# M-NCPPC

# MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

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> MCPB Item # 4-5/19/05

To:

Montgomery County Planning Board

From:

Countywide Planning Division (301/495-4545)

Date:

May 13, 2005

Subject:

Draft Environmental Impact Statement for a Proposed Water Treatment

Residuals Management Process for the Washington Aqueduct.

Mandatory Referral # 05002-DA-1.

## **STAFF RECOMMENDATIONS:**

• Support Alternative E.

- Multiple haul routes should be established and selected on a trip-by-trip basis depending upon the destination to minimize total truck travel. Trucks should only use haul routes in Montgomery County for travel to destinations either in Montgomery County or other Maryland jurisdictions north of Montgomery County.
- Haul Route "C" is not recommended as a suitable route because the portion of Little Falls Parkway incorporated in the haul route has a posted restriction prohibiting commercial vehicle use.
- Either Haul Route "A" or Haul Route "B" would be acceptable for trips traveling into Montgomery County.

• Truck trips should be concentrated during off-peak travel times during weekdays between 9:30 a.m. and 4:00 p.m.

The Planning Board recommendations are to be sent to the U.S. Army Corps of Engineers, Baltimore District prior to 5:00 p.m., June 6, 2005.

#### PART I. BACKGROUND

The purpose of this briefing is to present staff recommendations on the *Draft Environmental Impact Statement for a Proposed Water Treatment Residuals Management Process for the Washington Aqueduct*, April 2005. Readers may refer to the website at http://washingtonaqueduct.nab.usace.army.mil/aqueduct.htm for a full DEIS text.

Please refer to the Executive Summary, attachment # 1, for a synopsis of this proposed project. In brief, the U.S. Army Corps of Engineers is under an order to comply with its National Pollutant Discharge Elimination System (NPDES) permit within the Federal Facilities Compliance Agreement (FFCA) deadlines, for its potable water treatment facility at Dalecarlia. In the past, the Washington Aqueduct was allowed to discharge its water treatment process residuals back into the Potomac River. Their new permit rescinds that practice forcing the residuals to be disposed in a different manner.

#### PART II. ALTERNATIVES

The proposed action is to develop, design and construct a permanent residuals management system to satisfy NPDES requirements within the agreed upon deadline.

The following five alternatives are those that have been carried forward in the DEIS. Refer to attachment # 2 for a project area map.

#### SPECIFIC ALTERNATIVES

Alternative A: Dewatering at northwest Dalecarlia processing site (Montgomery County) and disposal by monofill in D.C.

Alternative B: Dewatering at northwest Dalecarlia processing site and disposal by trucking.

Alternative C: Thickening and piping to Blue Plains advanced wastewater treatment plant.

Alternative D: No Action Alternative. Maintained as a NEPA requirement. This alternative would continue residuals discharge to Potomac River, a de facto violation of the new NPDES permit.

Alternative E: Dewatering at east Dalecarlia processing site (in D.C.) and disposal by trucking. Following processing, the dewatered residuals would be contract hauled to a permitted offsite disposal facility. Up to 20 truck trips per weekday of dewatered residuals are expected to be transported from the processing site on average. Higher numbers of truck trips, as defined in Volume 4- Engineering Feasibility Study Compendium-, would be required during peak residuals production periods. Some haul routes are through Montgomery County. Table 2-1 provides the basis for residuals estimates.

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	Daily G	enerated		Truck Tri	ips/Day <sup>b</sup>	
	Vol	ume Yards) <sup>a</sup>	22 Cubic Yards/ Truck		11 Cubic Yards/ Truck	
Residuals	Current Average	Design Year Average	Current Average	Design Year Average	Current Average	Design Year Average
Water Treatment	94	120	7	8	13	16
Forebay	22	28	2	2	3	4

#### SELECTION OF THE PREFERRED ALTERNATIVE

Each of the alternatives evaluated (with the exception of the No Action Alternative) necessitate developing infrastructure in an urban setting, characterized by important natural and man-made resources. All five of the alternatives (including the No Action Alternative) evaluated to meet this federally mandated action will carry some degree of impact. Of particular concern is the ability of an alternative to meet the project's purpose and need, while minimizing impacts to the communities surrounding the potential operations, no matter where they be located. Particular emphasis was naturally placed in evaluating impacts near the Dalecarlia Reservoir, Dalecarlia Water Treatment

<sup>&</sup>lt;sup>a</sup> Based on 7 days per week production.
<sup>b</sup> Based on hauling to a final disposal site 5 days per week.

Plant (WTP), Georgetown Reservoir, and Blue Plains Advanced Wastewater Treatment Plant (AWWTP) facilities, as well as intermediate conveyance areas potentially impacted by Alternative C, the pipeline alternative. The preferred alternative for the DEIS should be the alternative that best meets the objectives of the project, as stated in the Notice of Intent (published in the *Federal Register* on January 12, 2004).

The following sources of information were considered by Washington Aqueduct while selecting the proposed action from the five possible residuals alternatives:

- Information on the potential impacts revealed by the technical evaluation (detailed in Sections 3 and 4 of the DEIS),
- Ideas and concerns raised by the public during five open public meetings or submitted directly to Washington Aqueduct staff, and
- Consultations with regulatory authorities at the federal, state, and local levels (detailed in Section 4 of the DEIS).

Both Alternatives A (Dewatering and Disposal by Monofill) and C (Thickening and Piping to Blue Plains AWWTP) have beneficial elements that contribute to the objectives of the Clean Water Act and NEPA, by enabling the Washington Aqueduct to stop discharging residuals into the Potomac River, and prevent residuals-bearing trucks from traveling on local community roads nearest to the Dalecarlia WTP facilities. However, implementation of Alternatives A and C would not allow Washington Aqueduct to comply with the Federal Facility Compliance Agreement schedule issued by the U.S. Environmental Protection Agency (USEPA), and they both would have significant long-term adverse impacts on various natural and community resources.

More specifically, during the course of this NEPA process, it has been learned that the development of Alternative A is not consistent with the schedule for investigations of this site by the U.S. Army Corps of Engineers for its ongoing remediation efforts for the American University Experimental Station (AUES), Formerly Used Defense Site (FUDS) project. Further, Alternative C, like the other piping alternatives examined during the screening process, is not consistent with the District of Columbia Water and Sewer Authority's (DC WASA's) long-term plans for its Blue Plains AWWTP and is more than double the cost of each of the other alternatives. Both alternatives would have unacceptably large potential visual, cultural, forest habitat, and perhaps recreational, impacts.

Alternative D, the no-action alternative, cannot be selected by the Washington Aqueduct because it would place it in violation of the Federal Clean Water Act, the terms

of their NPDES permit, and the FFCA issued by USEPA. Throughout the DEIS preparation process, USEPA has confirmed that they would be unwilling to modify the NPDES permit to allow the Washington Aqueduct to return to a residuals disposal practice consistent with the No Action alternative, despite the Washington Aqueduct's consideration of it and a number of similar river discharge alternatives during this process.

The Washington Aqueduct selected between Alternatives B and E for the proposed action. Both alternatives can be implemented within the required timeframe with a much greater degree of certainty than is possible for either Alternative A or C. The costs of these alternatives are consistent with the project budget, which is wholly dependent for financial support from the three local wholesale water customers and the rate-paying public. Both alternatives, as did the other action ones, feature residuals processing with trucking, albeit to off-site disposal locations. They differ in the location of the processing facilities and the location in which the trucks enter the local roadways. Alternative B would construct the residuals processing facility at the northwest Dalecarlia WTP location in Montgomery County and the trucks would enter the local roadways at the existing facility entrance to MacArthur Boulevard. Alternative E would construct the residuals processing facilities at the east Dalecarlia WTP location in D.C. and trucks would enter the local roadways at the existing intersection of Little Falls Road and Dalecarlia Parkway. These differences form the basis of the tradeoffs between each alternative.

Alternatives B and E present equally feasible options, from an engineering perspective, for a residuals management program that eliminates residuals discharge to the Potomac River. Each would enable the Aqueduct to meet the conditions of the recent Permit No. DC 0000019 within the schedule put forth in its Federal Facilities Compliance Agreement with the USEPA. Alternative E offers advantages in the following areas:

- Less visual impact to surrounding residential neighbors
- Site topography allows impacts to be minimized
- Less truck noise attributable to residuals trucks traveling on Loughboro Road
- Greater distance between surrounding neighborhoods and proposed residuals processing facilities
- Fewer apparent soils issues

Therefore, Alternative E—Dewatering at east Dalecarlia processing site and disposal by trucking is recommended as the Proposed Action for the DEIS.

# PART III. PROPOSED RESIDUALS HAUL ROUTES

The Washington Aqueduct Residuals Management Project includes the dredging of the Dalecarlia and Georgetown Reservoirs, and the subsequent haulage of the residuals

to various sites, which are primarily accessible via the Capital Beltway (I-495). The proposed haulage operations would occur generally between 6:00 a.m. and 4:00 p.m., and be concentrated between 9:00 a.m. and 3:00 p.m., on weekdays only. The haulage activity would have a minimal impact on the morning peak period and would have no impact on the afternoon peak period, by restricting hauling to this timeframe.

All hauling routes analyzed, with the exception of southeastern route H, were considered previously by the Washington Aqueduct for dredging the Dalecarlia Reservoir. Prior to September 11, 2003, the southern routes were feasible for trucking residuals through the District of Columbia. New security measures adopted after September 11, 2003 have limited the roadways where trucks may travel making routes F and G infeasible. In response, a new haul route has been proposed that directs truck traffic from the Dalecarlia WTP to the south, ultimately connecting with I-395. This route has been designated Route H.

Eight potential haul routes (A to H), as illustrated in attachment # 3, have been evaluated within the DEIS. Five of those routes connect Dalecarlia to the Capital Beltway. The remaining three routes connect Dalecarlia to the Southeast/Southwest Freeway. The eight routes are as follows:

- Route A To the north via MacArthur Boulevard—Loughboro Road—Dalecarlia Parkway—Western Avenue—Wisconsin Avenue (MD 355)—Capital Beltway (I-495).
- Route B To the northwest via MacArthur Boulevard—Loughboro Road—Dalecarlia Parkway—Western Avenue—River Road (MD 190)—Capital Beltway (I-495).
- Route C To the northwest via MacArthur Boulevard—Loughboro Road—Dalecarlia Parkway—Massachusetts Avenue (MD 396)—Little Falls Parkway—River Road (MD 190)—Capital Beltway (I-495).
- Route D To the west via MacArthur Boulevard—Arizona Avenue—Canal Road—Chain Bridge Road (VA 123)—Dolley Madison Boulevard (VA 123) Dulles Access/Toll Road Capital Beltway (I-495).
- Route E To the west via MacArthur Boulevard Arizona Avenue Canal Road Chain Bridge Road (VA 123) Georgetown Pike (VA 193) Capital Beltway (I-495).
- Route F- To the southeast via MacArthur Boulevard-Loughboro Road-Dalecarlia Parkway-Massachusetts Avenue-23rd Street-Constitution Avenue-9th Street (Tunnel)-Southwest/Southeast Freeway (I-395).

- Route G-To the southeast via MacArthur Boulevard-Canal Road-Whitehurst Freeway-23rd Street-Constitution Avenue-9th Street (Tunnel)-Southwest/Southeast Freeway (I-395).
- Route H- To the southeast via MacArthur Boulevard-Loughboro Road-Dalecarlia Parkway-Massachusetts Avenue-Mount Vernon Square-New York Avenue-Southwest/Southeast Freeway (I-395) (In reverse direction, Southwest/Southeast Freeway (I-395)-2nd NW-Massachusetts Avenue-7th Street-Mount Vernon Square-Massachusetts Avenue-Dalecarlia Parkway-Loughboro Road-MacArthur Boulevard.

The DEIS evaluated all potential haul routes based on their functional and service characteristics. Key criteria included peak versus off-peak directional patterns, ADT/Lane Configuration and Level-of-Service relationships, vehicle classification characteristics, travel time - distance relationships, capacity/operational constraints, safety deficiencies and impacts on "sensitive" land uses.

A factor complicating evaluation of the haul routes is not knowing where the residuals ultimate destination or destinations will be located. Only routes passing through Montgomery County will be commented upon by staff.

Three haul routes, A, B and C pass through Montgomery County. Route A passes through Friendship Heights and Bethesda along Wisconsin Avenue, both very heavily traffic impacted areas. Route B misses Friendship Heights by turning along Western Avenue at River Road. Route C utilizes Little Falls Parkway, a major constraint.

The eight routes can be characterized in three groups, organized geographically as follows:

- Routes A, B, and C extend in a northwesterly direction toward the Capital Beltway in Montgomery County
- Routes D and E extend in a westerly direction toward the Capital Beltway in Fairfax County, Virginia
- Routes F, G, and H extend in a southeasterly direction toward the Southeast/Southwest Freeway in Washington, DC.

Each of the routes require travel on six to eight miles of local arterial roadway, so no one route or set of routes is clearly advantageous for all possible destinations. Staff finds that at least three haul routes should be established with one route selected from each of the three geographic groups described above. For each trip, the haul route chosen should be one that minimizes total travel distance to the destination. For destinations in Montgomery County, or Maryland jurisdictions north of Montgomery County, Haul Routes A and B would be suitable.

Staff finds that Haul Route C should not be recommended as a suitable route because it incorporates a portion of Little Falls Parkway between Massachusetts Avenue (MD 396) and River Road (MD 190) on which commercial vehicles are prohibited.

In Montgomery County, Haul Routes A and B consist of those portions of Wisconsin Avenue (MD 355) and River Road (MD 190), respectively, between the Capital Beltway and the District of Columbia. Staff finds that Haul Routes A and B are very similar in sharing the following characteristics:

- Approximately four miles in length between the Capital Beltway and the Washington DC boundary
- Classified as multilane, divided, Major Highways in the County's Master Plan of Highways
- No prohibitions on truck traffic
- Carry approximately 60,000 vehicles per day in the vicinity of the Capital Beltway
- Congestion levels prompted the Planning Board to seek initiation of State Highway Administration Development and Evaluation studies based on the July 2004 Annual Development Approval and Congestion Report

The differences between Wisconsin Avenue and River Road are primarily related to adjacent land uses, which have sensitivity to truck traffic for different reasons. Wisconsin Avenue serves the pedestrian-oriented central business districts of Friendship Heights and Bethesda. Based in part on the pedestrian activity, posted speed limits range from 25 MPH to 35 MPH. River Road serves lower density communities in the Bethesda-Chevy Chase planning area and is generally lined with residential and institutional uses, excepting the Westbard Sector Plan area. Posted speed limits range from 35 MPH to 45 MPH.

Staff finds that neither the pedestrian-oriented developments along Wisconsin Avenue nor the low-density residential communities along River Road to be clearly superior or inferior in determining the appropriateness of a haul route. Both routes carry in excess of 2,000 trucks per day near the Capital Beltway, so the effect of truck traffic anticipated by the proposed action (up to 40 vehicles per day on all haul routes combined) is not expected to be observable on either route. Staff therefore finds that either Haul Route A (Wisconsin Avenue) or Haul Route B (River Road) would be an appropriate designation.

Staff does not concur with the DEIS finding that Wisconsin Avenue and River Road operate at acceptable levels of service based on M-NCPPC standards. As described above, substandard congestion levels exist during peak periods along both candidate

routes as identified in the July 2004 Annual Development and Congestion Report. Staff therefore recommends that the truck trips be scheduled to occur after the end of the morning peak period and before the beginning of the evening peak period. Based on the peak period definitions in the Planning Board's Local Area Transportation Review Guidelines, the truck travel should be scheduled to occur between 9:30 a.m. and 4:00 p.m.

Full Transportation Planning staff comments are in attachment # 4.

#### PART IV. COST

The potential cost to the customers represented by the proposed alternatives takes into consideration both initial capital costs and long-term operational and maintenance costs.

#### **COST SIGNIFICANCE CRITERIA**

No Impact

An alternative has no impact on cost if its capital cost (in 2004 dollars) is below the \$50,000,000.00 capital budget allocation for the residuals project.

#### No Significant Impact

An alternative has no significant impact on cost if its capital cost (in 2004 dollars) is above the \$50,000,000.00 capital budget allocation for the project but below an amount equal to 30 percent over the budget allocation, or \$65,000,000.00.

#### **Significant Impact**

An alternative has a significant impact on cost if its capital cost (in 2004 dollars) is above \$65,000,000.00.

### IMPACT EVALUATION BY ALTERNATIVE AND OPTION

For this resource, impacts are described by alternative, rather than by both treatment facility and alternative. For each alternative, the initial capital cost and the estimated annual costs are used to calculate the present worth, or present value of the project, using a 20-year evaluation period. It is assumed that present worth costs have a directly proportional impact on the rates charged by the Washington Aqueduct's wholesale customers. For this reason, present worth costs are useful for comparing and ranking the alternatives from a life cycle cost perspective. Specific rate impacts for each alternative have not been prepared for the DEIS. Cost serves as only one of the decision variables used to select the preferred alternative.

Table 4-6 presents a summary of the construction costs for the four alternatives (excluding Alternative D-No Action Alternative) that are evaluated in detail in this DEIS. These figures are prepared at an order of magnitude level. Costs for sedimentation and residuals collection options are also summarized in Table 4-8. As was discussed in Section 4 of the Engineering Feasibility Study Compendium, previous cost estimates by Whitman Requardt and Associates for facilities such as residuals conveyance through the Georgetown Conduit, thickening, and dewatering were updated for inflation and used as the basis for this estimate. New construction cost estimates were developed for other facilities, such as the modifications to the sedimentation basins and the residuals collection equipment for the Georgetown Reservoir and the Forebay. For Alternative C-Thickening and Piping to Blue Plains AWWTP, it was assumed that a dewatering building, equivalent in cost to the one proposed for the Dalecarlia WTP, would need to be constructed at Blue Plains AWWTP. The cost for the monofill was based on the cost for a monofill of similar size, constructed in Northern Virginia in the mid-1990s for lime residuals. Actual bid costs were used as the basis for the estimate and were updated for inflation.

Based on the construction costs listed in Table 4-7, Alternative A would have no significant impact on cost because its cost is between \$50,000,000.00 and \$65,000,000.00. Alternatives B and E would have no impact on cost because their costs are each below \$50,000,000.00. Alternative C has significant impact on cost because its cost is well above \$65,000,000.00 and between 2.5 and 3.0 times the cost of the other three alternatives.

Table 4-7 presents preliminary present worth costs for each of the four alternatives evaluated in detail in the DEIS. Each alternative assumes that the existing Dalecarlia sedimentation basins will be retrofitted with residuals collection equipment and that new dredging equipment will be installed in the Georgetown Reservoir to collect residuals, along with a thickening and dewatering facility. The present worth cost was calculated for a 20-year project life at a discount factor (interest rate) of 3 percent.

Table 4-8 is a summary of the assumptions used to create the annual operations and maintenance (O&M) costs used in the evaluation. At this preliminary level of detail, the general conclusion is that Alternative A—Dewatering at Northwest Dalecarlia Processing Site and Disposal by Monofill has the lowest present worth cost. Onsite processing with hauling of dewatered residuals to an offsite location (Alternatives B and E) has the second lowest present worth cost, Alternative C—Thickening and Piping to Blue Plains AWWTP has the highest present worth cost.

The costs presented in this DEIS are preliminary. It is important to note that cost is only one of the factors considered in choosing the recommended alternative for

implementation. This DEIS evaluates other factors specifically pertaining to environmental and other impacts that will be used by Washington Aqueduct to choose the recommended alternative for implementation.

TABLE 4-6
Order\_of\_Marmitude Construction Cost Summary for the Selected Alternatives

Cost Item	Alternative A Dewatering at Northwest Dalecarlia Processing Site and Disposal by Monofill	Alternatives B and E Dewatering at Northwest or East Dalecarlia Processing Site and Disposal by Trucking	Alternative C Thickening and Piping to Blue Plains AWWTP
Retrofit of Existing Basins with Collection Equipment	\$14,200,000	\$14,200,000	\$14,200,000
Dredging System at Georgetown	\$2,400,000	\$2,400,000	\$2,400,00 <b>0</b>
Subtotal—Sedimentation and Residuals Collection	\$16,600,000	\$16,600,00C	\$16,600,000
Gravity Thickeners and Thickened Residuals Pump Station	\$9,700,000	\$9,700,000	\$9,700,00
Dewatering Building	\$19,700,000	\$19,700,000	\$19,700,000
Miscellaneous Support Facilities	\$1,600,000	\$1,600,000	\$1,600,000
Subtotal—Collection and Processing Facilities	\$47,600, <b>00</b> 0	\$47,600,000	\$47,600,000
Dalecariia Monofill	\$6,700,000		
Thickened Residuals Pump Station and Pipeline		· ·	\$95,000, <b>00<i>0</i></b>
Total Construction Cost (\$2004)	\$54,300,000	\$47,600,000	\$142,600,000
Construction Cost Escalated to Mid-Point of Construction (July 2008)	\$62,900,000	\$55,100,000	\$165,100,000

TABLE 4-7 Not Present Value for the Selected Alternatives

		Alternatives B and E	
	Alternative A		Alternative C
Residuals Process	Dewatering at Northwest Dalecarlia Processing Site and Disposal by Monofill	Dewatering at Northwest or East Dalecarlia WTP Location and Disposal by Trucking	Thickening and Piping to Blue Plains AWWTP
Capital Costs			
Collection and Processing	\$47,600,000	\$47,600,000	\$47,600,000
Additional Facilities	\$6,700,000	\$0	\$95,000,000
Total Capital Cost (\$2005)	\$54,300,000	\$47,600,000	\$142,600,000
Annual O&M Costs			
Labor (Thickening and Dewatering)	\$374,000	\$374,000	\$374,000
Labor (Monofill Operation)	\$69,000	\$0	\$0
Chemicals (Thickening and Dewatering)	\$238,000	\$238,000	\$238,000
Power	\$117,000	\$117,000	\$192,000
Other (Monofill-Specific Costs)	\$79,000	\$0	\$0
Other (Contract Hauling)	\$0	\$1,194,000	\$1,194,000
Total (Annual O&M Costs)	\$877,000	\$1,923,000	\$1,998,000
Present Worth Costs			
Present Worth of Annual Costs	\$13,100,000	\$28,600,000	\$29,700,000
Salvage Value	\$0	\$0	\$0
Net Present Value	\$67,400,000	\$76,200,000	\$172,300,000

Category	Assumptions	
Residuals Production		
Production	32 dry tons/day @ 30% dry solids; 109 wet tons/day	
Average Operating Period	16 hours/day; 5 days/week; 52 weeks/year	
Chemicals		
Polymer Use	8 to 10 Lbs. active material per ton of dry solids	
Polymer Cost	\$2.00 per pound of active material	
Power		
Electrical Power Costs	\$0.045 to \$0.070 per kWh (\$0.06/kWh was used for the evaluation)	
Labor Costs		
Burdened Operations Labor Costs	\$33.00 per hour	
Burdened Managerial Labor Costs	\$47.00 per hour	
Managerial to Operations Ratio	1 to 6 (for thickening and dewatering only)	
Thickening and Dewatering Labor	2 people; 16 hours/day	
Landfill Labor	1 person; 40 hours/week	
Contract Hauling		
Contract Hauling	\$30.00 per wet ton	

#### Other Assumptions:

Present Worth Period

Discount Rate

Salvage Value

**Net Present Value Calculations** 

Maintenance costs for equipment and facilities are not included in the evaluation.

20 years

None

3%

Annual costs for the monofil and costs for contract hauling are based on discussions with the Upper Occoquan Sewage Authority (Centreville, VA).

Costs for contract having will depend on the competitive environment and having distances.

Capital costs are not escalated to the mid-point of construction.

5. Cost calculations for assume that the capital and annual costs to thicken at the Dalecarlia WTP and dewater at Blue Plains are the same as an all-Dalecartia WTP operation.

# PART V. NEXT STEPS AND SCHEDULE

The Planning Board is expected to select its recommendations and forward them to the Washington Aqueduct no later than 5:00 p.m., June 6, 2005.

#### Attachments:

- #1 Executive Summary from DEIS
- #2 Project Area Map (In color, Planning Board only)
- #3 Map of Potential Truck Haul Routes (In color, Planning Board only)
- #4-May 11, 2005 Transportation Planning Memorandum
- #5 CD for Planning Board Packet Only

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