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Sanitary Sewer Capacity Memorandum, Triad  
Associates, April 9, 2014



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## Sanitary Sewer Capacity Memo

April 9, 2014

Andrew Williamson  
Economic Development Director  
City of Black Diamond  
P.O. Box 599  
Black Diamond, WA 98010-0559

RE: The Villages MPD – Sanitary Sewer Capacity  
Triad Job No. 10-001

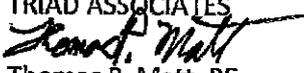


Dear Mr. Williamson:

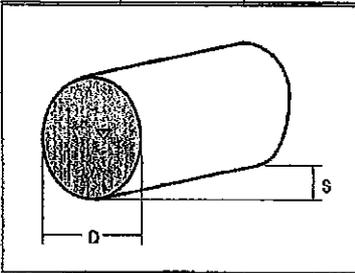
This memorandum has been prepared to calculate and document the sewer capacity of the City sewer system downstream of MH 151 to the Jones Lake lift station. The existing sewer system capacity was calculated using Manning's equation. The capacity was calculated assuming gravity flow with a Manning roughness coefficient  $n$  equal to 0.013 in accordance with Washington State Department of Ecology Criteria for Sewerage Works Design. The capacity of the system was conservatively calculated assuming a flow depth of 80% of the pipe diameter. Pipe slopes used for capacity calculations are from available City sewer record drawings.

The City sewer system from MH151 downstream to the Jones Lake lift station has existing pipes of 8 inch, 15 inch and 18 inch diameter. The existing sewer system from MH151 to MH14 is 8 inch PVC pipe with the flattest section having a slope of 3.8%. This 8 inch pipe has a capacity of 2.24 cfs (cubic feet per second). The existing sewer system from MH14 to MH13 is 15 inch PVC pipe with a slope of 0.58%. This 15 inch PVC pipe has a capacity of 4.33 cfs. The existing sewer system from MH 13 to the Jones Lake lift station is 18 inch RCP (reinforced concrete pipe) with the flattest section having a slope of 0.38%. This existing 18 inch RCP has a capacity of 6.33 cfs.

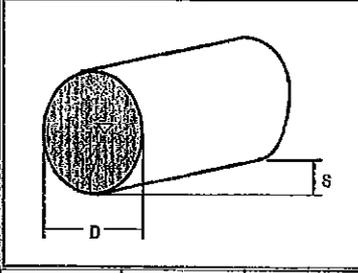
Inspection and cleaning of the City of Black Diamond sewer system downstream from MH151 to the Jones Lake Lift Station has been completed and restores the capacity of the pipelines as noted above. Overall the downstream sewer system from MH151 to the Jones Lake Lift Station was found to be in good condition. If you have any questions, please feel free to contact me at (425) 216-2117 or at [tmatt@triadassociates.net](mailto:tmatt@triadassociates.net).

Sincerely,  
TRIAD ASSOCIATES  
  
Thomas P. Matt, PE

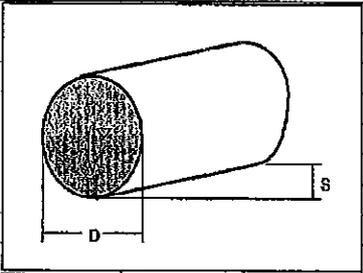
Pipe

	Input	Output							
<b>Q (cfs)</b>	0.00	2.24							
<b>n</b>	0.013	0.013							
<b>d (ft)</b>	0.660	0.66	0	10	/16	inches			
<b>y (ft)</b>	0.528	0.53							
<b>S (ft/ft)</b>	0.0380	0.038							
									
			<b>A (sf)</b>	0.293					
			<b>Pw (ft)</b>	1.481	<b>V (ft/s)</b>	7.640			
			<b>R (ft)</b>	0.201					
			<b>Critical y (ft) =</b>						
	<b>Qmax @ y (ft) =</b>	0.6192							
	<b>Vmax @ y (ft) =</b>	0.5365							
<b>Job:</b>	The Villages	<b>Description:</b>	MH150 to MH149						
<b>By:</b>	Tom Matt	<b>Date:</b>	4/3/2014						
8" PVC Pipe SDR35 Gravity Sewer Pipe									
Inside Pipe Diameter = 7.92 inches									

Pipe

	Input	Output							
<b>Q (cfs)</b>	0.00	4.33							
<b>n</b>	0.013	0.013							
<b>d (ft)</b>	1.202	1.20	1	3	/16	Inches			
<b>y (ft)</b>	0.962	0.96							
<b>S (ft/ft)</b>	0.0058	0.0058							
									
			<b>A (sf)</b>	0.974					
			<b>Pw (ft)</b>	2.663	<b>V (ft/s)</b>	4.451			
			<b>R (ft)</b>	0.366					
			<b>Critical y (ft) =</b>						
			<b>Qmax @ y (ft) =</b>	1.1277					
			<b>Vmax @ y (ft) =</b>	0.9770					
<b>Job:</b>	The Villages	<b>Description:</b>	MH14 to MH13						
<b>By:</b>	Tom Matt	<b>Date:</b>	4/3/2014						
			15" PVC Pipe SDR35 Gravity Sewer Pipe						
			Inside Pipe Diameter = 14.426 inches						

Pipe

	Input	Output							
Q (cfs)	0.00	6.33							
n	0.013	0.013							
d (ft)	1.50	1.50	1	8 /16	inches				
y (ft)	1.20	1.20							
S (ft/ft)	0.0038	0.0038							
									
			A (sf)	1.516					
			Pw (ft)	3.321	V (ft/s)	4.176			
			R (ft)	0.456					
			Critical y (ft) =						
Qmax @ y (ft) =	1.4073								
Vmax @ y (ft) =	1.2192								
Job:	The Villages	Description:	MH14 to MH13						
By:	Tom Matt	Date:	4/3/2014						
	18" RCP								
	Inside Pipe Diameter = 18 inches								