment area. In accordance with guidance from the City of Linden for the redevelopment of this area, these wetlands are not to be impacted by any proposed new developments on the brownfield site.

5.1.5 Biological Features

5.1.5.1 Vegetation

Disturbance to common reed, salt marsh cordgrass, and disturbed field species will be the principal impact to vegetation resulting from the implementation of the TPCR and associated local road improvements. Disturbed areas will be revegetated with a seed mixture approved as part of the Freehold and Somerset-Union Soil Conservation Districts approvals.

5.1.5.2 Wildlife Habitat

The area is a combination of highly urbanized and industrialized environments and disturbed tidal wetlands and open water systems. Wildlife species found in urban and industrial environments are capable of adapting to human modified environments. With the extensive use of piles to support the roadway/bridge, the wildlife in the wetlands will have the capability of moving about within the expansive existing wetlands system and not be bifurcated from adjacent areas.

All open water systems will be traversed by pile supported elevated structures with no adverse impact to fish species. Further information on the minimization of adverse impacts to fisheries resources and benthic communities is presented in the Essential Fish Habitat assessment (Appendix I). The existing habitat that will be disturbed by the TPCR is limited to primarily wetlands, with the majority of the impacts the result of shading, not filling, of the vegetated areas. The effect on wildlife from implementation of the TPCR will be minor.

5.1.5.3 Threatened and Endangered Species

The development of the TPCR will not have an adverse impact upon any rare, threatened or endangered species. According to the NJDEP Office of Natural Lands Management's search of the Natural Heritage Database for the area, the anticipated threatened or endangered species reported to occur in the primary impact/construction area are black-crowned and yellow-crowned night herons,

which use the area for foraging (See Appendix C). Proposed mitigation measures for impacts to night heron foraging areas are described in Section 6.2.2.

5.1.6 Traffic

5.1.6.1 TPCR

The TPCR will provide a direct link between Industrial Highway in Carteret and Tremley Point Road in Linden. Traffic lane requirements are based on consideration of the development at Tremley Point at a "Design Level" - anticipated growth of existing industries and new facilities during the next 15 to 20 years (for further information see Appendix A – Traffic Analysis). Estimated peak hour traffic volumes by peak period and development level are listed in Table 5-1.

Table 5-1
Tremley Point Connector Road Project
2009 Projected Traffic Volumes

Peak Period	Direction	Cars	Trucks	Total	% Trucks
AM	NB	1,858	300	2,158	14
	SB	302	292	594	49
PM	NB	382	317	699	45
	SB	1,772	268	2,040	13

Source: E&K 2003

The morning northbound and afternoon southbound peak direction volumes contain a substantial number of commuter vehicles, while the off-peak direction volumes contain a high percentage of trucks. An evaluation of the full build volumes clearly indicates that a single lane capacity is exceeded in the peak direction both during the AM and PM peak hours.

The operations of the roadway were also tested as an undivided, four-lane highway with a 12-foot inner lane and a 15-foot shoulder lane in each direction of travel. (Highway Capacity Software (HCS) analysis was conducted for two 12-foot lanes and a 3-foot shoulder in each direction). In the northbound direction, there will be a grade of 3 percent for a distance of approximately 1,100 feet, while in the southbound direction a 3 percent grade extends for about 800 feet. A peak hour factor (PHF) of 0.90 and a free flow speed of 50 mph were also used for the multi-lane highway analysis. As the multi-lane highway module of HCS limits truck percentages to 25 percent and the off-peak direction truck percentages are in the 48-50 percent range, the truck percentage was set to 25 and the remaining trucks over 25 percent converted to cars at a truck equivalency factor (ET) of 1.5, which is consistent with the grades.

The results of the analysis are shown in Table 5-2. The roadway is expected to operate at level of service (LOS) "C" or better in the peak direction during both

AM and PM periods and with both volume levels. In the off-peak direction, the operations will be at LOS "A" or better.

Table 5-2
Tremley Point Connector Road Project
Tremley Point Connector Road HCS Analysis Results

Period	Direction	LOS	Density*
AM	NB	C	24.3
	SB	A	7.9
PM	NB	A	9.1
	SB	C	22.9

Source: E&K 2003
*Passenger cars/mile/lane

The HCS printouts for the multi-lane highway capacity analysis included in Appendix A demonstrate that the proposed TPCR will operate at a LOS of C or better, which results in no adverse air quality impacts from the operation of the TPCR.

5.1.6.2 Roosevelt Avenue – Carteret

Several approved developments are scheduled to be completed by the time the TPCR is constructed. In Carteret, these include the OENJ Car Port, Lower Roosevelt Avenue Redevelopment Area, a Ferry Terminal, Port Carteret and the Titan PDC warehouse distribution facility. Morning and evening peak hour generated trips were obtained from traffic reports submitted to the borough, based on Institute of Transportation Engineers (ITE) trip generation rates and given land use parameters or estimated from the level and type of traffic activity anticipated for a given facility. Truck percentages for each development were also obtained from the development traffic studies or estimated based on anticipated activity. Information for the Carteret developments was obtained from the Interchange 12 traffic report and updated based on subsequent changes. The morning and evening peak hour trips for light vehicles and trucks are listed in Table 5-3. In total, these developments are expected to add 1,568 morning and 1,867 evening peak hour trips to the study area roadways.

TABLE 5-3 TREMLEY POINT CONNECTOR ROAD PROJECT						
CARTERET DEVELOPMENT TRIPS						
	AM	AM	AM	PM	PM	PM
Development	Cars	Trucks	Total	Cars	Trucks	Total
OENJ Car Port	150	14	164	150	14	164
Lower Roosevelt RDA	260	7	267	584	18	602
Ferry Terminal	174	0	174	130	0	130
Port Carteret	282	108	390	294	78	372
Titan PDC	488	85	573	539	60	599
TOTAL	**1354**	**214**	**1568**	**1697**	**170**	**1867**
Source: E&K 2006						

5.1.6.3 South Wood Avenue - Linden

Besides from the redevelopment of the brownfield areas, approved developments or expansion of existing facilities on Tremley Point by the City of Linden will also contribute to additional future traffic on South Wood Avenue and vicinity. These approved facilities identified as the Tremley Point Expansions included Tremley Point Marine Terminal, PSE&G, Citgo, Linden Bulk Carriers, Grasselli and Pacific Gas. Changes in the ownership of businesses within in the Tremley Point Expansion sites have taken place. A revised list of businesses at these sites includes Linden Transport, Citgo, USD, Nustar, PSE&G and Clayton Block. The changes in ownership at these facilities result in comparable anticipated traffic volumes. Trip generation information was obtained from the traffic studies associated with the feasibility assessment of Interchange 12A and was based on the number of new or added employees, commuter characteristics, daily truck trips and the type and level of trucking activity at each facility. As shown in Table 5-4, the total number of trips added by these approved facilities is expected to be 774 trips during the morning peak hour and 705 trips during the evening peak hour. .

TABLE 5-4 TREMELY POINT CONNECTOR ROAD PROJECT						
TREMLEY POINT EXPANSION TRIPS						
	AM	AM	AM	PM	PM	PM
Development	Cars	Trucks	Total	Cars	Trucks	Total
Tremley Pt. Marine Term.	194	80	274	164	80	244
PSE&G	33	5	38	29	5	34
Citgo	55	30	85	48	30	78
Linden Bulk Carriers	111	177	288	94	177	271
Grasselli	30	13	43	26	13	39
Pacific Gas	40	6	46	33	6	39
TOTAL	**463**	**311**	**774**	**394**	**311**	**705**
Source: E&K 2006						

In the model, the trips for the combined Linden and Carteret approved developments represent a future base condition with a time line approximating that of the TPCR implementation. These generated trips bring the future base condition trip table to 51,018 light vehicle trips and 3,296 truck trips for the morning peak hour. For the evening peak hour, the trip levels are 49,877 and 2,477 respectively.

5.1.6.4 Existing, Approved and Proposed Traffic

The 400 acres of Brownfields on Tremley Point that have been identified as the prime area for redevelopment into a warehousing facility are currently owned by a combination of DuPont and ISP. Through a pending eminent domain claim by the City of Linden, the 400 acres of Brownfields on Tremley Point have been combined under an August 2004 developers agreement between the City of Linden and The Morris Companies that will total approximately 4.8 million square feet of modern warehousing space divided into two areas. Area 1 is the former ISP site and consists of the first three phases of development. Area 2 is the DuPont site and includes the fourth and fifth phases of the overall development proposed by The Morris Companies. Based on ITE trip generation formulas and truck percentages observed for other Tremley Point and Carteret developments (see Section 5.1.6.2 and 5.1.6.3), Area 1 of The Morris Companies development will generate 1,094 light vehicle trips and 170 truck trips during the morning peak hour and 990 light vehicle trips and 203 truck trips during the evening peak hour. Area 2, which is somewhat smaller, will generate 698 light vehicle trips and 108 truck trips during the morning peak hour and 630 light vehicle trips and 129 truck trips during evening peak hour.

With the addition of The Morris Companies Area 1 trips, the model trip tables increase to 52,112 light vehicle trips and 3,466 truck trips for the morning peak

hour. For the evening peak hour, the trip levels are 50,867 and 2,680 respectively. Area 2 increases the trip table to 52,810 light vehicle trips and 3,574 truck trips for the morning peak hour. The evening peak hour trip levels increase to 51,497 light vehicle trips and 2,809 truck trips.

Trip Distribution

The generated trips were assigned the appropriate traffic analysis zone (TAZ) number and distributed to other zones based on distribution patterns developed for the PANY/NJ Portway Extensions model. For example, the new Tremley Point trips (Tremley Expansions and Morris Companies) were distributed to all other zones based on the percentage distribution found in the Portway Extension model. The distributions were performed independently for each vehicle purpose and time period. Likewise, each of the Carteret developments was assigned the distribution patterns of a proximate Portway Extension model zone or group of zones.

Trip Assignment

The South Wood Avenue model utilized the equilibrium loading method for trip assignment, which modifies the link travel time between iterations based on the volumes to capacity (v/c) ratio of each link in the network. As the v/c ratio of a given link increases so does its travel time and routings via that particular link become less attractive. Subsequently, a different path may be chosen between a given zone pair during the next iteration.

The assignments were performed for four trip levels and two networks. The base network was modified by adding the links representing the proposed TPCR to evaluate its impact on the study area travel patterns. The networks are labeled Existing and TPCR.

The four trip levels are as follows: existing base that represents the calibrated trip tables; future base that adds the Carteret developments and Tremley Point Expansions; Morris 1 which, as the name implies, adds Morris Companies Area 1 trips; and Morris 2. Each AM and PM peak hour trip table was assigned to both networks except for the existing base trips, which were assigned only to the Existing network.

The assignment results are summarized in Table 5-5. The South Wood Avenue and Roosevelt Avenue locations are near the Turnpike overpasses and the TPCR location is between the Titan PDC and Kinder Morgan access intersection and Tremley Point Road. The volumes shown in Table 5-5 are a total of both directions of travel and combine both truck and light vehicles. The truck percentages are also indicated for reference.

TABLE 5-5 TREMLEY POINT CONNECTOR ROAD PROJECT OVERALL TRAFFIC IMPACTS							
AM Peak							
		South Wood Avenue		TPCR		Roosevelt Avenue	
Traffic Conditions	Network	Total Volume	Percent Trucks	Total Volume	Percent Trucks	Total Volume	Percent Trucks
Existing Base	Existing	335	26%			2032	17%
Future Base	Existing	1115	36%			2503	14%
Morris 1	Existing	2379	24%			2502	14%
Morris 1 + 2	Existing	3185	21%			2519	14%
Future Base	TPCR	250	20%	899	39%	2643	17%
Morris 1	TPCR	715	14%	1700	28%	2956	15%
Morris 1 + 2	TPCR	986	13%	2244	25%	3046	15%
PM Peak							
		South Wood Avenue		TPCR		Roosevelt Avenue	
Traffic Conditions	Network	Total Volume	Percent Trucks	Total Volume	Percent Trucks	Total Volume	Percent Trucks
Existing Base	Existing	343	26%			2207	8%
Future Base	Existing	1057	38%			2602	7%
Morris 1	Existing	2248	27%			2607	7%
Morris 1 + 2	Existing	3006	24%			2610	7%
Future Base	TPCR	196	18%	903	41%	2889	9%
Morris 1	TPCR	431	13%	1861	30%	3258	9%
Morris 1 + 2	TPCR	679	10%	2373	28%	3391	9%
Source E&K 2006							

As presented in Table 5-5, the TPCR will drastically reduce the volumes and percent of trucks on South Wood Avenue under all trip levels. Traffic volumes on Roosevelt Avenue will see an increase of about 10 percent under the future base condition, however, the traffic increases as Tremley Point is further developed. The truck percentage on Roosevelt Avenue remains relatively constant.

5.1.6.5 South Wood Avenue Roadway Capacity

The general "rule of thumb" for the capacity of a lane is about 2,000 vehicles per hour. There are a number of factors that change this, such as the width of the lanes and shoulders, the profile grade, on-street parking and percentage of trucks. An important item to understand from the data presented in Table 5-5 is that the volumes provided are for both directions of travel (i.e., east bound and west bound). Even with one lane in each direction on South Wood Avenue, the volumes shown for the all the options with the TPCR will not exceed the capacity of South Wood Avenue for through traffic.

5.1.6.6 South Wood Avenue Vehicle Travel

The proposed TPCR will provide an alternate access to the Tremley Point area. It will be a high capacity access that will provide an expeditious route to Interchange 12 of the New Jersey Turnpike. The impact of the TPCR was evaluated in reference to the model area, which extends from the Arthur Kill to just west of Route 1&9 Corridor and from New Jersey Turnpike Interchange 11 in Woodbridge to Interchange 13 in Elizabeth. The morning and evening peak hour vehicle hours and vehicle miles of travel within the total model area were tabulated and presented in Table 5-6 for seven trip and network combinations. These conditions are as follows: existing traffic on existing roadway network; future traffic on existing network; future traffic and the first phase of Morris Development on existing network; future traffic and all of Morris Development of existing network; future traffic on the TPCR network; future traffic and the first phase of Morris Development on the TPCR network; and future traffic and all of Morris Development of the TPCR network.

Table 5-7 provides a comparison of the area wide travel statistics with and without the TPCR. As more vehicles use the TPCR, the time spent traveling (vehicle hours of travel) is reduced more and more. As the TPCR adds some distance to the trip, the vehicle miles of travel is increased. However, the average speed in the whole system is increased.

A similar analysis was conducted for the South Wood Avenue Corridor between the New Jersey Turnpike and Route 1&9. Table 5-8 indicates the vehicle hours and vehicle miles of travel by vehicle type and by peak hour for each of the seven traffic/network conditions. It should be noted that as traffic increases, the travel speed along South Wood Avenue is significantly reduced.

Table 5-9 compares the vehicle hours and vehicle miles of travel and the resultant average travel speed for this segment of South Wood Avenue. Due to the diversion of traffic to the TPCR, there is a significant reduction in both the vehicle hours and vehicle miles of travel for each traffic condition along South Wood Avenue.

Table 5-6
TREMLEY POINT CONNECTOR ROAD PROJECT
SOUTH WOOD AVENUE MODEL ASSIGNMENT COMPARISON
VEHICLE MILE AND VEHICLE HOUR SUMMARIES

Traffic Conditions	Network	Cars Vehicle Hours	Cars Vehicle Miles	Trucks Vehicle Hours	Trucks Vehicle Miles	Total Vehicle Hours	Total Vehicle Miles	Speed
Existing Base	Existing	6,603	223,719	415	21,220	7,018	244,939	34.9
Future Base	Existing	7,174	236,829	537	24,680	7,711	261,509	33.9
Morris 1	Existing	7,557	242,744	583	25,533	8,140	268,277	33.0
Morris 1 + 2	Existing	7,969	246,555	637	26,110	8,606	272,665	31.7
Future Base	Connector	7,163	237,225	520	25,139	7,683	262,364	34.1
Morris 1	Connector	7,430	244,189	553	26,217	7,983	270,406	33.9
Morris 1 + 2	Connector	7,623	248,428	574	26,895	8,197	275,323	33.6
Traffic Conditions	**Network**	**Cars Vehicle Hours**	**Cars Vehicle Miles**	**Trucks Vehicle Hours**	**Trucks Vehicle Miles**	**Total Vehicle Hours**	**Total Vehicle Miles**	**Speed**
Existing Base	Existing	5,818	223,141	287	15,072	6,105	238,213	39.0
Future Base	Existing	6,410	236,837	396	18,211	6,806	255,048	37.5
Morris 1	Existing	6,707	241,791	444	19,216	7,151	261,007	36.5
Morris 1 + 2	Existing	7,094	244,924	490	19,858	7,584	264,782	34.9
Future Base	Connector	6,401	237,451	379	18,681	6,780	256,132	37.8
Morris 1	Connector	6,642	243,623	415	19,967	7,057	263,590	37.4
Morris 1 + 2	Connector	6,800	247,373	437	20,776	7,237	268,149	37.1

Source E&K 2006

Table 5-7
TREMLEY POINT CONNECTOR ROAD PROJECT
SOUTH WOOD AVENUE MODEL
VEHICLE HOURS OF TRAVEL AND VEHICLE MILES TRAVELED COMPARISON

AM Peak									
Traffic Conditions	**Vehicle Hours**	**Existing Network Vehicle Miles**	**Speed**	**Vehicle Hours**	**TPCR Vehicle Miles**	**Speed**	**Vehicle Hours**	**Change Vehicle Miles**	**Speed**
Future Base	7,711	261,509	33.9	7,683	262,364	34.1	-28	855	0.2
Morris 1	8,140	268,277	33.0	7,983	270,406	33.9	-157	2,129	0.9
Morris 1 + 2	8,606	272,665	31.7	8,197	275,323	33.6	-409	2,658	1.9
PM Peak									
Traffic Conditions	**Vehicle Hours**	**Existing Network Vehicle Miles**	**Speed**	**Vehicle Hours**	**TPCR Vehicle Miles**	**Speed**	**Vehicle Hours**	**Change Vehicle Miles**	**Speed**
Future Base	6,806	255,048	37.5	6,780	256,132	37.8	-26	1,084	0.3
Morris 1	7,151	261,007	36.5	7,057	263,590	37.4	-94	2,583	0.9
Morris 1 + 2	7,584	264,782	34.9	7,237	268,149	37.1	-347	3,367	2.1

Source E&K 2006

TABLE 5-8

TREMLEY POINT CONNECTOR ROAD PROJECT
SOUTH WOOD AVENUE
(Between Route 1&9 and the NJ Turnpike)
Vehicle Mile and Vehicle Hour Summaries

AM Peak

Traffic Conditions	Network	Cars Vehicle Hours	Cars Vehicle Miles	Trucks Vehicle Hours	Trucks Vehicle Miles	Total Vehicle Hours	Total Vehicle Miles	Speed
Existing Base	Existing	20	284	7	108	27	392	14.5
Future Base	Existing	55	820	33	497	88	1,317	15.0
Morris 1	Existing	155	1,924	51	685	206	2,609	12.7
Morris 1 + 2	Existing	246	2,411	66	769	312	3,180	10.2
Future Base	Connector	14	199	3	46	17	245	14.4
Morris 1	Connector	41	591	6	85	47	676	14.4
Morris 1 + 2	Connector	55	794	7	105	62	899	14.5

PM Peak

Traffic Conditions	Network	Cars Vehicle Hours	Cars Vehicle Miles	Trucks Vehicle Hours	Trucks Vehicle Miles	Total Veh. Vehicle Hours	Total Vehicle Miles	Speed
Existing Base	Existing	20	285	8	114	28	399	14.3
Future Base	Existing	50	734	36	512	86	1,246	14.5
Morris 1	Existing	160	1,841	66	801	226	2,642	11.7
Morris 1 + 2	Existing	348	2,550	81	968	429	3,518	8.2
Future Base	Connector	12	169	3	43	15	212	14.1
Morris 1	Connector	27	390	5	66	32	456	14.3
Morris 1 + 2	Connector	42	595	7	85	49	680	13.9

Source E&K 2006

TABLE 5-9

TREMLEY POINT CONNECTOR ROAD PROJECT
SOUTH WOOD AVENUE
(Between Route 1&9 and the NJ Turnpike)
VEHICLE HOURS TRAVELED AND VEHICLE MILES TRAVELED COMPARISON

AM Peak

Traffic Conditions	Vehicle Hours	Existing Network Vehicle Miles	Speed	Vehicle Hours	Connector Vehicle Miles	Speed	Vehicle Hours	Change Vehicle Miles	Speed
Future Base	88	1,317	15.0	17	246	14.5	-71	-1,071	-0.5
Morris 1	206	2,609	12.7	47	676	14.4	-159	-1,933	1.7
Morris 1 + 2	312	3,180	10.2	62	899	14.5	-250	-2,281	4.3

PM Peak

Traffic Conditions	Vehicle Hours	Existing Network Vehicle Miles	Speed	Vehicle Hours	Connector Vehicle Miles	Speed	Vehicle Hours	Change Vehicle Miles	Speed
Future Base	86	1,246	14.5	15	212	14.1	-71	-1,034	-0.4
Morris 1	226	2,642	11.7	32	456	14.3	-194	-2,186	2.6
Morris 1 + 2	429	3,518	8.2	49	680	13.9	-380	-2,838	5.7

Source E&K 2006

5.1.7 Noise

Noise modeling was performed in the vicinity of the TPCR to assess potential noise impacts resulting from the proposed TPCR.

The FHWA Traffic Noise Model (TNM) Model Version 2.0 is a computerized noise model used to predict noise levels from traffic that may include a variety of vehicle types. The TNM Model utilizes data on vehicle volumes, speeds and the physical characteristics of the roadway and the surrounding environment to estimate noise levels associated with traffic. Roadway gradients, traffic flow controls (e.g., stop signs, signalized intersections, etc.), barriers (reflective or absorptive), ground cover, and terrain features that affect noise levels as they vary over distance can also be used by the TNM model to estimate noise impacts. Roadways may intersect or coincide geometrically. The alignment of a roadway is defined by a connected series of straight line segments oriented on a Cartesian coordinate system.

Model verification is a procedure whereby the model user takes actual traffic count data and inputs these data into the model to generate results for comparison to noise measurement data collected during a similar time frame. Under optimal circumstances the noise modeling results should correlate well with the noise measurement data. If the model results do not correlate well with the noise measurement data, then the user has the option of "calibrating" the model with adjustment factors. According to FHWA policy, adjustment factors should only be used to account for propagation effects not calculated by the TNM model (e.g., atmospheric effects) and then, only after sufficient field measurements have been made to verify the adjustment. No adjustments are made for differences of less than 3 dBA.

Verification modeling was performed for Noise Monitoring Location NM-1 (CVS on Roosevelt Avenue) to validate the model for the project area and roadway configurations (see Figure No. 20). Location NM-1 was used to validate the model as it was considered to provide a good representation of the noise environment in the project area. Model input used for this validation study included traffic volume data from the corresponding 15-minute manual traffic counts. See Appendix B for details on the model verification results.

Noise modeling was performed using the TNM Model for predicting noise from traffic in the project area for the following:

- Existing Peak Hour AM Traffic;
- Existing Peak Hour PM Traffic;
- Project Build Peak Hour AM Traffic; and
- Project Build Peak Hour PM Traffic.

Input into the program included receptor and roadway geometry, posted speed limits, and traffic volumes for existing and future traffic scenarios. Traffic volumes used in the TNM model were obtained from traffic data provided by the NJTA Traffic Engineer and are discussed in detail in Appendix B. Input files for model parameters and modeling scenarios including model verification are also provided in Appendix B.

The TNM model input for roadway segments include X and Y coordinates as well as ground elevation at each point (start/end) of a roadway segment. These coordinates and elevations from plan sheets of the project area were prepared by E&K (E&K, October 2002).

Receptors that are considered potentially sensitive to noise include residences, schools, hospitals, and recreational facilities (USEPA 1974). The area in the vicinity of the TPCR site is a mix of industrial and commercial facilities, and residences. Local residences located near the TPCR site (Beverly Street) and near the roadways expected to carry project related traffic are considered potentially sensitive receptors. Noise modeling was performed at four receptor locations within the project area including two noise monitoring locations. The locations of each receptor are presented in Figure Nos. 23 and 24.

Noise modeling results are summarized in Table 5-10 for the Existing and Project Build traffic scenarios. Output files for all modeling scenarios including model verification are provided in Appendix B.

Review of the results presented in Table 5-10 indicate that the modeled receptors have expected noise levels that are less than the NJTA criteria of 67 dBA for both the existing and Project Build scenarios, with the exception of NM-3 during the Project Build scenario (AM and PM) which are predicted to be 67.7 and 67.0, dBA respectively. The noise level difference between the existing and the Project Build scenario at NM-3 are 1.1 dBA (AM) and 1.7 dBA (PM), respectively. The predicted results at NM-3 are the highest modeled noise levels identified in the study and can be partially attributed to the traffic traveling on Roosevelt Avenue. Receptors R1, R2, and NM-4 are predicted by the Model to have an increase in noise level of slightly more than 3 dBA (ranging from 4.2 to 5.7 dBA) with the Project Build scenario over the Existing scenario. A change of 3 dBA is considered to be barely perceptible, while a change of 5 dBA is considered to be readily perceptible.

The modeled results reflect vehicle speeds of 30 mph for all vehicle classifications (50 mph on the TPCR and on Industrial Highway). Noise levels increase with increasing vehicle speed.

Legend

Receptor Location

Surrounding Road Network

Note: Locations of receptors are approximate.

SOURCE:
ArcGIS Online - Aerials Express, 2006.

NOISE MODELING RECEPTOR LOCATIONS (EXISTING)
NEW JERSEY TURNPIKE AUTHORITY
TREMLEY POINT CONNECTOR ROAD
BOROUGH OF CARTERET, MIDDLESEX COUNTY
AND CITY OF LINDEN UNION COUNTY, NEW JERSEY

PS&S
integrating design & engineering

Drawn By: EB	Scale: 1" = 400'	Project No. 02595.003.004
Chk'd By: IPD	Date: 9/16/08	Figure No. 23

Map Document: (P:\02595\003\Y\N\Maps\Fig23_NoiseModelingReceptorLocations_091608_04.mxd)
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Legend

- Proposed Connector Road
- Receptor Location
- Surrounding Road Network

Note: Locations of receptors are approximate.

SOURCE:
ArcGIS Online - Aerials Express, 2006

NOISE MODELING RECEPTOR LOCATIONS (PROJECT BUILD)
NEW JERSEY TURNPIKE AUTHORITY
TREMLEY POINT CONNECTOR ROAD
BOROUGH OF CARTERET, MIDDLESEX COUNTY
AND CITY OF LINDEN, UNION COUNTY, NEW JERSEY

PS&S
integrating design & engineering

Drawn By: EB	Scale: 1" = 1,000'	Project No. 02595.003.004
Chk'd By: JTM	Date: 9/16/08	Figure No. 24

Map Document: (P:\02595\003\Y\N\Maps\Fig24_NoiseModelingReceptorLocations_ProjectBuild_091608_05.mxd)
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TABLE 5-10 TREMLEY POINT CONNECTOR ROAD PROJECT Noise Modeling Results – Sensitive Receptors (a)					
ID	Receptor Description	Peak Traffic Hour	Predicted Leq Noise Levels (dBA)		
			Existing	Project Build	Difference (b)
R1	Beverly St. west corner	AM	59.0	63.9	+4.9
		PM	57.6	63.3	+5.7
R2	1 block south of R1	AM	57.5	62.4	+4.9
		PM	56.1	61.8	+5.7
NM3	Park at Grant Ave. and Roosevelt Ave. (c)	AM	66.6	67.7	+1.1
		PM	65.3	67.0	+1.7
NM4	Open lots on northern side of Beverly St. (d)	AM	60.7	64.9	+4.2
		PM	59.3	64.1	+4.8

Notes:

(a) Predicted maximum noise levels due to traffic are based on peak AM hour and peak PM hour traffic volumes.
(b) Plus sign denotes modeled Project Build noise levels are greater than modeled existing levels, and a negative sign denotes modeled Project Build noise levels are less than modeled existing noise levels.
(c) Noise monitoring site NM-3
(d) Noise monitoring sites NM-4a and NM-4b

5.1.8 Air Quality

As the proposed TPCR involves roadway construction and subsequent vehicular use, the air pollutants of potential concern include fugitive dust emissions during construction and carbon monoxide (CO) emissions from vehicular traffic during the use of the TPCR. The NJDEP and USEPA have identified CO as the primary pollutant of concern for evaluating potential air quality impacts from traffic related motor vehicle emissions because CO is the most significant component of motor vehicle emissions, can be observed at elevated concentrations near roadways, and can cause adverse health effects at relatively low concentrations and short exposure periods. In addition, increased concentrations of CO can occur at congested intersections where traffic delays are common during peak hour traffic periods (i.e., because CO emissions from vehicles are greater during periods of vehicle acceleration/deceleration and idling, which typically occurs much more at congested intersections).

The TPCR is designed to provide a direct link between Carteret and Linden and improve traffic conditions in Tremley Point in Linden and around the currently congested Interchange. Proposed improvements to Interchange 12 will be constructed prior to the TPCR. A study of the anticipated LOS for future (Design) traffic volumes was performed by E&K. E&K has identified traffic lane requirements based upon a "Design Level" – anticipated growth of existing industries and new facilities during the next 15 to 20 years.

Estimated peak hour traffic volumes for the TPCR at the Design Level indicate a LOS of "C" or better. The results of this Traffic Study are presented in Table 5-2. The planned improvements associated with this project are anticipated to result in a LOS of C or better at nearby intersections. The NJDEP guidance (approved by USEPA) for assessing potential air quality impacts from traffic-related mobile source emissions states that "*As part of the procedure for determining critical intersections, intersections with a future LOS of D, E or F (or those that have changed to LOS D, E or F because of traffic related to the development should be considered for modeling. Intersections at LOS A, B or C do not require further analysis for air quality impacts because they do not have sufficient delay to produce congestion and excessive idle emissions*".

As documented above and in Section 5.1.6 (Traffic Impacts), all of the signalized intersections that will be impacted by TPCR are predicted to operate a LOS of A, B or C. Therefore, in accordance with NJDEP guidance, the TPCR will not have a significant impact on ambient air quality. In addition, as the TPCR is listed on the North Jersey Transportation Planning Authority's Transportation Improvement Program (TIP) for FY 2009 – 2012, the TPCR is in conformance with the State Implementation Plan (SIP) for northern New Jersey. Being in conformance with the SIP demonstrates that the TPCR will contribute to improving air quality in areas where pollutants (i.e., CO, ozone and particulate matter) exceed national standards.

One of the issues raised by opponents for the redevelopment of Tremley Point is that residents of Linden have a disproportionate level of commercial truck traffic and several major industrial facilities, which contribute to the area's poor air quality and high incidence of asthma and other respiratory illnesses in children and senior citizens. Based upon the traffic modeling for the TPCR and the air quality impact assessment provided herein, it has been demonstrated that the TPCR will not have a significant air quality impact in the area and the TPCR will not cause an exceedance of the State and Federal Ambient Air Quality Standards.

5.1.9 Hazardous Materials

Additional investigations will be conducted to identify impacted areas that may potentially contain hazardous materials. A wide range of organic and inorganic contaminants, particularly with regard to petroleum hydrocarbons, volatile organic compounds and metals, could be expected to be encountered during construction due to the location of bulk petroleum storage facilities, contaminated lagoon areas and former landfills in the area, which have been reported to have historically impacted the area. To date, the preliminary geotechnical borings conducted in the western Cytec lagoon (in accordance with the NJDEP General Permit No. 12) have detected levels of lead and thallium in excess of NJDEP standards. Additional geotechnical borings within the approximate area of the TPCR have detected exceedances of Marine/Estuary Screening Guidelines for base neutral compounds, metals, pesticides and PCBs. In addition, groundwater

samples noted exceedances of the NJDEP Groundwater Quality Criteria for volatile organics, base neutral compounds and metals. Further soil and groundwater sampling and laboratory analysis will be conducted to identify the contaminant concentration necessary to substantiate appropriate re-use and/or management of these materials, as may be required. Soil contaminants above NJDEP Cleanup Criteria identified during preconstruction remedial investigations will be handled, segregated, and/or appropriately recycled or disposed of per procedures in an NJDEP-approved RAW.

Groundwater quality in the surface aquifer is reported to exceed NJDEP groundwater quality standards. Areas of floating product have been reported at the Amoco Upper Plant, Amoco Lower Plant and GATX/Phillips facilities. Groundwater removed as part of construction dewatering may have to be treated so as not to further degrade surface and/or groundwater quality.

Leakage from adjacent former landfills and contaminated lagoon areas may be encountered by construction activities. The lagoon impoundments adjacent to the right-of-way for the TPCR are unlined and accepted wastes from various manufacturing operations for 25 years (see Sections 4.1.9.5 and 4.1.9.6). Within the RAW, the Deed Restriction placed on these areas will be addressed. Based upon the results of the boring program to be implemented for the right-of-way, special considerations may need to be incorporated into the procedures utilized in the driving of pile and site grading with regard to handling landfill/contaminated materials. These procedures will be pre-approved by the NJDEP. It is anticipated that minimal landfilled/lagoon material will be disturbed as part of the pile driving. Landfilled/lagoon materials disturbed will either be returned to the landfill and appropriately covered or disposed at an appropriate off-site facility.

The density of major regulated sites within the City of Linden is approximately 18 times the state average (3.72 sites per 1,000 acres compared to 0.2). The TPCR will provide the access necessary to allow for the redevelopment of an extensive Brownfield site located in Linden. In accordance with the State Plan, Brownfields Redevelopment, Portfields Initiative, and county and municipal plans, up to 400 acres of Brownfield areas on Tremley Point will be redeveloped into warehousing facilities. This will be a significant environmental improvement for the citizens of the Tremley Point neighborhood as they are the closest residential area to Tremley Point, in addition to meeting the goals of the previously identified regional, state, county and municipal goals of cleaning up historically contaminated sites in New Jersey.

5.2 Man-Made Resources

5.2.1 Land Use

The TPCR will primarily traverse over undeveloped wetlands parcels, with the exception of the intersection north of Industrial Highway that leads to the Kinder

Morgan facility (i.e., Salt Meadow Road) in Carteret. The access to Salt Meadow Road will be maintained, however, the existing guard shack will have to be relocated for the TPCR connection to Industrial Highway. Conversion of these parcels to a transportation use such as the development of the TPCR and its subsequent link with Industrial Highway and Interchange 12 is compatible with the existing concentration of rail lines and highways in the project area. The intersection with Tremley Point Road in Linden is also an undeveloped area with no anticipated impacts to adjacent parcels.

Redevelopment of the project area will have a positive impact on the surrounding land use and will be in conformance with the land use goals embellished in the State Plan, Brownfields Redevelopment, Portfields Initiative, and local County and municipal goals by redeveloping an extensive Brownfield site into a beneficial reuse of an underutilized site (i.e., commercial warehousing facilities).

5.2.2 Secondary Impact Area Land Uses

Uses in the vicinity of the TPCR are primarily commercial and industrial facilities that will benefit from the construction activities by improving vehicle access and circulation, combined with decreased traffic (primarily truck traffic on the local roads of the City of Linden and adjacent roadways that lead to Interchange 12 in Carteret) from other approved redevelopment projects in Carteret and on Tremley Point not associated with the 400-acre Brownfield area. Existing traffic patterns require vehicles to travel a distance of seven miles on local roads to reach Tremley Point from Interchange 12.

5.2.3 Zoning

Implementation of the construction of the TPCR will be consistent with the Borough of Carteret and City of Linden zoning. As an agency of the State of New Jersey, the Authority is not subject to local municipal zoning requirements, however, the Authority continues to consult with and inform the Borough of Carteret and City of Linden on the status of the TPCR project.

5.2.4 Population Density

The proposed TPCR will have no effect upon population density in Carteret, Middlesex County or Linden, Union County.

5.2.5 Demographics

The proposed development of the TPCR will not alter the residential populations or housing stocks in the vicinity of the project and therefore will have no demographic impact.

5.2.6 Public and Municipal Services

Police protection for the TPCR is to be divided amongst Linden and Carteret. Fire protection and emergency medical services for the TPCR are to be provided by the Borough of Carteret and City of Linden Fire Departments and area first aid squads and hospitals. The improvements for the TPCR will not increase the demand for parks, public school education or cultural and social services.

5.2.7 Utilities

In Carteret, the Middlesex Water Company maintains a 12-inch diameter main pipe in the project area that crosses under the Turnpike just north of Roosevelt Avenue and continues down the avenue, branching north at Industrial Highway. The Elizabethtown Gas Company, a subsidiary of NUI Corporation, operates a natural gas distribution network serving residences and businesses. The distribution system consists of an 8-inch gas main that follows Roosevelt Avenue in the project area. A 60-inch sanitary sewer line from the Rahway Valley Sewerage Authority also travels under the Turnpike adjacent to the railroad tracks. In addition, a combination of privately owned oil and gas transmission lines are located along Roosevelt Avenue, Industrial Highway and parallel to the Turnpike in the project area. The pipelines are owned by a combination of Colonial, Buckeye and Texas Eastern. All appropriate engineering measures will be implemented to protect the existing utility lines from TPCR related construction and operation activities.

In Linden, Citgo maintains transmission lines along Tremley Point Road. All utility lines will be carefully marked so as to not be impacted by the proposed construction activities.

5.2.8 Navigation

Based upon the results of a navigation study completed for the TPCR (see Appendix G), there is limited vessel traffic on the Rahway River, with the present vessel traffic consisting of seasonal use leisure vessels such as cabin cruisers, small motorboats, canoes, paddleboats and sailboats. The vessels docked at the Rahway Yacht Club approximately three miles from the Arthur Kill range in length from 14 to 28 feet with one 36-foot trawler from Georgia that docks there for a period during the summer. Of all the vessels that dock at the Rahway Yacht Club, the maximum vertical clearance is 30 feet. Additionally, when required to respond to emergency spills, commercial entities use boats docked on the Rahway River for the placement of oil booms.

Rather than utilize a fixed bridge for the TPCR with a center height of 36 feet above the Rahway River, the concept of constructing a moveable bridge (i.e., retractable, thrust, folding, swing, drawbridge, lift and bascule) that would be of a lesser height was also considered. A moveable bridge would have much higher

operational and maintenance issues as compared to a fixed bridge as it must be raised periodically. With the lower profile of a moveable bridge, the shading impacts to wetlands would be more severe and use of retaining walls with more fill materials will be required. In addition, more piles and towers will be needed in the Rahway River to operate a moveable bridge and the bulky towers would present undesirable aesthetic features as compared to the arch-like profile of a bridge.

5.3 Human Resources

5.3.1 Cultural Features

As no cultural features exist on or near the TPCR area, no impacts to such features will result from implementation of the development of the TPCR.

5.3.2 Parks and Recreational Facilities

The St. Joseph Parish School is located on the south side of Roosevelt Avenue in Carteret. In Linden, there are two parks on South Wood Avenue, Memorial Park and Tremley Point Park, located approximately 2.5 miles west of the proposed TPCR intersection with Tremley Point Road. The improvements for the TPCR will not impact upon the existing facilities.

5.3.3 Aesthetic Features

A bridge across the Rahway River is proposed, as it is the simplest method to cross the river with the least impacts. The TPCR bridge is proposed to be at the same height, but of a lesser width than that of the New Jersey Turnpike bridge located to the west of the proposed TPCR bridge. If a person was to view the project area from the New Jersey Turnpike, the viewer will see a large area of chemical and petroleum bulk storage tanks, a bridge, tidally influenced wetlands and Staten Island in the distance. This area is very typical of the industrial port district of New Jersey. The proposed TPCR bridge will not have a significant impact on the view of the area.

As limited aesthetic features are in the project area, certain minor impacts to wetlands features, that are to be mitigated for, will result from implementation of the improvements for the TPCR. Proposed project related impacts to the existing wetland complex have been minimized to the extent practicable, while still meeting the project's purpose and need.

5.3.4 Historic Resources

The project area has a very low potential for containing historic domestic sites. There were very few residential dwellings proximate to the TPCR; most existing along Roosevelt Avenue in Carteret and Tremley Point Road in Linden. The

impacts along Roosevelt Avenue are primarily near the Turnpike Interchange and the BP/Amoco tank farm, both locations that have been repeatedly disturbed by construction. Impacts to Tremley Point Road will be restricted to the south side of the road. The road has been disturbed by industrial and pipeline construction. The TPCR will result in a conditional no adverse effect to historic resources. This effect may be minimized through implementation of the TPCR that does not require the relocation of the Carteret Extension of the Central Railroad of New Jersey.

The "Inch" Lines Multi-State Historic District consists of two World War II era pipelines that run from Texas to Linden. The ends of the two lines run the length of Tremley Point Road in Linden, including the project area. Citgo obtained one of the lines from Texas Eastern Transmission Company. This 12-inch line carries product to a facility near the Citgo truck loading area. The other line is believed to be abandoned in place. The TPCR will be designed so as not to impact the existing utilities and Inch Lines.

5.3.5 Archeological Resources

A Stage 1A Cultural Resource survey was completed for the TPCR. There are no known prehistoric sites within the project area. There are a few known sites in Carteret, Linden and the surrounding areas. All can be described as find spots, where a single or a few prehistoric artifacts, primarily projectile points were found. None have been scientifically investigated. The project area includes geographic situations that may be sensitive for containing prehistoric sites, such as those proximal to a major river or streams. However, much of the project area is wetlands, and most of the adjacent areas have been previously filled, with some sites having been heavily impacted by industrial development since the 1870s. A number of hazardous waste sites exist in the project area, including those from landfills, as well as the petroleum and chemical industries.

A prehistoric site or sites could potentially have once existed in the project area. The possible locations of sites from the Woodland Period would largely be restricted to places not inundated by the tides. It is possible that small areas of higher elevations existed before modern developments. During the period when occupancy by prehistoric people could have taken place, the sea levels were much lower and the path of the Rahway River would have been different than the current route. It is estimated that artifacts, if present, are located beneath 30 feet of sediments and marsh mats. In addition, during historic times, the Rahway River channel has changed course numerous times, which tends to greatly limit the potential for locating artifacts. Such areas could be "islands" of higher terrain within the saltmarsh, or bank deposits along the Rahway River or the creeks. However, many of the locations most likely to hold Woodland sites have been impacted by industrial development, or at least filled by natural processes. Archaic and Paleo-Indian periods included lower sea levels when the area's wetlands of today may have included areas of non-tidal land. Locating prehistoric

sites within the project area is problematic in the extreme as the site would be situated 30 feet beneath the existing grade. One type of prehistoric site that could potentially exist within the area is the shell midden, a prehistoric garbage dump. Shell middens can include well preserved faunal remains, which is not the case in most prehistoric sites in the region.

Regular archaeological excavations within the saltmarsh are not possible. However, once the preferred alternative alignment is finalized, it may be possible to preliminarily examine areas of the uplands located adjacent to the existing marsh for shell middens. However, any attempt to search for prehistoric sites in this part of Linden and Carteret must be flexible. Possible testing methods, including probing, power augering, mechanical coring, mechanically assisted manual excavations, and backhoe tests should be evaluated. As such, a Stage 1B Prehistoric Survey is recommended once the preferred alignment has been determined. During construction, excavated areas can be further evaluated for artifacts.

5.3.6 Environmental Justice

The USEPA defines environmental justice as: *"The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."*

In addition to complying with New Jersey's Environmental Justice procedures as per New Jersey Executive Order No. 96, in accordance with Federal Executive Order 12898 of February 11, 1994, the TPCR project addresses environmental justice procedures in that there will be no disproportionate impacts on minority or low-income populations. There will be no residences or businesses displaced due to implementation of the project. The proposed upfront mitigation to offset anticipated wetlands impacts will result in no significant environmental impacts as a result of the project.

TABLE 5-11 New Jersey Turnpike Authority – Tremley Point Connector Road Project Environmental Impact Checklist		
Parameter	**Impact**	**Rationale**
Geology	No effect on bedrock. Ramps constructed on pile supported and solid filled berms to support roadway elements.	Structural supports for elevated roadway sections will not penetrate the bedrock layer. No blasting or rock removal required.
Soils	Construction has potential to result in soil erosion.	Erosion will be minimized through implementation of SCD-certified soil erosion and sediment control plans.
Land Form	Excavation, filling and piles to achieve the required roadway grades.	Roadway embankments will be similar to those of the existing interchange and rail lines. Portions of roadway will be elevated structurally using piles.
Hydrological Features	The Rahway River will be crossed by the TPCR. No impacts to ground water or potable water are anticipated.	Stream crossings accomplished by pile supported structures. No extraction of ground water is proposed. No public water supply wells are in vicinity of the TPCR.
Vegetation	Permanent removal and temporary disturbance of common reed, salt marsh cordgrass, manicured lawn and ruderal species.	Disturbed areas will be top-soiled and seeded after construction to promote re-vegetation.
Wildlife and Habitat	Limited impact on terrestrial food chain.	Areas along route have been previously disturbed by past activities. Proposed mitigation will off-set impacts to area wildlife.
Threatened or Endangered Species	No impact anticipated as wetlands mitigation will offset impacts from project.	Search of Natural Heritage database identified black-crowned and yellow-crowned night herons using the project area for foraging.
Flood Plain	Minimal impacts anticipated.	Portions of Industrial Highway and Tremley Point Road within 100 year tidal flood plain of Rahway River & Arthur Kill. The intersections with the TPCR will be within the flood plain. However, fluvial flooding is not applicable to project area.
Wetlands	Tidal /freshwater wetlands will be impacted primarily by shading from the roadway overpass for the TPCR.	Impacts to wetlands mitigated through creation of wetlands at Piles Creek and as an alternate remedy the purchase of mitigation credits at a certified mitigation bank.
Air Quality	No significant impact will occur to air quality and the TPCR will not cause an exceedance of the AAQS.	Construction-related fugitive dust to be minimized through implementation of mitigation measures.
Noise	No exceedance of NJTA noise abatement criteria thresholds.	Construction noise will be minimized through application of equipment controls and time-of-day limitations on construction activities.
Hazardous Materials	Disturbance of landfilled materials and contaminated soils.	Additional investigations will be conducted to identify and delineate areas of impacted soils and groundwater. Reuse and/or disposal of contaminated soils will be conducted in accordance with NJDEP regulations
Project Area Land Use	The TPCR will cross over the project area.	Portions of the proposed TPCR will transverse undeveloped parcels. Conversion of these parcels to transportation use is consistent and compatible with existing highway and rail uses in the area.
Demographics	No impact.	No impact to identified existing residential and populated areas
Public and Municipal Services	Shared demand for fire protection and emergency medical services between Linden and Carteret.	Roadway transverses municipal and county borders. Increased services anticipated to be minimal.

TABLE 5-11 New Jersey Turnpike Authority – Tremley Point Connector Road Project Environmental Impact Checklist		
Parameter	**Impact**	**Rationale**
Utilities	No impacts to existing utility usage.	Utility lines will be carefully marked out so as to not be impacted by the TPCR.
Cultural Features	No impact.	No such features exist on or near the site.
Parks and Recreational Facilities	No effect.	No such facilities exist on the site.
Aesthetic Features	Elevated portions of roadway will be visible from nearby roads, highways and freight rail lines.	New structure will be visually compatible with existing highway and rail structures in the vicinity.
Historical and Archaeological Features	To be determined.	The TPCR will be designed so as not to impact existing Big and Little Inch Lines along Tremley Point. As there is a potential for archaeological resources in the project area, a site specific Stage 1B Prehistoric Survey is recommended within the right-of-way of the TPCR once the preferred alternative alignment has been determined.
Architectural Features	No impact.	New roadway will be architecturally compatible with existing highway and rail structures in the vicinity.