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DRIVE RESULTS

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June 7, 2011

Tony Plante, Town Manager
Town of Windham
8 School Road
Windham, ME 04062

Re: Windham Sewer – 302 Corridor Schematic Design and Project Cost Estimate

Dear Mr. Plante:

We have completed the refinements of the 302 Corridor Schematic Design and Project Cost Estimate according to our contract for professional services dated October 8, 2010. Specifically, this scope of work focused on a subset of the Phase 1 Area, the spine of the collection and transport system hereinafter identified as the "302 Corridor". The goal of this effort is to develop a higher level of accuracy on the cost estimate for this corridor, which represents more than 40-percent of the overall project cost outlined in the 2011 Wastewater Facilities Plan. The 302 Corridor is described as: Route 302 from Raymond town line south to Nash Road; plus Route 35 from the west end of the Phase 1 area across Route 302, east on Route 115 to Sandbar Road; plus Route 202 from the southwest end of the Phase 1 area, around the rotary and to the northeast end of the Route 202/Phase 1 area (near John Deere Rd/Hall Implement); and Route 302 from Nash Road down through Westbrook to the East Bridge Street intersection.

Project Base Plan Development

We subcontracted survey services to Bradstreet Consultants, Inc. to obtain the topographical survey. This survey provides the information necessary to complete schematic design of the system layout, but is not adequate for detailed design. Bradstreet utilized aerial photography to develop the roadway profile in Maine State Plane coordinate system. The total linear distance of the survey is approximately 20 miles. We developed the Existing Conditions Roadway Plan and Profile Sheets of the 302 Corridor, at a scale of 1" = 100' horizontal and 1" = 10' vertical (half size 11"x17" paper is 1"=200' horizontal and 1" = 20' vertical). In developing base plans for completing our design effort, we included 2006 aerial orthophotographs and the Town's GIS data as a background images to the Plans; we are confident these overlays will better enable the Town to understand the Plans. We were not contracted to complete a comprehensive land or boundary survey, or an inventory of existing utility infrastructure as they are not necessary to complete this schematic design, however a more comprehensive survey would need to be completed to perform detailed design.

Upon completion of project base plans, Councilor Peter Busque coordinated a meeting with local site contractors on Thursday February 10, 2011; we met at RJ Grondin's office to gain an understanding of contractor experiences of the extent of bedrock we should anticipate for developing our design and project cost estimate within the 302 Corridor. In attendance was Tom Bartell (Windham Economic Development Office), Peter Busque (Windham Town Council), Dan Shaw (Shaw Bros), Tom Shaw (Gorham Sand and Gravel), Ken Grondin (RJ Grondin), Mike White (White Bros.), Shawn McGoldrick (McGoldrick Bros Blasting), Tim Tandberg (CR Tandberg), Jason Elder (ML Rogers), and Mark Verrill (V&M Construction); each having completed work along the 302 Corridor. This task helped to identify areas where there is a likelihood that bedrock may be encountered during construction; this data was used to increase the accuracy of the cost estimate. The results of this data collection are depicted in the profile view on the drawings, as shaded areas; we have also developed a summary table and enclosed a copy with this letter report.

We communicated with the Portland Water District (PWD), Maine Department of Transportation (MDOT), and Windham Public Works to obtain roadway and utility plans within the 302 Corridor; we also reached out to the City of Westbrook. PWD provided data indicating the presence of bedrock in the location of water pipe. The PWD data does not cover the entire project area; however it correlates well with the data provided by the contractors. MDOT provided road plans for the majority of the project area and similarly, where these plans show road reconstruction the presence of bedrock correlates well with the data provided by the contractors. We have retained electronic copies of these plans; however, most are outdated and will not be useful for additional design purposes.

Data Analysis and Recommendations

The 302 Corridor was divided into sections and for each we made a determination on the existence (or lack) of bedrock, as a percentage of total distance. The categories are: zero (no) bedrock present, bedrock present for 20% of the distance in the area identified, and in the same manner 50%, 60%, 80%, and 100%. Within the shaded areas depicted in the profile view of the plans, we noted the percentage of bedrock existence. We supplemented the profile view bedrock notation with information from PWD in the plan view. Based on the information we obtained at the meeting with the contractors, PWD, and MaineDOT, we see no major gaps in our understanding of the bedrock in the project area. This data is adequate to improve the accuracy of the cost estimate, however it is not adequate for design and bidding purposes.

We do not recommend additional bedrock data collection at this time. We do recommend the Town complete a comprehensive bedrock probing program as it moves forward with design. That program would be intended to verify the existence and depth of bedrock, to provide more accurate information for the design and bidding. We recommend a boring program at 100-foot intervals where bedrock is anticipated to be present and at 300-foot intervals in other areas. Where bedrock is encountered in an area not anticipated to be present, we recommend performing an additional probe at a 10 foot offset. Furthermore, we recommend collecting groundwater levels at each probe, and soil samples and rock quality be taken at approximately every mile to provide the characteristics of soil and rock.

Schematic Design

Utilizing the base plans, we completed the layout of the collection system and pump stations within the 302 Corridor; the alignment and profile design are in general accordance with *TR-16 Guides for the Design of Wastewater Treatment Works,* published by NEIWPCC. For the purpose of the schematic design, we set the sewers along the centerline of the road. We utilized the flow estimates from the 2011 Wastewater Facilities Plan to size the collection and transport sewers. Sanitary sewers, force mains, and wet well structures have a long life (50+ years) and were sized to provide the flexibility within the system to expand in the future (including the Phase 1 and Phase 2 service areas at "maximum" future build-out). Pumps have a shorter life (~20 years) and we sized these according to the flow anticipated within the 302 Corridor. We used the bedrock data to guide the design of the system and maximize the extents of gravity portions of the system and minimize pumping. We developed schematic sanitary sewer and forcemain Plan and Profile Sheets for the entire 302 Corridor area, and those sheets are enclosed with this letter report.

Based on joint meetings with the City of Westbrook during development of the Facilities Plan, and in an effort to optimize the design of the wastewater transport system, we completed a cursory review of the *Route 302 Smart Growth Project, Sanitary Sewer Feasibility Evaluation* prepared for the City of Westbrook in 2003 by Wright-Pierce. From that, we understand Westbrook has evaluated the provision to expand wastewater service north of Prides Corner. We developed the schematic design to maximize the benefit of pumping while providing gravity transport (and collection opportunity) from Willow Drive in Westbrook to the East Bridge Pump Station.

Cost Estimating

Utilizing the schematic design, we prepared a quantity takeoff and have broken out items consistent with traditional publicly advertised/bid sewer collection system projects. The collection and transport system takeoff is detailed within Table 1; we utilized our internal database for sewer collection system projects, as well as MDOT data, and solicited feedback from a local contractor to confirm Unit Costs.

Table 1: Collection and Transport System Costs for 302 Corridor

Item	Quantity	Unit	Unit Cost (1)	Total Cost
Relocation of Utilities Allowance	1,000	LF	$110	$110,000
Contaminated Soils Allowance	1	Lump Sum	$20,000	$20,000
Bridge Crossing Allowance	1	Lump Sum	$45,000	$45,000
Test Pits	20	EA	$770	$15,000
Testing Allowance	20	EA	$1,650	$33,000
Forcemain 6" PVC	9,073	LF	$83	$756,000
Forcemain 8" PVC	2,202	LF	$86	$190,000
Forcemain 10" PVC	1,261	LF	$89	$113,000
Forcemain 15" PVC	34,944	LF	$98	$3,434,000
Sanitary Sewer 10" PVC	1,755	LF	$111	$196,000
Sanitary Sewer 12" PVC	16,177	LF	$114	$1,838,000
Sanitary Sewer 15" PVC	3,664	LF	$117	$429,000
Sanitary Sewer 21" PVC	5,205	LF	$138	$720,000
Sanitary Sewer 27" PVC	21,302	LF	$167	$3,559,000
Service Connections	477	EA	$3,300	$1,574,000
Sanitary Sewer Manholes (4-feet diameter)	155	EA	$4,950	$767,000
Sanitary Sewer Manholes (6-feet diameter)	1	EA	$7,700	$8,000
Air Release Manhole (6-feet Diameter)	11	EA	$11,550	$127,000
Clean Out Manhole (6-feet Diameter)	34	EA	$9,350	$318,000
Pump Station (4 inch discharge)	1	EA	$365,000	$365,000
Pump Station (6 inch discharge)	2	EA	$420,000	$840,000
Pump Station (8 inch discharge)	1	EA	$640,000	$640,000
Pump Station (10 inch discharge)	1	EA	$750,000	$750,000
Pump Station (15 inch discharge)	1	EA	$860,000	$860,000
Bedrock (2)	28,424	CY	$69	$1,970,000
			SUBTOTAL:	***$19,700,000***
General Conditions and Administration (15%) (3)	1	Lump Sum	$2,500,000	$2,500,000
			TOTAL:	***$22,200,000***

(1) Unit costs include labor, materials, trenching/excavation, backfill, traffic control, environmental protection, restoration (paving/road repair), overhead, and profit.

(2) Bedrock was estimated based on cubic yards and includes pre-blast survey, blasting, and removal of rock, and select backfill. To correlate the bedrock cost with the drawings, use $51 per linear foot and multiply by the percentage identified (e.g. for bedrock at 60%, $51 x 60% = $31 per LF).

(3) General Conditions and Administration includes construction supervision, project management, temporary facilities/utilities, safety and security, bonding, and insurance, among other items.

As a next step in identifying the total project cost, we developed a Total Project Cost Opinion, presented as Table 2. This Project Cost Opinion includes other necessary project components, like the Westbrook-Gorham Regional Water Pollution Control Facility (WGRWPCF) upgrades identified during the Wastewater Facilities Plan. The opinion also includes consideration for inter-municipal cost sharing, legal and land acquisition, construction contingency, and projected soft costs (engineering and permitting). As a reference point, Table 2 also includes cost estimate values taken from the Wastewater Facilities Plan.

With respect to the East Bridge Pump Station and WGRWPCF upgrades, we were not tasked with, nor have we completed any work to evaluate or further refine cost estimates, and have carried forward the Wastewater Facilities Plan estimates. For legal and land acquisition costs, we reviewed the locations of proposed pump stations with the Town to understand where land acquisition may or may not be required. Pump Station #2 was identified as having potential to reasonably locate on Town property, at the Fire Station. Similarly, Pump Station #3 has potential to be located on Windham Economic Development Corporation property; and Pump Station #6 serving the RSU#14 could reasonably be located at the existing treatment facility. We have included in the Total Project Cost Opinion an allowance of $50,000 for each of the other four pump stations for costs associated with easements and/or land acquisition, as well as legal and survey services. As referred to previously, Table 2 also reflects our preliminary opinion relative to cost sharing of joint systems; the project includes sewers that will be for the mutual benefit of Windham and City of Westbrook; specifically, the 5,525 linear feet of gravity sewers in the Prides Corner area, as well as the necessary pump station upgrades to accommodate the additional flow. Table 2 also includes a recommended construction contingency set at 15% of the total construction cost; this contingency is the real cost of items that will be necessary to the project, but which are not specifically identified at this stage due to lack of detailed design. We have also included an estimate for design engineering, permitting, and construction services, established at 20% of construction cost.

Table 2: Total Project Cost Opinion for 302 Corridor

Item	Cost	*Wastewater Facilities Plan Cost Estimate* (7)
302 Corridor Collection System and Transport	$22,200,000	*$29,000,000*
Phase 1 Collection System and Transport	$0 (1)	*$8,600,000*
Westbrook share of jointly constructed sanitary sewer (in Westbrook) (2)	($550,000)	*($217,000)*
Increase capacity of existing gravity sewer in Westbrook (3)	$740,000	*$390,000*
East Bridge pump station capacity upgrades (4)	$600,000	*$600,000*
Westbrook share of East Bridge pump station capacity upgrades (5)	($300,000)	*($300,000)*
WGRWPCF Upgrade (6)	$4,600,000	*$4,600,000*
Legal Fees/Land Acquisition Allowance	$200,000	*$0*
Subtotal Construction Cost	$27,400,000	*$42,700,000*
Construction Contingency (15%)	$4,100,000	*$9,700,000*
Design Engineering, Permitting, and Construction Engineering (20%)	$6,300,000	*$9,700,000*
PRESENT VALUE PROJECT COST	**$37,800,000**	***$67,800,000***
AACE & Basic Cost Engineering, Low (-25%)	$28,400,000	*(-30%) $47,500,000*
AACE & Basic Cost Engineering, High (+30%)	$49,100,000	*(+50%) $102,000,000*

(1) 302 Corridor service area does not include collection system within the larger Phase 1 area.
(2) Total of 5,525 LF in Westbrook, from Station 36+89 to 92+14; total cost included in the 302 Corridor Collection System and Transport Cost item.
(3) Total of 3,700 LF of pipe replacement from Station 0+00 to 37+00; assumes zero cost-sharing.
(4) See January 2011 Wastewater Facilities Plan for basis of cost.
(5) Assumes Westbrook 50/50 cost-sharing contribution.
(6) See January 2011 Wastewater Facilities Plan for basis of cost.
(7) This column represents itemized costs described in January 2011 Wastewater Facilities Plan.

As discussed during the presentation of the Wastewater Facilities Plan, *AACE* and *Basic Cost Engineering* by Humphreys & Wellman provide guidance for establishing cost estimate accuracies, relative to the equivalent level of engineering/design; the accuracy of the Wastewater Facilities Plan estimate was minus 30% to plus 50% as defined as "order of magnitude". With the work effort completed here and at this stage of the project, we consider a reasonable range to be equal to minus 25% to plus 30%. In part, this range takes into account the fact that some cost components of the project as described herein, have not been advanced to the same level of schematic design.

Escalation

The costs presented in this report will increase over time as a result of inflation and market fluctuations. Typical escalation of project costs gives consideration to cost indices tracked by *Engineering News Record* (ENR) or Civil Works Construction Cost Index System (CWCCIS). ENR is backward looking and has identified an average annual increase in construction cost of 3.6% over the past decade; CWCCIS is forward looking and forecasts an average annual increase in construction cost of 1.7% over the next decade. When budgeting for this project and identifying a future construction date, we recommend the Town have deliberate conversations in factoring the appropriate escalation rate.

Closing

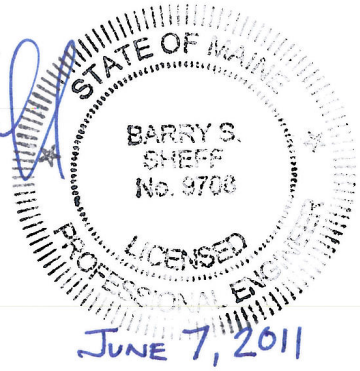
We estimate the total project cost to sewer the 302 Corridor is $37.8M; the cost to sewer the Phase 1 project area was previously estimated at $67.8M. The work effort completed here has improved our opinion and accuracy of the cost estimate for the project. The most significant impact to the cost, is the fact that the 302 Corridor is smaller than the Phase 1 service area, and focused on servicing the most densely developed (highest wastewater flows) areas.

The accuracy of the cost estimate is improved due to improved topography which increased the accuracy of pipe sizes, pipe lengths, and pump station number and locations. As a result, we are comfortable in the reduction of the construction contingency to 15%, and *AACE* and *Basic Cost Engineering* recommended cost range narrowing to -25% to +30%.

We are confident this information is consistent with our intended project goals, and hope that it proves useful to the Town as you consider moving forward with developing your business plan. We would be happy to meet with your team and the Council to discuss any questions you have regarding our work, or next steps for the project. We appreciate the opportunity to have supported the Town with this step in your process, and are excited for the Town and the benefit that wastewater service could provide. Please do not hesitate to contact me at (207) 774-2112.

Sincerely,

WOODARD & CURRAN INC.



Barry Sheff, P.E.
Senior Vice President

Enclosures

cc: Tom Bartell, Director of Economic Development

WOODARD &CURRAN
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CLIENT Town of Windham, Maine
PROJECT Windham Sewer
DESIGNED BY KMC DATE 3/18/2011
CHECKED BY DATE
PROJECT NO. 203363.05

Purpose: To estimate the volume of bedrock to be removed as part of the Route 302 Corridor Windham Sewer Project. Kyle Coolidge met with a group of contractors on Thursday Feb 10, 2011 at RJ Grondins office to obtain estimates of bedrock in the Phase 1 project area and along route 302 corridor. In attendance was Tom Bartell (Windham Economic Development Office), Peter Busque (Windham Town Council), Dan Shaw (Shaw Bros),Tom Shaw (Gorham Sand and Gravel), Ken Grondin (RJ Grondin), Mike White (White Bros.), Shawn McGoldrick (McGoldrick Bros Blasting), Tim Tanberg (CR Tandberg), Jason Elder (ML Rogers), Mark Verrill (V&M Construction), and former super to RJ Grondin during rebuilding of route 302.

Assumptions:
1. Where bedrock present, assumed would remove on average 5 vertical feet.
2. Blasting width 4 feet.

Table 1: Summary of Bedrock Present in Route 302 of the Route 302 Corridor Area

From:	To:	Presence of Bedrock as percentage of linear feet (1)	Total Approximate Distance of Gravity Sewer (miles)	Total Approximate Distance of Force Main (miles)	Total Linear Distance w/ Bedrock (miles)	Volume of Bedrock (cubic yards)
Northern Point of Phase 1 (Claman Dr) (714+00)	Shore Rd (Pats Pizza) (Sta. 647+00)	50%	1.3	0.7	1.0	3,907
Shore Rd (Pats Pizza) (Sta. 647+00)	Harriett Ave (Dunkin Donuts) (Sta. 455+50)	0%	3.6	0.7	0.0	0
Harriett Ave (Dunkin Donuts) (Sta. 455+50)	Pleasant River (442+00)	100%	0.3		0.3	1,001
Pleasant River (442+00)	Route 202 (Rotary) (425+00)	100%	0.3	0.3	0.6	2,448
Route 202 (Rotary) (425+00)	Nash Rd (Hawks Farm) (370+00)	80%	0.1	1.0	0.9	3,616
Nash Rd (Hawks Farm) (370+00)	Albion Rd (316+50)	20%		1.0	0.2	792
Albion Rd (316+50)	Town Limit (205+00)	50%		2.1	1.1	4,126
Town Limit (205+00)	Farmlake Drive (178+00)	0%		0.5	0.0	0
Farmlake Drive (178+00)	Royal Grant Way (152+50)	50%		0.5	0.2	945
Royal Grant Way (152+50)	Willow Drive (Sta. 120+50)	20%		0.6	0.1	474
Willow Drive (Sta. 120+50)	Reed Street (Sta. 14+50)	60%	1.0	0.5	0.9	3,708
Reed Street (Sta. 14+50) (2)	E. Bridge Street (Sta. 00+00)	100%			0.0	0
	TOTALS:		***6.6***	***8.0***	***5.4***	***21,017***

(1) Data from Contractors Meeting 2/10/11.
(2) No new gravity sewer or force mains will be installed from Reed Street to E. Bridge Street.

Table 2: Summary of Bedrock Present in Route 202 of the Route 302 Corridor Sewer Area						
From:	To:	Presence of Bedrock as percentage of linear feet (1)	Total Approximate Distance of Gravity Sewer (miles)	Total Approximate Distance of Force Main (miles)	Distance w/ Bedrock (miles)	Volume of Bedrock (cubic yards)
Old Route 202 (Sta. 6+83)	Rotary (Sta. 0+00)	100%	0.1	0.0	0.1	506
Rotary (Sta. 0+00)	Windham Center Road (Sta. 50+00)	80%	0.9	0.5	1.2	4,504
Windham Center Road (Sta. 50+00)	High School Area (Sta. 76+00)	100%	0.5	0.1	0.6	2,397
		TOTALS:	***1.6***	***0.6***	***1.9***	***7,407***

(1) Data from Contractors Meeting 2/10/11.

Table 3: Summary of Bedrock Present in Route 115 & 35 of the Route 302 Corridor Sewer Area					
Route:	Presence of Bedrock as percentage of linear feet (1)	Total Approximate Distance of Gravity Sewer (miles)	Total Approximate Distance of Force Main (miles)	Distance w/ Bedrock (miles)	Volume of Bedrock (cubic yards)
Route 115	0%			0.0	0
Route 35	0%			0.0	0
TOTALS:		***0.0***	***0.0***	***0.0***	***0***

(1) Data from Contractors Meeting 2/10/11.

TOTAL OF TABLES:	7.3	28,424