Chapter 3: Commuter Rail Routes and Operating Plans

3.1 Commuter Rail Service Assumptions
3.2 Rail Network Characteristics
3.3 Description of Each Route
3.4 Access to Downtown Cleveland
3.5 Access to Downtown Akron
CHAPTER 3: TABLE OF CONTENTS

3.1 COMMUTER RAIL SERVICE ASSUMPTIONS ........................................................................................................ 3
  3.1.1 LEVEL OF SERVICE STANDARDS .................................................................................................................. 3
      Level of Service (LOS) 1 – Minimum service with no reverse-peak .............................................................. 3
      Level of Service (LOS) 2 – Basic service with limited reverse-peak .............................................................. 4
      Level of Service (LOS) 3 – Basic service with full reverse-peak .................................................................. 4
  3.1.2 TRAINSET REQUIREMENTS ............................................................................................................................ 5

3.2 RAIL NETWORK CHARACTERISTICS .................................................................................................................. 6
  3.2.1 RIGHT OF WAY OWNERSHIP .......................................................................................................................... 6
  3.2.2 RAIL FREIGHT TRAFFIC ................................................................................................................................... 8
  3.2.3 ROUTE SEGMENT CLASSIFICATION ............................................................................................................... 14
  3.2.4 NETWORK CONSTRAINTS .................................................................................................................................. 15

3.3 DESCRIPTION OF EACH ROUTE ........................................................................................................................ 19
  3.3.1 ROUTE 1 – LAKE WEST CORRIDOR, CLEVELAND – LORAIN ................................................................. 19
      Physical and Operational Characteristics of the Line ......................................................................................... 19
      Capacity Opportunities and Constraints ........................................................................................................ 22
      Major Capital Projects .................................................................................................................................... 23
      Station Locations ............................................................................................................................................. 24
  3.3.2 ROUTE 2 – WEST CORRIDOR, CLEVELAND – ELYRIA – AMHERST .............................................................. 26
      Physical and Operational Characteristics of the Line ......................................................................................... 26
      Assumed Configuration in Hopkins Airport Vicinity ...................................................................................... 28
      Capacity Opportunities and Constraints ........................................................................................................ 30
      Major Capital Projects .................................................................................................................................... 30
      Station Locations ............................................................................................................................................. 31
  3.3.3 ROUTE 3 – SOUTHWEST CORRIDOR, CLEVELAND – MEDINA ................................................................. 32
      Physical and Operational Characteristics of the Line ......................................................................................... 32
      Capacity Opportunities and Constraints ........................................................................................................ 35
      Major Capital Projects .................................................................................................................................... 35
      Station Locations ............................................................................................................................................. 35
  3.3.4 ROUTE 4 – SOUTH CORRIDOR, CANTON – AKRON – CLEVELAND VIA HUDSON ................................. 36
      Physical and Operational Characteristics of the Line ......................................................................................... 36
      Capacity Opportunities and Constraints ........................................................................................................ 39
      Major Capital Projects .................................................................................................................................... 40
      Station Locations ............................................................................................................................................. 40
  3.3.5 ROUTE 5 – SOUTH CORRIDOR, CANTON – AKRON – CLEVELAND VIA KENT ........................................... 42
      Physical and Operational Characteristics of the Line ......................................................................................... 42
      Capacity Opportunities and Constraints ........................................................................................................ 45
      Major Capital Projects .................................................................................................................................... 46
      Station Locations ............................................................................................................................................. 46
  3.3.6 ROUTE 6 – EAST CORRIDOR, CLEVELAND – SOLON – AURORA – MANTUA ........................................... 47
      Physical and Operational Characteristics of the Line ......................................................................................... 47
      Capacity Opportunities and Constraints ........................................................................................................ 49
      Major Capital Projects .................................................................................................................................... 49
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station Locations</td>
<td>50</td>
</tr>
<tr>
<td>3.3.7 ROUTE 7 – LAKE EAST CORRIDOR, CLEVELAND – PAINESVILLE – ASHTABULA – CONNEAUT</td>
<td>51</td>
</tr>
<tr>
<td>Physical and Operational Characteristics of the Line</td>
<td>51</td>
</tr>
<tr>
<td>Capacity Opportunities and Constraints</td>
<td>53</td>
</tr>
<tr>
<td>Major Capital Projects</td>
<td>54</td>
</tr>
<tr>
<td>Station Locations</td>
<td>54</td>
</tr>
<tr>
<td>3.4 ACCESS TO DOWNTOWN CLEVELAND</td>
<td>55</td>
</tr>
<tr>
<td>3.4.1 INTERMODAL TRANSPORTATION HUB</td>
<td>55</td>
</tr>
<tr>
<td>3.4.2 CLEVELAND STORAGE AND MAINTENANCE FACILITY</td>
<td>56</td>
</tr>
<tr>
<td>3.4.3 ERIE-NICKEL PLATE CONNECTION</td>
<td>58</td>
</tr>
<tr>
<td>Overview</td>
<td>58</td>
</tr>
<tr>
<td>Elements of construction</td>
<td>58</td>
</tr>
<tr>
<td>Railroad grades</td>
<td>60</td>
</tr>
<tr>
<td>Operations</td>
<td>60</td>
</tr>
<tr>
<td>Advantages</td>
<td>60</td>
</tr>
<tr>
<td>Disadvantages</td>
<td>60</td>
</tr>
<tr>
<td>Assumptions to Guide Future Planning</td>
<td>60</td>
</tr>
<tr>
<td>3.4.4 CUYAHOGA RIVER CROSSING AT CLEVELAND LAKEFRONT</td>
<td>61</td>
</tr>
<tr>
<td>Capacity Expansion Options and Opportunities</td>
<td>61</td>
</tr>
<tr>
<td>Existing Conditions</td>
<td>62</td>
</tr>
<tr>
<td>Potential Markets for Transportation Capacity Across the River</td>
<td>62</td>
</tr>
<tr>
<td>Crossing Capacity Requirements</td>
<td>63</td>
</tr>
<tr>
<td>Technology</td>
<td>64</td>
</tr>
<tr>
<td>Configuration</td>
<td>65</td>
</tr>
<tr>
<td>Potential Future Track Configuration</td>
<td>66</td>
</tr>
<tr>
<td>Issues/Variables</td>
<td>66</td>
</tr>
<tr>
<td>Assumptions to Guide Future Planning</td>
<td>67</td>
</tr>
<tr>
<td>3.5 ACCESS TO DOWNTOWN AKRON</td>
<td>67</td>
</tr>
<tr>
<td>3.5.1 AKRON RAIL NETWORK</td>
<td>67</td>
</tr>
<tr>
<td>3.5.2 ALTERNATIVE AKRON STATION LOCATIONS</td>
<td>69</td>
</tr>
<tr>
<td>3.5.3 REQUIRED TRACK CONNECTION</td>
<td>72</td>
</tr>
<tr>
<td>3.5.4 AKRON STORAGE AND MAINTENANCE FACILITY</td>
<td>72</td>
</tr>
<tr>
<td>3.5.5 ASSUMPTIONS FOR GUIDING FUTURE PLANNING</td>
<td>72</td>
</tr>
</tbody>
</table>
CHAPTER 3 -
COMMUTER RAIL ROUTES AND OPERATING PLANS

3.1 COMMUTER RAIL SERVICE ASSUMPTIONS

3.1.1 Level of Service Standards
The Phase I study generated information concerning the size of the potential ridership market in each of the NEORail corridors. The general magnitude of the potential market in each corridor was found to be approximately the same. As a result, a range of three potential commuter service levels was defined to guide the Phase II analysis and provide a standard basis of comparison among the Phase II routes. These were defined, from lowest to highest, as Levels of Service (LOS) 1, 2 and 3. Table 3.2.1 presents the basic characteristics of the service provided at each level.

Table 3.2.1
Commuter Rail Generic Levels of Service

<table>
<thead>
<tr>
<th>LOS 1</th>
<th>LOS 2</th>
<th>LOS 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 daily round trips (6 daily trains)</td>
<td>6 daily round trips (12 daily trains)</td>
<td>11-12 daily round trips (22-24 trains)</td>
</tr>
<tr>
<td>Peak period, peak direction service only</td>
<td>4 trains in peak direction in peak period</td>
<td>5-6 trains in peak direction in peak period</td>
</tr>
<tr>
<td></td>
<td>1 reverse peak train in peak period</td>
<td>3-4 reverse peak trains in peak period</td>
</tr>
<tr>
<td>45-minute peak headway</td>
<td>35-40 minute peak headway</td>
<td>30-35 minute peak headway</td>
</tr>
<tr>
<td>No off-peak service</td>
<td>1 mid-day round trip</td>
<td>Bi-hourly off-peak service</td>
</tr>
</tbody>
</table>

Each potential commuter rail corridor was evaluated at each of the three levels of service, in terms of ridership potential, operations and maintenance costs and the capital costs required to implement service at that level. In general, the higher levels of service require increasing investment in railroad infrastructure capacity and capability - to ensure that commuter traffic does not negatively impact rail freight operations and to permit bi-directional commuter operations at peak periods.

Level of Service (LOS) 1 - Minimum service with no reverse-peak
Level of Service 1 provides the minimum amount of service considered sufficient to attract customers to commuter rail in reasonable numbers. It provides only rush hour service to the Cleveland central business district, with three trains operating inbound to Cleveland in the morning and the same three trains operating outbound in the evening peak. It does not serve
reverse-commute markets or trips from one side of the region to another, and it can serve only a very limited number of suburb-to-suburb commuter trips within a single corridor.

The time window for peak travel also is relatively small – limited to a period of 1 ½ to 2 hours in both the morning and afternoon. At LOS 1, there is a tradeoff between service frequency (headway) and the length of the peak window. Operating three peak trains at 45-minute headways would permit a peak period of 90 minutes. Lengthening peak headways to 60 minutes would extend the peak window to cover two hours.

In all cases, LOS 1 would require three revenue trainsets per route (not including spare equipment). This represents a relatively inefficient use of the equipment, since each trainset would make only one round trip per day (inbound in the morning, and out again in the evening).

There would be no commuter train meets (i.e., trains passing each other in opposite directions), so new passing sidings for commuter trains would not be required. LOS 1 also would have the least impact on the operations of the freight railroads who own the rights-of-way. This level of service is potentially compatible with the shared use of busy rights-of-way by both freight and passenger trains, provided that agreement can be negotiated with the right-of-way owner.

LOS 1, however, is not able to address several of the regional mobility and development goals articulated at the outset of the study, namely: improved mobility for the transit-dependent in the inner city, particularly with respect to access to suburban jobs. It also is unlikely to generate a sufficient critical mass of travel by rail to encourage concentrated land use development patterns around train stations or significantly stem the outflow of jobs from the large urban central business districts.

**Level of Service (LOS) 2 – Basic service with limited reverse-peak**

This intermediate level of service adds more peak period service (4 peak direction trains plus one reverse-peak train) and adds one mid-day round trip. This level of service provides minimal reverse-direction and off-peak service. LOS 2 doubles the number of daily train movements from six to twelve. Peak headways are in the range of 35 to 40 minutes.

This level of service is more responsive than LOS 1 to the regional mobility and development goals, but the ability of commuter rail to capture significant numbers of reverse-peak and cross-region trips may be hampered by the limited number of reverse-peak and off-peak trains. It offers improved equipment utilization, with each trainset making two daily round trips instead of one.

Commuter service at LOS 2 is potentially compatible with shared use of busy freight rights-of-way over short distances, subject to negotiated agreement with the right-of-way owner.

**Level of Service (LOS) 3 – Basic service with full reverse-peak**

A higher level of service also was identified, corresponding to 11-12 daily round trips (22-24 trains), including 5-6 trains in peak direction in peak period, at a 30-35 minute peak headway, plus 3-4 reverse peak trains in the peak period, and bi-hourly off-peak service. LOS 3 extends the rush hour period and offers the best equipment utilization compared with LOS 1 and LOS 2.
At this higher level of service, separate track and passing sidings for commuter trains will generally be required alongside busy rail freight lines.

There are many examples of U.S. commuter railroads that operate with shorter peak headways and higher numbers of daily trains than LOS 3. However, in the Northeast Ohio study area, LOS 3 is consistent with the expected overall volume of demand in the NEORail corridors. Higher-frequency service would likely not capture sufficient ridership to meet minimum standards for passenger loads and operating cost recovery. Similarly, this analysis did not consider zone express service, because the overall level of demand is considered to be too small to support such service at adequate load factors and cost recovery levels.

The number of daily commuter trains at LOS 3 (approximately 24) makes sharing of mainline tracks with freight traffic difficult on those segments of railroad that are already in heavy use by the freight railroads. Therefore, this level of service requires a higher level of construction of new mainline track than the lower levels of service, to reduce and, in some cases, eliminate negative impacts of the commuter service on the operational reliability of freight trains.

At LOS 3, the potential exists for weekend and holiday service. This analysis assumes the provision of approximately bi-hourly service on these days. As with other LOS special event service can be provided over and above these levels, to the extent that equipment is available and the revenues collected are sufficient to justify the incremental operating costs expended.

3.1.2 Trainset Requirements
Hypothetical commuter rail timetables were developed for each of the seven corridors, for each of the three levels of service standards. In addition, variations in the length of several corridors were explored (e.g., Elyria versus Amherst as the terminus of Route 2, Cuyahoga Falls versus Akron versus Canton as the terminus of Route 4, Aurora versus Mantua as the terminus of Route 6). Table 3.2.2 presents revenue trainset requirements for operating all of the combinations of service levels and route-length variations within each corridor. The total number of required coaches will be a function of estimated ridership, but, in general, trainsets are projected to consist of a locomotive with three coaches. Requirements for spare locomotives and coaches (to allow for routine maintenance, unscheduled repairs and overhauls) are not included in this table.

In general, LOS 1 requires three trainsets per route, regardless of the length of the route. LOS 2 is possible with three trainsets for the shorter routes, up to five or six trainsets on the longest routes. Except in the Lorain and Aurora corridors, expanding service to LOS 3 requires the acquisition of additional trainsets over and above LOS 2.
Table 3.2.2
NEORAIL Trainset Requirements

<table>
<thead>
<tr>
<th>Route</th>
<th>LOS 1 (Trainsets/Locs/Coaches)</th>
<th>LOS 2 (Trainsets/Locs/Coaches)</th>
<th>LOS 3 (Trainsets/Locs/Coaches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Lake West</td>
<td>3 / 4 / 12</td>
<td>3 / 4 / 12</td>
<td>3 / 4 / 12</td>
</tr>
<tr>
<td>2 West</td>
<td>3 / 4 / 12</td>
<td>3 / 4 / 12</td>
<td>4 / 5 / 15</td>
</tr>
<tr>
<td>3 Southwest</td>
<td>3 / 4 / 12</td>
<td>3 / 4 / 12</td>
<td>4 / 5 / 15</td>
</tr>
<tr>
<td>4 South via Hudson</td>
<td>3 / 4 / 12</td>
<td>5 / 6 / 18</td>
<td>7 / 9 / 27</td>
</tr>
<tr>
<td>5 South via Kent</td>
<td>3 / 4 / 12</td>
<td>6 / 7 / 21</td>
<td>8 / 10 / 30</td>
</tr>
<tr>
<td>7 Lake East</td>
<td>3 / 4 / 12</td>
<td>3 / 4 / 12</td>
<td>4 / 5 / 15</td>
</tr>
</tbody>
</table>

3.2 RAIL NETWORK CHARACTERISTICS

3.2.1 Right of Way Ownership
The Northeast Ohio study area is served by three mainline railroads: Norfolk Southern (NS), CSX Transportation, and the Wheeling & Lake Erie Railroad. The seven potential commuter rail routes use portions of track owned by all three of these railroads.

Prior to the break-up of Conrail, both NS and CSX were relatively minor players in the rail freight business in the Northeast Ohio region centered on Cleveland. That has changed since Conrail was acquired and its routes and assets were divided between NS and CSX. Cleveland is now the focal point for east-west rail traffic on both railroads. Four mainline rail freight routes radiate outward from Cleveland. All are former Conrail lines and handle relatively high volumes of freight traffic (upwards of 50 train movements per day). They include:

- NS Chicago Line - Cleveland towards Toledo and Chicago
  Owned and dispatched by Norfolk Southern
  Double-track with sidings
  Route of Amtrak Capitol Limited, Lake Shore Limited and Pennsylvanian
  Route of potential future high-speed passenger service to Toledo & Chicago (Midwest Regional Rail Initiative)
  NEORail Route 2 (and portions of Routes 1 and 3)

- CSX Chicago Line - Cleveland towards Buffalo
  Owned and dispatched by CSX Transportation
  Double-track with sidings
  Route of Amtrak Lake Shore Limited
  NEORail Route 7

- CSX Big Four Line - Berea towards Columbus and Cincinnati
  Owned and dispatched by CSX Transportation
Recently double-tracked, Berea-Greenwich to support increased traffic
No current Amtrak service
Potential future high-speed passenger service to Columbus & Cincinnati (3-C Corridor)
Not considered to be a potential NEORail corridor

- **NS Cleveland Line** – Cleveland towards Alliance & Pittsburgh
  Owned and dispatched by Norfolk Southern
  Double-track
  Route of Amtrak Capitol Limited and Pennsylvanian
  Portion of NEORail Route 4 (and smaller portions of Routes 5 and 6)

In addition, there are a number of other freight lines that provide service in the Northeast Ohio region at lower levels of daily traffic. These include:

- **NS Nickel Plate Line**, westward from Cleveland to Lorain and Chicago, eastward from Cleveland to Ashtabula and Buffalo
  Owned and dispatched by Norfolk Southern
  Single-track with sidings
  No passenger service
  Portion of NEORail Route 1

- **NS Randall Secondary**, eastward from Cleveland to Aurora
  Owned and dispatched by Norfolk Southern
  Single-track
  No passenger service, and only sporadic freight service
  Portion of NEORail Route 6

- **CSX Newcastle Subdivision (former B&O)**, eastward and westward through Akron
  Owned and dispatched by CSX Transportation
  Double-track
  Route of Amtrak Three Rivers

- **CSX Cleveland Line**, from Cleveland southwestward to Medina County
  Owned and dispatched by CSX Transportation
  Single-track with limited sidings
  No passenger service
  Portion of NEORail Route 3

- **Wheeling & Lake Erie Railroad**, from Cleveland southward to Kent
  Owned and dispatched by the Wheeling & Lake Erie
  Single-track with limited sidings
  No passenger service
  Portion of NEORail Route 5
• Akron Metro lines (several routes, centered on Akron)
  Owned by Akron Metro RTA
  Single-track
  Abandoned – no existing rail service
  Portions of NEO Rail Route 4 and 5.

Figures 3.2.1 and 3.2.2 show the current main and branch line railroad routes in the nine-county Northeast Ohio study area. The maps indicate current ownership and trackage rights for other railroads to operate.

Within Cleveland, NS and CSX have several alternative routings for their trains operating through the city, as Figure 3.2.2 shows:

• NS Pittsburgh - Chicago
  • Primary route: via Cleveland lakefront
  • Secondary route: via Short Line (trackage rights over CSX), using track connections at Harvard and Berea

1. NS Buffalo - Chicago
   a. Primary route: via Nickel Plate bridge over Cuyahoga River and Cloggsville connection to Clark St. branch (former Big Four) to Rockport Yard and Chicago mainline at Brook Park
   b. Secondary route: via Nickel Plate bridge over Cuyahoga River and Nickel Plate line to Lorain and Vermilion

2. NS Buffalo - Pittsburgh via Cleveland (infrequent use)
   a. Primary route: via Short Line (trackage rights over CSX) and Kinsman Connection track to NS Cleveland Line at Erie Crossing

3. CSX Buffalo - Columbus/Cincinnati/Chicago
   a. Primary route: via Short Line between Collinwood and Berea
   b. Secondary route: via Cleveland lakefront (trackage rights over NS), using CSX right-of-way from Collinwood to lakefront and track connection at Berea

In addition, NS and CSX have trackage rights over each other's lines in the Cleveland - Buffalo corridor. There are several locations where track connections exist between the two parallel lines.

3.2.2 Rail Freight Traffic
Table 3.2.1 presents the current level of freight activity, in terms of typical daily train movements, on each of the principal rail line segments in the Northeast Ohio study area. Table 3.2.2 presents historical traffic levels on these segments before the Conrail break-up, and contrasts them with current levels and projected future levels based on information submitted by NS and CSXT to the Surface Transportation Board at the time of the Conrail break-up.
Figure 3.2.1
Northeast Ohio Rail Network
Figure 3.2.2
Cleveland Area Rail Network

Railroad Lines
- Blue: Norfolk Southern
- Green: CSX Transportation
- Orange: Wheeling & Lake Erie Railroad
- Brown: Cuyahoga Valley Scenic Railroad
- Black: Other

Map showing the rail network with various railroad lines and connections.
The CSXT Newcastle Subdivision, the former B&O main line and the primary CSX east-west route between Chicago and Pittsburgh prior to the Conrail break-up, passes through Barberton, Akron and Kent and carries between 26 and 30 million gross tons of traffic annually.

The other rail lines in the study area are predominantly single track and carry less traffic. The NS Nickel Plate line (Route 1 to Lorain and the alternate Route 7 to Lake and Ashtabula Counties) handles on the order of 14 trains per day between Cleveland and Lorain and 16 daily trains between Cleveland and Buffalo. The Wheeling & Lake Erie line southeast of Cleveland (Route 5) has four daily trains. And the north-south CSX line through Medina County (Route 3) handles on the order of six daily trains.

With the acquisition of Conrail by Norfolk Southern and CSX, and the attendant reorganization and redistribution of rail freight traffic in the eastern U.S., track ownership and traffic patterns in Northeast Ohio have changed. Both CSX and NS have identified Northeast Ohio as a key location in their rail networks between the east coast and the Midwest. Both have projected future increases in traffic resulting from the merger. Figure 3.2.2 presents the existing and project future level of rail freight traffic on key rail links in the Northeast Ohio study area.

NS has agreed to limit traffic on the Nickel Plate Line between Cleveland and Lorain to no more than 16 trains per day. The bulk of their traffic will be routed over the Chicago Line through Berea. Traffic on this line west of Cleveland is projected to increase from 48 to 57 trains per day.

On the NS Cleveland Line between Bedford and Hudson, freight traffic has risen from the level of approximately 30 daily trains prior to the Conrail merger to approximately 65 daily trains. In this busy stretch of double mainline track, NS serves two major automobile assembly plants – Ford at Walton Hills and Chrysler at Twinsburg. Both auto plants are serviced from Motor Yard, which is located along a five-mile stretch of the line between Northfield and Macedonia. These two plants are located on opposite sides of the main line, so the main line tracks are often tied up by trains working the yard and the two auto plants.

The six-mile portion of the NS mainline closest to Cleveland has seen NS traffic increase considerably since the Conrail merger, from 13 to 30 daily trains, since the former Conrail bypass route using the Short Line from Harvard to Brook Park has been turned over to CSX and now is used by NS only on a contingency basis.

CSX traffic on the Short Line route, which bypasses downtown Cleveland and links Collinwood Yard with the new CSX line to Columbus, Indianapolis and Chicago, has seen its level of daily traffic increase from 16 to 46. CSX now uses the former Chicago Line route from Collinwood to Berea via the North Coast and downtown Cleveland only as a back-up route to the Short Line. CSX traffic between Collinwood and the North Coast, therefore, has decreased from a high of 53 trains before the Conrail merger to 13 or fewer trains per day.

The redistribution of freight rail lines between NS and CSX has been accomplished with limited major capacity investments in the Cleveland area. CSX has double-tracked most of the Short Line to accommodate its projected growth. NS has rebuilt a two-track line between Brook Park and Cloggsville to connect the Chicago Line to the west and the NS Nickel Plate line to the east.
Short Interlocking, on the Short Line just east of Rockport Yard, used to be a diamond crossing of the Short Line and the former Big Four line between Berea and downtown Cleveland. The diamond has been eliminated and the two railroads pass by each other at this location with only a minor track connection between them.

Table 3.2.1
Northeast Ohio Year 2001 Train Activity Levels

<table>
<thead>
<tr>
<th>Line</th>
<th>Total Trains</th>
<th>Intermodal</th>
<th>Merchandise</th>
<th>Unit</th>
<th>Local</th>
<th>Amtrak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>per Day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CSX Transportation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleveland-Painesville</td>
<td>52</td>
<td>15</td>
<td>28</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Cleveland-NCTC/Drawbridge</td>
<td>6</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Short Line</td>
<td>50</td>
<td>15</td>
<td>30</td>
<td>3</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Berea-Greenwich</td>
<td>50</td>
<td>15</td>
<td>30</td>
<td>3</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Cleveland-Medina</td>
<td>8</td>
<td>-</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Newcastle Sub (Akron Mainline)</td>
<td>38</td>
<td>8</td>
<td>24</td>
<td>-</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>Norfolk Southern</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleveland-Hudson</td>
<td>66</td>
<td>21</td>
<td>27</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Cleveland-Brook Park</td>
<td>68</td>
<td>21</td>
<td>27</td>
<td>6</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Brook Park-Berea-Amherst</td>
<td>73</td>
<td>22</td>
<td>33</td>
<td>6</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Nickel Plate East</td>
<td>20</td>
<td>2</td>
<td>12</td>
<td>2</td>
<td>4</td>
<td>--</td>
</tr>
<tr>
<td>Nickel Plate West</td>
<td>10</td>
<td>--</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>--</td>
</tr>
<tr>
<td>Cloggsville-Rockport-Brook Park</td>
<td>6</td>
<td>--</td>
<td>4</td>
<td>--</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Randall Secondary -- Outer</td>
<td>0</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Randall Secondary – Inner</td>
<td>2</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>2</td>
<td>--</td>
</tr>
</tbody>
</table>
Table 3.2.2
Northeast Ohio Historical, Current and Projected Future Train Activity Levels

<table>
<thead>
<tr>
<th>Line</th>
<th>Pre-Merger</th>
<th>Post-Merger Forecast</th>
<th>Year 2001 Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CSX Transportation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleveland-Painesville</td>
<td>50</td>
<td>55</td>
<td>52</td>
</tr>
<tr>
<td>Cleveland-NCTC/Drawbridge</td>
<td>55</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Short Line</td>
<td>16</td>
<td>44</td>
<td>50</td>
</tr>
<tr>
<td>Berea- Greenwich</td>
<td>15</td>
<td>53</td>
<td>50</td>
</tr>
<tr>
<td>Cleveland-Medina</td>
<td>6</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Newcastle Subdivision(Akron Mainline)</td>
<td>33</td>
<td>34</td>
<td>38</td>
</tr>
<tr>
<td><strong>Norfolk Southern</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hudson-Garfield Hts. (White)</td>
<td>26</td>
<td>41</td>
<td>66</td>
</tr>
<tr>
<td>Garfield Hts. (White)-Cleveland</td>
<td>13</td>
<td>40</td>
<td>66</td>
</tr>
<tr>
<td>Cleveland-Brook Park</td>
<td>48</td>
<td>54</td>
<td>68</td>
</tr>
<tr>
<td>Brook Park-Berea-Amherst</td>
<td>48</td>
<td>63</td>
<td>73</td>
</tr>
<tr>
<td>Nickel Plate East</td>
<td>13</td>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>Nickel Plate West</td>
<td>14</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Cloggsville-Rockport-Brook Park</td>
<td>2</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Randall Secondary -- Outer</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Randall Secondary -- Inner</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Otherwise, the track configuration in the Northeast Ohio study area has remained approximately the same. The two-track movable bridge across the Cuyahoga River on the Chicago Line, which opens regularly for recreational boating traffic during the Spring-to-Fall season, will continue to be a bottleneck point. The total volume of rail traffic through Berea will increase considerably, although fewer crossover movements between the two lines will occur there. Grade separation of the Front Street crossing in Berea will help mitigate the impact of increased rail traffic on the adjacent community. Also, there will be fewer merging and diverging freight train movements at the North Coast site in downtown Cleveland, although the total number of train movements will remain about the same.

The actual traffic patterns and implications for commuter rail service in Northeast Ohio remain unclear two years after the merger. Both NS and CSXT are still in the process of evolving their
networks and service patterns to reflect the new eastern network configuration. Table 3.2.3 classifies the major railroad line segments according to the degree to which introducing commuter trains will potentially affect rail freight operations.

In all cases, these effects can be mitigated by capital investment to increase line capacity or separate commuter and freight train flows (either by means of new parallel track construction or grade separated crossings).

### Table 3.2.3

**Potential Impact on Rail Freight Operations of Introducing Commuter Trains onto Existing Mainline Freight Tracks**

<table>
<thead>
<tr>
<th>High Impact</th>
<th>Moderate Impact</th>
<th>Low Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS (Conrail) Chicago Line towards Chicago Routes 1, 2, 3</td>
<td>NS Nickel Plate Line towards Lorain Route 1</td>
<td>NS (Conrail) Randall Secondary Route 6</td>
</tr>
<tr>
<td>NS (Conrail) Cleveland Line towards Pittsburgh Routes 4, 5 &amp; 6</td>
<td>NS Nickel Plate Line towards Conneaut Alternate Route 7</td>
<td>Wheeling &amp; Lake Erie Railroad Routes 3, 5</td>
</tr>
<tr>
<td>CSX (Conrail) Chicago Line towards Buffalo Route 7</td>
<td>CSX Newcastle Subdivision at Akron Route 4</td>
<td>CSX Cleveland Line, Medina-Lester-Cleveland Route 3</td>
</tr>
</tbody>
</table>

#### 3.2.2 Route Segment Classification

A series of Northeast Ohio rail network maps shows some of the important characteristics of the existing rail lines in the study area. Figure 3.2.3 presents the maximum authorized speed and FRA Track Class of each railroad and line segment. Figure 3.2.4 identifies single-track, double-track and multiple-track segments. Figure 3.2.5 indicates the relative degree of difficulty associated with adding line capacity (i.e., constructing additional mainline tracks) along various segments of the right-of-way. There are significant differences among the various corridors. Replacing or reinstalling tracks where they used to exist on 4-track rights-of-way is a relatively straightforward process. Adding a third track to a double-track line that passes over river gorges, alongside steep slopes and through town centers is a much more difficult and costly proposition.
3.2.3 Network Constraints
The unique characteristics of each potential commuter rail route are documented in Section 3.3 below. However, it is useful to look at the big picture of freight and passenger rail traffic patterns in Northeast Ohio. In general, the study area is blessed with excellent coverage by existing active railroads and inactive but available former rail rights-of-way.

However, Northeast Ohio also has become the nexus for east-west rail traffic for each of the two railroads that have become dominant in the long-haul market in the eastern U.S., namely Norfolk Southern and CSX. They are operating at traffic levels that effectively use up the majority of the available capacity on their main lines. They also are very sensitive to anything that might negatively affect the reliability of their service. Therefore, adding significant numbers of commuter trains onto existing tracks without making significant investments in additional capacity will be perceived by the railroads as harming the reliability of their freight service.

Specific rail system bottlenecks are identified in Figure 3.2.6. Many of these bottlenecks apply to multiple potential NEORail routes. These include:

- NS Cuyahoga River crossing – double-track lift bridge
- NS Bedford-Walton Hills – Tinkers Creek Crossing, severe topography and historic highway bridges
- Erie Crossing / Harvard diamond track crossings and slow-speed connections
- NS Motor Yard and Twinsburg (Chrysler) branch line
- NS Alcott-to-Brook Park main line
- NS Brook Park / Hopkins Airport vicinity
- Berea – NS and CSX junction
- CSX Collinwood Yard
- CSX Short Line
- East Cleveland (Short Line)

The existence of these bottlenecks results in the need for significant capital investment to create capacity in a manner that enables commuter rail service to be initiated while protecting the reliability and future growth potential of rail freight.
Figure 3.2.3
Northeast Ohio Rail Network
Maximum Speeds
for Passenger Trains

Railroad Lines
- Red: 30 – 40 mph
- Blue: 50 – 60 mph
- Green: 70 - 80 mph
Figure 3.2.4
Northeast Ohio Rail Network
Number of Mainline Tracks

Railroad Lines
- Green: 2 tracks in 4-track right-of-way
- Red: 2 tracks in 2-track right-of-way
- Pink: Mixed single & double track
- Light blue: Single track in 2-track right-of-way
- Orange: Single track

Final Report
December 2001
Figure 3.2.5
Northeast Ohio Rail Network
Degree of Difficulty Associated with Adding Mainline Tracks

Railroad Lines
- Green: Relatively easy: Former 4-track mainline
- Red: Difficult
- Orange: Moderate
- Dark Green: Relatively easy: Former 2-track mainline

Report Details:
- Final Report
- December 2001
Figure 3.2.6
Northeast Ohio Rail Network
Existing Rail System Bottlenecks

Railroad Lines
- Norfolk Southern
- CSX Transportation
- Wheeling & Lake Erie Railroad
- Akron Metro RTA
- Cuyahoga Valley Scenic Railroad
- Other

Final Report
December 2001
3.3 DESCRIPTION OF EACH ROUTE

A summary of the important distinguishing characteristics of each potential commuter rail route is presented below. The appendices to this report contain additional information on the assumed track configuration, required rail infrastructure projects, station locations and characteristics, and estimated capital costs. This information formed the basis for the comparative evaluation of the routes and possible route combinations in the NEORail Phase II study, including the preparation of ridership and cost estimates. The list of potential stations on each route includes a mix of town center and park-and-ride locations, based on input from local stakeholders, and representing a reasonable set of assumptions for feasibility analysis and decision-making. Actual locations and implementation priorities may change as the design and implementation process progresses. The final determination of rail capacity needs, infrastructure projects and station locations will be made later in the implementation process, following additional studies, public reviews, and negotiations with the railroad right-of-way owners.

3.3.1 Route 1 - Lake West Corridor, Cleveland - Lorain

Physical and Operational Characteristics of the Line
Route 1 follows Lake Erie westward from Cleveland, serving downtown Cleveland, the west side of the City of Cleveland, and the communities of Lakewood, Rocky River, Westlake, Bay Village, Avon, Avon Lake, Sheffield, Sheffield Lake and Lorain (see Figure 3.3.1). This route is approximately 24 miles long. The typical travel time by rail from Lorain to downtown Cleveland is approximately 40 minutes.

The downtown Cleveland station is at the proposed North Coast Transportation Center (NCTC), located between West 3rd and East 9th Streets along the lakefront. The exact location and configuration of the NCTC will depend on the results of other planning studies impacting the lakefront area. Proceeding west from Cleveland, Route 1 follows the double-track Norfolk Southern (former Conrail Chicago Line) mainline for approximately two miles, crossing the Cuyahoga River on a lift bridge. This bridge constrains the capacity of the line, since it must open regularly during the boating season to permit lake freighters, excursion boats and high-masted pleasure craft to pass between Lake Erie and the river.

From Alcott Jct. to Lorain, a total of 22 miles, the route follows the Norfolk Southern former Nickel Plate line. The Nickel Plate line is predominantly single track, but the original right-of-way is two tracks wide.

A former track connection at Alcott Jct. must be restored between the two lines now owned by NS, in order to provide a route for commuter trains. A realignment of the connection is recommended to improve the speed of commuter trains as they transition from one line to the other and to increase the buffer distance to residential properties adjoining the right-of-way (see Figure 3.3.2). To minimize impacts on rail freight operations, the Alcott connection track will be tied into the Chicago Line just west of the Cuyahoga River lift bridge. It will tie into the Nickel Plate Line just east of the West 110th Street grade crossing.
Figure 3.3.1
Lake West Corridor
Route 1
Figure 3.3.2
Alcott Junction Connection
A distinguishing feature of this route is the high number of grade crossings (over 60), given the relatively short length of the route – including grade crossings at almost every block (33 crossings in approximately three miles) through the City of Lakewood.

The proposed terminal station location in Lorain is at the Grove site, adjacent to the central business district, which is in the process of being redeveloped by the Lorain County Port Authority, with a proposed rail station as the centerpiece of the development. This site requires a short rail spur from the Nickel Plate main line.

The quantity of freight traffic on the Nickel Plate Line has declined significantly since the Conrail break-up occurred. An agreement made by Norfolk Southern at the time of the Conrail acquisition limits freight traffic on the Nickel Plate Line to 16 daily trains or less. Actual daily activity currently is running at approximately ten freight trains per day, with most NS through trains now routed via the Chicago line (through Berea and Elyria). Implementing commuter rail at Level of Service 1, 2 or 3 is possible on this line with three revenue trainsets (not counting spare equipment).

**Capacity Opportunities and Constraints**

The NS agreement to limit freight traffic on the Nickel Plate Line, and their apparent success at diverting NS traffic from the Nickel Plate Line to the Chicago Line, creates substantial residual capacity on this line that represents an opportunity for the introduction of commuter rail service at a reasonable cost. The existing track and signal system are in relatively good condition and do not require major upgrading or investment. The mayors of the four western lakeshore communities in Cuyahoga County (Bay Village, Lakewood, Rocky River and Westlake) through which the Erie-Nickel plate alignment (portion of Route 1) would run, have expressed their opposition to increased rail service through their cities, and specifically their opposition to commuter rail service. Congressman Dennis Kucinich, who represents the area in the US Congress, helped the west lakeshore mayors negotiate a reduction in freight rail service through the area in 1999, and is also opposed to the development of commuter rail through this area. Lorain County, on the other hand, has expressed strong support for commuter rail service in this corridor and is investing in a future commuter rail station facility in downtown Lorain.

A major constraint at Level of Service 1 and 2 is the assumed shared use of the Cuyahoga River lift bridge by commuter and freight trains. (At Level of Service 3, a new parallel bridge is assumed to be required.) Agreement will be required with NS before this service can be operated. It is expected that the proposed Erie-Nickel Plate connection, described in Section 3.4.3, will enable NS to divert more trains away from the lakefront lift bridge than will be added by the Lorain commuter service. Regardless, Route 1 requires only one mile of shared track with NS (from the Cuyahoga River lift bridge to the NCTC).

The grade crossings, particularly in Lakewood, will need to be the subject of detailed study prior to implementation of commuter rail service. Provision of safe crossings is of paramount importance, and investment in enhanced grade crossing protection is included in the project cost of implementing commuter service on this line. The noise generated by train whistles at crossings also is an important issue. By the time service is implemented, grade crossing protection technology and design standards are likely to have progressed to the point where
crossings can be designed safety enough to avoid the need for trains to blow their whistles in advance of every grade crossing. A third issue relates to the impacts of commuter train operations on traffic levels and vehicular delays at grade crossings. The NEORail commuter trains are projected to be only three cars long and are projected to cause crossing gates to close for approximately the same length of time as a typical traffic signal (i.e., less than one minute) – unlike freight trains, which can consist of 100 or more cars and take several minutes to pass through a crossing. At the height of rush hour, a commuter train would operate through Lakewood approximately every 20 minutes or so. The impact of these operations on traffic flow and vehicular delays, therefore, is expected to be minimal.

The service headway on this line is constrained to the 35-40 minute level by the relatively long stretches of single track. The single track stretch from the NCTC to Rocky River, including the City of Lakewood, would be relatively costly to double track, due to grade crossings and the Rocky River viaduct. Extension of double-track as required west of Lakewood, on the other hand, would be relatively easy, since the line historically was double track.

Commuter operations will need to work around any freight operations at the existing yard in Avon. Sidings are provided at several locations where freight trains may be stored during the times of day when commuter trains are operating.

NS has agreed to limit the number of freight trains using the former Nickel Plate line to Lorain to 16 daily freight trains or less, which means that ample capacity exists on this line for running commuter trains, and the introduction of commuter service should be relatively easier than on Route 2 (via Elyria and Amherst).

While NS is not normally supportive of commuter rail trains using their main tracks, the proposed inclusion in the Route 1 project of the Erie-Nickel Plate connection offers considerable operational and capacity benefits to NS, which should compensate for the impact of a small number of Lorain commuter trains using the lakefront lift bridge.

The lower levels of service to Lorain limit the number of trains to those that can be accommodated on the existing lift bridge, by agreement with NS. When and if additional capacity across the Cuyahoga River is provided, service on this line to downtown Cleveland can be increased to LOS 3. In the interim, the Nickel Plate line west of Alcott Jct. will support LOS 3 commuter service, so it would be possible to operate additional trains on the line between Lorain and West Boulevard, with a passenger transfer to the GCRTA Red Line – until such time as the capacity improvements across the Cuyahoga River are made.

**Major Capital Projects**
A former track connection between the NS Chicago and Nickel Plate lines at Alcott Jct. must be restored to enable this route to operate. Grade crossing protection upgrades will be needed, for safety and to enable whistle-free operation. Other significant capital investments include station facilities, a track connection into the proposed terminal site at Lorain, extension of the passing sidings at Rocky River and Avon (for LOS 2 or LOS 3), and an allowance for rail capacity improvements at the Cuyahoga River bridge crossing.
A train storage and maintenance facility will be needed at Lorain, to provide capacity for overnight storage of up to four trainsets. This facility also should have the capability of performing overnight servicing and inspection, as well as minor maintenance and repairs, so that the number of required non-revenue train movements across the Cuyahoga River lift bridge can be minimized. A mid-day storage yard and maintenance shop are assumed to be built near downtown Cleveland, at the E.26th Street yard site. This facility will be designed to be implemented in stages and will ultimately serve the heavy maintenance needs of a full Northeast Ohio commuter rail network.

Station Locations
The following station locations along Route 1 have been assumed for purposes of ridership estimating and capital costing.

### Table 3.3.1
**Potential Commuter Rail Stations - Route 1 - Lake West Corridor**

<table>
<thead>
<tr>
<th>Station:</th>
<th>Street location:</th>
<th>Transit connections</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland – North Coast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation Center</td>
<td></td>
<td>LRT, buses</td>
<td></td>
</tr>
<tr>
<td>West Boulevard*</td>
<td>E.98th St., Detroit Ave.,</td>
<td>Red Line Rapid Transit,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>West Blvd.</td>
<td>buses</td>
<td></td>
</tr>
<tr>
<td>Lakewood</td>
<td>St. Charles Ave.</td>
<td>Buses</td>
<td>T</td>
</tr>
<tr>
<td>Rocky River</td>
<td>Former station location</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>Westlake / Bay Village</td>
<td>Columbia Rd.</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Avon</td>
<td>SR 83</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Sheffield / East Lorain</td>
<td>Lake Breeze Rd.</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Lorain Grove Site</td>
<td>US 6 &amp; Broadway</td>
<td>T,P</td>
<td></td>
</tr>
</tbody>
</table>

* = town center; P = park and ride available.

* Not included in Phase II ridership and cost estimates.

West Boulevard station offers a location from which residents of the west side of the City of Cleveland can access the commuter rail system. It also provides an opportunity for passengers to transfer between commuter rail and the GCRTA Red Line rapid transit. A Red Line station already exists at this location and has been fully renovated within the past year. Building a commuter rail station platform alongside the Alcott connection track, on the route between Lorain and the NCTC, would be feasible but expensive, because the commuter track at this location is in a curve and on a steep grade as it transitions from the Conrail Line to the Nickel Plate Line.

A less expensive alternative would be to build a station platform on the existing Nickel Plate track immediately adjacent to the Red Line station. Situated east of the Alcott Jct. connection, this platform would not be usable by trains operating to or from the NCTC. However, this location could become a desirable turn-back point for additional trains on the Lorain line, since the number of commuter trains permitted by NS to operate across the existing Cuyahoga River lift bridge is expected to be limited. Though not included in either the ridership or cost estimates for
Route 1, a station at this location should be considered in future planning for rail service in this corridor. An alternate station location within the City of Cleveland would be West 117th Street, which offers relatively good bus connections but doesn't link with the Red Line rapid transit.

Lakewood has the highest density of adjacent development, with the potential for significant numbers of people to walk to the station, but a single location would be accessible on foot from only a portion of the city. The availability of parking, therefore, is the key to finding a single, preferred station location within Lakewood.

A station situated at St. Charles Avenue could potentially take advantage of a nearby public parking garage (primarily used for Lakewood Hospital). Open space adjacent to station could be developed for vehicular pick-up/drop-off and pedestrian access to the platform. No significant parking opportunities were identified at other locations within Lakewood.

In Rocky River, the station is proposed to be located at the former passenger station site, which has an existing parking lot that could be used by commuter rail patrons. Users of the existing parking lot may be displaced by rail commuters, which may require construction of additional parking elsewhere.

At Westlake / Bay Village (Columbia Road), the station would be built immediately adjacent to the existing park-and-ride lot, which is heavily-used today by express bus patrons. It is expected that the rail service will replace the existing I-90 express bus service to downtown Cleveland.

At Avon and Sheffield, the proposed stations are located at major north-south roadways serving the heart of the adjoining residential communities. The suggested sites also avoid the Avon rail yard, where construction of platforms and pedestrian access to the platforms would be more difficult and costly.

At Lorain, the Grove Site was the preferred station site in Lorain. It is a large, vacant tract of land, situated adjacent and parallel to the main commercial street of downtown Lorain. It has ample space for required rail tracks and station facilities. Available land exists at south end of Grove site for the required end-of-the-line train storage and maintenance facilities, although the development plans for the site will need to be modified to include provision for these facilities. The sole disadvantage of the Grove site is the fact that it does not lie along the mainline right-of-way, which makes future extension of commuter service to the west of Lorain difficult. The strong local support and committed funding for development of the Grove site, and its proximity to the Lorain central business district, coupled with the lack of an identified significant commuter rail market to the west of Lorain, favor the Grove site as the logical terminus of this route.
3.3.2 Route 2 – West Corridor, Cleveland - Elyria - Amherst

Physical and Operational Characteristics of the Line
A second potential commuter rail route also serves Cleveland, western Cuyahoga County and Lorain County. Route 2 follows the Norfolk Southern (former Conrail) Chicago Line from downtown Cleveland westward to Elyria and Amherst. Outside of Cleveland, it serves the communities of Brook Park, Berea, Olmsted Falls, North Ridgeville, Elyria and Amherst (see Figure 3.3.3).

Traveling by rail from Cleveland to Elyria would take approximately 40 minutes. The route from Cleveland to Amherst is approximately 29 miles long - similar in distance, travel time and the potential size of the ridership market to the Cleveland-Lorain route. The major suburban location on this route is Elyria, about 26 miles from downtown, which is the Lorain County seat and has significant concentrations of both population and employment. The major drawback for commuter service on this route is the very heavy volume of freight traffic on the two-track Norfolk Southern main line. This line has become a principal east-west route for NS and has absorbed the traffic diverted from the Nickel Plate Line subsequent to the Conrail break-up.

In addition to the Cuyahoga River bottleneck, the right-of-way width is constrained through the vicinity of Hopkins International Airport and Berea. Elsewhere, right-of-way generally exists to reinstall a third track, and even a fourth track, for commuter use where necessary.

The right-of-way from the Cuyahoga lift bridge to Alcott Jct. is four tracks wide, occupied by the two main tracks plus a long siding. The Lorain route would occupy the fourth track slot between the lift bridge and Alcott. The siding, which runs all the way to Brook Park, would be converted to a third mainline track. To the west of Alcott Jct., the width of right-of-way for track expansion is constrained by the presence of the GCRTA Red Line, which occupies two track slots on the north side of the right-of-way as far west as Hopkins Airport.

There are numerous overhead and undergrade bridges that cross the right-of-way between Alcott and Brook Park. All of these will permit three mainline tracks for freight and passenger service without modification. Some of them can support the addition of a fourth track. Others, however, notably the bridges carrying I-71 and I-90 across the right-of-way, would require major structural modifications to accommodate a fourth track with standard horizontal clearances between track centerlines.

There is an existing freight yard at West Park. It would be possible to install a fourth track, as a freight passing siding, for approximately 1½ miles in the vicinity of West Park.
Figure 3.3.3
West Corridor
Route 2
It may be possible to reduce the capital cost of improvements in this corridor, if the Erie-Nickel Plate connection proves to be successful in diverting a relatively large share of the NS through traffic from the lakefront route to the Nickel Plate route across the Cuyahoga River. If this is the case, the mainline route might have sufficient line capacity for freight service, commuter service and potential intercity high-speed passenger service to Chicago and Columbus/Cincinnati with three mainline tracks between Alcott Jct. and Brook Park, plus a siding at West Park. The existing siding could be upgraded to serve as a third mainline track at a relatively low cost. Should a 4-track mainline be required from Alcott to Brook Park, extensive bridge reconstruction would be required to create the right-of-way necessary to support four tracks. The capital cost estimates for commuter rail at LOS 1 and 2 assume a three-track mainline, while the estimates for LOS 3 include the additional costs of providing four tracks in this area.

In the vicinity of Hopkins Airport, the passenger rail alignment could either follow the existing rail right-of-way or follow a new alignment into the airport proper, serving a potential new multi-modal transportation center attached to the air passenger terminal building. Though not currently in active planning, the concept of such a terminal could provide an important linkage between the airport and passenger rail – including both commuter rail and the intercity high-speed rail lines that are proposed to serve Cleveland. The assumed railroad configuration in this area is described in more detail below.

West of Berea, the former New York Central right-of-way is generally four tracks wide. Some newly-built or re-built bridges across the right-of-way do not preserve enough space for additional tracks and may have to be modified to accommodate one or two additional commuter tracks. Freight passing siding capacity needs to be preserved. Some sidings would have to be relocated. Selected bridge spans will require reconstruction, some shifting of freight mains/sidings may be required to create space for a new passenger track. However, costs of construction in this area are reasonable, compared with the difficulty of creating a passenger right-of-way through the airport area.

High-speed rail service may require additional costs, for signaling, grade crossing protection, grade crossing elimination, and provision for increased clearance between centerlines of existing freight and new passenger tracks. These costs have not been factored into the NEORail estimates.

Since the cost of initial implementation at any level of service is high, LOS 3 is the appropriate level of service to analyze for commuter rail in this corridor, if built in tandem with a new Cuyahoga River bridge crossing, the airport station could become the logical termination point (instead of downtown Cleveland) for commuter services from the east and south.

Assumed Configuration in Hopkins Airport Vicinity

In the vicinity of Brook Park, the confluence of multiple rail lines and the interstate highway interchange of I-71, I-480, SR 237 and SR17 creates a bottleneck point where addition of main tracks for passenger rail service is difficult and costly. The freight tracks run directly parallel to the RTA Red Line tracks beneath the interstate highway bridges, with no spare “slots” for additional tracks. Additional tracks, however, are needed for passenger trains through this bottleneck. A proposed concept is shown in Figure 3.3.4.
Figure 3.3.4
Potential Passenger Rail Route
via Hopkins International Airport

[Map showing potential routes including Existing NS Lines, Potential re-route of GCRTA Red Line, and Potential route of passenger rail line.]
Shifting the freight tracks is impossible because of the relatively complex trackwork where the Chicago line, Cloggsville branch line, Rockport Yard lead tracks and the yard serving the Ford assembly plant all come together in a major interlocking. Therefore, the proposed concept in this area shifts the Red Line to a new alignment directly north of its existing alignment and at a lower level - tunneling beneath the interstate highway bridge approaches and passing beneath Brook Park Blvd. before rising up to grade level along the west side of the existing RTA yard and then connecting into the existing tunnel to the Hopkins Airport terminal station. The Brook Park Red Line station would be reconstructed and the existing pedestrian underpass beneath the railroad refurbished and extended to serve the new station. Additional parking also could be provided west of the railroad on industrial land that is not now in active use.

The two existing Red Line tracks would be reconstructed as the passenger mainline tracks. West of Brook Park Blvd., the passenger tracks would veer off of the railroad right-of-way and head towards the airport terminal, crossing SR 237 - either on elevated structure or in a depressed section or tunnel. If an elevated structure is used, the elevation of the approaches must remain outside of the Hopkins Airport runway approach clear zone.

Commuter rail service at Level of Service 1 or 2 would require three revenue trainsets (not including spares). Expanding to Level of Service 3 requires a fourth trainset.

Seasonal service to recreational areas at Cedar Point and Sandusky also could be provided along this line, provided negotiated agreement is reached with Norfolk Southern for the operation of such trains.

With the combination of commuter service to Elyria, high-speed passenger service to Chicago and high-speed passenger service in the 3-C corridor, it is assumed that a two-track dedicated passenger railroad will be required from the NCTC in downtown Cleveland to the vicinity of North Ridgeville, including a separate dedicated alignment through Hopkins Airport.

**Capacity Opportunities and Constraints**

Route 2 has some obstacles to commuter service that may make it more difficult or costly to implement than the Lorain route. Route 2 shares the busy NS Chicago mainline for its entire 29-mile length, from downtown Cleveland to Amherst. The extent to which a third or perhaps fourth main track will be needed, to separate passenger traffic from freight traffic, will be subject to negotiation with Norfolk Southern. NS has expressed opposition to the introduction of commuter trains on this line and may require significant capital investment.

The Cuyahoga River crossing and the Brook Park-Hopkins Airport area are the two principal bottleneck points on this line - both of which require major capital investment to support commuter rail service at LOS 2 or LOS 3.

**Major Capital Projects**

The downtown Cleveland facilities - the NCTC and E.26th Street Yard, would be the same as for Route 1. The Erie-Nickel Plate connection is considered to be a prerequisite for any service in
this corridor that does not include the construction of additional rail capacity across the Cuyahoga River.

Between the Cuyahoga River and Berea, including the segment through Hopkins Airport, significant investment in additional railroad capacity will be required. Between Berea and Elyria, an additional mainline track is assumed to be provided, within the existing right-of-way, which was originally four tracks wide. West of Elyria, addition of a dedicated passenger track will require a new bridge span and addition of a crossing diamond at the crossing of the CSX north-south branch line.

Station Locations
The following station locations along Route 2 have been assumed in this analysis.

Table 3.3.2
Potential Commuter Rail Stations - Route 2 -West Corridor

<table>
<thead>
<tr>
<th>Station:</th>
<th>Street location:</th>
<th>Transit connections</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland - NCTC</td>
<td>LRT, buses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hopkins Airport</td>
<td>Airport Terminal</td>
<td>RTA Red Line</td>
<td>P</td>
</tr>
<tr>
<td>Berea</td>
<td>Front St.</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>Olmsted Falls</td>
<td>Depot St.</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>North Ridgeville</td>
<td>SR 10</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Elyria</td>
<td>East St.</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>Amherst</td>
<td>SR 58 &amp; Ohio Tpke.</td>
<td></td>
<td>P</td>
</tr>
</tbody>
</table>

T=town center; P=park and ride available.

The North Coast Transportation Center is the assumed station location in downtown Cleveland. The Hopkins Airport station is assumed to be located at a new multi-modal facility adjacent to the air passenger terminal, with convenient pedestrian connections to both the RTA Red Line and the air terminal. Should commuter rail in this corridor proceed without or in advance of major redevelopment at the airport, a station could be constructed along the existing rail corridor, where a new passenger track would need to be constructed adjacent to the existing rail line. Pedestrian connections to the airport and Red Line station, in this instance, would be by means of moving walkways, shuttle buses or other on-airport transport system.

The station at Berea would be situated between the NS and CSX main lines, placed in such a way as to not interfere with connecting train movements between the two lines in either direction. Additional tracks would need to be constructed in this area to accommodate a station, and these tracks also would be grade separated at Front Street.

Passenger stations would be located in the village of Olmsted Falls and in North Ridgeville near the SR10 interchange with the Ohio Turnpike. The Elyria station would be located at the historic
train station site, on East Street. It is assumed that Amtrak trains stopping at Elyria also would use this station. If commuter service is extended to Amherst, a passenger station could be located at SR58 or at the former passenger station location. The former site may be preferable, since the historic station site is accessible only from local residential streets.

3.3.3 Route 3 - Southwest Corridor, Cleveland - Medina

Physical and Operational Characteristics of the Line
The majority of this route follows the CSX Cleveland branch line, a single-track line with available capacity for commuter trains. The Cleveland end of the route, however, follows the same alignment as Route 2 - between Cleveland and the vicinity of Brook Park and Hopkins Airport, with all the attendant capacity constraints and construction requirements. The Medina end of the route includes approximately three miles of the Wheeling & Lake Erie line approaching Medina from the west (see Figure 3.3.5). Compared with Interstate 71, the obvious highway route, the rail routing from Medina to Cleveland is relatively indirect.

Route 3 from Cleveland to Medina follows the Route 2 alignment along the Norfolk Southern main line to the vicinity of Brook Park or Berea (10-12 miles), and then requires a new track connection to the CSX (former B&O) Line running southwestward from Cleveland. The connection would join the CSX line somewhere between Parma Jct. and the crossing of the Ohio Turnpike. The line then follows the CSX Line to Lester (a total of 12-17 miles, depending upon the location where the connection from NS is made), serving the western portions of Strongsville and Brunswick. The route would turn eastward where it crosses the Wheeling & Lake Erie for the approach to downtown Medina. A shorter route was initially considered, following an abandoned B&O rail spur from Lester into Medina. This alignment, however, is now occupied by a hiker/biker trail and a major water line and is no longer available for rail use.

Three preliminary potential routings were identified for the NS-CSX Connection:

- Rockport alignment
- I-71 alignment
- Fairgrounds alignment

Figure 3.3.6 shows the general alignment of these three preliminary options. All of these routes would entail substantial investment in right-of-way acquisition, grade separation, support structures and new trackwork and signaling.

The full route from Cleveland to Medina would be approximately 35-40 miles long. A trip from Medina to downtown Cleveland typically would take about 50-60 minutes by rail.

Commuter rail service at Level of Service 1 or 2 would require three revenue trainsets (not including spares). Expanding to Level of Service 3 requires a fourth trainset.
Figure 3.3.5
Southwest Corridor Route 3

[Map of Ohio showing the Southwest Corridor Route 3 with cities and towns labeled, including Cleveland, Akron, Canton, Medina, and other locations along the route.]
Figure 3.3.6
NS-CSX Connection Alignment Options

Parsons
Brinckerhoff

Final Report
December 2001
Capacity Opportunities and Constraints
The unique characteristic of this route, among all of the potentially feasible routes, is the need for a piece of new rail line most likely on a new right-of-way - to connect the CSX Cleveland Line with the NS Chicago Line in order for commuter trains to be able to reach the North Coast Transportation Center site in Cleveland. This connection will require acquisition of a new right-of-way. Several possible alignments were identified, but a preferred route for the connection was not selected in the first phase of the NEORAIL Study. The relatively high cost of this connection makes this route the least cost-effective of the seven potentially feasible routes. Route 3 also shares with Route 2 the Cuyahoga River capacity constraints and heavy freight traffic between Brook Park and Cleveland.

Major Capital Projects
All of the rail capacity investments for Route 2 between Cleveland and Brook Park also are required for service in the Medina corridor. If this route is implemented as an extension to service on Route 2, the incremental cost still needs to include major investment in a new track connection between the NS Chicago Line and the CSX Cleveland Line. Other significant capital projects in this corridor include:
- passing siding in the vicinity of Liverpool and Brunswick
- signaling of the line to support bi-directional passenger operations
- CSX-W&LE track connection west of Medina
- overnight storage yard in Medina.

Station Locations
The following station locations along Route 3 have been assumed for purposes of ridership estimating and capital costing. Alternate locations for stations along the three potential NS-CSX connection routings are shown.

The I-71 and Rockport routings are shown with a station at West Park, to enable transfers between the commuter rail line and the GCRTA Red Line. For the Fairgrounds routing, this transfer is assumed to occur at Hopkins Airport.

Each of the three potential routing options has a station in the vicinity of Brook Park (Snow Road) and another station in the vicinity of Middleburg Heights (Bagley Road). The Strongsville and Brunswick/Liverpool stations are projected to be located at SR82 and SR303, respectively. The rail line is situated well to the west of the downtown areas of these towns.

The station in Lester is a former passenger station location, at the junction point of the CSX line to Lorain. The Medina station is located on the south edge of downtown, where the W&LE Railroad crosses through town at grade.
Table 3.3.3
Potential Commuter Rail Stations - Route 3 - Southwest Corridor

<table>
<thead>
<tr>
<th>Station:</th>
<th>Street location:</th>
<th>Rockport Rt. I-71 Route Fairgrounds</th>
<th>Transit connections</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland - NCTC</td>
<td>W.3rd-E.9th Sts.</td>
<td>●●●●</td>
<td>LRT, buses</td>
<td></td>
</tr>
<tr>
<td>West Park</td>
<td>RTA Red Line West Park</td>
<td>●●○</td>
<td>GCRTA Red Line</td>
<td>P</td>
</tr>
<tr>
<td>Hopkins Airport</td>
<td>Airport Terminal</td>
<td>○○○</td>
<td>GCRTA Red Line</td>
<td>P</td>
</tr>
<tr>
<td>Brook Park</td>
<td>Snow Road at I-71</td>
<td>○○○</td>
<td>GCRTA Red Line</td>
<td>P</td>
</tr>
<tr>
<td>Brook Park / Parma</td>
<td>Snow Road at Pearl Road</td>
<td>○○○</td>
<td>GCRTA Red Line</td>
<td>P</td>
</tr>
<tr>
<td>Berea/Fairgrounds</td>
<td>Cuy.CO.Fairgrounds</td>
<td>○○○</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Middleburg Hts.</td>
<td>Bagley Road at I-71</td>
<td>●●○</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Strongsville</td>
<td>SR 82</td>
<td>●●●●</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Brunswick / Liverpool</td>
<td>SR 303</td>
<td>●●●●</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Lester</td>
<td>SR 57 / Spieth Rd.</td>
<td>●●●●</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Medina</td>
<td>SR 18 / Washington St.</td>
<td>●●●●</td>
<td></td>
<td>T,P</td>
</tr>
</tbody>
</table>

T=town center; P=park and ride available.

3.3.4 Route 4 - South Corridor, Canton - Akron - Cleveland via Hudson

Physical and Operational Characteristics of the Line
This is one of two routes in the NEORail South Corridor (Cleveland-Akron-Canton corridor) that were analyzed and found to be potentially feasible. The two routes are:

- Route 4, Via Hudson on the Norfolk Southern Cleveland Line
- Route 5, Via Kent on the Wheeling & Lake Erie Railroad

A Major Investment Study is underway in this corridor, addressing the same two potential commuter rail routes, plus light rail (in interstate highway corridor), bus service improvements and highway improvements. Both commuter rail routes follow a common alignment between the North Coast station in Cleveland and Bedford - using approximately 13 miles of the Norfolk Southern (former Conrail) Cleveland Line right-of-way. They also share a common alignment at the south end, from Akron to Canton. The two alternative routes follow different alignments between Bedford and Akron, as described below. The Akron station and track configuration approaching Akron also could differ substantially between the two options. Route 5 is described in Section 3.3.5.

Route 4, shown in Figure 3.3.7, serves Cuyahoga Falls, Hudson, Macedonia and other communities between Akron and Cleveland.
Figure 3.3.7
South Corridor
Route 4
Route 4 remains on the Norfolk Southern Cleveland Line for a total of 25 miles, from the North Coast Transportation Center in downtown Cleveland to Hudson. The Cleveland Line is double-track, but an additional track may have to be added along most, if not all, of this route because of the relatively heavy level of freight traffic. At Hudson, the line would diverge onto an abandoned branch line to reach Akron. The Hudson branch line, now owned by Akron Metro RTA, is a single-track right-of-way that starts in Hudson and runs for 12 miles through Cuyahoga Falls to Arlington Street in Akron. The tracks along this branch line would need to be restored.

At Arlington Street, the commuter rail route would have to cross over the busy east-west CSX main line and run parallel to it for approximately one mile to reach the proposed commuter station site at Quaker Square. The crossing could be either at-grade (the least expensive alternative) or grade-separated by means of a commuter track flyover at Arlington Street (which would be more costly but avoid potential scheduling conflicts and delays for passenger and freight trains at this junction point).

This alignment offers the most direct and potentially the fastest route between the Cleveland and Akron downtowns. Speeds up to 79 mph are possible along the NS mainline. The run time from Akron to Cleveland, with intermediate stops, would be slightly under one hour.

The biggest potential drawback with this option is the very heavy level of freight traffic on the Cleveland Line – the Norfolk Southern main line between Cleveland and Pittsburgh - and the presence of a very active rail freight yard in the Macedonia vicinity. “Motor Yard” serves two active automobile plants on either side of the right-of-way. The original mainline right-of-way is only two tracks wide between Bedford and Hudson, with the addition of a third track for commuter trains more costly than elsewhere in the study area where the original railroad was built wider.

To get between Akron and Canton, both South Corridor routes would follow a largely abandoned single-track line recently acquired by Akron Metro RTA, formerly the CSX Sandyville Subdivision. This line generally follows Interstate Route 77, an active and growing development corridor, and passes adjacent to the Akron-Canton Airport and the Pro Football Hall of Fame. The station at Canton could be either in the vicinity of Tuscarawas Street or at the former Amtrak station location at the southern edge of the business district. The route from Akron to Canton is approximately 24 miles long and provides a relatively direct link between the two cities. A trip between Canton and Akron would take between 35 and 40 minutes. A trip between Canton and Cleveland, with an intermediate stop at the Quaker Square Station in Akron, would take approximately 100 minutes.

With three revenue trainsets, a Cleveland-focused commuter operation could be supported at LOS 1 (or LOS 2, if the line were to terminate at Cuyahoga Falls). Adding a fourth revenue trainset would enable operations at LOS 2 to Akron. Adding a fifth revenue trainset would enable LOS 3 between Cleveland and Akron or LOS 2 between Cleveland and Canton, via Akron. Full operations over the entire 60-mile route require a total of seven revenue trainsets.

Similar capital investments will be required to support LOS 2 or LOS 3 in this corridor. A new mainline track will need to be constructed alongside the NS mainline between Cleveland and Hudson, the Akron Metro RTA-owned secondary line between Hudson and Akron, and between
Akron and Canton will need to be upgraded for commuter operations, and an alignment and station location in Akron will need to be selected. LOS 3 will require two or more additional commuter passing sidings than LOS 2.

Capacity Opportunities and Constraints
The following locations along Route 4 represent capacity constraints or areas where significant investment will be required to support commuter operations:

**South and East Corridors:**
- **NCTC-E.33rd St.**
  - Right-of-way for 3rd main track up grade (adding 4th track requires retaining structures)
  - Reconstruction of bridge
- **E.33rd St.-Kinsman Ave.**
  - Right-of-way for 3rd main track (former 4-track right-of-way)
  - Repair of existing bridges, retaining walls – could be costly
- **Euclid Ave./E.55th St. Station**
  - Single-track station at Euclid Ave. relatively easy to construct
  - Double-track station problematic – and more costly
- **Kinsman Yard**
  - Good opportunity for commuter passing siding & interlocking

**South Corridor (CAC):**
- **Erie Crossing-Harvard**
  - Right-of-way, bridges available to create 3rd main track (former 4-track right-of-way)
- **Harvard-Bedford**
  - Wheeling & Lake Erie right-of-way, parallel and adjacent to NS mainline, available for operation of commuter trains
- **Bedford-Northfield, Macedonia-Hudson**
  - 3rd main track alongside NS requires substantial civil/structural work, including
    - Tinker’s Creek crossing (high existing embankment)
    - Historic roadway bridges (2-track spans)
    - Numerous cuts and fills and stream culverts
- **Motor Yard**
  - Local switching traffic uses, crosses main tracks
  - Hand-thrown switches at Motor Yard, Chrysler Branch junction
  - 3rd main track, remote-control interlockings to improve operations, add capacity
  - Grade separation of passenger track would be costly

**South Corridor (CAC):**
- **Hudson-Cuyahoga Falls**
  - Single-track right-of-way- passing siding desirable
- **Akron area**
  - Crossing of CSX main line at Arlington Street – grade separation avoids conflicts but adds significant cost
Major Capital Projects

This route serves several urbanized areas but also has a relatively high estimated implementation cost. The base estimate includes passing sidings and a signal system for bi-directional passenger service (to serve the multiple destination markets in this corridor) as well as increased capacity along the NS Cleveland Line between Cleveland and Hudson. The magnitude of the required investment will be a function of negotiations with Norfolk Southern. An additional main track would be relatively easy to add between the North Coast Transportation Center and Harvard. Between Harvard and Erie Crossing, the single-track Wheeling & Lake Erie parallels the 2-track NS mainline. With additional crossovers and signals added at two locations, this track could effectively serve as a third main track and could be used by passenger trains. Improvements south of that point, where the right-of-way narrows, would be more costly.

Station Locations

Table 3.3.4 lists the station locations along Route 4 that have been assumed for purposes of ridership estimating and capital costing. In addition to the main terminal at the North Coast Transportation Center, there are several potential station locations within the City of Cleveland east of downtown. The East 55th/Euclid station is located at the site of the original Pennsylvania Railroad station. Vestiges of the station platforms and stairways remain in place. Modern platforms, stairways and elevators would be constructed. A bus transfer facility would be built as part of this station, serving buses along the Euclid Avenue corridor as well as local buses along East 55th Street. NEORail passengers destined for the University Circle area would use this station to transfer to Euclid corridor buses.

The East 88th/Union station is located at the point where Routes 4 and 6 diverge, providing the opportunity for rail-to-rail transfers between the two lines, if both are operated. Local bus routes along Union Avenue and Broadway can be adjusted to serve the station and provide good transit connections for reverse commuters from many neighborhoods on the east side of Cleveland. Vehicular access is from Union Avenue. Alternative station locations in the city of Cleveland also were considered and may be candidates for future implementation. These include East 79th Street (transfer to the GCRTA Red Line), Shaker Rapid (transfer to the GCRTA Blue and Green lines) and Kinsman Avenue.

The station at Garfield Heights is assumed to be located with convenient highway access from Interstate 480. At Bedford, the station would be downtown, in the vicinity of the Grace Street grade crossings of the NS and W&LE lines. A potential future station location is indicated in the vicinity of Walton Hills/Northfield Park. The Macedonia station would be located approximately where SR 82 crosses the rail right-of-way. Construction of a third track through this area is assumed, as is modification or reconstruction of the SR 82 underpass to increase vehicular clearances and enable widening of the roadway.

At Hudson, the preferred station location from a railroad operations point-of-view would be on the Hudson-Akron branch line. An alternate site would be on the northern side of downtown, along the NS mainline. A potential station to serve Silver Lake, Stow and Darrowville could be situated in the vicinity of Graham Road. The preferred Cuyahoga Falls station is at Broad Boulevard, at an industrial site that is slated for redevelopment.
There are three alternative station locations in downtown Akron, each of which is described in Section 3.5.2. On the Sandyville line south of Akron, stations are assumed to be located at South Akron (SR 764, Triplett Blvd.), Myersville/Uniontown (SR 619), Akron-Canton Airport, North Canton (Everhard Road and Belden Village) and Canton (Tuscarawas Street).

The actual locations of NEORail stations will require extensive local discussion and analysis and are subject to change prior to implementation of commuter rail service. The CAC major investment study, for instance, is analyzing fewer stations in its initial analysis (omitting the E.88th/Union, Northfield Park, Silver Lake and Myersville/Uniontown stations).

Table 3.3.4
Potential Commuter Rail Stations - Route 4 - South Corridor - Cleveland-Hudson-Akron-Canton

<table>
<thead>
<tr>
<th>Station:</th>
<th>Street location:</th>
<th>Transit connections</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland - NCTC</td>
<td>W.3rd-E.9th Streets</td>
<td>LRT, buses</td>
<td></td>
</tr>
<tr>
<td>E.55th / Euclid</td>
<td>Euclid Av., E.55th Street</td>
<td>Buses</td>
<td></td>
</tr>
<tr>
<td>E.88th / Union</td>
<td>Union Avenue</td>
<td>Buses, NEORAIL</td>
<td></td>
</tr>
<tr>
<td>Garfield Heights</td>
<td>I-480 / Broadway</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Bedford</td>
<td>Grace Street</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>Northfield Park</td>
<td>Vicinity of Northfield Pk.Racetrack</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Macedonia</td>
<td>E.Aurora Rd./SR 82</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>Hudson</td>
<td>Milford Rd./Hudson Plaza</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>Silver Lake</td>
<td>Graham Road</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Cuyahoga Falls</td>
<td>Broad Boulevard</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>Akron, at one of 3 sites:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Quaker Square</td>
<td></td>
<td></td>
<td>T</td>
</tr>
<tr>
<td>• N. Main St.</td>
<td></td>
<td></td>
<td>T</td>
</tr>
<tr>
<td>• N. Howard St.</td>
<td></td>
<td></td>
<td>T</td>
</tr>
<tr>
<td>South Akron</td>
<td>SR 764 / Triplett Boulevard</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Myersville / Uniontown</td>
<td>SR 619 / Edison Street</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Akron-Canton Airport</td>
<td>Mt. Pleasant Street</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>North Canton</td>
<td>Everhard Rd./Belden Village</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Football Hall of Fame</td>
<td>Fulton Drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canton</td>
<td>Tuscarawas Street</td>
<td>T,P</td>
<td></td>
</tr>
</tbody>
</table>

T=town center; P=park and ride available.
3.3.5 Route 5 – South Corridor, Canton – Akron – Cleveland via Kent

Physical and Operational Characteristics of the Line
This route provides a more circuitous route between Cleveland and Akron (10 miles and 15 minutes longer than Route 4), using the Wheeling & Lake Erie Railroad between Bedford and Kent, an abandoned line owned by the Akron Metro RTA between Kent and Akron. As with Route 4, this route is being studied as part of an ongoing major investment study of transportation options in the Canton-Akron-Cleveland corridor.

Route 5 serves the City of Kent and, compared to Route 4, serves a slightly different set of suburban communities between Akron and the southern end of Cuyahoga County, as shown in Figure 3.3.8 (Streetsboro, Twinsburg, portions of Aurora and Tallmadge on Route 5, versus Cuyahoga Falls, Hudson and Macedonia on Route 4).

The route would be identical to Route 4 at its northern and southern ends – between Cleveland and Bedford and between Akron and Canton. Route 5 would diverge from Route 4 at Bedford, continuing to follow the Wheeling & Lake Erie line instead of the NS mainline for approximately 20 miles from Bedford to the vicinity of Kent, passing through Glenwillow, Twinsburg and Streetsboro. From Kent to Akron, the route would follow for approximately 10 miles an abandoned rail line (formerly part of the Erie Railroad) that is owned by Akron METRO. This part of the line passes through or adjacent to the communities of Munroe Falls, Tallmadge and Stow.

Route 5 has two alignment variations in the Kent Area, for connecting between the Wheeling & Lake Erie and the Akron Metro RTA line. The lowest-cost option would use the existing track connection southwest of Kent, which is known as “Plum Jct.” Unfortunately, the existing connection is in the southeast quadrant of the crossing – which would require Cleveland-Akron through trains to do a “double-reverse” move to continue proceeding towards Akron. An alternative connection would use a piece of the former Lake Erie & Pittsburgh right-of-way, which crosses the Wheeling near Judson Road and passes within approximately one-half mile of the Summit Port Line at Brady Lake. The dog-leg routing via Brady Lake adds approximately 2.2 miles but would save about nine minutes over the alternative routing due to the elimination of the double-back move. The Brady Lake route is preferable from a service standpoint, using the downtown Kent station location and providing a straight-through move for Cleveland-Akron trains. Both routing alternatives are shown in Figure 3.3.9.

Route 5 takes advantage of the railroad capacity that is available on the Wheeling & Lake Erie Railroad and minimizes the distance over which commuter trains must use the heavily-used NS freight mainline (to only the first six miles heading southward from Cleveland). The route serves Kent, as well as other intermediate points that are less well served by Route 4 via Hudson. The Kent-Akron route would provide a rail link between Kent State University and the University of Akron, which could be used by students from one university taking classes at the other university. This route, as well as Route 4, would also serve Cleveland State University, Case Western Reserve University and other educational institutions in the greater Cleveland area.
Figure 3.3.8
South Corridor
Route 5
Figure 3.3.9
Route 5 via Kent – Potential Station Sites and Brady Lake Connection

Cleveland
Norfolk Southern
Former LE&P
Brady Lake Connection
Potential Downtown Kent Station (former Erie RR station)
Existing Plum Jct. track connection
Proposed Route 261 Station

Akron

Akron Metro RTA
CSX Newcastle Subdivision

Final Report
December 2001
While the Wheeling line carries very little freight traffic compared with the NS main line, the track on the Wheeling route is slow speed and in need of upgrading. Norfolk Southern is generally unsupportive of Route 4 because of potential impacts on their extensive rail freight operations, whereas the Wheeling and Lake Erie views commuter rail as a potential source of revenue and is generally supportive of Route 5, which sees only limited freight traffic.

There are two principal disadvantages of this routing. First, it is approximately 10 miles longer than Route 4 via Hudson. Second, the Wheeling line was originally a narrow gauge (3 feet) line, built relatively inexpensively to a lower standard than the Pennsylvania Railroad’s Cleveland Line. It has numerous curves, which reduce allowable speeds to between 35 and 55 mph at eight locations between Bedford and Kent. Improving the speeds at these locations requires realigning the track geometry. Increasing super elevation and adding spirals into and out of curved track sections would allow for a marginal increase in speed. Significant improvements in speed could be achieved by straightening curves at selected locations, but these improvements would be very difficult and costly because of the hilly terrain and the fact that the line is built on the bank of a stream - Tinker's Creek - for much of its length. Overall, Route 5 adds between 15 and 30 minutes to the total travel time between Akron and Cleveland, as compared to Route 4 via Hudson.

Between Akron and Canton, the alignment of Route 5 is identical to that of Route 4, following the former Sandyville line now owned by Akron METRO RTA. In this alternative, as with Route 4, the multiple-destination travel markets in the corridor favor an operating plan with bi-directional service, which will require investment in passing sidings and signal systems.

Generally, running an equivalent level of service on Route 5 via Kent requires one more revenue trainset than running the same service on Route 5 via Hudson. This is due simply to the longer travel distance.

As with Route 4, the NEORail Phase II study looked at this route in a number of different configurations:

- Cleveland to Kent only
- Cleveland to Akron via Kent
- Cleveland to Akron via Kent, with connecting service to Canton from Akron
- Cleveland to Akron to Canton, via Kent.

A Cleveland-Kent route at LOS 1 or 2 would require three trainsets, similar to the Cleveland-Cuyahoga Falls option for Route 4. However, because of the longer alignment and running time, Route 5 in most cases requires one more revenue trainset than Route 4 to operate the equivalent level of service. Adding two revenue trainsets (for a total of five) would enable LOS 2 between Cleveland and Akron via Kent. A sixth revenue trainset would support either LOS 3 between Cleveland and Akron via Kent, or LOS 2 over the full route, including Akron-Canton. LOS 3 over the full Cleveland-Kent-Akron-Canton alignment would require a total of eight revenue trainsets.

Capacity Opportunities and Constraints
Route 5 is identical to Route 4, from Cleveland to Bedford and from Akron to Canton. Between Bedford and Akron, this route takes advantage of the available capacity on the Wheeling &Lake
Erie and avoids the congested portion of the NS mainline between Bedford and Hudson, including Motor Yard. The only existing siding on the Wheeling line is at Glenwillow. This siding would need to be lengthened and additional sidings constructed to permit bi-directional commuter rail operations to occur. Bi-directional passenger operations also would require installation of a signal system on the line, which is presently unsignaled.

**Major Capital Projects**
Route 5 would require capital investment in track and signal upgrades on the Wheeling & Lake Erie, plus a siding extension and an improved track connection to the Akron METRO RTA alignment in the Kent vicinity.

**Station Locations**
The following station locations along Route 5 have been assumed for purposes of ridership estimating and capital costing.

### Table 3.3.5
**Potential Commuter Rail Stations - Route 5 - South Corridor - Cleveland-Kent-Akron-Canton**

<table>
<thead>
<tr>
<th>Station:</th>
<th>Street location:</th>
<th>Transit connections</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland – NCTC</td>
<td>W.3rd-E.9th Sts.</td>
<td>LRT, buses</td>
<td></td>
</tr>
<tr>
<td>E.55th / Euclid</td>
<td>Euclid Av., E.55th Street</td>
<td>Buses</td>
<td></td>
</tr>
<tr>
<td>E.88th / Union</td>
<td>Union Avenue</td>
<td>Buses, NEORAIL</td>
<td></td>
</tr>
<tr>
<td>Garfield Heights</td>
<td>I-480 / Broadway</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Bedford</td>
<td>W&amp;LE station (town center)</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>Glenwillow</td>
<td>Pettibone Rd.</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Twinsburg</td>
<td>E.Aurora Rd./SR 82</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Streetsboro</td>
<td>Mondial Pkwy. (s. of Ohio Tpke.)</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Kent-South</td>
<td>SR 261</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Kent-Downtown</td>
<td>E.Main St. &amp; Water St.</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Tallmadge</td>
<td>Erie St. &amp; Southeast Ave.</td>
<td>T,P</td>
<td></td>
</tr>
<tr>
<td>Akron/Quaker Square</td>
<td>Broadway &amp; University Ave.</td>
<td>Buses</td>
<td>T</td>
</tr>
<tr>
<td>South Akron</td>
<td>SR 764 / Tripplett Boulevard</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Myersville / Uniontown</td>
<td>SR 619 / Edison Street</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Akron-Canton Airport</td>
<td>Mt. Pleasant Street</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>North Canton</td>
<td>Everhard Rd./Belden Village</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Football Hall of Fame</td>
<td>Fulton Drive</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Canton</td>
<td>Tuscarawas Street</td>
<td>T,P</td>
<td></td>
</tr>
</tbody>
</table>

T=town center; P=park and ride available.
The station locations are the same as for Route 4, except for those between Bedford and Akron. On this route, the Bedford station would be at the historic station site on the Wheeling and Lake Erie. At Twinsburg, the station would be located at one of three alternative sites in the vicinity of SR 82. The major east-west highway in Streetsboro is SR 303, but wetlands at the point where the road crosses the railroad may preclude development of a station; an alternate site adjacent to the industrial park along Mondial Parkway is assumed, with good roadway access from both SR 303 and SR 14.

At Kent, there are a number of alternative station sites. The preferred location for a park-and-ride station is at SR 261 south of downtown. Trains using the Plum Jct. connection would stop and reverse direction at this station. An additional station stop could be provided at the former Erie Railroad depot in downtown Kent, along the Akron METRO RTA right-of-way. If the Brady Lake connection were to be implemented, this would be the logical Kent station location.

Between Kent and Akron, along the abandoned former Erie Railroad right-of-way now owned by Akron METRO RTA, the logical intermediate station stop would be at Tallmadge, on the southeast edge of the town center, also serving parts of Stow. At Akron, this route runs directly to the Quaker Square station site with minimal impediments (unlike Route 4). Therefore, this Akron station site is assumed for the Route 5 alternative. Connecting either the former Erie line (from Kent) or the Sandyville line (from Canton) to either the N. Howard St. or N. Main Street station sites would require the construction of track connections that do not now exist.

### 3.3.6 Route 6 –East Corridor, Cleveland - Solon - Aurora - Mantua

#### Physical and Operational Characteristics of the Line

Route 6 proceeds in a southeasterly direction from downtown Cleveland to Solon, Aurora and Mantua, serving the intermediate communities of Bainbridge, North Randall, Bedford Heights, Warrensville Heights and Maple Heights, as well as the southeastern portion of the City of Cleveland (see Figure 3.3.10). The line would follow the Norfolk Southern (former Conrail) Cleveland Line for six miles from the North Coast Transportation Center to Erie Crossing, where it would diverge onto the Norfolk Southern (former Conrail) Randall Secondary. The Randall Secondary, originally the Erie Railroad mainline, is now a lightly used branch line that terminates 21 miles east of Erie Crossing, at Chamberlain Road, east of Aurora.

This route follows the same alignment as Routes 4 and 5 from the North Coast Transportation Center for six miles to Erie Crossing. A third track will need to be added in this area to allow adequate separation of commuter and freight trains, as described previously for Route 4. If commuter rail service is ultimately provided in both the Southeast and South corridors (Route 6 and either Route 4 or 5), then a fourth mainline track may have to be added between Cleveland and Erie Crossing. The original Pennsylvania Railroad right-of-way is four tracks wide, and almost all of the railroad bridges remain capable of carrying four tracks, although the two center track slots are currently used. For the introduction of commuter rail service, three tracks are required as a minimum. Whether or not a fourth is required will depend upon the level of service to be operated on each of the commuter lines, and the success of the Erie-Nickel Plate connection project in diverting through freight traffic away from the NS Cleveland line between Erie Crossing and downtown Cleveland.
Figure 3.3.10
East Corridor
Route 6
This route requires a new track connection at Erie Crossing, which would be less expensive to construct than the connection at Alcott Jct. (Route 1), because the two rail lines are at the same elevation. There is ample capacity on this line to accommodate commuter rail service, and implementation of commuter service would be less problematic than it would be on lines where heavy freight activity is present or where expensive new track connections are required.

This route would be easier to implement than other routes that use busy freight corridors. With a third track provided between the North Coast site and Erie Crossing, this route would have almost no impact on any of the heavily-used rail freight lines in the region.

The current track ends at Chamberlain Road, approximately 1½ miles east of Aurora. Potential extension of this line approximately four miles to Mantua, following former Erie ROW, would entail reconstructing track in the former roadbed.

Three revenue trainsets are required to operate service at LOS 1, 2 or 3 to Aurora. Extension of service to Mantua at LOS 2 or LOS 3 requires acquisition of an additional trainset.

**Capacity Opportunities and Constraints**

On the first six miles of the line between Cleveland and Erie Crossing, the issues are the same as for Route 4. East of Erie Crossing, as far as Aurora, there are no significant obstacles to reintroduction of passenger rail service. In areas with adjoining residential development, noise mitigation measures may be appropriate.

**Major Capital Projects**

Major required capital investment on this line include:

- 3rd main track, NCTC to Erie Crossing
- Passing siding – Kinsman (E.79th to Union Ave.)
- Passing siding – Harper Rd. to Solon
- Track upgrade, NS Randall Secondary
- Signal system, NS Randall Secondary
- Grade crossing upgrades, NS Randall Secondary
- Stations (see below)
- Overnight storage yard: Aurora (3 trainsets)

The line is short enough that the trainsets could be stored and maintained overnight at the East 26th Street facility in downtown Cleveland. This would save on initial capital costs (avoiding investment in an outlying terminal facility) and add slightly to daily operating costs. The additional non-revenue train movements would not negatively impact freight operations because they would not need to occupy the NS mainline tracks at any time.

If the line is extended to Mantua, an additional passing siding would be required east of Aurora.

Of the seven NEORail corridors, Route 6 to Solon and Aurora is the one that should be easiest to implement, in terms of obtaining approval from Norfolk Southern for the operation of commuter trains over their right-of-way. The first six miles out from Cleveland follow the busy double-track...
Cleveland-Pittsburgh main line, where a third track for passenger trains is assumed to be built. With this track in place, addition of commuter trains will have no impact on Norfolk Southern main line operations. The remaining 20 miles of this route follow the NS Randall Secondary, which is now a minor branch line with infrequent freight service. Commuter trains can be operated over this route with no significant impact on freight operations, which can be restricted to nighttime hours. NS is likely to support commuter trains on this line, which could help the profitability of this line for NS, or, alternatively, it may be possible and desirable for the sponsor of NEORail service to purchase the line from NS at a reasonable price.

Phasing – Installation of 6 miles of third main track on the NS line southeastward from Cleveland is a prerequisite for significant commuter rail service. With this improvement in place, plus passing sidings at appropriate locations on the Randall Secondary, it will be possible to operate early-on a high level of service on this line with relatively low incremental costs.

Station Locations
The station locations shown in Table 3.3.6 for Route 6 have been assumed for purposes of ridership estimating and capital costing. The Cleveland, E.55th/Euclid and E.88th/Union stations are at the same locations as on Routes 4 and 5. An additional stop within the City of Cleveland is assumed at East 131st Street, where Miles Avenue crosses the rail line. This location has limited parking potential but provides good local bus access.

A stop at North Randall, also serving Bedford Heights and Warrensville Heights, would be located west of Northfield Road and south of the Randall Park Mall. This location would have a park-and-ride lot and would be relatively accessible from I-480.

Two stations are proposed within the City of Solon: a park-and-ride station at Harper Road, and a downtown Solon station at SR 91. Two station locations also are assumed at the vicinity of the Six Flags amusement park. A stop near the historic Geauga Lake station site could provide easy walk access to the Six Flags Park. A park-and-ride station at Brewster Road, using a portion of the former Sea World parking lot, could serve commuters from Bainbridge and Aurora as well as patrons of the water park part of the Six Flags complex.

The Aurora station is assumed to be located at the historic station site, along SR 82. Should the line be extended to Mantua, the station would be situated to the west of Main Street (SR 44).

Table 3.3.6
Potential Commuter Rail Stations - Route 6 - East Corridor

<table>
<thead>
<tr>
<th>Station:</th>
<th>Street location:</th>
<th>Transit connections</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland - NCTC</td>
<td>W.3rd-E.9th Sts.</td>
<td>LRT, buses</td>
<td></td>
</tr>
<tr>
<td>E.55th/Euclid</td>
<td>Euclid Av., E.55th St.</td>
<td>Buses</td>
<td></td>
</tr>
<tr>
<td>E.88th/Union</td>
<td>Union Ave.</td>
<td>Buses, NEORAIL</td>
<td></td>
</tr>
<tr>
<td>E.131st</td>
<td>East 131st Street. &amp; Miles Ave.</td>
<td></td>
<td>T</td>
</tr>
</tbody>
</table>
3.3.7 Route 7 – Lake East Corridor,
Cleveland – Painesville – Ashtabula – Conneaut

Physical and Operational Characteristics of the Line
Route 7 links downtown Cleveland with Lake and Ashtabula Counties, along the shore of Lake Erie (see Figure 3.3.11). Route 7 follows the CSX mainline, which is double track (on a right-of-way that originally was built with four tracks by the New York Central). The biggest capacity bottleneck on this line is Collinwood Yard, which is a major yard and maintenance facility for CSX. The main line is reconfigured through this area, to provide additional capacity (i.e., a third main track) for commuter trains. The extent to which additional portions of third main track or additional sidings are required will depend upon the outcome of negotiations with CSX.

Extending service beyond Painesville would contribute relatively little incremental ridership and should be considered only if it can be delivered at a small incremental cost.

This route parallels Lake Erie to the east of Cleveland using the CSX (former Conrail) Chicago Line. It serves the east side of the City of Cleveland and the communities of Bratenahl, Euclid, Willoughby, Mentor, Painesville, Perry, Madison, Geneva, Ashtabula and Conneaut. The line is one of the longest being considered – stretching a total of 67 miles from Cleveland to Conneaut. However, the density of development drops off considerably east of Painesville – 28 miles out from Cleveland. Travel times to Cleveland would be on the order of 30 minutes from Painesville, 65 minutes from Ashtabula, and 80 minutes from Conneaut.

This corridor has significant ridership demand potential, with well-established communities alongside the rail line and substantial growth in employment in close proximity to the right-of-way, particularly in Lake County. However, the I-90 and State Route 2 highways parallel the rail corridor and have substantial available capacity, which will make attracting a significant share of trips to the railroad a challenge.

The Chicago Line east of Cleveland is double-tracked along its entire length, with additional sidings at Painesville, Perry, Ashtabula and Conneaut. The original New York Central right-of-way is four tracks wide in most places.
Figure 3.3.11
Lake East Corridor
Route 7
With the CSX and NS acquisition of Conrail, the first six miles of this route – from the NCTC to Collinwood Yard – are now much less heavily used by freight trains than previously, freeing up capacity for commuter trains. The line east of Collinwood, however, has become CSX’s main line from the Midwest to upstate New York and New England. The existing and projected future heavy freight traffic volumes may make the introduction of commuter rail service problematic without investment in at least some additional track capacity.

The NS Nickel Plate Line offers an alternative routing, but this route is not preferred, since the NS line has only a single track, is slated for substantial growth in traffic following the Conrail acquisition, and would require construction of a track connection between the two lines. Should the CSX line become unavailable for use by commuter trains, an alternative routing could use portions of the NS (former Nickel Plate) line, which closely parallels the CSX line through Lake and Ashtabula Counties.

Between Cleveland and Painesville, once a slot for a passenger track is created through Collinwood Yard, the incremental capital cost to increase commuter service from LOS 1 to LOS 3 is relatively small – principally the construction of two intermediate passing sidings. East of Painesville, however, the cost of infrastructure to support more than two or three rush hour trains to Cleveland, and the relatively small size of the projected travel market, make LOS 1 appropriate for this territory. Ashtabula County has limited ridership potential and a peak direction orientation, so LOS 1 is appropriate with minimal investment, contingent upon railroad approval.

Three revenue trainsets would be required for LOS 3 to Painesville (not including spares). Extension of LOS 3 service to Madison would required the acquisition of an additional trainset, as would increasing the number of Ashtabula County trains above two or decreasing peak headways below approximately 35 minutes.

**Capacity Opportunities and Constraints**
The following locations along the Lake East Corridor (Route 7) represent capacity constraints or areas where significant investment will be required to support commuter operations:

- **NCTC-Collinwood**
  - Double-track mainline, with limited freight service – no capacity investments required for commuter service
  - Passenger storage yard and maintenance shop at E. 26th St.

- **Collinwood Yard:**
  - Short Line tracks should be realigned for direct connection
  - CSX has proposed a realignment of the Short Line connection, which would make creation of a dedicated passenger train route through the yard problematic
  - 3rd main track though yard area (south side) for passenger trains – requires shifting of existing tracks and reconfiguration of the westbound diesel locomotive fueling facility and the lead tracks to and from the engine maintenance facility.

- **Collinwood and East:**
  - Installation of 3rd track relatively easy (formerly 4-track)
Some bridges would require reconstruction, some shifting of freight mains/sidings may be required for passenger track.

**Major Capital Projects**

Major projects on this route include:

- E.26th St. Yard & Shop
- 3rd main track, Collinwood to Painesville
- Passing sidings– Wickliffe and Mentor
- Track upgrade and grade crossing upgrades, CSX main line

The third main track between Collinwood and Painesville generally is the trackbed of the former New York Central Railroad, which was a 4-track railroad in this area. At several locations, bridge spans need to be replaced, or bridges widened to make room for an additional mainline track. Overnight train storage and inspection/servicing requirements are assumed to be accommodated at Conneaut for trains originating in Ashtabula County and at the East 26th Street yard facility for trains that start revenue service at Painesville.

**Station Locations**

The station locations along Route 7 shown in Table 3.3.7 have been assumed for purposes of ridership estimating and capital costing. An East Cleveland / Bratenahl station is provided at East 105th Street, near the existing bus turnaround facility. Limited commuter parking is potentially available with some private property acquisition. In Euclid, a station is assumed along the CSX mainline in the vicinity of the existing mall.

An alternative routing of this line, via University Circle, was identified but not analyzed in detail as part of this study. It would include stops at the East 55th/Euclid station and at University Circle, adjacent to the GCRTA Red Line. The Euclid station along this routing would be at the existing GCRTA bus park-and-ride location.

A station serving Wickliffe and Willowick is assumed at East 305th Street. A station near downtown Willoughby also would serve portions of Eastlake. Two candidate stations in Mentor are provided: one on the west side of town at SR 306 and another serving central Mentor at SR 615. Two stations also are provided in Painesville. A West Painesville park-and-ride station could be situated along SR 44, as part of proposed new development in this area. Downtown Painesville would be served by a station at this historic rail station site.

The stations at Madison and Geneva are located in town centers, but in areas with reasonably good highway access and parking potential. As at Painesville, two stations are indicated in Ashtabula - a West Ashtabula park-and-ride facility at SR45, and a downtown Ashtabula location at the historic station site, with more limited vehicular access. The Conneaut station is assumed to be at the historic downtown station site.
### Table 3.3.7

**Potential Commuter Rail Stations - Route 7 - Lake East Corridor**

<table>
<thead>
<tr>
<th>Station:</th>
<th>Street location:</th>
<th>Transit connections</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland - NCTC</td>
<td>W.3rd-E.9th Sts.</td>
<td>LRT, buses</td>
<td></td>
</tr>
<tr>
<td>E.Cleveland/Bratenahl</td>
<td>E.105th St.</td>
<td>Buses</td>
<td>P</td>
</tr>
<tr>
<td>Euclid</td>
<td>E.260th St.</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>West End (Wickliffe, Willowick)</td>
<td>E.305th St./Rush Rd.</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Willoughby / Eastlake</td>
<td>Depot St.</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>W.Mentor / Willoughby</td>
<td>SR 306</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Mentor</td>
<td>SR 615</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>W. Painesville</td>
<td>SR 44</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Painesville</td>
<td>State St.</td>
<td></td>
<td>T,P</td>
</tr>
<tr>
<td>Madison</td>
<td>SR 528/Lake St.</td>
<td></td>
<td>T,P</td>
</tr>
<tr>
<td>Geneva</td>
<td>Broadway</td>
<td></td>
<td>T,P</td>
</tr>
<tr>
<td>W. Ashtabula</td>
<td>SR 45</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>Ashtabula</td>
<td>Station Ave./Lake Ave.</td>
<td></td>
<td>T,P</td>
</tr>
<tr>
<td>Conneaut</td>
<td>Mill St.</td>
<td></td>
<td>T,P</td>
</tr>
</tbody>
</table>

T=town center; P=park and ride available.

### 3.4 ACCESS TO DOWNTOWN CLEVELAND

#### 3.4.1 Intermodal Transportation Hub

The downtown Cleveland station for commuter rail is assumed to be the North Coast Transportation Center (NCTC), located between West 3<sup>rd</sup> and East 9<sup>th</sup> Streets along the lakefront. The NCTC location, the subject of a separate Intermodal Hub Study, was identified as the preferred passenger rail terminus in Cleveland and the NEORAIL Study assumes this location for all of the potential commuter rail routes that serve Cleveland.

The Intermodal Hub Study followed up on RTA’s 1992 study, and examined the need for a site to be identified for multimodal use. RTA had included commuter rail in their long-range plan and a site needed to be identified that would accommodate Cleveland area travel markets, and the economic development in the area. There were several different locations identified as being potentially feasible, including West Third Street Station, North Coast Transportation Center below Mall C, Tower City, East 12<sup>th</sup> St. on the Lakefront, West 150<sup>th</sup> Street, and in the area of Cleveland Hopkins International Airport. Tower City was originally identified as the preferred location after the 1992 study, but since that study it has been determined not to be the best location, due to the opposition of the owner of the site and the construction of a new courthouse tower on a portion of the right-of-way.
North Coast Transportation Center below Mall C was selected as the most feasible location, because it would provide access to RTA’s Waterfront Line, Amtrak services, buses/street transportation, Cleveland businesses, and various Lakefront attractions, including the Rock and Roll Hall of Fame, the Science Center, and the Browns Stadium. Other sites were determined to be constrained by the size of the site, adjacent roads and property, and new construction in these locations may interfere with existing traffic.

Figure 3.4.1
North Coast Transportation Center Concept

3.4.2 Cleveland Storage and Maintenance Facility
With all of the NEORail Phase II corridors serving downtown Cleveland, the most logical place for a consolidated maintenance facility is close to the North Coast Transportation Center. There are few vacant or potentially available parcels of land situated next to the railroad right-of-way, near the NCTC and with sufficient acreage to support a yard and shop facility. The only site that meets these requirements is the former East 26th Street Yard alongside the CSX tracks heading eastward towards Collinwood.

A possible configuration for a commuter rail storage and maintenance facility at East 26th Street is shown in Figure 3.4.2. The facility is expected to include the following types of facilities:

- Storage tracks for NEORail trainsets
- Welfare facilities (e.g., locker rooms, lunchroom) for train crews and maintenance crews reporting to East 26th Street
- Train service and inspection facility (shed with pit track, one train length long), for performing required inspections, routine and preventive maintenance, and minor repairs
- Car wash
- Locomotive fueling facility (fuel rack)
- Wheel true machine
- Utilities, including electrical power (480v), potable water supply, site lighting and sewerage
- Automobile/truck access and parking.
Figure 3.4.2
East 26th Street Yard Potential Configuration

Parsons Brinckerhoff

North Coast Transportation Center

Amtrak Mail and Express Facility

East 26th Street Yard

Transloading Facility

NEORail to Painesville, Conneaut →
CSX Line to Buffalo →

Service/Insp. Bldg.
Car&Loco Shop/
Wheel True
Storage Tracks

NS Cleveland Line to Pittsburgh
NEORail to Aurora, Akron

Potential 3rd &/or
4th track for
passenger rail

Potential 3rd &/or
4th track for
passenger rail

Final Report
December 2001
The 26th Street Yard is part of the assumed system considered in NEORail II costs and operations planning. It is expected that this facility would be constructed in stages, as the commuter rail network grows. Should implementation proceed on high-speed corridor service to Chicago and/or in the 3-C corridor, it would make sense for this service to use the same maintenance facility as NEORail.

3.4.3 Erie-Nickel Plate Connection

Overview
The purpose of this capital project is to provide an alternate route through Cleveland for NS mainline trains, to create capacity for additional passenger trains on the lakefront route. It is the only significant capital project proposed by the NEORail Study that is not proposed for use directly by passenger trains. The project would create a double-track through route for NS trains from Erie Crossing on the east side of Cleveland, on the NS Cleveland-Pittsburgh mainline, to the NS-owned Nickel Plate bridge over the Cuyahoga River on the south side of downtown Cleveland. This new line would connect with the Nickel Plate Line and with a new double-track mainline that NS has constructed from Cloggsville, on the west bank of the Cuyahoga River, to Brook Park, where the line re-joins the NS Cleveland-Chicago mainline (see Figure 3.4.3).

As planned, this route would have a maximum one percent grade over a 3,000-foot distance, slightly higher than the maximum grade along the lakefront route. This route, however, would entail less of a vertical rise for freight trains than the lakefront route, where the bridge over the river is approximately 50 feet lower.

This project would benefit all of the potential NEORail routes by diverting freight trains away from the lakefront, including all routes operating across the Cuyahoga River west of the NCTC (1, 2, 3), and all routes operating between the NCTC and Erie Crossing (4, 5 and 6). It also would benefit the potential future high-speed intercity passenger service to Columbus, Cincinnati, Toledo and Chicago.

Elements of construction:
The following major items of work are required:
- Reconstruct interlocking on NS Nickel Plate Line
- New railroad grade connecting Nickel Plate and Erie (Randall Secondary) lines east of E.34th Street
- Install track on former Erie-CUT connection alignment across Nickel Plate bridge
- Upgrade Erie line (Randall Secondary) to Class IV track with signals and centralized traffic control (CTC), from Nickel Plate connection to Erie Crossing
- Modify track curvature for higher speed on connecting tracks at Erie Crossing
- New interlocking with NS Cleveland-Pittsburgh main line in Harvard vicinity
Figure 3.4.3
Alternative NS Route through Cleveland via Erie-Nickel Plate Connection

- Existing Nickel Plate Line
- NS Cloggsville Connection
- Proposed Erie-Nickel Plate Connection

Existing low-level lift bridge
Existing high-level lift bridge
Railroad grades:
One reason cited by NS and others for not advancing this project at the time of the Conrail breakup is the grade of the connection between the two lines at E.37th Street. Topographic base mapping of the area was obtained at a scale of 1″=200′, with two-foot contours. The grade of the alignment that uses the existing Erie-CUT bridge is approximately 1.3 percent - between the controlling vertical constraints of the rail bridge over NS and the underside of the E.34th Street overpass. This contrasts with the current grades on the NS mainline, which reach a maximum of 0.91 percent west of the Cuyahoga River and 0.78 percent east of the river.

However, if a new grade is created on the southern side of both the Nickel Plate and Erie rights-of-way, a longer distance is available to make the vertical transition, and the maximum grade can be limited to 1.0 percent or less. Covering a distance of only 3,000 feet, this grade is not significantly different from the existing mainline grade and is likely to be acceptable to NS, considering that the total vertical rise of the railroad from the Cuyahoga River to Erie Crossing is approximately 50 feet less than via the lakeshore route.

Operations:
At a minimum, the Erie-Nickel Plate connection could be used by westbound NS through trains, where the 1.0 percent grade should not be an issue. Should the capacity and energy savings to NS be great enough, and if there is sufficient capacity to combine the majority of trains on both the Chicago-Pittsburgh and Chicago-Buffalo routes over the Nickel Plate bridge, then this route could become the preferred mainline route for NS trains through Cleveland. The existing line stretching eastward from the NCTC to Erie Crossing and westward to Brook Park and Hopkins Airport would then become primarily a reliever route for NS, while also continuing to serve port-related and local customer traffic. This could conceivably reduce the required magnitude of investment - and possibly delay the need for that investment - in additional passenger-train capacity along this route, including a fourth mainline track and associated bridge reconstruction and potential right-of-way acquisition. However, the lakeshore route will still be required for a significant share of the NS traffic as well as occasional CSX traffic.

Advantages of the Erie-Nickel Plate Connection, and potential drawbacks or obstacles to its implementation, include the following:

Advantages:
- Fuel savings (saves vertical rise of approximately 50 ft. for through trains)
- Capacity (double-track line at higher level and further upstream than lakefront bridge - resulting in fewer bridge openings)
- Both ends of Rockport Yard directly accessible from main line
- Increased separation of freight and passenger traffic

Disadvantages
- Capacity of two-track bridge must be shared between NS Buffalo and Pittsburgh routes

Assumptions to Guide Future Planning
The NEORail study has concluded that there are considerable potential benefits to freight and passenger rail in the Northeast Ohio region associated with implementing the Erie-Nickel Plate
Connection. These benefits will accrue to the freight railroads, freight shippers, passenger rail operators and travelers in the region. If successful, the project will improve the flow of freight trains through Cleveland and free up capacity along the lakefront to introduce commuter rail and potentially high-speed intercity passenger rail service. Without detailed operations analysis, the NEORail Study has estimated that up to one half of the through freight trains at the lakefront could potentially be diverted to the Erie-Nickel Plate Connection route.

The connection project has not been a high enough priority for Norfolk Southern to implement it on its own. However, the public sector cannot implement the project without the approval of NS. Additional technical analyses will be necessary to demonstrate the physical and operational viability and quantify the benefits of the project for NS. Engineering studies will need to be done to determine the minimum grade that will be required at the connection and the curvature and allowable speed for trains operating over the connection. The design of the track connections and railroad configurations at the two new junction points also will need to be further developed and the estimated capital costs refined. Operational analyses, including simulations, will need to be performed to determine the relative running times for typical trains operating over the Connection route, as compared to the existing route, and to determine more precisely the number of trains that can reasonably be diverted from the lakeshore route to the Connection route.

Given the potential freight-related benefits of the project, it may be desirable to progress implementation of the Erie-Nickel Plate Connection in advance of and separate from decision-making and implementation of NEORail commuter rail service in the region.

3.4.4 Cuyahoga River Crossing at Cleveland Lakefront

Expansion Options and Opportunities

Expansion of rail capacity across the Cuyahoga River at the Cleveland lakefront may be required to support significant increases in the volume of passenger rail traffic to the west of Cleveland, including commuter rail, intercity high-speed rail and Amtrak service. A review of existing conditions, projected future changes and planned improvements and capital projects in the area of the Cuyahoga River at the Cleveland lakefront was carried out, at the direction of the NEORail Commuter Rail Advisory Committee (CRAC). The effort was undertaken to better understand the possible synergies of combining investment in rail capacity with investment to address other transportation needs in the same geographic area.

Future railroad system requirements were identified, and other potential markets for new cross-river transportation capacity also were identified. Available information on existing bridge openings was compiled, along with information on the characteristics of vessels using the Cuyahoga River.

Alternative bridge and approach configurations were developed, and general order-of-magnitude estimates of implementation cost were prepared. In the context of the overall NEORail Phase II Study recommendations, specific assumptions concerning the extent and timing of investment in new Cuyahoga River crossing capacity were developed. A listing was prepared of outstanding technical and policy issues, to be resolved in the future prior to decision-making,
Existing Conditions
The original railroad crossing of the Cuyahoga River at the Cleveland lakefront was a single-track swing bridge, built in 1890. The New York Central Railroad subsequently built the Short Line as a bypass route around downtown Cleveland, temporarily relieving some of the pressure on the single-track crossing. The existing 2-track lift bridge was built in 1957. Conrail was formed in the mid-1970s to take over the routes and services of the bankrupt eastern U.S. railroads, which included the New York Central, Pennsylvania Railroad and Erie-Lackawanna Railroad, all of which had served Cleveland. In 1999, Conrail was acquired by Norfolk Southern (NS) and CSX Transportation. The Cuyahoga River lift bridge is now owned by NS and is part of the NS east-west main line between Pittsburgh and Chicago. Both CSX and Amtrak have operating rights across the bridge, and the bridge is used by the trains of all three railroads.

Rail traffic has grown to the point where the existing bridge has become a significant bottleneck for east-west rail traffic through Cleveland. The railroad right-of-way widens on either side of the bridge – with three tracks running westward towards Hopkins Airport and Berea, and five tracks heading eastward (two towards Pittsburgh on the Norfolk Southern line and three towards Buffalo on the CSX line). In addition, the bottom of the bridge deck structure is only 7-8 feet above the Cuyahoga River water line, so the lift span is raised approximately 8,000 times per year to permit vessels to pass underneath. The railroad is closed to through-traffic while the bridge is lifted. The duration of a bridge lift varies, from under a minute for small pleasure craft to several minutes for large cargo vessels serving the steel and other industries along the River. Further complicating railroad operations and limiting the capacity of the bridge crossing is the track connection to the Port of Cleveland bulk facility at Whiskey Island, which connects to the main line directly west of the bridge. All trains moving to-or-from Whiskey Island, therefore, occupy Track 2 on the bridge.

Typical daily traffic across the bridge is 35-40 trains, including six Amtrak passenger trains. The plan prepared by NS and CSX for the acquisition of Conrail showed 52 planned daily trains crossing the bridge (a combination of NS, CSX & Amtrak services). NS is unlikely to grant access across the bridge for substantial numbers of additional passenger trains.

The existing bridge is a span drive vertical lift span. The bridge provides for 7 - 8 feet of vertical clearance above the water when closed. It provides 98 feet of clearance above the water when fully open. The bridge is 250 feet long, spanning the full width of the river channel.

Potential Markets for Transportation Capacity Across the River
There are several potential uses for new transportation capacity across the Cuyahoga River at the Cleveland lakefront:

- Rail
  - Commuter rail (e.g., NEORail routes)
  - Intercity high-speed corridors, including the Midwest Regional Rail Initiative (MWRRI) with potential service to Toledo and Chicago, and the 3-C Corridor with potential service to Columbus and Cincinnati

* Source: U.S. Coast Guard.
o Rail freight – through-traffic for both NS and CSX
o Port of Cleveland – railroad access, especially to the bulk facility at the Whiskey Island terminal
o Amtrak (through-trains and staging for mail/express traffic)

- Roadway
  - Port of Cleveland – truck access between the Whiskey Island terminal and the interstate highway network
- Flats West Bank – Truck access to-and-from the interstate highway network
  - Other vehicles – emergency, entertainment center patrons, etc.
- Bikeway / greenway
  - Lakefront bikeway – missing link along waterfront
  - Cuyahoga Valley towpath trail

Whereas the construction of a new bridge to serve only one or a couple of these markets might be difficult to justify, given the relatively high cost, a combined project to serve all of the above constituencies might have a better chance of acquiring needed public and political support, as well as funding.

**Crossing Capacity Requirements**
The desired long-range railroad configuration includes four mainline tracks across the Cuyahoga River – two for freight trains and two for passenger trains, permitting independent bi-directional freight and passenger operations. The separation of freight and passenger traffic would extend westward at least as far as Berea and eastward through the North Coast Transportation Center site. The new rail bridge would have 2, 3 or 4 tracks, depending upon the disposition of the existing bridge and the viability of the proposed Erie-Nickel Plate Connection as a diversion route for NS trains through Cleveland.

Rail access will need to be maintained to the Whiskey Island facility west of the river, and to the Port of Cleveland facilities on the east bank of the river.

The assumed roadway configuration consists of two travel lanes with shoulders. A 2-lane bikeway and footpath also are assumed to be provided, adjacent to the roadway lanes.

**Bridge Opening Statistics and Vessel Characteristics**
According to information obtained from the U.S. Coast Guard, the lift bridge opens approximately 8,000 times annually. However, the frequency of bridge openings varies seasonally. During the first quarter of the year (January through March), there are only about four to six openings per day. However, during the rest of the year, the typical average is between 30 and 40 openings per day.

The following table (3.4.1) presents the mix of vessels contributing to the bridge openings. They involve a combination of three types of vessels: large lake vessels serving the steel mills and industries up-river, excursion passenger boats that make regular trips from the flats area out onto the lake, and other pleasure boats of various types and sizes. The first two categories of vessels require relatively large vertical clearances, and the reconstruction of bridge approaches and a
fixed rail bridge at a high enough elevation to clear these vessels would be prohibitively costly. The pleasure craft, however, include many vessels (other than high-masted sailboats) that could pass beneath a bridge span that provided a relatively small increase in vertical clearance.

Table 3.4.1
Bridge Openings by Vessel Group

<table>
<thead>
<tr>
<th>Vessel Group</th>
<th>Annual Lifts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port-related lifts (laker ships)</td>
<td>2,000</td>
</tr>
<tr>
<td>Excursion boats</td>
<td>3,000</td>
</tr>
<tr>
<td>Pleasure boats (sail &amp; power)</td>
<td>3,000</td>
</tr>
<tr>
<td>Total</td>
<td>8,000</td>
</tr>
</tbody>
</table>

Technology
The preferred solution for maintaining reliable railroad operations would be to replace the movable bridge with a fixed bridge set at a high enough level to permit all vessels to clear underneath. In this case, due to the presence of high-masted sailboats and the large cargo and passenger boats operating on the Cuyahoga River, construction of a high-level fixed span would be impractical due to the long approach grades that would be required to achieve the required height. A tunnel also would be infeasible due to excessive required grades. In this case, the east and west approaches to the lakefront bridge are on downward grades that already approach one percent, the practical maximum for mainline freight service. Any practical tunnel configuration would push the required grades above this threshold.

As a result, movable bridge technology is considered to be the most appropriate technology to continue to apply at this site. Given site constraints such as adjacent commercial and entertainment development immediately to the south of the existing bridge and potential development of port-related facilities to the north, and the continued use of lift bridge technology appears to be the most practical. A new lift bridge or lift bridges could be set at a higher elevation than the existing bridge, to reduce the number of required openings. It also would be feasible to modify the existing bridge structure and lift mechanism to increase the base height of the existing span, if desired.

Effect of Base Elevation Changes
Increasing the base height of the bridge deck would reduce the number of bridge openings, with higher bridge elevations having a greater effect on the number of bridge lifts, as shown in the following table:

<table>
<thead>
<tr>
<th>Increasing base height of bridge deck by...</th>
<th>...could reduce pleasure craft openings by...</th>
<th>...resulting in a reduction in annual bridge lifts to...</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 ft.</td>
<td>60-70%</td>
<td>6,000</td>
</tr>
<tr>
<td>15 ft.</td>
<td>70-80%</td>
<td>5,700</td>
</tr>
<tr>
<td>20 ft.</td>
<td>80-85%</td>
<td>5,500</td>
</tr>
</tbody>
</table>

Port-related and excursion boat trips would account for the majority of remaining bridge lifts.
Configuration
The existing bridge could be replaced with a new bridge with a single wide span serving all users, or the ultimate configuration could be a series of independent lift spans. The multiple span concept offers both operational flexibility and redundancy. Based on experience elsewhere, the incremental operations and maintenance costs associated with a multiple span will not be significant. The spans would be controlled and operated from a single location.

Any new bridge spans would be situated immediately to the north of the existing span, preserving the existing commercial and entertainment land uses located directly south and east of the existing bridge. It is assumed that separate rail and roadway/bikeway/footpath spans would be built, to enable these two spans to be located at different base elevations and to permit staged implementation.

For purposes of this analysis, a new double-track rail span is assumed. The railroad approaches are assumed to have sufficient crossovers to allow for flexible/universal track use by both freight and passenger trains. The operating plan would normally assign passenger trains to the new bridge and freight trains to the existing bridge alignment, but, in the event of a bridge outage or to respond to delays, breakdowns or maintenance activities, it would be possible to route freight trains via the new bridge and passenger trains over the existing bridge as required.

This configuration would permit retention of the existing bridge structure, which is in reasonably good structural condition. Retaining the existing bridge is more cost-effective than replacing it. It also more readily permits staging of construction and allows the existing low-level span and associated track connections to be retained, if desired by NS.

Once the new bridge or bridges are built to the north of the existing bridge, raising the base height of the existing 2-track bridge span would be feasible, if desired. However, a new track connection would need to be built to provide a connection to the Whiskey Island facility. A potential track configuration and arrangement of bridge spans is shown in Figure 3.4.4.

Figure 3.4.4 Expanded Cuyahoga River Crossing at Cleveland Lakefront
Potential Future Track Configuration

Two basic alternatives were developed for the base elevation of the new Cuyahoga River rail crossing:

- Moderate rise (5-10 ft.)
- Substantial rise (20-25 ft.)

In the former scheme (moderate rise of 5-10 ft.), the westerly approach tracks would meet the existing embankment grade, which begins rising immediately to the west of the river. The easterly bridge approach would transition down to the existing grade level prior to reaching the site of the North Coast Transportation Center. This would enable changes to the current NCTC & lakefront plans to be kept to a minimum. The one major required project would be reconfiguration of the waterfront light rail bridge across the right-of-way. This scheme would result in a greater number of bridge openings than the second option described below. It also would be less costly, preserving the existing Shoreway alignment and the other bridges over the right-of-way between West 3rd Street and East 9th Street.

In the latter scheme (substantial rise of 20-25 ft.), the westerly approach would still be level and meet the existing grade, but it would require construction of a longer embankment than the first scheme. The railroad grade east of the river would be raised to approximately the same height as the bridge elevation (25-30 feet above grade) and supported on a structure. This structure presumably also would be designed to support air rights development of the right-of-way, at least partially offsetting the cost of the structure. This configuration would have the benefit of reducing the length of the grade experienced by NS freight trains operating via the lakefront routes. It also would create a “lower level” beneath the track structure that could be occupied by a relocated light rail line, the freight track access to the port, vehicle parking and a relocated through roadway (Shoreway and/or port access road). At the North Coast station, the station platforms would be one level closer to the city streets, and the station building would be visible from local streets to the south. However, this configuration would be very costly – several hundreds of millions of dollars – and, therefore, must be part of a comprehensive program of lakefront and air rights development.

Issues/Variables

There are a number of outstanding issues that will need to be resolved based on local policy decisions and development actions:

- Port of Cleveland master plan,
- Incorporating rail, vehicular, bike & pedestrian access to/from or around facilities
- Lakefront master plan
- Ultimate configuration of the Shoreway (State Route 2)
- Waterfront light rail line
- Downtown Cleveland Convention Center
- Transportation joint-development potential at and adjacent to NCTC site
- Implementation timing (of multiple projects)
- Coordination & responsibility.
Assumptions to Guide Future Planning
The future configuration of the Lake Erie waterfront will not be decided solely based on transportation interests and concerns, much less those off commuter rail by themselves. At the lakefront, transportation access problems will need to be solved and land development planned in a comprehensive manner. This exercise, as part of the NEORail commuter rail study, has been to raise the possibility of a multi-modal project to improve access across the river that might benefit multiple users and generate broad interest in the further exploration of the potential costs and benefits of such a project.

The work to date has been based on readily available information. More detailed data will need to be generated on the volume and nature of bridge openings and vessel movements, to enable a more precise calculation of the potential capacity benefits (and relative levels of train delay) associated with raising the railroad river crossing by various amounts.

A dialogue should be established and maintained among a wide range of interested parties, including:
- NOACA, City of Cleveland, Port of Cleveland, Cuyahoga County Planning Commission (bikeway/greenway)
- Flats Oxbow Association, Growth Association
- NS, CSX, Amtrak, ORDC (MWRRI, 3-C, statewide goods movement.)

These parties should monitor the progress and review the results and recommendations of ongoing planning efforts, including refinement and implementation of the master plan for the Port of Cleveland, the Flats Transportation Study, North Coast Transportation Center, downtown Cleveland Convention Center, definition of the future Shoreway configuration, and other plans for development at the lakefront.

As these various plans develop and coalesce, a decision will need to be made by the affected stakeholders as to whether or not a constituency exists for funding and implementing the following:
- A new multi-use bridge or bridges across the Cuyahoga River at the lakefront
- Lakefront development sufficient to help support and justify the expense of new bridge capacity.

At some future point in the process, it will be necessary to collect data on the geotechnical conditions at the site, prepare engineering concept plans including alignments, profiles and cross-sections, develop more precise cost estimates, and perform an analysis and evaluation of the alignment, configuration and bridge height alternatives.

3.5 ACCESS TO DOWNTOWN AKRON

3.5.1 Akron Rail Network
Figure 3.5.1 shows the rail lines that currently serve Akron.
Figure 3.5.1
Akron Area Rail Network

Railroad Lines
- CSX Transportation
- Wheeling & Lake Erie Railroad
- Akron Metro RTA
- Cuyahoga Valley Scenic Railroad
- Other

Final Report
December 2001
The CSX east-west mainline, known as the Newcastle Subdivision (formerly the main line of the Baltimore and Ohio Railroad) bisects downtown Akron. The Akron Amtrak station at Quaker Square is located on this alignment.

The Cuyahoga Valley Scenic Railroad and the Wheeling & Lake Erie Railroad generally follow the contours of the Cuyahoga River Valley to the north of the Akron business district. The Cuyahoga Valley line runs in the river valley all the way to Cleveland. The Wheeling line is a different route from the one used by NEORail Route 5 between Bedford and Kent, running westward from Mogadore to Medina (the same line used by NEORail Route 3 to access downtown Medina).

Three rights of way also have been acquired by the Akron Metro RTA as possible passenger rail routes. The Hudson to Akron branch line was originally built by the Pennsylvania Railroad but is no longer in service. It parallels the CSX Newcastle Subdivision from Cuyahoga Falls to the outskirts of Akron. The Kent to Akron line through Tallmadge was originally part of the Erie Railroad and also has been abandoned, but the right-of-way remains intact. The Sandyville Subdivision of CSX Transportation, linking Akron to Canton, was also recently acquired by Metro RTA. Limited freight service remains on the northernmost section of this branch line, and Metro RTA has funded restoration of the line to minimum passenger standards.

### 3.5.2 Alternative Akron Station Locations

There are three potential sites for a commuter rail station serving downtown Akron:

- Quaker Square, on the CSX Newcastle Subdivision
- North Main Street, on the Wheeling & Lake Erie Railroad
- North Howard Street, on the Cuyahoga Valley Scenic Railroad alignment

Figure 3.5.2 shows these three potential station locations in relation to downtown Akron. All three locations have been the site of passenger stations at some time in the past. Two of the locations are still active stations: the Amtrak Three Rivers train between New York and Chicago stops one a day in each direction at the Quaker Square site; and, a station building and passenger platform for the Cuyahoga Valley scenic line have recently been built at North Howard Street.

All three of these potential sites would require a passenger train operating between Cleveland and Canton on either NEORail Route 4 (via Hudson) or Route 5 (via Kent) to reverse directions at the Akron Station. A fourth location was considered at Arlington Street, on the direct through route between Cleveland and Akron. This location would reduce travel times between Canton and Cleveland by approximately 15 minutes. However, the Arlington Street site is not conveniently situated with respect to downtown Akron, and the travel demand analysis indicated that overall net ridership would decline with Arlington Street as the Akron station, since there is greater demand for travel between Akron and Cleveland than between Canton and Cleveland. Traditional commuter rail equipment, in a “push-pull” configuration with a locomotive at one end and a cab control car at the other end, is capable of being operated in either direction. With an Akron station stop of 7 to 10 minutes, the train engineer has sufficient time to walk the length of the train and conduct a brake test before starting out in the opposite direction.
Figure 3.5.2
Alternative Locations for
Akron Rail Station

[Map showing alternative locations for Akron Rail Station, including N. Howard St. Station (Cuyahoga Valley Scenic RR), N. Main St. Station (W&LE), Quaker Square Station (Amtrak), and Metro RTA to Canton.]
Northeast Ohio Commuter Rail
Feasibility Study Phase II

Page 3.71

Each of the three alternative downtown Akron station locations has advantages and disadvantages, as Table 3.5.1 indicates. As of the date of this report, a single preferred site had not been identified, and the City of Akron had indicated a willingness to consider all three options. The siting of the Akron station will be determined at a later stage of the implementation process, perhaps as part of the Canton-Akron-Cleveland major investment study, and will depend upon factors such as local policy and development priorities in the City of Akron and the extent to which agreement can be reached with CSX Transportation concerning commuter rail access onto or across their right-of-way. A feasible railroad alignment and operating plan can be developed for any of the three sites.

### Table 3.5.1
Advantages and Disadvantages of Alternative Downtown Akron Station Locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| Quaker Square (CSX)    | • Convenient walking distance to business district and University of Akron  
                        | • Co-located with Amtrak station in Akron  
                        | • Direct rail access towards Kent and Canton                                                    | • Requires crossing of (or relocation of) CSX main line to access Hudson line  
                        |                                             | • A commuter rail flyover across the CSX main line may be required at Arlington Street  
                        |                                             | • Requires construction of new track parallel to CSX main line between Arlington Street and Quaker Square |
| North Main Street (W&LE)| • Avoids CSX main line  
                        | • Convenient walking distance to north end of business district  
                        | • Potentially compatible with nearby development  
                        | • Direct access to potential train storage & maintenance facility at existing W&LE site | • Less direct access to University of Akron and south end of business district  
                        |                                             | • Results in 3 different rail stations in downtown Akron  
                        |                                             | • Requires new track connection to Canton                                                      |
| North Howard Street (CVSR)| • Avoids CSX main line  
                        | • Existing station facility (platform, station building, access road & parking)  
                        | • Direct rail access towards Canton                                                             | • Relatively poor access to Akron business district and University of Akron  
                        |                                             | • Requires new track connection to Hudson line (less expensive than Arlington flyover)  
                        |                                             | • Amtrak and commuter rail served by different stations                                    |
3.5.3 Required Track Connections
The Arlington Jct. area, located about a mile north and east of the Akron business district, has a remarkable confluence of railroad lines on multiple levels. Virtually all of the railroads serving Akron converge, cross each other and interconnect at Arlington, as Figure 3.5.3 shows – including the potential NEORail commuter routes to Hudson and Cleveland (Route 4), Kent and Cleveland (Route 5) and Canton (both routes).

Each of the three Akron station locations requires a short rail spur from Arlington Jct. to the station site. Generally, these track connections can be made within existing railroad rights-of-way, but, in some cases, new track alignments will need to be graded and new railroad bridge or viaduct structures constructed to provide the required connections between the various lines.

3.5.4 Akron Storage and Maintenance Facility
The NEORail operating plans for the South Corridor call for the overnight storage and minor maintenance of three to as many as nine commuter rail trainsets at Akron. If the Quaker Square site is selected, the storage/maintenance facility is assumed to be located to the west of downtown Akron, along the CSX alignment. Land is potentially available, but the existing CSX main tracks might have to be relocated to provide access to the commuter rail yard separate from the CSX mainline.

The North Main Street site provides a direct track connection to the existing Wheeling & Lake Erie yard and shop facility on the east side of Akron. Space is potentially available at this location for storing and maintaining the commuter rail equipment.

The North Howard Street site would require the construction of a NEORail storage and maintenance facility, most likely at the Valley Yard directly east of the station, which has been acquired by Akron Metro RTA from CSX Transportation.

3.5.5 Assumptions for Guiding Future Planning
For purposes of analysis in NEORail Phase II, the Quaker Square site is assumed to be the location of the Akron commuter rail station. The plan and cost estimates allow for the construction of commuter rail tracks and station facilities that are operationally independent of the CSX mainline traffic, including a rail flyover from the Hudson branch line at Arlington Street and new dedicated commuter tracks parallel to the CSX main tracks from Arlington Street to Quaker Square.

The station is assumed to consist of a new island platform with two platform tracks (separate from but adjacent to the current Amtrak station), with a new pedestrian bridge accessing both platforms.

It may be possible to reduce the implementation cost of commuter rail in this corridor by selecting one of the alternative station locations, entering into an agreement with CSX Transportation to permit commuter trains to cross the freight mainline at grade, or constructing a more modest station and storage/maintenance facility.
Figure 3.5.3
Rail Connections at Arlington Jct.

Railroad Lines
- Blue: Norfolk Southern
- Green: CSX Transportation
- Orange: Wheeling & Lake Erie Railroad
- Pink: Akron Metro RTA
- Brown: Cuyahoga Valley Scenic Railroad
- Other

Legend:
- CV: Cuyahoga Valley Scenic Railroad
- W&LE: Wheeling & Lake Erie Railroad
- Metro RTA (former PRR): to Hudson
- Metro RTA (former Erie): to Kent
- CSX: to Pittsburgh
- Hill Yard: Upper, Lower
- Metro (former CSX) to Canton
- Scrap Yard
- Valley Yard
- Downtown Akron
- CV

Map details:
- Cuyahoga River Valley
- Norfolk Southern
- CSX Transportation
- W&LE to Mogadore
- CV to Kent
- Metro RTA to Canton
- Metro RTA to Hudson
- Hill Yard Upper, Lower
- CV to Canton

Final Report
December 2001