

Attachment E.1
Initial Estimates of Traffic and Rail Transit Delays from Bridge Openings
in the Lower Passaic River

**to the Comments on behalf of the Lower Passaic River Study Area Site Cooperating Parties
Group on the Proposed Plan for the Lower Eight Miles of the Lower Passaic River Study
Area Portion of the Diamond Alkali Superfund Site**

Initial studies were performed of the potential impacts on roadway and passenger rail network operations due to the opening of roadway and rail bridges over the Lower Passaic River to allow barges to pass. The reviews of potential impacts on vehicular traffic operations show that delays associated with even single events on one bridge can be substantial in terms of vehicles queued on local streets and major roadways, with extensive associated delays for travelers. It appears that the EPA has not yet completed any studies of such impacts, which the analyses summarized in this memo clearly show are necessary.

The preliminary assessment of potential delays on commuter and intercity rail passenger service confirm that any regular opening of major rail bridges carrying Amtrak, NJ TRANSIT and PATH trains would have very serious and extensive impacts on rail network operations, with extensive delays to thousands of passengers. If more frequent rail bridge openings at multiple times of the day were required, the transportation effects on these vital travel links between New Jersey and New York City could result in serious economic impacts. Very detailed studies of these potential impacts are needed in connection with any plan that requires these bridges to be opened on a regular basis.

VEHICULAR TRAFFIC DELAY

An initial assessment of the potential impacts of the opening of selected roadway bridges across the Lower Passaic River to allow barges to pass was recently performed by AECOM.¹ As indicated in that assessment, the three roadway bridges that cross the Lower Passaic River within the area of focus are at Clay Street, Bridge Street and Jackson Street. Continuous traffic volumes at the roadways leading into these bridges in both directions were surveyed from Tuesday, May 6 through Thursday, May 15, 2014.

As a bridge opening to allow a barge to pass was estimated to take approximately 15 minutes from the time the traffic gate closes to when it reopens for vehicular traffic, bridge volumes in both directions were established for representative 15-minute periods in the AM and PM Peak periods and the Midday and Evening off-peak periods on weekdays. During these closure times, vehicle queues will build along the streets that lead to the bridges (e.g., eastbound traffic across the Bridge Street Bridge comes from northbound McCarter Highway and eastbound Bridge Street).

¹ "Review of April 11, 2014 USEPA Focused Feasibility Study for the Lower Eight Miles of the Lower Passaic River Study Area. Traffic Impact Evaluation, Phase 1 Technical Memorandum." Prepared by AECOM (July 17, 2014).

Table 1: Potential Impact per Bridge Opening

	AM Peak (8:00- 8:15 am)	Midday (1:00- 1:15 pm)	PM Peak (6:00- 6:15 pm)	Evening (9:00- 9:15 pm)
Additional Queued Vehicles by Crossing				
Bridge Street (Newark and Harrison)				
Eastbound	120	150	220	130
Westbound	180	100	110	90
Total	300	250	330	220
Clay Street (Newark and East Newark)				
Eastbound	80	90	150	80
Westbound	220	140	230	140
Total	300	230	380	220
Jackson Street (Newark and Harrison)				
Northbound	180	180	210	110
Southbound	190	130	180	90
Total	370	310	390	200
Additional Delay Per Bridge Opening				
Vehicle Hrs. of Delay	240	200	280	160
Passenger Hrs. of Delay	260	220	310	180

As shown in Table 1, depending on the time and location of the bridge opening, these assessments indicated that anywhere from 80 to 230 additional vehicles will accumulate in queues on Harrison Avenue, Bridge Street, McCarter Highway, Passaic Avenue and other streets feeding the bridges. These queues could disrupt traffic flows on other intersected streets (e.g., Market Street), causing further delays. The total increase in queued vehicles at streets leading to all three bridges in both directions due to each passage of a barge would total approximately 600 to 1,100 vehicles, resulting in a total of 160 to 280 vehicle hours of delay and 180 to 310 passenger hours of delay (assuming an average vehicle occupancy of 1.1 persons).

PASSENGER RAIL TRAFFIC DELAY

Bridge openings on the Lower Passaic River due to barge movements would also impact some of the nation's busiest passenger rail lines, with the potential to disrupt all trans-Hudson passenger rail traffic between New Jersey and New York City. The following are the bridges that would be involved:

- **NJ TRANSIT Rail Operations Newark-Harrison (Morristown Line) Bridge**

Located just east of Newark's Broad Street Station, this two-track swing bridge carries a three-track section of the NJ TRANSIT (NJT) Morris & Essex Lines across the Passaic River from the west and east. The bridge serves the following rail services:

- NJT Gladstone Line services to/from Hoboken and to/from Penn Station New York
- NJT Morristown Line services to/from Hoboken and to/from Penn Station New York
- NJT Montclair-Boonton Line services to/from Hoboken and to/from Penn Station New York

Peak hour passenger service on weekdays across the bridge (combined traffic in both directions) is approximately 20 trains per hour. Off-peak passenger service levels are approximately 4 trains per hour. The bridge is also used in off-peak periods (primarily in the evening) for occasional freight movements. There are generally no movements across the bridge between approximately 1:30 and 4:30 a.m.

- **Amtrak Dock Bridge (Amtrak Northeast Corridor, NJ TRANSIT NEC, NJCL, RVL services)**

The Dock Bridge, located immediately east of Newark Penn Station, actually consists of two independent structures – a north structure that accommodates Northeast Corridor (NEC) Tracks 2, 3 and 4, and a south structure that accommodates NEC Track 1. The bridges accommodate the following services:

- Amtrak Northeast Corridor trains (including Acela, Regional, Keystone and Long Distance services)
- NJT Northeast Corridor service to/from Penn Station New York
- NJT Raritan Valley Line service to/from Penn Station New York
- NJT North Jersey Coast Line services to/from Hoboken and to/from Penn Station New York

Peak hour passenger service on weekdays across the two bridges (combined traffic in both directions) is approximately 40 trains per hour, the majority of which are NJT trains. The bridge is not used for freight. Off-peak service levels are approximately 12 trains per hour. The bridge is used continuously day and night, with some service gaps of an hour between approximately 1:30 and 4:30 a.m. (see related PATH traffic constraints below).

- **PATH Dock Bridge (Newark-Journal Square-WTC service)**

A sub-structure of the Amtrak Dock Bridge south structure, the PATH Dock Movable Bridge includes two tracks used for directional running of PATH service between Newark and World Trade Center. Peak hour service on weekdays across the PATH sub-structure of the Amtrak Dock Movable Bridge, which is not used for freight, is approximately 28 trains per hour. Off-peak service levels are approximately 8 trains per hour across the bridge, which is used continuously day and night. During the overnight hours from approximately Midnight to 5:30 a.m., PATH operates a so-called "round the world" service that provides gaps of approximately 35 minutes between trains in each direction using the bridge. However, when the

operations in both directions are combined, the approximate bridge opening gap between trains is 17 minutes.

Summary of Passenger Rail Impacts

During peak weekday periods, approximately 88 trains an hour utilize these three crossings. The PATH and Amtrak Dock moveable bridges, from a bridge opening perspective, function as one bridge, with a total of 68 trains per hour. US Coast Guard regulations² prohibit opening Dock Bridge from 7:20 a.m. to 9:20 a.m. and 4:30 p.m. to 6:50 p.m. However, train volumes on both sides of these periods are very close to peak levels given the tremendous increase in rail demand in recent decades.

Using the same 15-minute opening scenario assumed for the three vehicular bridges and the somewhat lower train volumes in the morning or afternoon “shoulder peak” periods of approximately 52 trains per hour, a 15-minute closure of the PATH and Amtrak Dock bridges would delay approximately 13 trains (PATH, NJT and Amtrak) in crossing the Passaic River. In addition to the approximately 8,000 to 9,000 rail travelers on these trains, the effects of such a stoppage would ripple back through the nation’s busiest intercity (Amtrak) and commuter railroad network. This type of disruption would ripple into New York Penn Station and into Newark Penn Station, affecting the operations of other trains into and out of those stations and delaying many more travelers. Adding the effects of closing the NJT Morristown Line Bridge would add further train and passenger delays. If frequent openings of the Dock Bridge are being proposed, the poor condition of that very important rail crossing and its ability to withstand repeated openings would have to be considered given its critical role in the rail network and the significant effects of any extended outages.

Similar opening of Conrail’s Point-No-Point Bridge farther south on the Lower Passaic River could result in important disruptions to the region’s rail freight network and services. This issue would require careful assessment when considering multiple barge-related openings of that crossing.

² US Coast Guard regulations on openings of moveable bridge across the Passaic River are included in 33 CFR 117.739 - Passaic River.