

EXHIBIT G

**Engineer's Services, Owner's Responsibilities,
Time for Performance, and Method of
Payment**

CDM Smith

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**EXHIBIT A
TO AGREEMENT BETWEEN
OWNER AND ENGINEER
Scope of Work**

This is an exhibit attached to and made a part of the Agreement dated _____, between Brookfield Water Pollution Control Authority (OWNER) and CDM Smith Inc. (ENGINEER) for professional services.

1.0 ENGINEER'S SERVICES

1.1 Study and Report Phase

The duties and responsibilities of ENGINEER during the Study and Report Phase as set forth in this paragraph 1.1 are amended and supplemented as follows:

Background:

The Brookfield Water Pollution Control Authority (BWPCA) is seeking to develop a Wastewater Facilities Plan evaluate the wastewater management needs of the community. The goal of the study is to:

- Review and document previous reports and mapping.
- Establish condition of collection system and pump stations.
- Develop life cycle costs for facilities.
- Evaluate sewer needs/extension areas.
- Review of procedures and benchmarking.
- Develop a Wastewater Facilities Plan that will include a capital improvement plan to serve as a road map for long-term operation and maintenance of the sanitary sewer system.

The general theme of many of these tasks will be for ENGINEER to be provided with what is currently being done, review it, and provide suggestions for improvements, if necessary. Scope of work is as follows:

Task 1 – Document Existing Conditions

- A. Project kickoff activities, including preparing for and facilitating kickoff meeting with BPWCA and submitting meeting minutes.

- B. BPWCA, and their consultant Langan Engineering, has provided ENGINEER with available data, prior studies, mapping, plans, etc. applicable to this study. If additional data is available, it will be collected by ENGINEER at the kickoff meeting. All data will be review by ENGINEER. No time has been included in this proposal for collecting/copying/scanning information as the time is not needed/warranted.

ENGINEER will document physical features of the Town's existing wastewater facilities such as miles of pipe, age, diameter, pump station age, capacity, etc.

ENGINEER will summarize previous planning studies and intermunicipal agreements. Any known deficiencies will be noted.

Task 2 – Collection System Evaluation

- A. BPWCA has noted that all the BWPCA pump station run times and wetwell levels, and in many cases flow rates, are captured in real-time and sent by phone connection via Mission Communications and viewable on-line. ENGINEER will review available flow data and pump runtime data previously collected through 2018 and utilize this information to perform a preliminary infiltration / inflow (I/I) analysis.

ENGINEER will estimate the base wastewater flows for each sewershed utilizing water consumption data obtained from Aquarion water company from about 20 percent of properties. For the other approximately 80 percent of properties where water consumption data is not available, ENGINEER will estimate water flows based on industry averages.

Prior analysis of the available flow data estimated that during rain events the I/I can reach 10 to 20 percent of normal flows, which is indicative of a new and very tight sewer system that would likely not warrant further I/I evaluations. ENGINEER will review the I/I study completed by Langan (March 21, 2017), including prior smoke testing results. We will analyze the pump station and in-line flow meter records through 2018 to identify the portion of the flow attributable to sanitary, inflow, and infiltration within each contributing area. The results of this analysis will be compared against the findings of the 2017 Langan study.

- B. ***Optional task if needed.*** For areas identified in Task 2A of concern, ENGINEER will perform a detailed unit hydrograph analysis using the United States Environmental Protection Agency's (USEPA) Sanitary Sewer Overflow Analysis and Planning Toolbox (SSOAP) of up to 3 areas and characterize the short-, medium-, and long-duration rainfall-driven I/I response. This analysis will be completed for up to three representative storms that occurred during the metering period. This analysis will also consider seasonal fluctuations in the groundwater table. This analysis will either provide confirmation that no further I/I investigations is necessary, as previously concluded, or identify certain areas of the sewer collection system where further evaluations may be warranted.
- C. ***Optional task if needed.*** If I/I investigations in certain areas appears to be necessary, for those areas ENGINEER will propose methods for the identification and elimination of extraneous I/I, and prioritize these investigations on a cost-effective basis. ENGINEER will prepare recommendations by sewershed and flow component for

further Sewer System Evaluation Survey (SSES) field investigations. These recommendations will identify the sewersheds that may benefit from additional investigations/study and those that require no further action.

- D. ENGINEER will hire JKMuir (WBE) to coordinate, hire, oversee and review the results of a subcontractor conducting cleaning and closed-circuit television (CCTV) inspection of the existing sewer mains on Federal Road and Gray's Bridge Road, up to 5,000 linear feet.

Included in this task is an allowance for two police details for up to 8 hours a day during the assumed 5 days of CCTV investigations. The upper limit for police details are \$5,300.

Task 3 – Pump Station Evaluation

- A. BWPCA owns and operates 14 wastewater pumping stations of varying age, style, capacity and condition. BWPCA has noted that half or more of the existing pump stations are new or refurbished in the last 10 years. It is anticipated that these new and refurbished stations will need minimal or no recommendations and that the primary focus of the condition assessment will be the other half of the pump stations that are not new or refurbished in the last 10 years.

The goal of evaluating the stations will be for ENGINEER to develop a prioritized long-term capital improvements plan. To accomplish this, ENGINEER will tour BWPCA's 14 wastewater pumping station sites over two consecutive days with a qualified team of three engineers experienced in condition assessments, engineering design and operational needs. A more detailed review of the Caldor, Route 133, and Silvermine stations has been included. Inspections of the stations will generally consist of the following criteria as applicable:

1) General:

- Review site layout plot plan, as-built drawings, and available records of significant maintenance issues for all applicable pump stations.

2) Site/Civil:

- Visually assess the site conditions, such as fencing, security, land area, aesthetics, odors, 100-year flood elevation, access from road and parking, room for snow removal or stockpile, and confined space access.
- Assessment of permits, compile list of permit approvals likely to be required based on recommended improvements.

3) Process/Mechanical:

- Review of the most current equipment operating and maintenance data and record drawings for the applicable pump stations.
- Mechanical assessments at all stations, including bar screen, piping, gates, valves, pumps and support equipment.

- Summarize force main size, material, capacity, length, elevation change, condition, and availability of bypass provisions. ENGINEER will assess pipe material, history of issues, and age of force mains.
- Evaluate on-site/portable backup power generator. ENGINEER will evaluate portable generator connections at each site without on-site generator and provide recommendations for standardizing.

4) Electrical:

- Review the record drawings and equipment data (if applicable) for all pump stations and perform a NEC, NFPA 70 and NFPA 820 code review.
- Perform a conditional and compatibility assessment of the existing electrical equipment.
- Equipment condition assessment shall include the existing motor control centers, variable frequency drives, automatic transfer switches, manual transfer switches (if applicable), switchgear, panel-boards, transformers, lighting, receptacles, conduit and wire.

5) Instrumentation and Controls:

- Perform site automation assessment.

6) Architectural:

- Provide a general assessment of the building (if applicable) components such as walls, doors, windows, louvers, gutters, and roof.
- Assess the need for improvements to accommodate proposed modifications to mechanical equipment and electrical equipment.

7) Structural:

- Provide a general assessment of the building (if applicable) components such as material type and foundation.
- Perform a visual observation from above grade of the existing wet wells. No confined space entry will be included.

8) Plumbing:

- Where applicable, plumbing will assess the water systems, fuel systems, potable water supply (presence of on-site hydrant), fire protection, sanitary systems, venting, roof drainage (if applicable) and sump pumps/sump pump discharge.

9) HVAC:

- Where applicable, HVAC will assess the unit heaters, ventilators, and air handling units.
- Perform a site assessment and conditional assessment of the existing HVAC equipment installed and compliance with NFPA 820.

- B. ENGINEER will formally document pump station operation and maintenance activities. This will include developing standard operating procedures (SOPs), as needed. BWPCA will provide weekly/daily inspection sheets and reports that are stored in GIS for review/incorporating into SOP. SOP will be provided for each individual pump station for a total of 14 SOPs.
- C. ENGINEER will prepare pump station inventory data sheets. Sheets will be two sided. On one side will be pertinent information to the existing pump station, such as site information, pump and motor size and type, electric services, generator information, etc. On the other side will be a map of the pump station showing the route of the force main and the sewer service area to the pump station. The inventory data sheets will be laminated for distribution to O&M staff for use in the field.

Task 4 – Evaluate Sewer Needs Areas

- A. ENGINEER will review the prior Future Sewer Service Flow Projections study from 2012. Since that flow projection was completed, the treatment allotment for Brookfield to the Danbury Water Pollution Control Facility (WPCF) will be reduced from 500,000 gallons per day (GPD) to 380,000 GPD by 2022. ENGINEER will provide an update to that study that will supersede the prior study and be incorporated into the Wastewater Facilities Plan report.

The review will include evaluating the downstream sewer main and pump station/force main capacity from each of the potential sewer needs areas, individually and collectively.

- B. ENGINEER will:
 - a. Review existing records of septic system construction/age and failures from Board of Health and available soil testing data.
 - b. Review lot size and intensity of development based on available GIS information.
 - c. Review published soil mapping regarding suitability for septic leaching.
 - d. Review public water supplies - Aquifer Protection Areas and community wells.
 - e. ENGINEER will review existing regulations regarding maintenance and upgrades of on-site (septic) systems and make recommendations for future enhancement, if warranted.
- C. Engineer will update map of sewer needs area.
- D. Consider if any potential sewer needs areas candidates for self-contained treatment systems, including groundwater discharge. Conduct a cursory site screening for facility and subsurface groundwater recharge. For the Candlewood Lake area we will coordinate with BWPCA's consultant performing the study who will provide ENGINEER with proposed flows and treatment options.

Review wastewater disposal options, which are anticipated to included:

- a. Current allotment to Danbury WPCF up to 380,000 GPD.
- b. Costs for additional allotment to Danbury beyond 380,000 GPD, if needed.
- c. On-site treated wastewater disposal, such as groundwater discharge.
- d. Costs for additional discharge to other communities, such as New Milford.

Task 5 – Review of Procedures/Standards and Benchmarking

- A. ENGINEER will review current staffing levels for head count and positions and compare with other WPCA's of like-sized communities without a treatment plant, including benchmarking against available local, regional, and national statistics. This will be done for the existing collection system, as well as forecasting additional staffing levels as the sewer system continues to expand. Results of task, including future staffing recommendations, will be summarized in a technical memorandum that will be included in the appendix of the Wastewater Facilities Plan.
- B. ENGINEER will review BWPCA's existing Rules and Regulations, compare them with other WPCA's in Connecticut and best practices nationally, and provide recommendations for changes, if necessary. Result of this task, including language recommendations, will be summarized in a technical memorandum that will be included in the appendix of the Wastewater Facilities Plan.
- C. ENGINEER will review Brookfield's Ordinances, as they related to the wastewater collection system, benchmark them against other WPCA's and best practices nationally, and provide recommendations for changes, if necessary. Result of this task, including language recommendations, will be summarized in a technical memorandum that will be included in the appendix of the Wastewater Facilities Plan.
- D. ENGINEER will review BPWCA's available standards for sewer design and construction, such as design details, technical specifications, developer guidelines, etc., and provide recommendations for developing/updating as necessary. Result of this task will be summarized in a technical memorandum, including attachments for details/standards that are available/developed, that will be included in the appendix of the Wastewater Facilities Plan.

Task 6 – Capital Planning

- A. Review existing financial and budgetary data including operating budgets for past three years, capital expenditures, debt service schedules through maturity, customer rates and billings/collections for past three years.

Based on available data, develop a spreadsheet to project likely expenses for next 10 years to provide a baseline forecast.

- B. ENGINEER will estimate the potential revenue that may be generated through new Benefit Assessments and/or connection fees on the properties served by the sewer extensions. Additionally, buildings along existing sewers that are not connected will be identified and summarized. ENGINEER will meet with appropriate Town staff to understand the potential magnitude of system expansion.
- C. Based on the recommended facility plan improvements, develop two alternative projections of future revenue requirements and rates based on alternative implementation schedules for the capital projects and any other programs. The facility plan forecast will include the potential additional revenue from new customer connections.

Prioritize recommendations to develop a phased implementation plan.

- D. ENGINEER shall review BWPCA's billing classes versus the State classifications. ENGINEER will assess the BWPCA's current billing approach and evaluate the feasibility/desirability of moving from an ERU equivalency system to flow based rates for at least commercial accounts. This evaluation will require 2 to 3 years water consumption data for the 500 commercial accounts.

ENGINEER shall coordinate with BWPCA to identify a standard meter (assumed to be identical with Aquarion) for the measurement of water use for commercial accounts and will make a recommendation of an appropriate meter reading system. ENGINEER will coordinate with BWPCA counsel who will update the existing ordinance as necessary.

Task 7 – Wastewater Facilities Plan Report

- A. Allowance for up to eight total meeting(s).
- B. The recommendations for future expansion will be reviewed in conjunction with the Town of Brookfield 2015 Plan of Conservation and Development and the State Office of Policy & Management's Conservation & Development Policies: The Plan for Connecticut (2013-2018). Areas of conflict will be identified for resolution, and the recommended mapping will be reviewed with the BWPCA.
- C. The ENGINEER will prepare a draft written Wastewater Facilities Plan report describing the work completed in Tasks 1 through 6, the conclusions of the analysis, and recommendations. The report will provide long-term capital planning estimates and serve as a blueprint for long-term O&M of the sewer system.

The Wastewater Facilities Plan will include photos of each pump station, a listing of any deficiencies identified, and a prioritized list of recommended improvements, such as necessary upgrades, rehabilitation, or replacement. Consideration will be given to: simplicity of operation, ease of maintenance, reliability, accessibility, age, and operation. ENGINEER will prepare planning-level cost estimates for improvements at

each station, identify which stations are most in need of improvements, and assist OWNER in developing a prioritization plan. Once approved, the report shall serve as the basis for future upgrades to the stations.

The ENGINEER will prepare for and present a summary of the comparative analysis to the OWNER at a BWPCA meeting. ENGINEER will revise the draft report based on the feedback from BWPCA.

Final draft report will be submitted to Connecticut Department of Energy and Environmental Protection (CT DEEP) for review and ultimate approval. ENGINEER will update the report with comments received from CT DEEP on the final draft submittal.

Task 8 – Marketing/Branding

- A. ENGINEER will provide suggested brochures that could be used as bill inserts. Included in this task is preparing and providing informational pamphlets. It is assumed BWPCA will provide all effort associated with printing and mailing the brochures. Brochures that will be provided are:
 - a. Water Conservation
 - b. Illicit connections to the sewer system, such as sump pumps, foundation drains and roof leaders
 - c. Fats, Oils and Grease (FOG)

- B. ENGINEER will review BWPCA's customer communications model and provide recommendations for improvement that has been effective elsewhere to cast BWPCA brand in a positive way and to educate the public on BWPCA's mission and goals. ENGINEER will create a 5 to 10-minute video of the BWPCA's goals and topics listed above in Task 8A. This video will be able to play in BWPCA's lobby, local cable television, and posted on the internet.

2.0 OWNER'S RESPONSIBILITIES

- 2.1 Provide access to and make all provisions for ENGINEER to access wastewater collection system and pump stations as required for ENGINEER to perform services under this Agreement.

- 2.2 Provide information to ENGINEER as outlined above in Section 1.0.

3.0 TIME PERIOD FOR PERFORMANCE

The time periods for the performance of ENGINEER's services as set forth in Article 2 of said Agreement are as follows:

ENGINEER will provide a Draft Facilities Plan Report within (6) six months of Notice to Proceed.

ENGINEER will incorporate OWNER comments and submit Final Facilities Plan Report within (1) one month of receiving final review comments.

4.0 METHOD OF PAYMENT

The method of payment for Services rendered by ENGINEER shall be as set forth below:

HOURLY BILLING RATE

In the Basic Services performed under Section 1, the OWNER agrees to pay the ENGINEER as follows:

For work done by the ENGINEER at the hourly billing rate for the category of the individual performing the work, for all time directly chargeable to the project. The ENGINEER's schedule of Hourly Billing Rates is attached as Exhibit B.

Actual out-of-pocket expenses, including mileage charges, parking, tolls, printing and reproduction costs, and other miscellaneous costs, incurred specifically for this project will be billed at actual cost.

For work done by subcontract or consultants, at the actual cost to the ENGINEER of such services plus 5 percent.

The total cost of all Basic Services shall not exceed \$299,980.

5.0 SPECIAL PROVISIONS

OWNER has established the following special provisions and/or other considerations or requirements in respect of the Assignment:

N/A

EXHIBIT G

Budget

Exhibit B Brookfield, CT Wastewater Facilities Plan Budget														
Task	Description	Officer	Sr. Technical Spec.	Project Manager	Senior Project Engineer	Engineer II	Engineer I	GIS Analyst	Operation Specialist	Hours	Labour	Outside Professionals	ODCs	Total
		Personnel												
		Bi-noble Hourly Rate												
Task 1	Document Existing Conditions													
A	Kick-off Meeting / Preparation	2		12	8	4				26	\$4,800.00		\$250.00	\$5,050.00
B	Collect / Review Existing Data			8	20	20	26			74	\$9,720.00			\$9,720.00
	Task 1 Total	2	0	20	28	24	26	0	0	100	\$14,520.00	\$0.00	\$250.00	\$14,770.00
Task 2	Collection System Evaluation													
A	Analyze Existing Flow Data / Prior Studies		4	4	20	40	40	4		112	\$13,920.00		\$500.00	\$14,420.00
B	SSOAP Analysis		2	2	10	30	30			74	\$8,850.00			\$8,850.00
C	Recommendations for Field Investigations				10	10	20	2		32	\$3,660.00			\$3,660.00
D	CCTV				10	10	10			20	\$2,550.00	\$25,000.00	\$500.00	\$27,550.00
	Task 2 Total	0	6	6	50	70	100	6	0	238	\$28,980.00	\$25,000.00	\$500.00	\$54,480.00
Task 3	Pump Station Evaluation													
A	Field Inspections			12	24	24				60	\$9,360.00		\$1,000.00	\$10,360.00
B	SOP's			2		8	14		64	88	\$11,780.00			\$11,780.00
C	Inventory Data Sheets			2	2	8	84	20		116	\$11,370.00			\$11,370.00
	Task 3 Total	0	0	16	26	40	98	20	64	264	\$32,010.00	\$0.00	\$1,000.00	\$33,010.00
Task 4	Evaluate Sewer Needs Areas													
A	Evaluate Future Sewer Service Flow Projections			12	40	20	100	8		180	\$21,360.00			\$21,360.00
B	Review Existing Records			2	16		56	12		86	\$9,360.00			\$9,360.00
C	Update Sewer Needs Map			2	4		12	20		38	\$4,260.00			\$4,260.00
D	Wastewater Disposal Options			4	20	20	20	20		64	\$8,040.00			\$8,040.00
	Task 4 Total	0	0	20	80	20	188	60	0	368	\$43,020.00	\$0.00	\$0.00	\$43,020.00
Task 5	Review of Procedures / Standards and Benchmarking													
A	Review Staffing Levels		6	16		40				62	\$9,600.00			\$9,600.00
B	Review Rules and Regulations		4	8		30				42	\$6,240.00			\$6,240.00
C	Review Ordinances		2	6		16				24	\$3,660.00			\$3,660.00
D	Review Standards		6	8		4				42	\$7,560.00			\$7,560.00
	Task 5 Total	0	18	38	24	90	0	0	0	170	\$27,060.00	\$0.00	\$0.00	\$27,060.00
Task 6	Capital Planning													
A	Review Existing Financial and Budgetary Data		2	4	4	8	36			54	\$6,180.00			\$6,180.00
B	Revenue Estimate		2	4	4	16				26	\$3,900.00			\$3,900.00
C	Alternative Projections of Revenue Requirements		5	4	4	20	28			61	\$7,620.00			\$7,620.00
D	Assess Current Billing Approach		16	4	40	48				108	\$17,040.00			\$17,040.00
	Task 6 Total	0	25	16	52	92	64	0	0	249	\$34,740.00	\$0.00	\$0.00	\$34,740.00
Task 7	Wastewater Facilities Plan Report													
A	Progress Meetings	4		32	16					52	\$10,320.00		\$800.00	\$11,120.00
B	Conservation and Development Coordination				8		20	10		38	\$4,170.00			\$4,170.00
C	Wastewater Facilities Plan Report	12	16	40	80	100	80	40	16	384	\$53,880.00		\$800.00	\$53,880.00
	Task 7 Total	16	16	72	104	100	100	50	16	474	\$68,370.00	\$0.00	\$800.00	\$69,170.00
Task 8	Marketing / Branding													
A	Marketing / Branding			4	20			30		54	\$7,290.00			\$7,290.00
B	Video			4	40			44		44	\$7,440.00			\$7,440.00
	Task 8 Total	0	0	8	60	0	0	30	0	98	\$14,730.00	\$0.00	\$0.00	\$14,730.00
	TOTAL BASE TASKS	18	65	196	474	436	576	166	80	1,961	\$263,430.00	\$34,000.00	\$2,550.00	\$299,980.00

COST OF PRICE SUMMARY FOR SUBAGREEMENTS UNDER U.S. EPA GRANTS <i>(See accompanying instructions before completing this form)</i>	Form Approved OMB No. 158-RO144
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PART 1 - GENERAL

1. GRANTEE Town of Brookfield, Connecticut	2. GRANT NUMBER TBD
3. NAME OF CONTRACTOR OR SUBCONTRACTOR CDM Smith Inc.	4. DATE OF PROPOSAL December 21, 2018
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include Zip Code) 77 Hartland St Suite 201 East Hartford, CT 06108	6. TYPE OF SERVICE TO BE FURNISHED Consulting Services Wastewater Facilities Planning

PART II - COST SUMMARY

7. DIRECT LABOR (Specify labor categories)	ESTI- MATED HOURS	HOURLY RATE	ESTIMATED COST	TOTAL
Senior Project Manager / Technical Specialist	83	\$80.00	\$6,640.00	
Project Manager	196	\$70.00	\$13,720.00	
Senior Project Engineer	424	\$55.00	\$23,320.00	
Engineer II	436	\$40.00	\$17,440.00	
Engineer I	576	\$30.00	\$17,280.00	
GIS Analyst	166	\$35.00	\$5,810.00	
O&M Specialist	80	\$45.00	\$3,600.00	
DIRECT LABOR TOTAL:				\$87,810
8. INDIRECT COSTS (Specify indirect cost pools)	RATE	X BASE =	ESTIMATED COST	
Direct Overhead, General & Administration	1.6675	\$87,810.00	\$146,423.18	
INDIRECT COSTS TOTAL:				\$146,423
9. OTHER DIRECT COSTS				
a. TRAVEL			ESTIMATED COST	
(1) TRANSPORTATION			\$2,400.00	
(2) PER DIEM			\$150.00	
TRAVEL SUBTOTAL:			\$2,550.00	
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify Categories)		QTY	COST	ESTIMATED COST
EQUIPMENT SUBTOTAL:				
c. SUBCONTRACTS			ESTIMATED COST	
JK Muir, LLC (WBE)			\$25,000.00	
American View Productions (MBE)			\$9,000.00	
SUBCONTRACTS SUBTOTAL:			\$34,000.00	
d. OTHER (Specify Categories)			ESTIMATED COST	
OTHER SUBTOTAL:				
e. OTHER DIRECT COSTS TOTAL:				\$36,550
10. TOTAL ESTIMATED COST				\$270,783
11. PROFIT				\$29,279
12. TOTAL PRICE				\$299,980

