

## DMMIWG

Memo: DMMIWG  
From: Jim Tripp and Tom Wakeman, Co-Chairs  
Date: September 2, 2003

The next meeting of the DMMIWG is scheduled for the first Thursday of September, September 4, 2003, starting at 9:30 a.m. at Environmental Defense, 17<sup>th</sup> floor, 257 Park Avenue South, Manhattan, between 20<sup>th</sup> and 21<sup>st</sup> Streets.

The agenda for the September 4 meeting is:

1. Green Ports. Bill Nurthen and Joe Monaco. The Port Authority has initiated an Environmental Management System (EMS) that includes several Green Port activities. What is the scope of this program? What are the issues? What is to be measured? What is the schedule for EMS implementation?
2. Jamaica Bay and JFK. Ed Knoesel. What impact does runoff from JFK have on the Bay's habitat? What is the Port Authority doing to minimize runoff and any impact? How does this effort fit into the broader agenda of DEP, DEC, the Corps and the NPS for Jamaica Bay restoration?
3. Updates:
  - a. Harbor dredging projects - Corps
  - b. Arthur Kill erosion control based speed limits - PA
  - c. HARS & RMWG - EPA
  - d. CPIP – Mgmt Committee
4. Future DMMIWG Organization & Meeting Schedule

At the July 10, 2003 meeting we discussed the following:

**1. Multiple agendas for Jamaica Bay restoration.** Presentation by Chris Ward, Commissioner, NYC DEP. Where are we with water quality investments in terms of overall water quality goals for the Harbor? We have spent \$440 billion since 1910, and water quality levels are much improved for dissolved oxygen and coliform. If you look at the long-term investments and benefits per investment, we have seen investment returns fall dramatically. We are meeting 4.8 DO 40% of the time, and 2.3 100% of the time. What are the benefits of spending another \$2 – 2.5 billion under HEP? Local water bodies are a concern with quality of life issues, e.g., odor. Newtown Creek, Gowanus Canal and Paerdegat Basin have important local water quality issues.

The big issue is Jamaica Bay. What is the available information about Jamaica Bay? Where is it at risk? What is the status of studies? It is time for an implementation strategy. DEP has to come up with a nitrogen removal program for Jamaica Bay by 2006. Under the Blue Ribbon study, nitrogen placed low in terms of the ecological deterioration of Jamaica Bay.

Is it appropriate for DEP or whoever to look at an implementation strategy in the short term? There are enough studies and information to act now to stop its ecological deterioration. Is it better to spend dollars in the short-term to stop this ecological

deterioration or to spend dollars on the long-term water quality issues with little payback? Have we reached the stage among the Corps, NPS, DEP, DEC and HEP/DMMIWG where it is time to move into a more aggressive implementation phase? Who should lead this effort? DEP? If not, who? If not now, when?

Paerdegat Basin will cost \$400 million. It will have solved a local water quality problem. It will do little or nothing for the long-term health of Jamaica Bay. The Corps is working closely with DEP on the larger study for the restoration of Jamaica Bay. The feasibility study and DEIS are supposed to be completed by the end of 2003. It has been a long process to look at the major restoration sites. We have a Jamaica Bay marsh island study that we hope to construct under CAP in the fall of 2004.

There is a confluence of implementation strategies that are loosely coordinated but not really directed. There are a variety of priorities, concerns and issues. They can't all be met. Choices will have to be made. DEP does not want to take the lead if it is perceived that its agenda is to fill borrow pits without clear environmental standards. We need to match implementation strategies, priorities and dollars. There are several agendas: 1) the restoration feasibility study with the Corps and DEP; 2) nitrogen removal; and 3) restoration initiatives with DEC, NPS and EPA. However, there is no clear process for making overall priorities with dollars matched to those priorities, i.e., a statement of goals and priorities, the amount of dollars and the body of science. We need to put together a hierarchy of implementation priorities, a process fraught with political risk. There has to be a willingness on everyone's part to do this.

Ida Sanoff asked about JFK deicing practices and fuel plumes from leaking fuel tanks and pipes. Is it possible for DEP to work with the Port Authority? PA environmental engineers have identified two sources of fuel contamination. One system is in place at the bulk fuel farm. We have recovered 1.5 million gallons of fuel from the ground. Treatment has taken place. A retaining wall has been constructed to contain the contamination. For the other farm, a second system has been constructed but has not yet been implemented. Wakeman indicated that he would check with the PA engineers. Flatow added that a big challenge will be to get DEC permits for restoration.

**CPIP – Market Demand and Port Capacity.** Laura Shabe and Rick Gimello introduced the presentation by Halcrow's David Palmer. A major task in putting together the CPIP Plan is to forecast total traffic. An approach is to apply the OECD forecasts as to how countries will develop and what's going where over the world. After 25 years you use a straight line. Then we look at the US and its individual states. We end with a picture of the origin and destination of cargo entering and leaving the US. The next step then is: how will goods get from point A to point B? It is usually the cheapest route. Most cargo moves by road, rail or water. We have looked at the origin and destination of cargo and the cheapest routes. One can compare forecasts with the reality of the last 10 years, then adjust the model and then do the forecast.

We can look at the PA's total base forecast. For 1999, it shows 64.1 million tons of imports and exports, 5.7% of the US total. The forecast for 2020 is a total of 117.7 million tons and then 224.1 million tons by 2060. This is an increase of 250% over the 1999 level. During the same period, US international trade forecast shows an increase of

200% to 3.34 billion tons by 2060. If you leave out liquid bulk fuels, 75% moves by containers. How will shipping lines respond? We have assumed that inland transportation is unconstrained. We also assume that the Panama Canal will remain as is. Generally, the percentage of goods containerized has been very stable over the last 10 years. The volume is also growing more slowly than the total value. We are measuring the number of boxes of containers, not the weight.

We can look at the PA container forecast. It shows a total of 3.015 million TEUs in 1999, 5.954 million TEUs in 2020, 8.974 by 2040 and 12.055 million TEUs by 2060. That assumes that ship sizes stay the same. The average new ship now has a 3000-TEU capacity. An 8000-TEU ship is being launched. In the future, there may be 12,000-TEU ships. The transportation savings are huge. For these larger ships, the beam increases to 185 feet, but the draft remains at 47.5 feet. The size of the ship depends on the shallowest port with a ship typically visiting eight to 10 ports per rotation.

The next challenge is to predict the impact of growing ship size on Port throughput. Halcrow has modeled the deepening of Harbor's navigation channels vs. not deepening them vs. deepening or not deepening other ports. The results show that East coast ports will lose market share since ships from East Asia will be less able to pass through the Panama Canal. With the HNS 50-foot deepening in place, this would allow it to retain its market share vs. other east coast ports. Harbor deepening reduces the overall transport costs and total inland road and rail miles (the model assumes that the transportation system is unconstrained). At 50 feet and other ports' channel depths remain as they currently are, NY Harbor would handle 6.2 million TEU in 2020, 10.4 in 2040 and 15.0 in 2060. If other ports deepen their channels, the respective figures are 5.6, 8.5 and 11.3 million TEUs for 2020, 2040 and 2060.

We then need to assess port capacity. There are a total of 559 docks, wharfs and piers in the Harbor region. Which are worthwhile counting in terms of port capacity? Liquid bulk docks etc. total 135 ; ferry docks/piers total 26. The US Customs counts 32 terminals that handle 22.68 million tons; the PA has authority over 17 with a reported 23.9 million tons of throughput. The 17 terminals carry almost all of the Port's cargo. All 17, except for Global, are owned by the PA. So this is the basis of the assessment. The remaining 4 large general cargo and 11 bulk cargo facilities that handle single commodities are excluded from the analysis.

We then need to look at the existing terminal infrastructure, existing methods of operation, existing labor practices, current improvements and real world practicalities (seasonality, peaking, downtime etc.). We have looked at berth capacity that is a function of wharf length, ship size, the number of berths and cranes, the rate of working and working time. We have assumed 850-foot long ships. We have used a queueing theory to work out the percentage of time that a wharf can be used so that a ship does not have to wait more than one hour. Crane capacity is a function of the actual number of cranes, with new cranes capable of 30 lifts per hour, with an average of 25 lifts per hour, and working time with peaking and non-productive time reducing crane capacity. Halcrow assumes that terminal handling technology current exists.

Yard capacity is a function of available storage area, stacking equipment, ground slot density, stack height and dwell time. Yards take up 70% of the gross area of a terminal. There are different ways of stacking containers and moving them using straddle carriers, rubber tire gantries, reach stackers and empties stackers. The basic parameters of gate capacity are the number of gates, gate processing time and working time with peaking conditions and non-productive time reducing that capacity.

The critical components of terminal capacity are berth and yard capacity. If we look at the seven major terminals (Maher, APM Maersk, PNCT, Howland Hook, Global, Red Hook and ASI PN), their total acreage is 1300. At a total number of 5.04 million lifts per year, lifts per acre per year comes to 3,871. Today, the PA's throughput is 1500 lifts per acre per year (based on a total of 1,945,473 lifts in 2001).

Vehicle handling capacity for five terminals (FAPS, DAS, Toyota, NEAT and BMW) is based on a total of 489 acres. With 933,300 total units per year, the number of units per acre is 1909. 2001 throughput was 603,400. That comes to 1234 units per acre.

The summary of demand vs. capacity shows actual throughput in 2001 of 3.1 million TEUs with an assessed 2005 capacity of 8.6 million, with a forecast demand for 2060 and 11.3 million. For automobiles, assessed 2005 capacity is 930,000 with 200a throughput at 603,000. For general cargo, assessed 2005 capacity is 4.86 million with actual 2001 throughput at 2.24 million.

The conclusions are that the PA will need additional capacity to handle forecast demand for containerized cargo, autos and bulk cargo. Addition capacity can be provided by: improving cargo handling operations, improving existing land allocation and usage, increasing infrastructure facilities such as yard area and berth length. There is a lot of wasted land at the Newark/Elizabeth facilities. There is a lot of businesses that do not need to be near the port. At the moment we do not have to fill to provide adequate terminal capacity overall. Aggregate terminal capacity is greater than forecasted throughput to 2040. But the commercial reality is that the positioning of individual terminals will lead to different results. Nerden added that the PA has a \$340 million redevelopment effort underway that includes express rail. Maher, Maersk and Howland Hook have their own terminal redevelopment efforts that are to be completed by 2005-2006. That is the baseline. CPIP has an inland transportation capacity study underway. Halcrow is looking at the rail side; Gannett Fleming is looking at the roadway side.