

April 30, 2021

Project Number: P2128

NOVATECH Engineers, Planners & Landscape Architects
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Attention: Murray Chown

**Subject: Ottawa BMW Parking Lot Expansion:
Hydrologic & Hydraulic Analysis.**

PROJECT OVERVIEW

J.F. Sabourin and Associates Inc (JFSA) has been retained by Novatech Engineering Consultants (Novatech), on behalf of Otto's BMW to complete a hydrologic analysis of the proposed parking lot to the west of Otto's BMW showroom located at 660 Hunt Club Road, Ottawa. The proposed Parking lot covers an area of approximately 1.27 ha and will be primarily a gravelled surface with slopes directing the surface runoff to perimeter swales and infiltration trenches, which will infiltrate the majority of the runoff from the site back into the ground, refer to Figure 1, for an overview of the proposed parking lot.

As a part of this parking lot expansion, it is also proposed that a crossing over the Deniverville drain will also be implemented to provide pedestrian and vehicle access from the parking lot to the showroom. This memo assesses the hydrologic impacts of the proposed parking lot and the hydraulic impacts of the proposed crossing. As a part of this work a detailed water budget analysis has also been completed based on continuous hydrologic simulations under pre- and post-development conditions.

BACKGROUND INFORMATION

As a part of this study, the following background reports and data were provided and reviewed:

Reports

- "Stormwater Management Report, Parking Lot Expansion, Otto's BMW, 660 Hunt Club Road, Ottawa, Ontario" exp, February 2015.
- "Geotechnical & Environmental Information Assessment, Hunt Club Road Pinestand, Ottawa, Ontario", Stantec, November 23, 2011.
- "Preliminary Geotechnical Investigation, Proposed Commercial Development, Hunt Club Road Pine stand, Ottawa, Ontario, Ottawa International Airport Authority", Jacques Whitford, May 2008.

Data

- CAD files of the Detailed site grading plan provided by Novatech to assist in the hydrologic analysis for the site.
- Photos of watercourse provided by Novatech to assist the hydraulic modelling.
- LiDAR data of the study area provided by the City of Ottawa. Reflective of topographic conditions in 2020.

DESIGN CRITERIA

- The allowable release rate will be based on control of runoff to pre-development conditions for all storms up to the 100-year event.
- As a result of the onsite soil conditions infiltration-based stormwater management methods will be used to promote groundwater recharge; a detailed water balance analysis has been completed to assess and quantify the impacts of the proposed development on the natural water cycle of these lands.
- The infiltration facility and outflow structure will be designed to safely convey excess flows above the 100-year event to the Deniverville Drain.
- A normal level of 70% TSS removal is required for quality control for the site.
- A gravel parking lot is currently proposed, although this analysis will assume on an asphalt surface in the event the parking lot is paved in the future.

HYDROLOGIC MODEL

To determine the peak flows for pre- and post-development conditions from the subject site, SWMHYMO (version 5.5) was used. This hydrologic modelling software is widely used in Ontario and beyond and can be used to simulate the transformation of rainfall into surface runoff.

Pre-Development Conditions

The existing site is located south of Hunt Club Road and west of the Deniverville Drain. The 1.27 ha site is wooded and is relatively flat, with surface elevations ranging from 99.2 m to 100.8 m with a typical slope of around 1%. Based on these parameters a time of concentration was derived based on the Federal Aviation Authority (FAA). Based on geotechnical studies conducted for the area documented in the (Jacques Whitford and EXP reports) the native soil is mainly sand with a high infiltration potential of approximately 200 mm/hr, as such a type “A” SCS soil classification has been assumed for this site’s natural soil conditions.

A Curve Number (CN) of 45 was applied to the model, based on Type A soils(sands) for Woods. For the remaining parameters default values per the City of Ottawa Sewer Design Guidelines have been applied, refer to Table 1 below for full details. The entire site under existing conditions was represented using a single NASHYD command in SWMHYMO. Full details of this analysis and the modelling input and summary files have been provided in Attachment A.

Table 1: Pre-Development Hydrologic Modelling (SWMHYMO -NASHYD) Parameters

CALIB NASHYD	
Parameters	Description
AREA	A=1.27 ha, as per Novatech CAD drawings. Refer to Figure 1.
CN	CN=45, Based on Woods with a Type A Hydrologic soil group (sands).
N	N=3, is the typical value used in Southern Ontario. The number of linear reservoirs used in the computation for the Nash unit hydrograph.
Tp	Tp=0.4 hrs, is the time to peak of the Nash unit hydrograph has been set to 2/3 x time of concentration (Tc). Tc calculated using Federal Aviation Administration (FAA) formula. Refer to Table A1 in Attachment A for full details.
IA	Ia= 4.67 mm, is the initial abstraction (wetting losses) based on the default value of pervious lands per the City of Ottawa Sewer Design Guidelines.

Post Development Conditions

Under post-development conditions, it is assumed that 80% (1.02 ha) of the 1.27 ha will be asphalted and will be impervious. Note that the current plan for this area to be gravelled, as such the current analysis is conservative while also allows for future paving to be implemented without requiring any additional analysis. The remaining 0.25 ha will consist of two grass covered infiltration swales located around the perimeter of the proposed parking lot. The two grass swales will convey the runoff to two interconnected granular infiltration trenches near the drainage outlet of the site. A detailed grading plan has been developed by Novatech and has been provided in Attachment B.

Runoff from the entire site has been represented as a single STANDHYD command in the post-development conditions SWMHYMO model. With default parameters applied to the model per the City of Ottawa Sewer Design Guidelines, refer to Table 2 for full details. Surrounding the paved area there will be grassed swale/infiltration trenches that will be constructed to attenuate and infiltrate the majority of the runoff from the site, taking advantage of the local high groundwater recharge potential. A 3D surface of the swales/trenches was generated based on the detailed grading plan developed by Novatech. This surface was then used to derive a Elevation/ Depth/ Area/ Volume relationship, see Table B1 in Attachment B for full details.

Based on this Depth/ Area/ Volume relationship, a storage volume/ infiltration rate curve was derived, to represent the exfiltration of the trench as well as the attenuation of flow provided through the storage volume within the trench. To derive the exfiltration rates it was assumed that the bottom of the trench would be reflective of the natural soil infiltration rate of 200 mm/hr, which was reduced by a factor of 2.5 (80 mm/hr) as per Credit Valley Conservation LID guidelines, to ensure a conservative design. Depths above the bottom of the trench were assumed to be grassed and assigned an infiltration rate of 13 mm/hr (again with a reduction factor of 2.5 applied). The assumption that infiltration rates over the grass will diminish over time is very conservative as there is no real evidence that this actually occurs. However, these rates were then multiplied by the total ponding surface area to derive the outflow rates at specific elevations. These calculated outflows, at specific elevations, were then combined with the respective infiltration trench volume to derive a storage exfiltration curve for the model, see Table B2 in Attachment B for full details. The infiltration process of the swales, up to the overflow structure (at elevation 100.6m) were simulated with the use of a Route Reservoir command in SWMHYMO.

At the elevation of 100.6 m, it is proposed that a 1m wide broad crested weir be installed to safely convey any excess flow from the site to Deniverville Drain. This overflow weir has been represented in the SWMHYMO model as a second Route Reservoir command, with the volume based on the storage provided within the swale/ trench above the elevation of 100.6m and the outflow based on the weir equation, see Table B3 in Attachment B for full calculations. Any volume that exceeds the first Route Reservoir command that represented the exfiltration within the trench is then passed to the second Route Reservoir command which represents the outflow weir structure. This approach conservatively assumes that no infiltration occurs when the depth of flow/ storage in the swale/ trench exceeds the elevation of the weir.

At an elevation of 100.6m (depth 1.3m – at the bottom of the overflow weir) the infiltration trench will have a total storage volume of 614 m³, and a total surface area at 1,582m², simply assuming a uniform infiltration rate throughout the trench of 13 mm/hr (discounting the higher infiltration rate of the trench bottom), this results in a 29.9-hour drawdown time, which is less than the general allowable maximum drawdown time of 48 hours.

Per MOE design guidelines to meet 70% TSS removal via infiltration for a site at 80% impervious, the site will need to provide 28.3 m³/ha of infiltration volume. The trench below the overflow weir crest elevation has a total storage volume of 614 m³, based on a total drainage area of 1.27ha, results in a storage volume of 357 m³/ha provided for the site, well above the required volume to meet 70% TSS removal.

Table 2: Post-Development Hydrologic Modelling (SWMHYMO-STANDHYD) Parameters

CALIB STANDHYD	
Parameters	Description
AREA	A=1.27ha, as per Novatech CAD drawings. Refer to Figure 1.
XIMP	XIMP=0.80, is the directly connected impervious area, expressed as a ratio. This is conservatively assumed to be equal to the total imperviousness.
TIMP	TIMP=0.80, is the total imperviousness area, based on Novatech's CAD drawings.
Horton's Infiltration Parameters	As per default values from the City of Ottawa Sewer Design Guidelines. Maximum initial infiltration rate (Fo=76.20 mm/hr), maximum final infiltration rate (Fc=13.2 mm/hr) and decay constant (4.14/hr).
IAper and IAimp	Are the initial abstraction values for pervious and impervious surfaces, set to values of IAper=4.67 mm and IAimp=1.57 mm.
SLPP and SLPI	Average surface slopes for the pervious and impervious surfaces, based on Novatech's detailed grading plan.
LGP and LGI	Are the average surface lengths for the pervious and impervious surfaces. LGP values are assumed to be 40 m. LGI was estimated based on the longest water path in the study area (160 m).
MNP and MNI	Manning's roughness values for the pervious and impervious surfaces. MNP=0.25 and MNI=0.013. It is noted that MNP=0.25 is a high value and has been selected to simulate the effects of sheet flow over grassed surfaces over a typical residential lot. The MNI values are representative of the driveway, road surfaces.

Rainfall Distribution

The design storms used to simulate peak flows for the subject site were developed per the City of Ottawa Sewer Design Guidelines (October 2012) and based on the IDF data for the City of Ottawa. The design storms considered for analysis include:

- 25 mm (based on 3-hour Chicago distribution)
- 2, 5, 10, 25, 50 and 100-year 3-hour Chicago
- 100-year +20% 3-hour Chicago (stress test)
- 2, 5, 10, 25, 50 and 100-year 24-hour SCS Type II
- 100-year +20% 24-hour SCS Type II (stress test)
- July 1st, 1979 Historical Storm
- August 4th, Historical 1988 Storm
- August 8th, Historical 1996 Storm

Modelling Results

Both the pre & post-development models were simulated using the City design storms outlined above. Table 3 below outlines the peak flow and total runoff volumes under both conditions.

**Table 3: Pre & Post Development
Design Storm Peak Flow and Runoff Volume Summary**

Event	Pre-Development		Post Development			Difference	
	[A1]	[A2]	[B1]	[B2]	[B3]	[B1-A1]	[B2-A2]
	Peak Flow (m ³ /s)	Runoff Volume (m ³)	Peak Flow (m ³ /s)	Runoff Volume (m ³)	Trench Peak Water Level (m)	Peak Flow (m ³ /s)	Runoff Volume (m ³)
25mm CHI 3Hr	0.003	16	0.000	0	100.21	-0.003	-16
2-Year CHI 3Hr	0.006	28	0.000	0	100.32	-0.006	-28
5-Year CHI 3Hr	0.011	52	0.000	0	100.44	-0.011	-52
10-Year CHI 3Hr	0.015	72	0.000	0	100.51	-0.015	-72
25-Year CHI 3Hr	0.021	100	0.000	0	100.59	-0.021	-100
50-Year CHI 3Hr	0.026	124	0.002	55	100.60	-0.024	-68
100-Year CHI 3Hr	0.032	151	0.005	143	100.60	-0.027	-8
100-Year CHI 3 Hr +20%	0.046	214	0.010	311	100.38	-0.036	96
2-Year SCS 24 Hr	0.010	69	0.000	0	100.51	-0.010	-69
5-Year SCS 24 Hr	0.018	121	0.000	0	100.58	-0.018	-121
10-Year SCS 24 Hr	0.024	162	0.000	0	100.59	-0.024	-162
25-Year SCS 24 Hr	0.032	219	0.003	102	100.60	-0.029	-116
50-Year SCS 24 Hr	0.039	266	0.005	205	100.60	-0.034	-62
100-Year SCS 24 Hr	0.047	321	0.008	319	100.60	-0.039	-2
100-Years SCS 24 Hr +20%	0.066	446	0.014	551	100.60	-0.052	105
July 1st, 1979	0.050	205	0.010	298	100.60	-0.040	93
August 4th, 1988	0.043	189	0.007	219	100.60	-0.036	30
August 8th, 1996	0.030	160	0.005	155	100.60	-0.025	-5

Based on this analysis, it was found that for all post-development events the peak design flows from the site are less than existing conditions. These results also indicate that there will be no runoff from this site for events less than the 25-Year event. For all design storms, the total runoff volume from the site is less than for existing conditions, with the only exception being under the historical and stress test events.

Emergency Overflow

In the event that the infiltration trench is fully clogged and is full of water before a large rainfall event occurs, an additional stress test analysis was completed that does not consider any exfiltration and storage volume from the trench. This model was run for the full suite of design storms, to ensure that the overflow weir and trench are sufficiently sized to safely convey flow to Deniverville Drain in such an event. Table 4 below outlines the peak runoff from the site under this condition and the associated depth of flow over the weir and maximum ponding elevation in the trench. Note that the maximum allowable surface water elevation in the trench is 100.7 m, based on Novatech’s detailed grading plan.

**Table 4: Stress Test Scenario with Infiltration Trench Clogged and Full of Water
 Peak Outflow & Trench Water Level**

Storm	Peak Outflow (m ³ /s)	Depth Over Weir (m)	Level in Trench (m)
25mm CHI 3Hr	0.007	0.028	100.628
2-Year CHI 3Hr	0.010	0.034	100.634
5-Year CHI 3Hr	0.013	0.041	100.641
10-Year CHI 3Hr	0.016	0.048	100.648
25-Year CHI 3Hr	0.019	0.053	100.653
50-Year CHI 3Hr	0.021	0.057	100.657
100-Year CHI 3Hr	0.022	0.059	100.659
100-Year CHI 3 Hr +20%	0.026	0.065	100.665
2-Year SCS 24 Hr	0.011	0.036	100.636
5-Year SCS 24 Hr	0.015	0.046	100.646
10-Year SCS 24 Hr	0.018	0.051	100.651
25-Year SCS 24 Hr	0.020	0.054	100.654
50-Year SCS 24 Hr	0.022	0.059	100.659
100-Year SCS 24 Hr	0.024	0.061	100.661
100-Years SCS 24 Hr +20%	0.028	0.068	100.668
July 1st, 1979	0.027	0.067	100.667
August 4th, 1988	0.024	0.061	100.661
August 8th, 1996	0.022	0.059	100.659

Based on this stress test analysis the maximum outflow from the site will be 28 L/s, and the maximum water level obtained in the trench would be 100.668 m, 32 mm from the top of the trench (100.7m), indicating that even under the most extreme conditions the site will be able to safely discharge its runoff to the Deniverville Drain.

WATER BUDGET ANALYSIS

As a part of this study, a detailed pre and post-development water budget analysis was completed based on the SWHYMO models developed. The existing SWMHYMO models discussed above were converted to continuous SWMHYMO models and used hourly rainfall data recorded at the Ottawa Airport from 1967 to 2007. These models were run for a total of 39 years (note that there was no data available for the years 2001 & 2005). The total annual runoff volume, evaporation volume and infiltration volume were then extracted from the models for each year and these annual values averaged to approximate the water balance for the site under both the pre and post-development conditions. A full summary of the annual volumes under both the pre and post-development conditions has been provided in Attachment C.

Table 5: Pre & Post Development – Water Budget Summary

(based on 39 years of continuous simulations)

Scenario	Runoff (%)	Infiltration (%)	Evaporation (%)
Pre-Development	2.1%	63.3%	34.6%
Post-Development	0.4%	89.1%	10.5%

Based on this analysis it was found that the site under pre-development conditions will on average infiltrate 63.3% of the annual rainfall volume. Under proposed conditions, through the use of the infiltration trench, the site will exceed this target and infiltrate 89.1% of the annual rainfall, 25.8% more volume infiltrated each year as compared to existing conditions. As expected, when the impervious area is increased the amount of volume that is evaporated & can evapotranspire is decreased due to the reduction in total vegetation. This reduction generally results in an increase in annual runoff volume, which in this case has been offset through the use of the infiltration trench.

HYDRAULIC ANALYSIS - DENIVERVILLE DRAIN

As a part of the Parking Lot expansion, it is proposed that a crossing over the Deniverville Drain will be constructed/ installed to provide both vehicle and pedestrian access to and from the lot and showroom. As there is currently no official floodplain mapping model available for Deniverville Drain at this time, a 1D HEC-RAS model was developed solely to assess the proposed crossing. The following section outlines the details of this analysis.

Hydrologic Analysis

To approximate the design flows on the Deniverville Drain at the upstream side of the Hunt Club Road Crossing, the Ontario Flow Assessment Tool (OFAT) was used. Table 3 provides a summary of the design flows derived at this location (total drainage area – 376.33 ha) based on the two methods available using this tool. From this analysis, it was found that the Primary Multiple Regression method produced the highest flows at this location and selected for this analysis.

Table 6: Return Period / Flow on Deniverville Drain at Hunt Club Road
 (376.33 ha per OFAT)

Return Period	Primary Multiple Regression (m ³ /s)	Index Expected Probability Adjustment (m ³ /s)
2-Year	1.46	0.83
5-Year	2.35	1.02
10-Year	3.02	1.19
20-Year	3.73	1.38
50-Year	4.47	1.65
100-Year	5.22	1.85

The drainage area delineated by OFAT was reviewed with other existing available stormwater studies in the area and GeoOttawa’s storm sewer database. From this review, it was found that the drainage area delineated by OFAT was missing approximately 11.73 ha of drainage area from the existing PSP military housing development, but also assumed 105.1 ha of drainage area within the Ottawa International airport that is known to drain south, as well as 36.8 ha of commercial lands to the west of the drain along Hunt Club Road. Figure D1 provides a visual overview of these areas and outlines lands that have been included in this OFAT analysis that do not in fact discharge to the Deniverville Drain (indicated in Green hatching), as well as the areas that do drain to the Deniverville Drain that have not been included in the OFAT analysis. Based on this review the total drainage area to the Deniverville Drain should be approximately 245.16 ha; 130.17 ha (34%) less than what has been assumed in the OFAT. The flows determined by OFAT have still been used in this hydraulic analysis, although consideration should be given to the fact that these flows are a very conservative estimate, especially considering the fact that the majority of the lands that have been included in this analysis appear to not discharge to the Deniverville Drain are either commercial lands or an airport runway, both of which are highly impervious. In addition to this, the OFAT tool does not consider the presence of any major system storage or SWM facilities that may exist.

Downstream Boundary Condition

The downstream extent of the Deniverville Drain model that was developed as part of this study, is located at the upstream side of an existing storm sewer pipe that passes underneath Hunt Club Road. Once flows enter this storm sewer, they are conveyed through a series of storm sewer pipes that pass under Hunt Club Road before re-emerging north of Hunt Club Place, which then flows northwest and ultimately discharges to the Rideau River. Table 7 below outlines the properties of the storm sewer pipes under Hunt Club Road, based on data available on GeoOttawa.

Table 7: Culvert Under Hunt Club Road (GeoOttawa)

Culvert Location	Elevation (m)	Distance (m)	Diameter (m)	Culvert Type	Elevation Delta (m)	Slope
Upstream Inlet	97.14					
Midway Outlet	97.02	24.5	1.8	Concrete Pipe	0.12	0.5%
Midway Inlet	97.02					
Downstream Outlet	96.2	22.7	1.8	Concrete Pipe	0.82	3.6%

Based on Table 7, the upstream most portion of this pipe section was determined to be the most critical to flow conveyance (due to culvert slope). The higher of the two flows (Primary Regression) derived from the OFAT analysis at this location have been applied to the HY-8 culvert analysis software, along with the critical culvert parameters outlined above. Table 8 outlines maximum water level elevation at the upstream side of the culvert for the various return period. Based on this analysis it was found that for the 100-year event (per OFAT) this culvert will have a maximum water elevation of 98.89 m (flow depth of 1.75m), indicating that the existing culvert 1.80 m culvert has sufficient capacity to convey the 100-year flow. Based on this HY-8 analysis a flow of 9.9m³/s (almost double the calculated 100-Year event flow) would be required before the capacity of the culvert is exceed and flows would spill onto Hunt Club Road. Note that the 100-year flow determined by OFAT's Index Expected Probability Adjustment method (1.85 m³/s) was also included in this analysis. Table 8 below outlines the Water Surface Elevations at the upstream side of the existing culvert under Hunt Club Road. The Water Surface Elevations obtained from this analysis have been applied to the HEC-RAS model as the Downstream Boundary Condition.

**Table 8: Hunt Club Rd HY-8 Culvert Capacity Analysis
 1800 mm Concrete Pipe 24.5m @ 0.5%**

Return Period	Flow (m ³ /s)	Culvert Flow (m ³ /s)	Overtopping flow (m ³ /s)	Head Water Elevation (m)	Head Water Depth (m)
Q ₂ -Primary	1.46	1.46	0	97.94	0.80
Q ₅ -Primary	2.35	2.35	0	98.2	1.06
Q ₁₀ -Primary	3.02	3.02	0	98.38	1.24
Q ₂₀ -Primary	3.73	3.73	0	98.55	1.41
Q ₅₀ -Primary	4.47	4.47	0	98.72	1.58
Q ₁₀₀ -Index	1.85	1.85	0	98.05	0.91
Q ₁₀₀ -Primary	5.22	5.22	0	98.89	1.75
Overtopping	9.9	9.9	0	100.3	3.16

Existing Conditions Overview

The existing conditions model extends from the upstream side of the existing storm sewer pipe under Hunt Club Road, up to Deniverville Private, approximately 475 metres upstream. Using City LiDAR, the watercourses' primary flow path was delineated, and cross-sections cut every 25 m to accurately capture the hydraulic characteristics and flow conveyance of the existing watercourse. See Figure D2 in Appendix D for an overview of the model extents and cross-sections.

Proposed Conditions Overview

The proposed conditions model is a copy of the existing conditions model with the proposed crossing added. Based on this analysis it was determined that 3 x 1800 mm Corrugated Steel Pipes (CSP) would sufficiently convey the simulated flows, and have a limited impact on upstream water levels. It is noted that other crossing configurations (concrete box, ConSpan, bridge) may also work but were not evaluated at this time. To increase conveyance for the lower flows, it is proposed that the inverts of these culverts are buried 0.30m and that the culvert inlets and outlet mitred to conform with the proposed slope; with the HEC-RAS model culvert parameter adjusted to reflect such a design. The exact details of the proposed crossing (location) have been taken from the detailed design drawings provided by Novatech and fall between model cross-sections 50 and 25.

General Model Parameters

For all reaches in the model, a Manning's roughness value of 0.035 has been applied for the main channel and a Manning's of 0.05 has been applied for the overbanks. Bank markers were applied based on visual inspection (provided by Novatech) of each cross-section geometry and reviewed with aerial photography. The overbank flow lengths have been approximated based on the anticipated overbanks center of the flow.

Expansion/contraction coefficients for the two cross-sections upstream and downstream of the proposed structure have been adjusted from 0.1 / 0.3 (default values) to 0.3 / 0.5 respectively, to account for the increase in energy loss due to the expansion and contraction of flows around the proposed culvert structure. Ineffective flow areas have also been applied to the two cross-sections upstream and one cross-section downstream of the proposed structure, with the upstream areas expanding at a rate of 1:1 and the downstream sections expanding at a rate of 1:4. No other modifications were made to the proposed conditions model.

Results

Peak water levels have been extracted from the HEC-RAS model at key locations within the study area. Full summary tables of the model results have been provided in Attachment D, refer to Figure D2 for the location of the respective cross-sections provided in these tables. Note that for all simulated events, under both existing and proposed conditions, the flow is contained within the channel. Based on storm sewer data available from GeoOttawa, the only other outlets to this drain (excluding the neighbouring Otto's parking lot on the East side of the drain) are approximately 400 m upstream at Deniverville Private. This is the critical location (XS 475) for this hydraulic analysis, as any increases elsewhere will have no negative impacts on the neighbouring landowners. Table 9 outlines the existing and proposed water levels at this critical location (model XS 475). Also, note that the proposed three 1800 mm culverts are sufficiently sized to convey the 100-year flow without surcharging, and are only at 66% capacity during the 100-Year event.

**Table 9: Existing and Proposed Water Levels
 on the Deniverville Drain near Deniverville Private (XS 475)**

Event	Flow (m ³ /s)	Existing Water Level (A) (m)	Proposed Water Level (B) (m)	Difference (B)-(A) (m)
2 Year	1.46	98.880	98.890	0.010
5 Year	2.35	99.036	99.052	0.016
10 Year	3.02	99.131	99.152	0.021
20 Year	3.73	99.220	99.246	0.026
50 Year	4.47	99.304	99.335	0.031
100 Year	5.22	99.380	99.417	0.037
100 Year -Index	1.85	98.953	98.966	0.013

Based on this analysis it was found that the proposed crossing will result in water level increases of 0.010 m - 0.037 m, at the upstream extent of the drain near Deniverville Private. It is important to reiterate that the flows used in this analysis derived by OFAT appear to assume a drainage area approximately 34% larger than the actual drainage area based on GeoOttawa storm sewer data and nearby stormwater management studies, and even so the proposed culverts during the 100-year event are only operating at 66% capacity. As such the results and impacts presented in the above table are inherently conservative in nature.

Conclusion

This report/ memo outlines and assesses the proposed stormwater management design of the proposed parking lot expansion west of Otto's BMW at 660 Hunt Club Road, Ottawa. From this analysis, it was found that:

- Through the use of the infiltration trench, the proposed development with discharge to the Deniverville Drain at peak flows less than existing conditions for all design events.
- The infiltration trench will provide 357m³/ha of storage volume below the overflow weir, which is well in excess of the 28.3 m³/ha required per the MOE to meet 70% TSS removal.
- A detailed water budget analysis was completed which showed that through the use of the infiltration trench the site will on average exfiltrate 89.1% of the annual rainfall back to the ground, which is 25.8% more than under existing conditions.
- A hydraulic model of the Deniverville Drain under existing and proposed conditions was developed and determined that the proposed crossing will result in 0.010 m - 0.037 m increases, for the 100-Year design event, at the upstream extent of the drain near Deniverville Private.

Yours truly,

J.F Sabourin and Associates Inc.



Jonathon Burnett, B.Eng, P.Eng
Water Resources Engineer

cc: J.F Sabourin, M.Eng, P.Eng
Director of Water Resources Projects



Figures

Figure 1: Site Overview

Attachments

Attachment A: Pre-Development Conditions
Attachment B: Post-Development Conditions
Attachment C: Water Budget Analysis
Attachment D: HEC-RAS Modelling



Legend

- Study Area (1.27 ha)
- New Gravel Parking Lot
- Infiltration Swale
- Infiltration Trench
- Watercourse

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SCALE : 1:1,000
 0 20 40 60 m

PROJECT :
 Ottawa BMW Parking Lot Expansion

TITLE :
 Figure 1:
 Site Overview

PROJECT	2128
DRAWN:	JB
DATE:	APRIL 2021

Attachment A

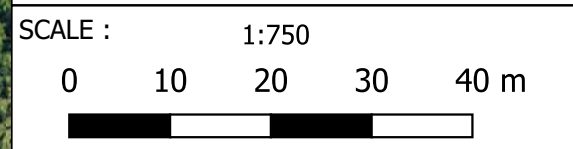
Pre-Development Conditions



- Legend**
- ▭ Study Area (1.27 ha)
 - Flow Path
 - Contours (0.25m)

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NOVATECH
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PROJECT :
 Ottawa BMW Parking Lot Expansion

TITLE :
 Figure A1:
 Existing Site Overview

PROJECT	2128
DRAWN:	JB
DATE:	APRIL 2021

Table A1: Time to Peak Calculations

Parameter	Units	EX
Area	ha	1.27
CN	-	45
C	-	0.2
Length of Channel	m	157
	ft	515
Elevation of Head Water	m	100.85
	ft	331
Elevation of Outlet	m	99.12
	ft	325
Average Slope	m/m	1.10%
	ft/ft	1.10%
Kirpich		
Time of Concentration	mins	5
Time to Peak	min	4
Time to Peak	Hours	0.06
FAA		
Time of Concentration	mins	36
Time to Peak	mins	24
Time to Peak	Hours	0.40
Barnsby Williams		
Time of Concentration	mins	9
Time to Peak	mins	6
Time to Peak	Hours	0.10
SCS		
Time of Concentration	mins	45
Time to Peak	mins	30
Time to Peak	Hours	0.50
Selected Method		
FAA		
Time to Peak	min	24
Time to Peak	Hours	0.40

Note:

All methods calculated as per Appendix A of the SWMHYMO manual

Time to Peak calculated as 2/3 Time of concentration


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1  20    Metric units / ID numbers OFF
2  *#*****
3  *# SWMHYMO / INPUT DATA FILE
4  *#*****
5  *# Project Name: [OTTO's Parking Lot Expansion]    Project Number: [2128]
6  *# Date       : 04-20-2021
7  *# Modeller   : [M.M. ]
8  *# Company    : JFSAinc.
9  *# License #  : 2549237
10 *#*****
11 *% 25 mm Storm based on 2-Year, 3-Hour Chicago Storm
12 START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[001]
13 ["25MMC3H.stm"] <--storm filename, one per line for NSTORM time
14 *%-----|-----
15 READ STORM     STORM_FILENAME=["storm.001"]
16 *%-----|-----
17 DEFAULT VALUES ICASEdef=[2], read values only
18 DEFVAL_FILENAME=["Ottawa.val"]
19 *%-----|-----
20 * SITE UNDER EXISTING CONDITIONS
21 CALIB NASHYD   NHYD=["EX"], DT[1](min), AREA=[1.268](ha)
22 DWF=[0](cms), CN=[45], IA=[4.67](mm), N=[3], TP[0.4](hrs),
23 RAINFALL[ , , -1]
24 *#=====
25 *
26 *#=====
27 *% 25 mm Storm based on 2-Year, 3-Hour Chicago Storm
28 *START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[001]
29 *              ["25MMC3H.stm"] <--storm filename, one per line for NSTORM time
30 *%-----|-----
31 *% 2-Year, 3-Hour Chicago Storm
32 START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[002]
33 ["002YC3H.stm"] <--storm filename, one per line for NSTORM time
34 *%-----|-----
35 *% 5-Year, 3-Hour Chicago Storm
36 START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[005]
37 ["005YC3H.stm"] <--storm filename, one per line for NSTORM time
38 *%-----|-----
39 *% 10-Year, 3-Hour Chicago Storm
40 START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[010]
41 ["010YC3H.stm"] <--storm filename, one per line for NSTORM time
42 *%-----|-----
43 *% 25-Year, 3-Hour Chicago Storm
44 START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[025]
45 ["025YC3H.stm"] <--storm filename, one per line for NSTORM time
46 *%-----|-----
47 *% 50-Year, 3-Hour Chicago Storm
48 START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[050]
49 ["050YC3H.stm"] <--storm filename, one per line for NSTORM time
50 *%-----|-----
51 *% 100-Year, 3-Hour Chicago Storm
52 START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[099]
53 ["100YC3H.stm"] <--storm filename, one per line for NSTORM time
54 *%-----|-----
55 *% 2-Year, 24-Hour SCS Storm
56 START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[102]
57 ["SC24002x.stm"] <--storm filename, one per line for NSTORM time
58 *%-----|-----
59 *% 5-Year, 24-Hour SCS Storm
60 START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[105]
61 ["SC24005x.stm"] <--storm filename, one per line for NSTORM time
62 *%-----|-----
63 *% 10-Year, 24-Hour SCS Storm

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64  START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[110]
65          ["SC24010x.stm"] <--storm filename, one per line for NSTORM time
66  *%-----|-----|
67  *% 25-Year, 24-Hour SCS Storm
68  START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[125]
69          ["SC24025x.stm"] <--storm filename, one per line for NSTORM time
70  *%-----|-----|
71  *% 50-Year, 24-Hour SCS Storm
72  START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[150]
73          ["SC24050x.stm"] <--storm filename, one per line for NSTORM time
74  *%-----|-----|
75  *% 100-Year, 24-Hour SCS Storm
76  START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[199]
77          ["SC24100x.stm"] <--storm filename, one per line for NSTORM time
78  *%-----|-----|
79  *% July 1st, 1979 Storm - Ottawa International Airport
80  START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[979]
81          ["19790701.stm"] <--storm filename, one per line for NSTORM time
82  *%-----|-----|
83  *% August 4th, 1988 Storm - Ottawa International Airport
84  START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[988]
85          ["19880804.stm"] <--storm filename, one per line for NSTORM time
86  *%-----|-----|
87  *% August 8th, 1996 Storm - Ottawa International Airport
88  START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[996]
89          ["19960808.stm"] <--storm filename, one per line for NSTORM time
90  *%-----|-----|
91  *% 100-Year, 24-Hour SCS Storm + 20%
92  START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[998]
93          ["SC24100x+.stm"] <--storm filename, one per line for NSTORM time
94  *%-----|-----|
95  *% 100-Year, 3-Hour Chicago Storm + 20%
96  START          TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[999]
97          ["100YC3H+.stm"] <--storm filename, one per line for NSTORM time
98  *%-----|-----|
99  FINISH
100

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00001 -----
00002
00003 SSSSS W W M M H H Y Y M M O O 222 000 11 5555 -----
00004 S W W M M M M H H Y Y M M O O 2 0 0 11 5
00005 SSSSS W W M M H H Y Y M M O O 2 0 0 11 5 Ver 5.500
00006 S W W M M H H Y Y M M O O 222 0 0 11 555 FEB 2015
00007 SSSSS W W M M H H Y Y M M O O 2 0 0 11 5
00008 00008 2 0 0 11 5 2549237
00009 Stormwater Management Hydrologic Model 222 000 11 555 -----
00010
00011 ***** SWHRYM0 Ver 5.500 *****
00012 based on the principles of HYMO and its successors
00013 A single event and continuous hydrologic simulation model
00014 based on the principles of HYMO and its successors
00015 OTTHW0-S and OTTHW0-S9.
00016 Distributed by: J.F. Sabourin and Associates Inc.
00017 Ottawa, Ontario: (613) 836-3884
00018 Gatineau, Quebec: (819) 243-6858
00019 E-mail: jsabour@jfsa.com
00020
00021 *****
00022 *****
00023 *****
00024 ***** Licensed user: JFSAinc. *****
00025 ***** SERIAL#:2549237 *****
00026 *****
00027 *****
00028 ***** PROGRAM ARRAY DIMENSIONS *****
00029 *****
00030 ***** Maximum Value For ID numbers : 11 *****
00031 ***** Max. number of rainfall points: 105408 *****
00032 ***** Max. number of flow points: 105408 *****
00033 *****
00034 *****
00035 ***** S U M M A R Y O U T P U T *****
00036 *****
00037 ***** RUN DATE: 2021-04-29 TIME: 09:29:31 RUN COUNTER: 003910 *****
00038 *****
00039 ***** Input file: C:\Temp\20210420-Pre-Development\Design\FPE-DEV_v01.dat *****
00040 ***** Output file: C:\Temp\20210420-Pre-Development\Design\FPE-DEV_v01.sum *****
00041 ***** Summary file: C:\Temp\20210420-Pre-Development\Design\FPE-DEV_v01.sum *****
00042 ***** User comments: *****
00043 *****
00044 *****
00045 *****
00046 *****
00047 *****
00048 *****
00049 *****
00050 *****
00051 # SWHRYM0 / INPUT DATA FILE
00052 # *****
00053 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00054 # Date : 04-20-2021
00055 # Modeller : [M.M.]
00056 # Company : JFSAinc.
00057 # License # : 2549237
00058 # *****
00059 # RUN# : COMMAND#
00060 # *****
00061 # START
00062 # [ZERO = .00 hrs on 0]
00063 # [METOUT = 2 (1=Imperial, 2=metric output)]
00064 # [NFORM = 0001]
00065 # *****
00066 # R0001:CO0002-----
00067 # *****
00068 # File name = storm.001
00069 # Comment = 25 MM BASED ON CHICAGO STORM 2 Year, 3 Hours
00070 # [SDT=10.00;SDOR= 3.00;POT= 25.00]
00071 # R0001:CO0003-----
00072 # *****
00073 # File name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00074 # ICASEV = 2 (read values only)
00075 # R001:CO0004-----
00076 # [CN= 45.0; N= 3.00; Tp = .40]
00077 # *****
00078 # *****
00079 # *****
00080 # *****
00081 # *****
00082 # *****
00083 # *****
00084 # *****
00085 # *****
00086 # *****
00087 # *****
00088 # *****
00089 # R002:CO0001-----
00090 # *****
00091 # START
00092 # [ZERO = .00 hrs on 0]
00093 # [METOUT = 2 (1=Imperial, 2=metric output)]
00094 # [NFORM = 0001]
00095 # *****
00096 # SWHRYM0 / INPUT DATA FILE
00097 # *****
00098 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00099 # Date : 04-20-2021
00100 # Modeller : [M.M.]
00101 # Company : JFSAinc.
00102 # License # : 2549237
00103 # *****
00104 # R0002:CO0002-----
00105 # *****
00106 # File name = storm.001
00107 # Comment = CHICAGO STORM 2 Year, 3 Hours
00108 # [SDT=10.00;SDOR= 3.00;POT= 31.86]
00109 # R0002:CO0003-----
00110 # *****
00111 # File name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00112 # ICASEV = 2 (read values only)
00113 # R0002:CO0004-----
00114 # [CN= 45.0; N= 3.00; Tp = .40]
00115 # *****
00116 # *****
00117 # *****
00118 # *****
00119 # *****
00120 # *****
00121 # *****
00122 # *****
00123 # *****
00124 # *****
00125 # *****
00126 # *****
00127 # R0005:CO0001-----
00128 # *****
00129 # START
00130 # [ZERO = .00 hrs on 0]
00131 # [METOUT = 2 (1=Imperial, 2=metric output)]
00132 # [NFORM = 0001]
00133 # *****
00134 # SWHRYM0 / INPUT DATA FILE
00135 # *****
00136 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00137 # Date : 04-20-2021
00138 # Modeller : [M.M.]
00139 # Company : JFSAinc.
00140 # License # : 2549237
00141 # *****
00142 # R0005:CO0002-----
00143 # *****
00144 # File name = storm.001
00145 # Comment = CHICAGO STORM 5 Year, 3 Hours
00146 # [SDT=10.00;SDOR= 3.00;POT= 42.51]
00147 # R0005:CO0003-----
00148 # *****
00149 # File name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00150 # ICASEV = 2 (read values only)
00151 # R0005:CO0004-----
00152 # [CN= 45.0; N= 3.00; Tp = .40]
00153 # *****
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00171 # *****
00172 # SWHRYM0 / INPUT DATA FILE
00173 # *****
00174 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00175 # Date : 04-20-2021
00176 # Modeller : [M.M.]
00177 # Company : JFSAinc.
00178 # License # : 2549237
00179 # *****
00180 # R010:CO0002-----

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00181# READ STORM
00182# File name = storm.001
00183# Comment = CHICAGO STORM 10 Year, 3 Hours
00184# [SDT=10.00;SDOR= 3.00;POT= 49.50]
00185# R010:CO0003-----
00186# *****
00187# File name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00188# ICASEV = 2 (read values only)
00189# R0010:CO0004-----
00190# [CN= 45.0; N= 3.00; Tp = .40]
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00360# *****

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00361) *****
00362) # SWHYND / INPUT DATA FILE
00363) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00364) # Date : 04-20-2021
00365) # Modeller : [M.M.]
00366) # Company : JFSAinc.
00367) # License # : 2549237
00368) # *****
00369) # R0105:C0002-----
00370) READ STORM
00371) File Name = storm.001
00372) Comment = 5 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00373) [SDT=10.00;SDUR= 24.00;PTOT= 64.11]
00374) # R0105:C0003-----
00375) DEFAULT VALUES
00376) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00377) ICASEV = 2 (read values only)
00378) CALIB NASHVD -----DTmin-ID:HNVD-----AREAhA-QPEARcms-TpeakDate_hh:mm-----RVm-R.C.---DMFcms
00379) [CN= 45.0; N= 3.00; Tp= .40]
00380) *****
00381) ** END OF RUN : 109
00382) *****
00383) # R0110:C0001-----
00384) RUN:COMMAND#
00385) START
00386) [TZERO = .00 hrs on 0]
00387) [METOUT= 2 (1=Imperial, 2=metric output)]
00388) [INSTORM= 1]
00389) [NSUN = 0110]
00390) # SWHYND / INPUT DATA FILE
00391) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00392) # Date : 04-20-2021
00393) # Modeller : [M.M.]
00394) # Company : JFSAinc.
00395) # License # : 2549237
00396) # *****
00397) # R0110:C0002-----
00398) READ STORM
00399) File Name = storm.001
00400) Comment = 10 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00401) [SDT=10.00;SDUR= 24.00;PTOT= 74.35]
00402) # R0110:C0003-----
00403) DEFAULT VALUES
00404) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00405) ICASEV = 2 (read values only)
00406) CALIB NASHVD -----DTmin-ID:HNVD-----AREAhA-QPEARcms-TpeakDate_hh:mm-----RVm-R.C.---DMFcms
00407) [CN= 45.0; N= 3.00; Tp= .40]
00408) *****
00409) ** END OF RUN : 124
00410) *****
00411) # R0125:C0001-----
00412) RUN:COMMAND#
00413) START
00414) [TZERO = .00 hrs on 0]
00415) [METOUT= 2 (1=Imperial, 2=metric output)]
00416) [INSTORM= 1]
00417) [NSUN = 0125]
00418) # SWHYND / INPUT DATA FILE
00419) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00420) # Date : 04-20-2021
00421) # Modeller : [M.M.]
00422) # Company : JFSAinc.
00423) # License # : 2549237
00424) # *****
00425) # R0125:C0002-----
00426) READ STORM
00427) File Name = storm.001
00428) Comment = 20 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00429) [SDT=10.00;SDUR= 24.00;PTOT= 86.89]
00430) # R0125:C0003-----
00431) DEFAULT VALUES
00432) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00433) ICASEV = 2 (read values only)
00434) CALIB NASHVD -----DTmin-ID:HNVD-----AREAhA-QPEARcms-TpeakDate_hh:mm-----RVm-R.C.---DMFcms
00435) [CN= 45.0; N= 3.00; Tp= .40]
00436) *****
00437) ** END OF RUN : 149
00438) *****
00439) # R0150:C0001-----
00440) RUN:COMMAND#
00441) START
00442) [TZERO = .00 hrs on 0]
00443) [METOUT= 2 (1=Imperial, 2=metric output)]
00444) [INSTORM= 1]
00445) [NSUN = 0150]
00446) # SWHYND / INPUT DATA FILE
00447) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00448) # Date : 04-20-2021
00449) # Modeller : [M.M.]
00450) # Company : JFSAinc.
00451) # License # : 2549237
00452) # *****
00453) # R0150:C0002-----
00454) READ STORM
00455) File Name = storm.001
00456) Comment = 50 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00457) [SDT=10.00;SDUR= 24.00;PTOT= 96.53]
00458) # R0150:C0003-----
00459) DEFAULT VALUES
00460) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00461) ICASEV = 2 (read values only)
00462) CALIB NASHVD -----DTmin-ID:HNVD-----AREAhA-QPEARcms-TpeakDate_hh:mm-----RVm-R.C.---DMFcms
00463) [CN= 45.0; N= 3.00; Tp= .40]
00464) *****
00465) ** END OF RUN : 198
00466) *****
00501) *****
00502) # R0199:C0001-----
00503) RUN:COMMAND#
00504) START
00505) [TZERO = .00 hrs on 0]
00506) [METOUT= 2 (1=Imperial, 2=metric output)]
00507) [INSTORM= 1]
00508) [NSUN = 0199]
00509) # SWHYND / INPUT DATA FILE
00510) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00511) # Date : 04-20-2021
00512) # Modeller : [M.M.]
00513) # Company : JFSAinc.
00514) # License # : 2549237
00515) # *****
00516) # R0199:C0002-----
00517) READ STORM
00518) File Name = storm.001
00519) Comment = 100 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00520) [SDT=10.00;SDUR= 24.00;PTOT= 106.73]
00521) # R0199:C0003-----
00522) DEFAULT VALUES
00523) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00524) ICASEV = 2 (read values only)
00525) CALIB NASHVD -----DTmin-ID:HNVD-----AREAhA-QPEARcms-TpeakDate_hh:mm-----RVm-R.C.---DMFcms
00526) [CN= 45.0; N= 3.00; Tp= .40]
00527) *****
00528) ** END OF RUN : 978
00529) *****

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00541) *****
00542) # R0979:C0001-----
00543) RUN:COMMAND#
00544) START
00545) [TZERO = .00 hrs on 0]
00546) [METOUT= 2 (1=Imperial, 2=metric output)]
00547) [INSTORM= 1]
00548) [NSUN = 0979]
00549) # SWHYND / INPUT DATA FILE
00550) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00551) # Date : 04-20-2021
00552) # Modeller : [M.M.]
00553) # Company : JFSAinc.
00554) # License # : 2549237
00555) # *****
00556) # R0979:C0002-----
00557) READ STORM
00558) File Name = storm.001
00559) Comment = July 1st, 1979 Storm (SH) - Ottawa International Airport step 5 min
00560) [SDT= 5.00;SDUR= 3.00;PTOT= 83.99]
00561) # R0979:C0003-----
00562) DEFAULT VALUES
00563) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00564) ICASEV = 2 (read values only)
00565) CALIB NASHVD -----DTmin-ID:HNVD-----AREAhA-QPEARcms-TpeakDate_hh:mm-----RVm-R.C.---DMFcms
00566) [CN= 45.0; N= 3.00; Tp= .40]
00567) *****
00568) ** END OF RUN : 987
00569) *****
00570) # R0989:C0001-----
00571) RUN:COMMAND#
00572) START
00573) [TZERO = .00 hrs on 0]
00574) [METOUT= 2 (1=Imperial, 2=metric output)]
00575) [INSTORM= 1]
00576) [NSUN = 0989]
00577) # SWHYND / INPUT DATA FILE
00578) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00579) # Date : 04-20-2021
00580) # Modeller : [M.M.]
00581) # Company : JFSAinc.
00582) # License # : 2549237
00583) # *****
00584) # R0989:C0002-----
00585) READ STORM
00586) File Name = storm.001
00587) Comment = August 4th, 1988 Storm (SH) - Ottawa International Airport step 5
00588) [SDT= 5.00;SDUR= 5.38;PTOT= 80.59]
00589) # R0989:C0003-----
00590) DEFAULT VALUES
00591) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00592) ICASEV = 2 (read values only)
00593) CALIB NASHVD -----DTmin-ID:HNVD-----AREAhA-QPEARcms-TpeakDate_hh:mm-----RVm-R.C.---DMFcms
00594) [CN= 45.0; N= 3.00; Tp= .40]
00595) *****
00596) ** END OF RUN : 995
00597) *****
00610) *****
00611) # R0996:C0001-----
00612) RUN:COMMAND#
00613) START
00614) [TZERO = .00 hrs on 0]
00615) [METOUT= 2 (1=Imperial, 2=metric output)]
00616) [INSTORM= 1]
00617) [NSUN = 0996]
00618) # SWHYND / INPUT DATA FILE
00619) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00620) # Date : 04-20-2021
00621) # Modeller : [M.M.]
00622) # Company : JFSAinc.
00623) # License # : 2549237
00624) # *****
00625) # R0996:C0002-----
00626) READ STORM
00627) File Name = storm.001
00628) Comment = August 8th, 1988 Storm (SH) - Ottawa International Airport step 5
00629) [SDT= 5.00;SDUR= 5.75;PTOT= 73.30]
00630) # R0996:C0003-----
00631) DEFAULT VALUES
00632) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00633) ICASEV = 2 (read values only)
00634) CALIB NASHVD -----DTmin-ID:HNVD-----AREAhA-QPEARcms-TpeakDate_hh:mm-----RVm-R.C.---DMFcms
00635) [CN= 45.0; N= 3.00; Tp= .40]
00636) *****
00637) ** END OF RUN : 997
00638) *****
00650) *****
00651) # R0999:C0001-----
00652) RUN:COMMAND#
00653) START
00654) [TZERO = .00 hrs on 0]
00655) [METOUT= 2 (1=Imperial, 2=metric output)]
00656) [INSTORM= 1]
00657) [NSUN = 0999]
00658) # SWHYND / INPUT DATA FILE
00659) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00660) # Date : 04-20-2021
00661) # Modeller : [M.M.]
00662) # Company : JFSAinc.
00663) # License # : 2549237
00664) # *****
00665) # R0999:C0002-----
00666) READ STORM
00667) File Name = storm.001
00668) Comment = 100 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00669) [SDT=10.00;SDUR= 24.00;PTOT= 128.08]
00670) # R0999:C0003-----
00671) DEFAULT VALUES
00672) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00673) ICASEV = 2 (read values only)
00674) CALIB NASHVD -----DTmin-ID:HNVD-----AREAhA-QPEARcms-TpeakDate_hh:mm-----RVm-R.C.---DMFcms
00675) [CN= 45.0; N= 3.00; Tp= .40]
00676) *****
00677) ** END OF RUN : 998
00678) *****
00689) *****
00690) # R0999:C0001-----
00691) RUN:COMMAND#
00692) START
00693) [TZERO = .00 hrs on 0]
00694) [METOUT= 2 (1=Imperial, 2=metric output)]
00695) [INSTORM= 1]
00696) [NSUN = 0999]
00697) # SWHYND / INPUT DATA FILE
00698) # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00699) # Date : 04-20-2021
00700) # Modeller : [M.M.]
00701) # Company : JFSAinc.
00702) # License # : 2549237
00703) # *****
00704) # R0999:C0002-----
00705) READ STORM
00706) File Name = storm.001
00707) Comment = CHUCKO STORM 100 Year, 3 Hours +20% Stress Test
00708) [SDT=10.00;SDUR= 3.00;PTOT= 86.00]
00709) # R0999:C0003-----
00710) DEFAULT VALUES
00711) File Name = C:\Temp\20210420-Pre-Development\Design\Ottawa.val
00712) ICASEV = 2 (read values only)
00713) *****

```

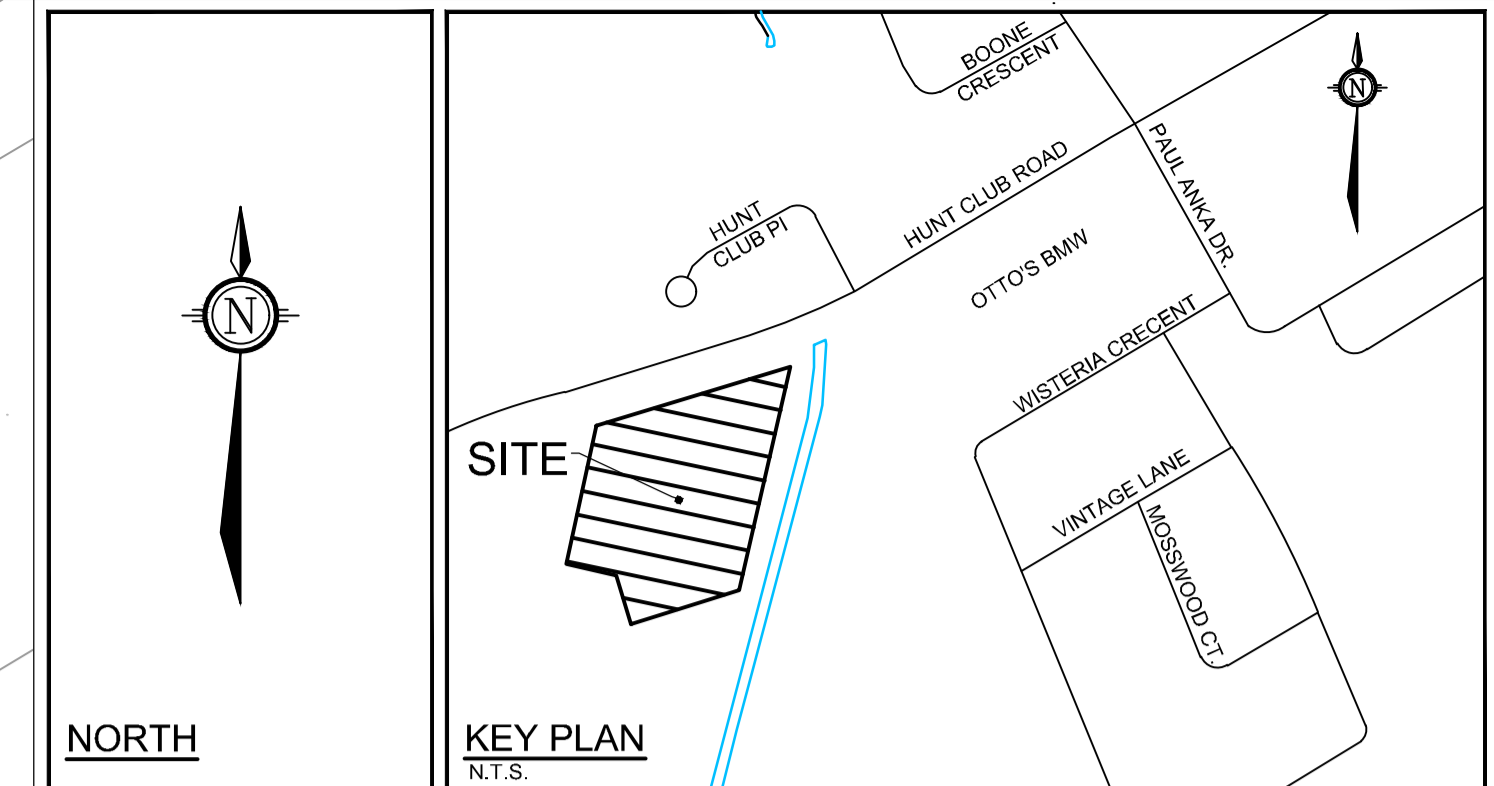
```
00721> R0999:c00004-----DTMIn-ID:MSYD-----AREAbA-QFEARcms-TpeakDate_hh:mm-----RValm-R.C-----DWFcms
00722> CALLID MSRYD          1.0 01:0X          1.27          .046 No_date      1129      16.89 :196      .000
00723> [CN= 45.0; N= 3.00; Tp= .40]
00724> #-----
00725> #-----
00726> R0999:c00002-----
00727> FINISH
00728> #-----
00729> #-----
00730> WARNINGS / ERRORS / NOTES
00731> #-----
00732> Simulation ended on 2021-04-29 at 09:29:33
00733> #-----
00734> #-----
```

Attachment B

Post-Development Conditions

TOPOGRAPHIC INFORMATION:

JOB BENCHMARK No. 1: TOP OF SPINDLE AT INTERSECTION OF HUNT CLUB AND PAUL ANKA DRIVE. ELEVATION = 101.39m.
 JOB BENCHMARK No. 2: TOP OF SPINDLE ON HUNT CLUB ROAD IN FRONT OF OTTO'S BMW. ELEVATION = 101.58m.
 REFER TO THE OLS PLAN OF SURVEY (DRAWING 19389-17) BY ADV FOR SPECIFIC DETAILS.
 ALL ELEVATIONS ARE GEODETIC. EXISTING TOPOGRAPHIC INFORMATION HAS BEEN COMPILED FROM CITY OF OTTAWA 1:1000 BASE MAPPING (SHEET No. 369022A & 369022B). THE TOPOGRAPHIC SITE SURVEY INFORMATION IS TAKEN FROM JOB #Y29000 BY FAIRHALL MAFFATT AND WOODLAND LTD. DATED JUNE 13, 2016 (SURVEY PLAN 192(a) - 2 (RF) GR).



LEGEND

- PROPERTY LINE
- PROPOSED ELEVATION
- EXISTING ELEVATION
- GRADE AND DIRECTION
- PROPOSED ELEVATION
- EMERGENCY OVERLAND FLOW ROUTE
- PROPOSED TERRACING
- PROPOSED GRASS SWALE
- PROPOSED CURB
- PROPOSED GUIDE RAIL SYSTEM
- ▲ BUILDING ENTRANCE / EXIT
- APPROXIMATE PONDING LIMITS
- X REMOVAL AND/OR ABANDONMENT
- PROPOSED FENCE AND GATE
- EXISTING EDGE OF PAVEMENT
- EXISTING VALVE & VALVE BOX
- EXISTING HYDRANT
- EXISTING COMBINED MH
- EXISTING CATCHBASIN
- EXISTING CATCHBASIN MH
- EXISTING UTILITY POLE & GUY WIRES
- EXISTING FENCE
- EXISTING OVERHEAD WIRES

PARKING LOT STRUCTURE:

- HEAVY DUTY GRANULARS (FUTURE / PROPOSED)
 - 150mm GRANULAR "A"
 - 450mm GRANULAR "B" TYPE II
 - THE GEOTECHNICAL ENGINEER IS TO ADVISE IF A GEOTEXTILE SEPARATOR IS REQUIRED UNDER THE GRAVEL PARKING LOT BASE ON EXISTING SITE CONDITIONS DURING CONSTRUCTION
- HEAVY DUTY PAVING
 - 40mm SUPERPAVE 12.5 - Traffic Level B
 - 60mm SUPERPAVE 19.0 - Traffic Level B
 - 150mm GRANULAR "A"
 - 450mm GRANULAR "B" TYPE II
 - ASPHALT GRADE PG 58-34

GENERAL NOTES:

- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
- BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND LANDSCAPE ARCHITECTS AS CO-INSURED.
- RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
- REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO GEOTECHNICAL REPORT (GEMTEC PROJECT 65134.09), DATED MAY 3, 2021, PREPARED BY GEMTEC CONSULTING ENGINEERS AND SCIENTISTS LTD FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- REFER TO THE SITE PLAN DRAWING FOR PARKING LOT AREAS AND DIMENSIONS.
- REFER TO THE HYDROLOGIC AND HYDRAULIC ANALYSIS (PROJECT No. P2128, DATED APRIL 30, 2021) PREPARED BY J.F. SABOURIN AND ASSOCIATES INC.
- SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).

GRADING NOTES:

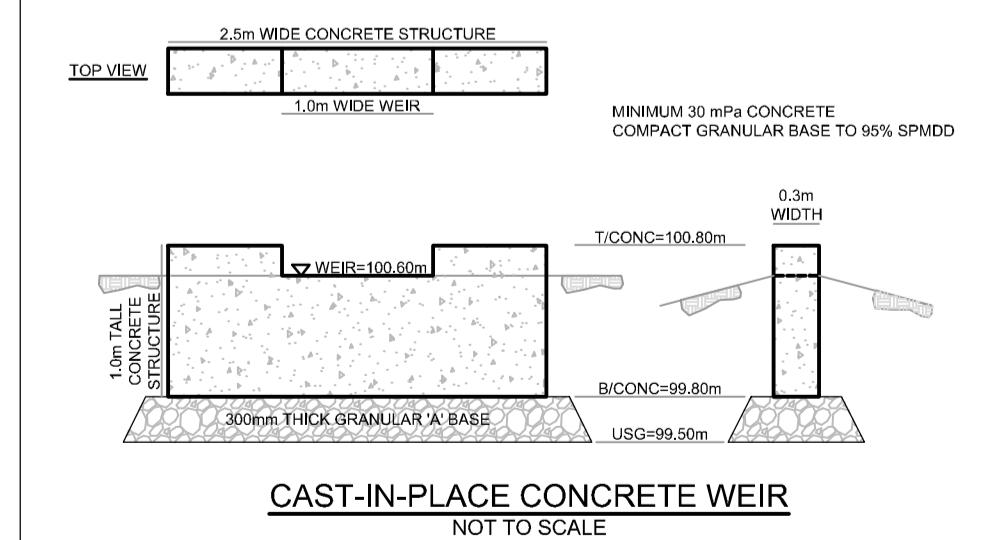
- ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
- EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
- ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
- THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
- MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
- MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
- ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
- ALL CURBS SHALL BE BARRIER CURB (150mm) UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC1.1).
- REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
- CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN AS WELL AS ALL SERVICING AS-BUILT ELEVATIONS FOR CULVERTS, STRUCTURES, PIPES AND ICDS.

EROSION AND SEDIMENT CONTROL NOTES:

- ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER AND THE CITY OF OTTAWA. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL AND SHOULD INCLUDE AS A MINIMUM THOSE MEASURES INDICATED ON THE PLAN.
- TO PREVENT SURFACE EROSION FROM ENTERING ANY STORM SEWER SYSTEM DURING CONSTRUCTION, FILTER BAGS WILL BE PLACED UNDER GRATES OF NEARBY CATCHBASINS AND STRUCTURES. A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED AROUND THE CONSTRUCTION AREA (WHERE APPLICABLE). THESE CONTROL MEASURES WILL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
- THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURES ARE NO LONGER REQUIRED. NO CONTROL MEASURES MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
- THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
- THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
- ROADWAYS ARE TO BE SWEEPED AS REQUIRED OR AS DIRECTED BY THE ENGINEER AND/OR MUNICIPALITY.
- THE CONTRACTOR SHALL ENSURE PROPER DUST CONTROL IS PROVIDED WITH THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS.

Erosion and Sediment Control Responsibilities:

ESCC Measure	Symbol	Specification	During Construction		After Construction Prior to Final Acceptance		After Final Acceptance	
			Installation Responsibility	Inspection/Maintenance Responsibility	Inspection Frequency	Approval to Remove	Removal Responsibility	Inspection/Maintenance Responsibility
Silt Fence	---	OPSD 219.110	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Consultant	Developer's Contractor	N/A
Filter Bags	---	Location as Indicated in ESC Note #2	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Consultant	Developer's Contractor	N/A
Mud Mat	(M)	Drawing Details	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Developer's Contractor	Developer's Contractor	N/A
Dust Control	---	Location as Required Around Site	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Consultant	Developer's Contractor	N/A
Stabilized Material Stockpiling	---	Location as Required by Contractor	Developer's Contractor	Developer's Contractor	Weekly (as a minimum)	Developer's Contractor	Developer's Contractor	N/A
Sediment Basin (for flows being pumped out of excavations)	---	Location as Required by Contractor	Developer's Contractor	Developer's Contractor	After Every Rainstorm	Developer's Contractor	Developer's Contractor	N/A



NOTE:
 THE POSITION OF ALL POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

SCALE
 1:500

DESIGN
 SM / MS

CHECKED
 MS

DRAWN
 SM / DM

CHECKED
 SM

APPROVED
 MS

No.	REVISION	DATE	BY
1	ISSUED FOR SITE PLAN APPROVAL	MAY 3/21	MS

FOR REVIEW ONLY

NOVATECH
 Engineers, Planners & Landscape Architects
 Suite 200, 240 Michael Cowpland Drive
 Ottawa, Ontario, Canada K2M 1P6
 Telephone: (613) 254-9643
 Facsimile: (613) 254-9667
 Website: www.novatech-eng.com

LOCATION
 CITY OF OTTAWA
 OTTO'S - OVERFLOW PARKING EXPANSION

DRAWING NAME
 GRADING, SERVICING AND EROSION & SEDIMENT CONTROL PLAN

PROJECT No.
 111177-00

REV
 REV #1

DRAWING No.
 111177-GS

M:\2011\11177\CAD\Design\11177-GS.dwg, SS: May 03, 2021, 3:11pm, sammathews

Table B1 :Infiltration Trench Depth/Area/Volume Summary

Elevation (m)	Depth (m)	Total Area (m ²)	Total Volume (m ³)
99.3	0.0	67	0
99.4	0.1	99	8
99.5	0.2	132	20
99.6	0.3	165	35
99.7	0.4	200	53
99.8	0.5	236	75
99.9	0.6	275	100
100	0.7	334	130
100.1	0.8	427	168
100.2	0.9	556	217
100.3	1.0	727	281
100.4	1.1	954	365
100.5	1.2	1230	474
100.6	1.3	1582	614
100.7	1.4	2162	801
100.8	1.5	2176	1018

Table B2 : Infiltration Trench Volume/Infiltration

Elevation (m)	Depth (m)	Incremental Area (m ²)	Total Area (m ²)	Incremental Volume (m ³)	Total Volume (m ³)	Infiltration Surface Type	Infiltration Rate (mm/hr)	Reduced Infiltration Rate* (mm/hr)	Incremental Infiltration Rate (m ³ /s)	Total Infiltration Rate (m ³ /s)
99.3	0.0	67	67	0	0	Sand	200	80	0.001493	0.001493
99.4	0.1	32	99	8	8	Grass	13	5	0.000115	0.001607
99.5	0.2	33	132	11	20	Grass	13	5	0.000118	0.001725
99.6	0.3	34	165	15	35	Grass	13	5	0.000122	0.001847
99.7	0.4	35	200	18	53	Grass	13	5	0.000125	0.001973
99.8	0.5	36	236	22	75	Grass	13	5	0.000129	0.002102
99.9	0.6	39	275	26	100	Grass	13	5	0.000140	0.002242
100	0.7	59	334	30	130	Grass	13	5	0.000213	0.002456
100.1	0.8	93	427	38	168	Grass	13	5	0.000337	0.002793
100.2	0.9	129	556	49	217	Grass	13	5	0.000466	0.003258
100.3	1.0	171	727	64	281	Grass	13	5	0.000617	0.003875
100.4	1.1	227	954	84	365	Grass	13	5	0.000820	0.004695
100.5	1.2	276	1230	109	474	Grass	13	5	0.000996	0.005691
100.6	1.3	352	1582	140	614	Grass	13	5	0.001271	0.006962

*Infiltration rate reduced by 2.5 as per CVC LID guidelines

Table B3:Storage/Outflow

Elevation (m)	Depth on Outlet (m)	Available Storage Volume above Outlet (m ³)	Outflow (m ³ /s)
100.6	0	0	0.000
100.7	1.4	801	0.049
100.8	1.5	1018	0.136


```

1  20  Metric units / ID numbers OFF
2  *#*****
3  *# SWMHYMO / INPUT DATA FILE
4  *#*****
5  *# Project Name: [OTTO's Parking Lot Expansion]   Project Number: [2128]
6  *# Date       : 04-20-2021
7  *# Modeller   : [M.M. ]
8  *# Company    : JFSAinc.
9  *# License #  : 2549237
10 *#*****
11 *% 25 mm Storm based on 2-Year, 3-Hour Chicago Storm
12 START           TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[001]
13 ["25MMC3H.stm"] <--storm filename, one per line for NSTORM time
14 *%-----|-----
15 READ STORM      STORM_FILENAME=["storm.001"]
16 *%-----|-----
17 DEFAULT VALUES ICASEdef=[2], read values only
18 DEFVAL_FILENAME=["Ottawa.val"]
19 *%-----|-----
20 * TOTAL SITE RUNOFF
21 CALIB STANDHYD NHYD=["PRO"], DT=[1](min), AREA=[1.268](ha), XIMP=[.80],
22 TIMP=[.80], DWF=[0.0](cms),
23 LOSS=[1] Horton Equ: Fo=[76.2](mm/hr), Fc=[13.2](mm/hr),
24 DCAY=[4.14](/hr), F=[0.00](mm),
25 Pervious areas: IAper=[4.67](mm), SLPP=[0.5](%), LGP=[40](m),
26 MNP=[0.25], SCP=[0](min),
27 Impervious areas: IAimp=[1.57](mm), SLPI=[1.1](%), LGI=[160](m),
28 MNI=[0.013], SCI=[0](min),
29 RAINFALL=[ , , -1]
30 *%-----|-----
31 * ROUTE FLOW WITHIN INFILTRATION TRENCH
32 * - OUTFLOW IS EXFILTRATION THROUGH SOIL
33 * - OVERFLOW IS EXCESS TO THE DRAIN
34 ROUTE RESERVOIR NHYDout=["Exfil"], NHYDin=["PRO"], RDT=[1](min),
35 TABLE of ( OUTFLOW-STORAGE ) values
36 (cms) - (ha-m)
37 [ 0.0 , 0.0 ]
38 [0.00149 , 0.00010]
39 [0.00154 , 0.00083]
40 [0.00159 , 0.00197]
41 [0.00163 , 0.00345]
42 [0.00168 , 0.00528]
43 [0.00174 , 0.00746]
44 [0.00179 , 0.01001]
45 [0.00188 , 0.01304]
46 [0.00201 , 0.01684]
47 [0.0022 , 0.02174]
48 [0.00245 , 0.02814]
49 [0.00277 , 0.03651]
50 [0.00317 , 0.0474]
51 [0.00368 , 0.06142]
52 [ -1 , -1 ] (maximum one hundred pairs of points)
53 NHYDovf=["Runoff"]
54 *%-----|-----
55 * ROUTE REMAINING (NON INFILTRATED FLOWS) THROUGH OUTLET STRUCTURE TO EXISTING DITCH
56 * OUTLET STRUCTURE 1m BROAD CRESTED WEIR AT ELEVATION 100.6 m
57 ROUTE RESERVOIR NHYDout=["Outflow"], NHYDin=["Runoff"], RDT=[1](min),
58 TABLE of ( OUTFLOW-STORAGE ) values
59 (cms) - (ha-m)
60 [ 0.0 , 0.0 ]
61 [0.01864 , 0.04896]
62 [0.04033 , 0.13567]
63 [ -1 , -1 ] (maximum one hundred pairs of points)

```

```

60                                     NHYDovf=["Overflow"]
61  *%-----|-----|
62  ADD HYD                               NHYDsum=["Out"], NHYDs to add=["Outflow"+"Overflow"]
63  *%-----|-----|
64  * BLOCKAGE SCENAIRO WHERE INFILTRATION TRENCH IS FULL PRIOR TO THE START OF THE EVENT
65  ROUTE RESERVOIR                       NHYDout=["BLOCK-OUT"], NHYDin=["PRO"], RDT=[1](min),
66                                     TABLE of ( OUTFLOW-STORAGE ) values
67                                     (cms) - (ha-m)
68                                     [ 0.0 , 0.0 ]
69                                     [0.01864 , 0.04896]
70                                     [0.04033 , 0.13567]
71                                     [ -1 , -1 ] (maximum one hundred pairs of points)
72                                     NHYDovf=["BLOCK-OVER"]
73  *%-----|-----|
74  *#=====|=====|
75  *                                     DESIGN STORMS
76  *#=====|=====|
77  *% 25 mm Storm based on 2-Year, 3-Hour Chicago Storm
78  *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[001]
79  *                                     ["25MMC3H.stm"] <--storm filename, one per line for NSTORM time
80  *%-----|-----|
81  *% 2-Year, 3-Hour Chicago Storm
82  *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[002]
83  *                                     ["002YC3H.stm"] <--storm filename, one per line for NSTORM time
84  *%-----|-----|
85  *% 5-Year, 3-Hour Chicago Storm
86  *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[005]
87  *                                     ["005YC3H.stm"] <--storm filename, one per line for NSTORM time
88  *%-----|-----|
89  *% 10-Year, 3-Hour Chicago Storm
90  *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[010]
91  *                                     ["010YC3H.stm"] <--storm filename, one per line for NSTORM time
92  *%-----|-----|
93  *% 25-Year, 3-Hour Chicago Storm
94  *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[025]
95  *                                     ["025YC3H.stm"] <--storm filename, one per line for NSTORM time
96  *%-----|-----|
97  *% 50-Year, 3-Hour Chicago Storm
98  *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[050]
99  *                                     ["050YC3H.stm"] <--storm filename, one per line for NSTORM time
100 *%-----|-----|
101 *% 100-Year, 3-Hour Chicago Storm
102 *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[099]
103 *                                     ["100YC3H.stm"] <--storm filename, one per line for NSTORM time
104 *%-----|-----|
105 *% 2-Year, 24-Hour SCS Storm
106 *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[102]
107 *                                     ["SC24002x.stm"] <--storm filename, one per line for NSTORM time
108 *%-----|-----|
109 *% 5-Year, 24-Hour SCS Storm
110 *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[105]
111 *                                     ["SC24005x.stm"] <--storm filename, one per line for NSTORM time
112 *%-----|-----|
113 *% 10-Year, 24-Hour SCS Storm
114 *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[110]
115 *                                     ["SC24010x.stm"] <--storm filename, one per line for NSTORM time
116 *%-----|-----|
117 *% 25-Year, 24-Hour SCS Storm
118 *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[125]
119 *                                     ["SC24025x.stm"] <--storm filename, one per line for NSTORM time
120 *%-----|-----|
121 *% 50-Year, 24-Hour SCS Storm
122 *START                                TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[150]
123 *                                     ["SC24050x.stm"] <--storm filename, one per line for NSTORM time
124 *%-----|-----|
125 *% 100-Year, 24-Hour SCS Storm

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126 START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[199]
127 ["SC24100x.stm"] <--storm filename, one per line for NSTORM time
128 *%-----|-----|
129 *% July 1st, 1979 Storm - Ottawa International Airport
130 START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[979]
131 ["19790701.stm"] <--storm filename, one per line for NSTORM time
132 *%-----|-----|
133 *% August 4th, 1988 Storm - Ottawa International Airport
134 START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[988]
135 ["19880804.stm"] <--storm filename, one per line for NSTORM time
136 *%-----|-----|
137 *% August 8th, 1996 Storm - Ottawa International Airport
138 START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[996]
139 ["19960808.stm"] <--storm filename, one per line for NSTORM time
140 *%-----|-----|
141 *% 100-Year, 24-Hour SCS Storm + 20%
142 START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[998]
143 ["SC24100x+.stm"] <--storm filename, one per line for NSTORM time
144 *%-----|-----|
145 *% 100-Year, 3-Hour Chicago Storm + 20%
146 START TZERO=[0.0], METOUT=[2], NSTORM=[1], NRUN=[999]
147 ["100YC3H+.stm"] <--storm filename, one per line for NSTORM time
148 *%-----|-----|
149 FINISH
```

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00001 -----
00002 -----
00003 SSSS W W M M H H Y Y M M O O 222 000 11 5555
00004 S W W M M M M H H Y Y M M M O 2 0 0 11 5
00005 SSSS W W M M H H Y Y M M O O 222 000 11 5
00006 S W W M M H H Y Y M M O O 222 0 0 11 555 FEB 2013
00007 SSSS W W M M H H Y Y M M O O 2 0 0 11 5
00008 2 0 0 11 5 2549237
00009 StormWater Management Hydrologic Model 222 000 11 555
00010 -----
00011 -----
00012 SWMRYD / INPUT DATA FILE
00013 ***** SWMRYD Ver 3.100 *****
00014 A single event and continuous hydrologic simulation model
00015 based on the principles of HYMO and its successors
00016 -----
00017 Distributed by: J.F. Sabourin and Associates Inc. *****
00018 Ottawa, Ontario: (613) 836-3884 *****
00019 Gatineau, Quebec: (819) 243-6858 *****
00020 E-mail: jsabour@jfsa.com *****
00021 -----
00022 -----
00023 *****
00024 Licensed user: JFSAinc. *****
00025 SERIAL#:2549237 *****
00026 *****
00027 -----
00028 *****
00029 ***** PROGRAM ARRAY DIMENSIONS *****
00030 Max. number of IO numbers: 31 *****
00031 Max. number of rainfall points: 105408 *****
00032 Max. number of flow points: 105408 *****
00033 -----
00034 -----
00035 S U M M A R Y O U T P U T
00036 -----
00037 RUN DATE: 2021-04-28 TIME: 11:58:11 RUN COUNTER: 003890
00038 -----
00039 Input file: C:\Temp\20210420-Post Development\Design\POST-DEV_V01.dat
00040 Output file: C:\Temp\20210420-Post Development\Design\POST-DEV_V01.out
00041 Summary file: C:\Temp\20210420-Post Development\Design\POST-DEV_V01.sum
00042 User comments:
00043 1:
00044 2:
00045 3:
00046 -----
00047 -----
00048 -----
00049 -----
00050 -----
00051 SWMRYD / INPUT DATA FILE
00052 ***** SWMRYD Ver 3.100 *****
00053 Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00054 Date: 04-20-2021
00055 Modeler: [J.M.M.]
00056 Company: JFSAinc.
00057 License #: 2549237
00058 *****
00059 RUN#COMMAND#
00060 R0001:C0000#
00061 [ZERO = .00 hrs on 0]
00062 [METOUT = 2 (1=imperial, 2=metric output)]
00063 [NSTORM = 1]
00064 [NRUN = 005]
00065 R0001:C0000#
00066 [XINF=80;TIMP=80]
00067 [Horton parameters: Fw= 76.20;Frc= 13.20;DCAV=4.14; Fc= .00]
00068 [Previous area: IArea= 4.67;SLPF= .50;LGP= 40.0;MNF= .250;SCP= .0]
00069 [Impervious area: IArea= 1.57;SLPF= 1.10;LGI= 160.0;MNI= .013;ICI= .0]
00070 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00071 [MxStoUsed=0.000E+00 m3, TotDurOfV= 0.hrs]
00072 overflow <= 1.0 01:Exfil 1.27 .003 No_date 3:05 18.88 n/a .000
00073 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00074 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00075 overflow <= 1.0 01:Runoff .00 .000 No_date 0:00 .00 n/a .000
00076 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00077 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00078 overflow <= 1.0 01:Outflow .00 .000 No_date 0:00 .00 n/a .000
00079 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00080 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00081 overflow <= 1.0 02:Overflow .00 .000 No_date 0:00 .00 n/a .000
00082 ADD HYD + 1.0 02:Outflow .00 .000 No_date 0:00 .00 n/a .000
00083 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00084 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00085 overflow <= 1.0 01:Runoff .00 .000 No_date 0:00 .00 n/a .000
00086 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00087 [MxStoUsed=.1904E-01 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00088 overflow <= 1.0 01:BLOCK-OVER 1.27 .007 No_date 2:23 18.88 n/a .000
00089 *****
00090 *****
00091 *****
00092 *****
00093 *****
00094 *****
00095 *****
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00102 *****
00103 *****
00104 *****
00105 *****
00106 *****
00107 *****
00108 *****
00109 RUN#COMMAND#
00110 R0002:C0001#
00111 [ZERO = .00 hrs on 0]
00112 [METOUT = 2 (1=imperial, 2=metric output)]
00113 [NSTORM = 1]
00114 [NRUN = 005]
00115 R0002:C0001#
00116 [XINF=80;TIMP=80]
00117 [Horton parameters: Fw= 76.20;Frc= 13.20;DCAV=4.14; Fc= .00]
00118 [Previous area: IArea= 4.67;SLPF= .50;LGP= 40.0;MNF= .250;SCP= .0]
00119 [Impervious area: IArea= 1.57;SLPF= 1.10;LGI= 160.0;MNI= .013;ICI= .0]
00120 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00121 [MxStoUsed=0.000E+00 m3, TotDurOfV= 0.hrs]
00122 overflow <= 1.0 01:Exfil 1.27 .003 No_date 3:05 24.95 n/a .000
00123 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00124 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00125 overflow <= 1.0 01:Runoff .00 .000 No_date 0:00 .00 n/a .000
00126 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00127 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00128 overflow <= 1.0 01:Outflow .00 .000 No_date 0:00 .00 n/a .000
00129 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00130 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00131 overflow <= 1.0 02:Overflow .00 .000 No_date 0:00 .00 n/a .000
00132 ADD HYD + 1.0 02:Outflow .00 .000 No_date 0:00 .00 n/a .000
00133 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00134 [MxStoUsed=0.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00135 overflow <= 1.0 01:BLOCK-OVER 1.27 .019 No_date 2:14 24.95 n/a .000
00136 *****
00137 *****
00138 *****
00139 *****
00140 *****
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00168 *****
00169 RUN#COMMAND#
00170 R0005:C0001#
00171 [ZERO = .00 hrs on 0]
00172 [METOUT = 2 (1=imperial, 2=metric output)]
00173 [NSTORM = 1]
00174 [NRUN = 005]
00175 R0005:C0001#
00176 [XINF=80;TIMP=80]
00177 [Horton parameters: Fw= 76.20;Frc= 13.20;DCAV=4.14; Fc= .00]
00178 [Previous area: IArea= 4.67;SLPF= .50;LGP= 40.0;MNF= .250;SCP= .0]
00179 [Impervious area: IArea= 1.57;SLPF= 1.10;LGI= 160.0;MNI= .013;ICI= .0]
00180 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00181 [MxStoUsed=0.000E+00 m3, TotDurOfV= 0.hrs]
00182 overflow <= 1.0 01:Exfil 1.27 .003 No_date 3:05 34.59 n/a .000
00183 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00184 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00185 overflow <= 1.0 01:Runoff .00 .000 No_date 0:00 .00 n/a .000
00186 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00187 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00188 overflow <= 1.0 02:Overflow .00 .000 No_date 0:00 .00 n/a .000
00189 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00190 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00191 overflow <= 1.0 01:Outflow .00 .000 No_date 0:00 .00 n/a .000
00192 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00193 [MxStoUsed=.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00194 overflow <= 1.0 02:Overflow .00 .000 No_date 0:00 .00 n/a .000
00195 ADD HYD + 1.0 02:Outflow .00 .000 No_date 0:00 .00 n/a .000
00196 ROUTE RESERVOIR --> DRAIN-ID:INHYD-----AREAh-QPEAKms-TpeakDate_hh:mm-----Rvm-R.C-----DMFms
00197 [MxStoUsed=0.000E+00 m3, TotDurOfV=.000E+00 m3, N-Ofv= 0, TotDurOfV= 0.hrs]
00198 overflow <= 1.0 01:BLOCK-OVER 1.27 .013 No_date 2:16 34.59 n/a .000
00199 *****
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00181 # Company : JFSAinc.
00182 # License # : 2549237
00183 # *****
00184 R0005:C0002#
00185 READ STORM
00186 File name = storm.001
00187 Comment = CHICAGO STORM 5 Year, 3 Hours
00188 [SDT=10.00;SDUR= 3.00;PLOT= 42.51]
00189 R0005:C0002#
00190 *****
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00361 R0050:C0002
00362 READ STORM
00363 Filename = storm.001
00364 Comment = CHICAGO STORM 50 Year, 3 Hours
00365 [SET=10.00:SDOR= 3.00:PTOT= 64.81]
00366 R0050:C0003
00367 ***** DEFAULT VALUES *****
00368 Filename = C:\Temp\20210420-Post Development\Design\Ottawa.val
00369 ICASEV = 2 (read values only)
00370 R0050:C0004-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00371 CALIS STANBYD 1.0 0.01:PRG 1.27 .457 No_date 1:00 55.50 856 .000
00372 [XIMP=80:ITMP=80]
00373 [Horton parameters: Fw= 76.20:Frc= 13.20:DCAV=4.14: Fw= .00]
00374 [Impervious area: IAPar= 4.67:SLPF= .50:ICM= 40.0:MM= .250:SCP= .0]
00375 [Impervious area: IAPar= 1.57:SLPF= 1.10:ICM= 160.0:MM= .01:SCP= .0]
00376 R0050:C0005-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00377 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .160 No_date 12:00 38.97 n/a .000
00378 out <- 1.0 0.01:EXFIL 1.16 .004 No_date 1:54 55.50 n/a .000
00379 over <- 1.0 0.03:Runoff 1.27 .025 No_date 1:54 55.50 n/a .000
00380 [M&TtoUsed=562E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00381 R0050:C0006-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00382 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .025 No_date 1:54 55.50 n/a .000
00383 out <- 1.0 0.01:Outflow .10 .002 No_date 3:03 55.49 n/a .000
00384 over <- 1.0 0.03:OverFlow .10 .002 No_date 3:03 55.49 n/a .000
00385 [M&TtoUsed=562E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00386 R0050:C0007-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00387 ADD HYD + 1.0 0.02:OverFlow .10 .000 No_date 0:00 .00 n/a .000
00388 + 1.0 0.01:Outflow .10 .000 No_date 0:00 .00 n/a .000
00389 SUM= 1.0 0.01:Out 1.00 .002 No_date 3:03 55.49 n/a .000
00390 R0050:C0008-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00391 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .457 No_date 1:00 55.50 n/a .000
00392 out <- 1.0 0.01:BLOCK-OUT 1.27 .022 No_date 2:12 55.50 n/a .000
00393 over <- 1.0 0.03:BLOCK-OVER .10 .000 No_date 0:00 .00 n/a .000
00394 [M&TtoUsed=562E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00395 ***** END OF RUN : 98 *****
00396
00397
00398
00399
00400
00401
00402
00403
00404
00405 RUN:COMMAND#
00406 R0099:C0001
00407 START
00408 [TZERO = .00 hrs on 0]
00409 [METOUT= 2 (1=Imperial, 2=metric output)]
00410 [METFORM= 1]
00411 [NRUN = 0099]
00412 *****
00413 # SWSHYNO / INPUT DATA FILE
00414 # Date = 04-20-2021
00415 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00416 # Modeller [J.F.S.]
00417 # License # [254923]
00418 # Company : JFSAinc.
00419 # License # : 254923
00420 *****
00421 R0099:C0002
00422 READ STORM
00423 Filename = storm.001
00424 Comment = CHICAGO STORM 100 Year, 3 Hours
00425 [SET=10.00:SDOR= 3.00:PTOT= 71.66]
00426 R0099:C0003
00427 ***** DEFAULT VALUES *****
00428 Filename = C:\Temp\20210420-Post Development\Design\Ottawa.val
00429 ICASEV = 2 (read values only)
00430 R0099:C0004-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00431 CALIS STANBYD 1.0 0.01:PRG 1.27 .511 No_date 1:00 62.02 865 .000
00432 [XIMP=80:ITMP=80]
00433 [Horton parameters: Fw= 76.20:Frc= 13.20:DCAV=4.14: Fw= .00]
00434 [Impervious area: IAPar= 4.67:SLPF= .50:ICM= 40.0:MM= .250:SCP= .0]
00435 [Impervious area: IAPar= 1.57:SLPF= 1.10:ICM= 160.0:MM= .01:SCP= .0]
00436 R0099:C0005-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00437 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .511 No_date 1:00 62.02 n/a .000
00438 out <- 1.0 0.01:EXFIL 1.04 .004 No_date 1:26 62.02 n/a .000
00439 over <- 1.0 0.03:Runoff 1.27 .074 No_date 1:26 62.02 n/a .000
00440 [M&TtoUsed=562E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00441 R0099:C0006-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00442 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .074 No_date 1:26 62.02 n/a .000
00443 out <- 1.0 0.01:Outflow .23 .005 No_date 3:03 62.01 n/a .000
00444 over <- 1.0 0.03:OverFlow .23 .005 No_date 3:03 62.01 n/a .000
00445 [M&TtoUsed=562E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00446 R0099:C0007-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00447 ADD HYD + 1.0 0.02:OverFlow .10 .000 No_date 0:00 .00 n/a .000
00448 + 1.0 0.01:Outflow .10 .000 No_date 0:00 .00 n/a .000
00449 SUM= 1.0 0.01:Out 1.00 .005 No_date 3:03 62.01 n/a .000
00450 R0099:C0008-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00451 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .511 No_date 1:00 62.02 n/a .000
00452 out <- 1.0 0.01:BLOCK-OUT 1.27 .022 No_date 2:12 62.02 n/a .000
00453 over <- 1.0 0.03:BLOCK-OVER .10 .000 No_date 0:00 .00 n/a .000
00454 [M&TtoUsed=562E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00455 ***** END OF RUN : 101 *****
00456
00457
00458
00459
00460
00461
00462
00463
00464
00465 RUN:COMMAND#
00466 R0102:C0001
00467 START
00468 [TZERO = .00 hrs on 0]
00469 [METOUT= 2 (1=Imperial, 2=metric output)]
00470 [METFORM= 1]
00471 [NRUN = 0102]
00472 *****
00473 # SWSHYNO / INPUT DATA FILE
00474 # Date = 04-20-2021
00475 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00476 # Modeller [J.F.S.]
00477 # License # [254923]
00478 # Company : JFSAinc.
00479 # License # : 254923
00480 *****
00481 R0102:C0002
00482 READ STORM
00483 Filename = storm.001
00484 Comment = 2 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00485 [SET=10.00:SDOR= 24.00:PTOT= 48.46]
00486 R0102:C0003
00487 ***** DEFAULT VALUES *****
00488 Filename = C:\Temp\20210420-Post Development\Design\Ottawa.val
00489 ICASEV = 2 (read values only)
00490 R0102:C0004-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00491 CALIS STANBYD 1.0 0.01:PRG 1.27 .160 No_date 12:00 38.97 804 .000
00492 [XIMP=80:ITMP=80]
00493 [Horton parameters: Fw= 76.20:Frc= 13.20:DCAV=4.14: Fw= .00]
00494 [Impervious area: IAPar= 4.67:SLPF= .50:ICM= 40.0:MM= .250:SCP= .0]
00495 [Impervious area: IAPar= 1.57:SLPF= 1.10:ICM= 160.0:MM= .01:SCP= .0]
00496 R0102:C0005-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00497 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .160 No_date 12:00 38.97 n/a .000
00498 out <- 1.0 0.01:EXFIL 1.27 .003 No_date 16:10 38.97 n/a .000
00499 over <- 1.0 0.03:Runoff 1.27 .000 No_date 0:00 .00 n/a .000
00500 [M&TtoUsed=145E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00501 R0102:C0006-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00502 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .000 No_date 0:00 .00 n/a .000
00503 out <- 1.0 0.01:Outflow .10 .000 No_date 0:00 .00 n/a .000
00504 over <- 1.0 0.03:OverFlow .10 .000 No_date 0:00 .00 n/a .000
00505 [M&TtoUsed= .000E+00 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00506 R0102:C0007-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00507 ADD HYD + 1.0 0.02:OverFlow .14 .003 No_date 0:00 .00 n/a .000
00508 + 1.0 0.01:Outflow .14 .003 No_date 0:00 .00 n/a .000
00509 SUM= 1.0 0.01:Out 1.00 .003 No_date 16:03 73.20 n/a .000
00510 R0102:C0008-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00511 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .011 No_date 13:02 38.97 n/a .000
00512 out <- 1.0 0.01:BLOCK-OUT 1.27 .011 No_date 13:02 38.97 n/a .000
00513 over <- 1.0 0.03:BLOCK-OVER .10 .000 No_date 0:00 .00 n/a .000
00514 [M&TtoUsed=2849E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00515 ***** END OF RUN : 104 *****
00516
00517
00518
00519
00520
00521
00522
00523
00524
00525 RUN:COMMAND#
00526 R0105:C0001
00527 START
00528 [TZERO = .00 hrs on 0]
00529 [METOUT= 2 (1=Imperial, 2=metric output)]
00530 [METFORM= 1]
00531 [NRUN = 0105]
00532 *****
00533 # SWSHYNO / INPUT DATA FILE
00534 # Date = 04-20-2021
00535 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00536 # Modeller [J.F.S.]
00537 # License # [254923]
00538 # Company : JFSAinc.
00539 # License # : 254923
00540 *****
00541 R0105:C0002
00542 READ STORM
00543 Filename = storm.001

00441 READ STORM
00442 Filename = storm.001
00443 Comment = 5 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00444 [SET=10.00:SDOR= 24.00:PTOT= 64.11]
00445 R0105:C0003
00446 ***** DEFAULT VALUES *****
00447 Filename = C:\Temp\20210420-Post Development\Design\Ottawa.val
00448 ICASEV = 2 (read values only)
00449 R0105:C0004-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00450 CALIS STANBYD 1.0 0.01:PRG 1.27 .222 No_date 12:00 52.97 826 .000
00451 [XIMP=80:ITMP=80]
00452 [Horton parameters: Fw= 76.20:Frc= 13.20:DCAV=4.14: Fw= .00]
00453 [Impervious area: IAPar= 4.67:SLPF= .50:ICM= 40.0:MM= .250:SCP= .0]
00454 [Impervious area: IAPar= 1.57:SLPF= 1.10:ICM= 160.0:MM= .01:SCP= .0]
00455 R0105:C0005-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00456 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .222 No_date 12:00 52.97 n/a .000
00457 out <- 1.0 0.01:EXFIL 1.13 .004 No_date 12:33 73.20 n/a .000
00458 over <- 1.0 0.03:Runoff 1.27 .034 No_date 12:33 73.20 n/a .000
00459 [M&TtoUsed=494E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00460 R0105:C0006-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00461 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .000 No_date 0:00 .00 n/a .000
00462 out <- 1.0 0.01:Outflow .10 .000 No_date 0:00 .00 n/a .000
00463 over <- 1.0 0.03:OverFlow .10 .000 No_date 0:00 .00 n/a .000
00464 [M&TtoUsed= .000E+00 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00465 R0105:C0007-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00466 ADD HYD + 1.0 0.02:OverFlow .10 .000 No_date 0:00 .00 n/a .000
00467 + 1.0 0.01:Outflow .10 .000 No_date 0:00 .00 n/a .000
00468 SUM= 1.0 0.01:Out 1.00 .000 No_date 0:00 .00 n/a .000
00469 R0105:C0008-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00470 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .222 No_date 12:00 52.97 n/a .000
00471 out <- 1.0 0.01:BLOCK-OUT 1.27 .013 No_date 12:33 52.97 n/a .000
00472 over <- 1.0 0.03:BLOCK-OVER .10 .000 No_date 0:00 .00 n/a .000
00473 [M&TtoUsed=494E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00474 ***** END OF RUN : 109 *****
00475
00476
00477
00478
00479
00480
00481
00482
00483
00484
00485 RUN:COMMAND#
00486 START
00487 [TZERO = .00 hrs on 0]
00488 [METOUT= 2 (1=Imperial, 2=metric output)]
00489 [METFORM= 1]
00490 [NRUN = 0110]
00491 *****
00492 # SWSHYNO / INPUT DATA FILE
00493 # Date = 04-20-2021
00494 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00495 # Modeller [J.F.S.]
00496 # License # [254923]
00497 # Company : JFSAinc.
00498 # License # : 254923
00499 *****
00500 R0105:C0002
00501 READ STORM
00502 Filename = storm.001
00503 Comment = 10 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00504 [SET=10.00:SDOR= 24.00:PTOT= 74.35]
00505 R0105:C0003
00506 ***** DEFAULT VALUES *****
00507 Filename = C:\Temp\20210420-Post Development\Design\Ottawa.val
00508 ICASEV = 2 (read values only)
00509 R0105:C0004-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00510 CALIS STANBYD 1.0 0.01:PRG 1.27 .266 No_date 12:00 62.04 834 .000
00511 [XIMP=80:ITMP=80]
00512 [Horton parameters: Fw= 76.20:Frc= 13.20:DCAV=4.14: Fw= .00]
00513 [Impervious area: IAPar= 4.67:SLPF= .50:ICM= 40.0:MM= .250:SCP= .0]
00514 [Impervious area: IAPar= 1.57:SLPF= 1.10:ICM= 160.0:MM= .01:SCP= .0]
00515 R0105:C0005-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00516 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .266 No_date 12:00 62.03 n/a .000
00517 out <- 1.0 0.01:EXFIL 1.27 .004 No_date 20:02 62.03 n/a .000
00518 over <- 1.0 0.03:Runoff 1.27 .000 No_date 0:00 .00 n/a .000
00519 [M&TtoUsed=589E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00520 R0105:C0006-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00521 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .000 No_date 0:00 .00 n/a .000
00522 out <- 1.0 0.01:Outflow .10 .000 No_date 0:00 .00 n/a .000
00523 over <- 1.0 0.03:OverFlow .10 .000 No_date 0:00 .00 n/a .000
00524 [M&TtoUsed= .000E+00 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00525 R0105:C0007-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00526 ADD HYD + 1.0 0.02:OverFlow .10 .000 No_date 0:00 .00 n/a .000
00527 + 1.0 0.01:Outflow .10 .000 No_date 0:00 .00 n/a .000
00528 SUM= 1.0 0.01:Out 1.00 .000 No_date 0:00 .00 n/a .000
00529 R0105:C0008-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00530 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .266 No_date 12:00 62.03 n/a .000
00531 over <- 1.0 0.01:BLOCK-OUT 1.27 .018 No_date 12:50 62.03 n/a .000
00532 over <- 1.0 0.03:BLOCK-OVER .10 .000 No_date 0:00 .00 n/a .000
00533 [M&TtoUsed=474E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00534 ***** END OF RUN : 124 *****
00535
00536
00537
00538
00539
00540
00541
00542
00543
00544
00545 RUN:COMMAND#
00546 R0123:C0001
00547 START
00548 [TZERO = .00 hrs on 0]
00549 [METOUT= 2 (1=Imperial, 2=metric output)]
00550 [METFORM= 1]
00551 [NRUN = 0123]
00552 *****
00553 # SWSHYNO / INPUT DATA FILE
00554 # Date = 04-20-2021
00555 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00556 # Modeller [J.F.S.]
00557 # License # [254923]
00558 # Company : JFSAinc.
00559 # License # : 254923
00560 *****
00561 R0123:C0002
00562 READ STORM
00563 Filename = storm.001
00564 Comment = 2 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00565 [SET=10.00:SDOR= 24.00:PTOT= 48.99]
00566 R0123:C0003
00567 ***** DEFAULT VALUES *****
00568 Filename = C:\Temp\20210420-Post Development\Design\Ottawa.val
00569 ICASEV = 2 (read values only)
00570 R0123:C0004-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00571 CALIS STANBYD 1.0 0.01:PRG 1.27 .317 No_date 12:00 73.20 843 .000
00572 [XIMP=80:ITMP=80]
00573 [Horton parameters: Fw= 76.20:Frc= 13.20:DCAV=4.14: Fw= .00]
00574 [Impervious area: IAPar= 4.67:SLPF= .50:ICM= 40.0:MM= .250:SCP= .0]
00575 [Impervious area: IAPar= 1.57:SLPF= 1.10:ICM= 160.0:MM= .01:SCP= .0]
00576 R0123:C0005-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00577 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .317 No_date 12:00 73.20 n/a .000
00578 out <- 1.0 0.01:EXFIL 1.27 .004 No_date 16:03 73.20 n/a .000
00579 over <- 1.0 0.03:Runoff 1.27 .000 No_date 0:00 .00 n/a .000
00580 [M&TtoUsed=102E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00581 R0123:C0006-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00582 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .000 No_date 0:00 .00 n/a .000
00583 out <- 1.0 0.01:Outflow .14 .004 No_date 12:33 73.20 n/a .000
00584 over <- 1.0 0.03:OverFlow .14 .004 No_date 12:33 73.20 n/a .000
00585 [M&TtoUsed=671E-02 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00586 R0123:C0007-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00587 ADD HYD + 1.0 0.02:OverFlow .14 .003 No_date 16:03 73.20 n/a .000
00588 + 1.0 0.01:Outflow .14 .003 No_date 16:03 73.20 n/a .000
00589 SUM= 1.0 0.01:Out 1.00 .003 No_date 16:03 73.20 n/a .000
00590 R0123:C0008-----DTMID-ID:INHYD-----AREAA-PEAKCms-TpeakDate_hh:mm-----RvM-R.C-----DWFCms
00591 ROUTE RESERVOIR -> 1.0 0.02:PRO 1.27 .317 No_date 12:00 73.20 n/a .000
00592 over <- 1.0 0.01:BLOCK-OUT 1.27 .020 No_date 12:52 73.20 n/a .000
00593 over <- 1.0 0.03:BLOCK-OVER .10 .000 No_date 0:00 .00 n/a .000
00594 [M&TtoUsed=162E-01 m3, TotVolVol= .000E+00 m3, N-ovf= 0, TotDurOvf= 0.hrs]
00595 ***** END OF RUN : 149 *****
00596
00597
00598
00599
00600
00601
00602
00603
00604
00605 RUN:COMMAND#
00606 R0700:C0001
00607 START
00608 [TZERO = .00 hrs on 0]
00609 [METOUT= 2 (1=Imperial, 2=metric output)]
00610 [METFORM= 1]
00611 [NRUN = 0100]
00612 *****
00613 # SWSHYNO / INPUT DATA FILE
00614 # Date = 04-20-2021
00615 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00616 # Modeller [J.F.S.]
00617 # License # [254923]
00618 # Company : JFSAinc.
00619 # License # : 254923
00620 *****
00621 R0700:C0002
00622 READ STORM
00623 Filename = storm.001

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00721 Comment = 50 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00722 [SET=10.00]STORM= 24.00[PFTOT= 36.53]
00723 R0199:R0199C0003-----
00724 DEFAULT VALUES
00725 File name = C:\Temp\20210420-Post Development\Design\Ottawa.val
00726 ICASEGV = 2 (read values only)
00727 R0199:R0199C0004-----
00728 CALIB STANDHYD 1.0 01:PRG 1.27 .357 Mdate 12100 81.87 848 .000
00729 [XIMP=80]TIME=.80
00730 (Horton parameters: Fw= 76.20[Fc= 13.20]DCAY=4.14; F= .00)
00731 [Previous area: IAPar= 4.67]SLP= .50[LIP= 40.0]NF= .250[SCP= .0]
00732 [Imperious area: IAMP= 1.97]SLP= 1.10[LIP= 160.0]NF= .012[SCP= .0]
00733 R0199:R0199C0005-----
00734 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .357 Mdate 12100 81.87 n/a .000
00735 out <= 1.0 01:RdInfl 1.02 .004 Mdate 12110 81.87 n/a .000
00736 overflow <= 1.0 03:Runoff .35 .095 Mdate 12110 81.87 n/a .000
00737 [MxStoUsed=.612E+01 m3, TotVol=2055E+01 m3, N-Ov= 2, TotDur=0.7 hrs]
00738 R0199:R0199C0006-----
00739 ROUTE RESERVOIR --> 1.0 02:Runoff .25 .095 Mdate 12110 81.87 n/a .000
00740 out <= 1.0 01:RdInfl .25 .005 Mdate 1408 81.86 n/a .000
00741 overflow <= 1.0 03:OverFlow .00 .000 Mdate 0100 .00 n/a .000
00742 [MxStoUsed=.129E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00743 R0199:R0199C0007-----
00744 ADD HYD + 1.0 02:Outflow .25 .005 Mdate 1408 81.86 n/a .000
00745 + 1.0 01:Outflow .25 .005 Mdate 1408 81.86 n/a .000
00746 SUM= 1.0 01:Outflow .25 .005 Mdate 1408 81.86 n/a .000
00747 R0199:R0199C0008-----
00748 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .357 Mdate 12100 81.87 n/a .000
00749 out <= 1.0 01:BLCK-OUT 1.27 .024 Mdate 12153 81.86 n/a .000
00750 overflow <= 1.0 03:BLCK-OVER .00 .000 Mdate 0100 .00 n/a .000
00751 [MxStoUsed=.632E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00752 *****
00753 #
00754 ** END OF RUN : 198
00755 *****
00756 *****
00757 *****
00758 *****
00759 *****
00760 *****
00761 *****
00762 RIN9:COMMANDS
00763 R0199:R0199C0001-----
00764 START
00765 [ITER= 0 .00 hrs on 0]
00766 [METOUT= 2 (1=Imperial, 2=metric output)]
00767 [NETINFO= 1]
00768 [NRUN = 019 ]
00769 *****
00770 # SMOOTH / INPUT DATA FILE
00771 *****
00772 # Project Name: (OTY's Parking Lot Expansion) Project Number: [1218]
00773 # Date : 04-20-2021
00774 # Modeler : [J.F.M.]
00775 # Company : JFSAinc.
00776 # License # : 2549237
00777 *****
00778 R0199:R0199C0002-----
00779 READ STORM
00780 File name = storm.001
00781 Comment = 100 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00782 [SET=10.00]STORM= 24.00[PFTOT= 156.73]
00783 R0199:R0199C0003-----
00784 DEFAULT VALUES
00785 File name = C:\Temp\20210420-Post Development\Design\Ottawa.val
00786 ICASEGV = 2 (read values only)
00787 R0199:R0199C0004-----
00788 CALIB STANDHYD 1.0 01:PRG 1.27 .400 Mdate 12100 91.03 853 .000
00789 [XIMP=80]TIME=.80
00790 (Horton parameters: Fw= 76.20[Fc= 13.20]DCAY=4.14; F= .00)
00791 [Previous area: IAPar= 4.67]SLP= .50[LIP= 40.0]NF= .250[SCP= .0]
00792 [Imperious area: IAMP= 1.97]SLP= 1.10[LIP= 160.0]NF= .012[SCP= .0]
00793 R0199:R0199C0005-----
00794 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .400 Mdate 12100 91.03 n/a .000
00795 out <= 1.0 01:RdInfl 1.02 .004 Mdate 12103 91.03 n/a .000
00796 overflow <= 1.0 03:Runoff .35 .297 Mdate 12103 91.03 n/a .000
00797 [MxStoUsed=.612E+01 m3, TotVol=3147E+01 m3, N-Ov= 2, TotDur=0.7 hrs]
00798 R0199:R0199C0006-----
00799 ROUTE RESERVOIR --> 1.0 02:Runoff .35 .297 Mdate 12103 91.03 n/a .000
00800 out <= 1.0 01:RdInfl .35 .008 Mdate 1403 91.03 n/a .000
00801 overflow <= 1.0 03:OverFlow .00 .000 Mdate 0100 .00 n/a .000
00802 [MxStoUsed=.203E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00803 R0199:R0199C0007-----
00804 ADD HYD + 1.0 02:Outflow .35 .008 Mdate 1403 91.03 n/a .000
00805 + 1.0 01:OverFlow .00 .000 Mdate 0100 .00 n/a .000
00806 SUM= 1.0 01:Outflow .35 .008 Mdate 1403 91.03 n/a .000
00807 R0199:R0199C0008-----
00808 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .400 Mdate 12100 91.03 n/a .000
00809 out <= 1.0 01:BLCK-OUT 1.27 .024 Mdate 12156 91.03 n/a .000
00810 overflow <= 1.0 03:BLCK-OVER .00 .000 Mdate 0100 .00 n/a .000
00811 [MxStoUsed=.706E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00812 *****
00813 #
00814 ** END OF RUN : 978
00815 *****
00816 *****
00817 *****
00818 *****
00819 *****
00820 *****
00821 *****
00822 RIN9:COMMANDS
00823 R0199:R0199C0001-----
00824 START
00825 [ITER= 0 .00 hrs on 0]
00826 [METOUT= 2 (1=Imperial, 2=metric output)]
00827 [NETINFO= 1]
00828 [NRUN = 079 ]
00829 *****
00830 # SMOOTH / INPUT DATA FILE
00831 *****
00832 # Project Name: (OTY's Parking Lot Expansion) Project Number: [1218]
00833 # Date : 04-20-2021
00834 # Modeler : [J.F.M.]
00835 # Company : JFSAinc.
00836 # License # : 2549237
00837 *****
00838 R0199:R0199C0002-----
00839 READ STORM
00840 File name = storm.001
00841 Comment = July 1st, 1979 Storm (38) Ottawa International Airport step 5 min
00842 [SET= 5.00]STORM= 3.00[PFTOT= 83.99]
00843 R0199:R0199C0003-----
00844 DEFAULT VALUES
00845 File name = C:\Temp\20210420-Post Development\Design\Ottawa.val
00846 ICASEGV = 2 (read values only)
00847 R0199:R0199C0004-----
00848 CALIB STANDHYD 1.0 01:PRG 1.27 .321 Mdate 1130 74.39 886 .000
00849 [XIMP=80]TIME=.80
00850 (Horton parameters: Fw= 76.20[Fc= 13.20]DCAY=4.14; F= .00)
00851 [Previous area: IAPar= 4.67]SLP= .50[LIP= 40.0]NF= .250[SCP= .0]
00852 [Imperious area: IAMP= 1.97]SLP= 1.10[LIP= 160.0]NF= .012[SCP= .0]
00853 R0199:R0199C0005-----
00854 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .321 Mdate 1130 74.39 n/a .000
00855 out <= 1.0 01:RdInfl 1.02 .004 Mdate 1137 74.39 n/a .000
00856 overflow <= 1.0 03:Runoff .40 .253 Mdate 1137 74.39 n/a .000
00857 [MxStoUsed=.612E+01 m3, TotVol=2398E+01 m3, N-Ov= 2, TotDur=0.7 hrs]
00858 R0199:R0199C0006-----
00859 ROUTE RESERVOIR --> 1.0 02:Runoff .40 .253 Mdate 1137 74.39 n/a .000
00860 out <= 1.0 01:RdInfl .40 .010 Mdate 1138 74.39 n/a .000
00861 overflow <= 1.0 03:OverFlow .00 .000 Mdate 0100 .00 n/a .000
00862 [MxStoUsed=.207E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00863 R0199:R0199C0007-----
00864 ADD HYD + 1.0 02:Outflow .40 .010 Mdate 2138 74.39 n/a .000
00865 + 1.0 02:OverFlow .00 .000 Mdate 0100 .00 n/a .000
00866 SUM= 1.0 01:Outflow .40 .010 Mdate 2138 74.39 n/a .000
00867 R0199:R0199C0008-----
00868 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .321 Mdate 1130 74.39 n/a .000
00869 out <= 1.0 01:BLCK-OUT 1.27 .027 Mdate 2133 74.39 n/a .000
00870 overflow <= 1.0 03:BLCK-OVER .00 .000 Mdate 0100 .00 n/a .000
00871 [MxStoUsed=.808E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00872 *****
00873 #
00874 ** END OF RUN : 987
00875 *****
00876 *****
00877 *****
00878 *****
00879 *****
00880 *****
00881 *****
00882 RIN9:COMMANDS
00883 R0199:R0199C0001-----
00884 START
00885 [ITER= 0 .00 hrs on 0]
00886 [METOUT= 2 (1=Imperial, 2=metric output)]
00887 [NETINFO= 1]
00888 [NRUN = 098 ]
00889 *****
00890 # SMOOTH / INPUT DATA FILE
00891 *****
00892 # Project Name: (OTY's Parking Lot Expansion) Project Number: [1218]
00893 # Date : 04-20-2021
00894 # Modeler : [J.F.M.]
00895 # Company : JFSAinc.
00896 # License # : 2549237
00897 *****
00898 R0199:R0199C0002-----
00899 READ STORM
00900 File name = storm.001

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00901 Comment = August 4th, 1988 Storm (5H) - Ottawa International Airport step 5
00902 [SET= 5.00]STORM= 5.38[PFTOT= 80.59]
00903 R0199:R0199C0003-----
00904 DEFAULT VALUES
00905 File name = C:\Temp\20210420-Post Development\Design\Ottawa.val
00906 ICASEGV = 2 (read values only)
00907 R0199:R0199C0004-----
00908 CALIB STANDHYD 1.0 01:PRG 1.27 .407 Mdate 2100 70.74 878 .000
00909 [XIMP=80]TIME=.80
00910 (Horton parameters: Fw= 76.20[Fc= 13.20]DCAY=4.14; F= .00)
00911 [Previous area: IAPar= 4.67]SLP= .50[LIP= 40.0]NF= .250[SCP= .0]
00912 [Imperious area: IAMP= 1.97]SLP= 1.10[LIP= 160.0]NF= .012[SCP= .0]
00913 R0199:R0199C0005-----
00914 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .407 Mdate 2100 70.74 n/a .000
00915 out <= 1.0 01:RdInfl 1.02 .004 Mdate 2100 70.74 n/a .000
00916 overflow <= 1.0 03:Runoff .31 .397 Mdate 2101 70.74 n/a .000
00917 [MxStoUsed=.612E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00918 R0199:R0199C0006-----
00919 ROUTE RESERVOIR --> 1.0 02:Runoff .31 .397 Mdate 2101 70.74 n/a .000
00920 out <= 1.0 01:RdInfl .31 .007 Mdate 2123 70.74 n/a .000
00921 overflow <= 1.0 03:OverFlow .00 .000 Mdate 0100 .00 n/a .000
00922 [MxStoUsed=.179E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00923 R0199:R0199C0007-----
00924 ADD HYD + 1.0 02:Outflow .31 .007 Mdate 2123 70.74 n/a .000
00925 + 1.0 02:OverFlow .00 .000 Mdate 0100 .00 n/a .000
00926 SUM= 1.0 01:Outflow .31 .007 Mdate 2123 70.74 n/a .000
00927 R0199:R0199C0008-----
00928 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .407 Mdate 2100 70.74 n/a .000
00929 out <= 1.0 01:BLCK-OUT 1.27 .024 Mdate 2119 70.74 n/a .000
00930 overflow <= 1.0 03:BLCK-OVER .00 .000 Mdate 0100 .00 n/a .000
00931 [MxStoUsed=.696E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00932 *****
00933 #
00934 ** END OF RUN : 995
00935 *****
00936 *****
00937 *****
00938 *****
00939 *****
00940 *****
00941 *****
00942 RIN9:COMMANDS
00943 R0199:R0199C0001-----
00944 START
00945 [ITER= 0 .00 hrs on 0]
00946 [METOUT= 2 (1=Imperial, 2=metric output)]
00947 [NETINFO= 1]
00948 [NRUN = 096 ]
00949 *****
00950 # SMOOTH / INPUT DATA FILE
00951 *****
00952 # Project Name: (OTY's Parking Lot Expansion) Project Number: [1218]
00953 # Date : 04-20-2021
00954 # Modeler : [J.F.M.]
00955 # Company : JFSAinc.
00956 # License # : 2549237
00957 *****
00958 R0199:R0199C0002-----
00959 READ STORM
00960 File name = storm.001
00961 Comment = August 8th, 1996 Storm (5H) - Ottawa International Airport step 5
00962 [SET= 5.00]STORM= 5.75[PFTOT= 73.90]
00963 R0199:R0199C0003-----
00964 DEFAULT VALUES
00965 File name = C:\Temp\20210420-Post Development\Design\Ottawa.val
00966 ICASEGV = 2 (read values only)
00967 R0199:R0199C0004-----
00968 CALIB STANDHYD 1.0 01:PRG 1.27 .304 Mdate 1126 64.62 874 .000
00969 [XIMP=80]TIME=.80
00970 (Horton parameters: Fw= 76.20[Fc= 13.20]DCAY=4.14; F= .00)
00971 [Previous area: IAPar= 4.67]SLP= .50[LIP= 40.0]NF= .250[SCP= .0]
00972 [Imperious area: IAMP= 1.97]SLP= 1.10[LIP= 160.0]NF= .012[SCP= .0]
00973 R0199:R0199C0005-----
00974 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .304 Mdate 1126 64.62 n/a .000
00975 out <= 1.0 01:RdInfl 1.02 .004 Mdate 1126 64.62 n/a .000
00976 overflow <= 1.0 03:Runoff .24 .175 Mdate 1126 64.62 n/a .000
00977 [MxStoUsed=.612E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00978 R0199:R0199C0006-----
00979 ROUTE RESERVOIR --> 1.0 02:Runoff .24 .175 Mdate 1126 64.62 n/a .000
00980 out <= 1.0 01:RdInfl .24 .004 Mdate 1126 64.62 n/a .000
00981 overflow <= 1.0 03:OverFlow .00 .000 Mdate 0100 .00 n/a .000
00982 [MxStoUsed=.133E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00983 R0199:R0199C0007-----
00984 ADD HYD + 1.0 02:Outflow .24 .005 Mdate 4131 64.62 n/a .000
00985 + 1.0 02:OverFlow .00 .000 Mdate 0100 .00 n/a .000
00986 SUM= 1.0 01:Outflow .24 .005 Mdate 4131 64.62 n/a .000
00987 R0199:R0199C0008-----
00988 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .304 Mdate 1126 64.62 n/a .000
00989 out <= 1.0 01:BLCK-OUT 1.27 .024 Mdate 1126 64.62 n/a .000
00990 overflow <= 1.0 03:BLCK-OVER .00 .000 Mdate 0100 .00 n/a .000
00991 [MxStoUsed=.630E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
00992 *****
00993 #
00994 ** END OF RUN : 997
00995 *****
00996 *****
00997 *****
00998 *****
00999 *****
01000 *****
01001 *****
01002 RIN9:COMMANDS
01003 R0199:R0199C0001-----
01004 START
01005 [ITER= 0 .00 hrs on 0]
01006 [METOUT= 2 (1=Imperial, 2=metric output)]
01007 [NETINFO= 1]
01008 [NRUN = 099 ]
01009 *****
01010 # SMOOTH / INPUT DATA FILE
01011 *****
01012 # Project Name: (OTY's Parking Lot Expansion) Project Number: [1218]
01013 # Date : 04-20-2021
01014 # Modeler : [J.F.M.]
01015 # Company : JFSAinc.
01016 # License # : 2549237
01017 *****
01018 R0199:R0199C0002-----
01019 READ STORM
01020 File name = storm.001
01021 Comment = 100 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
01022 [SET= 10.00]STORM= 24.00[PFTOT= 128.08]
01023 R0199:R0199C0003-----
01024 DEFAULT VALUES
01025 File name = C:\Temp\20210420-Post Development\Design\Ottawa.val
01026 ICASEGV = 2 (read values only)
01027 R0199:R0199C0004-----
01028 CALIB STANDHYD 1.0 01:PRG 1.27 .488 Mdate 12100 110.12 860 .000
01029 [XIMP=80]TIME=.80
01030 (Horton parameters: Fw= 76.20[Fc= 13.20]DCAY=4.14; F= .00)
01031 [Previous area: IAPar= 4.67]SLP= .50[LIP= 40.0]NF= .250[SCP= .0]
01032 [Imperious area: IAMP= 1.97]SLP= 1.10[LIP= 160.0]NF= .012[SCP= .0]
01033 R0199:R0199C0005-----
01034 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .488 Mdate 12100 110.12 n/a .000
01035 out <= 1.0 01:RdInfl 1.02 .004 Mdate 1137 110.12 n/a .000
01036 overflow <= 1.0 03:Runoff .50 .481 Mdate 12100 110.12 n/a .000
01037 [MxStoUsed=.612E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
01038 R0199:R0199C0006-----
01039 ROUTE RESERVOIR --> 1.0 02:Runoff .50 .481 Mdate 12100 110.12 n/a .000
01040 out <= 1.0 01:RdInfl .50 .014 Mdate 1134 110.12 n/a .000
01041 overflow <= 1.0 03:OverFlow .00 .000 Mdate 0100 .00 n/a .000
01042 [MxStoUsed=.160E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
01043 R0199:R0199C0007-----
01044 ADD HYD + 1.0 02:Outflow .50 .014 Mdate 1134 110.12 n/a .000
01045 + 1.0 02:OverFlow .00 .000 Mdate 0100 .00 n/a .000
01046 SUM= 1.0 01:Outflow .50 .014 Mdate 1134 110.12 n/a .000
01047 R0199:R0199C0008-----
01048 ROUTE RESERVOIR --> 1.0 02:PRG 1.27 .488 Mdate 12100 110.12 n/a .000
01049 out <= 1.0 01:BLCK-OUT 1.27 .028 Mdate 1300 110.12 n/a .000
01050 overflow <= 1.0 03:BLCK-OVER .00 .000 Mdate 0100 .00 n/a .000
01051 [MxStoUsed=.859E+01 m3, TotVol=Vol=.000E+00 m3, N-Ov= 0, TotDur=0.7 hrs]
01052 *****
01053 #
01054 ** END OF RUN : 998
01055 *****
01056 *****
01057 *****
01058 *****
01059 *****
01060 *****
01061 *****
01062 RIN9:COMMANDS
01063 R0199:R0199C0001-----
01064 START
01065 [ITER= 0 .00 hrs on 0]
01066 [METOUT= 2 (1=Imperial, 2=metric output)]
01067 [NETINFO= 1]
01068 [NRUN = 099 ]
01069 *****
01070 # SMOOTH / INPUT DATA FILE
01071 *****
01072 # Project Name: (OTY's Parking Lot Expansion) Project Number: [1218]
01073 # Date : 04-20-2021
01074 # Modeler : [J.F.M.]
01075 # Company : JFSAinc.
01076 # License # : 2549237
01077 *****
01078 R0199:R0199C0002-----
01079 READ STORM
01080 File name = storm.001

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01081 Comment = CHICAGO STORM 100 Year, 3 Hours +20% Stress Test
01082 [SET=10.00:SEUR= 3.00:FTOT= 86.00]
01083 R0999:C00003-----
01084 DEFAULT VALUES
01085 Filename = C:\Temp\20210420-Post Development\Design\Ottawa.val
01086 ICASEdv = 2 (read values only)
01087 R0999:C00004-----DRAIN-ID:BNYD-----AREBA-QFEARcms-TpeakDate_hh:mm-----RvM-R.C-----DWFcms
01088 CALIB STANDHYD 1.0 01:PFO 1.27 .633 No_date 1:00 75.79 .881 .000
01089 [XMP=.80:TIME=.80]
01090 [Morton parameters: Fc= 76.20:Fc= 13.20:DCAY=4.144 F= .00]
01091 [Previous area: IApw= 4.67:SLPF= .50:ICP= 40.:NMP=.250:SCF= .0]
01092 [Impervious area: IAlmp= 1.97:SLPfl=1.10:ICfl= 160.:NMI=.013:ICI= .0]
01093 R0999:C00005-----DRAIN-ID:BNYD-----AREBA-QFEARcms-TpeakDate_hh:mm-----RvM-R.C-----DWFcms
01094 ROUTE RESERVOIR -> 1.0 02:PFO 1.27 .633 No_date 1:00 75.79 n/a .000
01095 out <= 1.0 01:Rfill .85 .004 No_date 1:10 75.79 n/a .000
01096 overflow <= 1.0 03:Runoff .41 .253 No_date 1:10 75.79 n/a .000
01097 (MdtUsd=6.142E-01 m3, TotDvVol=.3142E-01 m3, N-Ovf= 2, TotDurOvf= 2.hrs)
01098 R0999:C00006-----DRAIN-ID:BNYD-----AREBA-QFEARcms-TpeakDate_hh:mm-----RvM-R.C-----DWFcms
01099 ROUTE RESERVOIR -> 1.0 02:Runoff .41 .253 No_date 1:10 75.79 n/a .000
01100 out <= 1.0 01:Outflow .41 .010 No_date 3:01 75.79 n/a .000
01101 overflow <= 1.0 03:Overflow .00 .000 No_date 0:00 .00 n/a .000
01102 (MdtUsd=.263E-01 m3, TotDvVol=.0000E+00 m3, N-Ovf= 0, TotDurOvf= 0.hrs)
01103 R0999:C00007-----DRAIN-ID:BNYD-----AREBA-QFEARcms-TpeakDate_hh:mm-----RvM-R.C-----DWFcms
01104 ADD HYD 1.0 02:Outflow .41 .010 No_date 3:01 75.79 n/a .000
01105 + 1.0 02:Overflow .00 .000 No_date 0:00 .00 n/a .000
01106 SUM= 1.0 01:Out .41 .010 No_date 3:01 75.79 n/a .000
01107 R0999:C00008-----DRAIN-ID:BNYD-----AREBA-QFEARcms-TpeakDate_hh:mm-----RvM-R.C-----DWFcms
01108 ROUTE RESERVOIR -> 1.0 02:PFO 1.27 .633 No_date 1:00 75.79 n/a .000
01109 out <= 1.0 01:LOCK-OUT 1.27 .026 No_date 2:12 75.79 n/a .000
01110 overflow <= 1.0 03:LOCK-OVER .00 .000 No_date 0:00 .00 n/a .000
01111 (MdtUsd=.7861E-01 m3, TotDvVol=.0000E+00 m3, N-Ovf= 0, TotDurOvf= 0.hrs)
01112 #-----
01113 #-----
01114 R0999:C00002-----
01115 FINISH
01116 -----
01117 -----
01118 WARNINGS / ERRORS / NOTES
01119 -----
01120 R0001:C00006 ROUTE RESERVOIR
01121 *** WARNING: Inflow hydrograph is dry.
01122 *** WARNING: Inflow hydrograph is dry.
01123 *** WARNING: Inflow hydrograph is dry.
01124 *** WARNING: Inflow hydrograph is dry.
01125 *** WARNING: Inflow hydrograph is dry.
01126 *** WARNING: Inflow hydrograph is dry.
01127 *** WARNING: Inflow hydrograph is dry.
01128 *** WARNING: Inflow hydrograph is dry.
01129 Simulation ended on 2021-04-28 at 11:58:13
01130 -----
01131

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Attachment C

Water Budget Analysis

Table C1: Existing Conditions Water Budget - Otto's Site (1.27 ha)

Year	Annual Rainfall (mm)	Site			Annual Percentage		
		Runoff (mm)	Evaporation (mm)	Infiltration (mm)	Runoff (%)	Infiltration (%)	Evaporation (%)
1967	689.3	13.9	235.4	440.0	2%	64%	34%
1968	592.8	11.3	214.0	367.5	2%	62%	36%
1969	570.3	9.7	195.1	365.5	2%	64%	34%
1970	558.9	8.9	183.4	366.7	2%	66%	33%
1971	522.1	6.3	148.1	367.7	1%	70%	28%
1972	784.3	20.7	309.3	454.3	3%	58%	39%
1973	744.9	15.0	280.5	449.3	2%	60%	38%
1974	386.2	4.2	98.1	283.9	1%	74%	25%
1975	535.5	8.7	179.2	347.6	2%	65%	33%
1976	493.2	6.5	140.5	346.3	1%	70%	28%
1977	677.8	12.1	233.6	432.1	2%	64%	34%
1978	641.4	9.0	221.1	411.4	1%	64%	34%
1979	866.5	25.0	373.3	468.2	3%	54%	43%
1980	622.0	10.2	207.7	404.1	2%	65%	33%
1981	936.4	41.2	367.1	528.1	4%	56%	39%
1982	596.1	8.2	187.2	400.7	1%	67%	31%
1983	587.5	9.3	177.1	401.2	2%	68%	30%
1984	459.4	8.6	171.6	279.3	2%	61%	37%
1985	559.9	9.1	218.4	332.5	2%	59%	39%
1986	849.4	28.1	338.2	483.1	3%	57%	40%
1987	640.1	12.0	197.1	431.0	2%	67%	31%
1988	643.8	11.3	212.9	419.6	2%	65%	33%
1989	523.2	7.2	163.8	352.3	1%	67%	31%
1990	727.8	14.3	255.3	458.2	2%	63%	35%
1991	556.0	7.9	163.1	385.0	1%	69%	29%
1992	732.8	16.3	269.9	446.7	2%	61%	37%
1993	721.3	11.0	216.0	494.4	2%	69%	30%
1994	540.2	9.4	188.3	342.5	2%	63%	35%
1995	538.5	37.0	263.5	238.1	7%	44%	49%
1996	512.2	8.2	160.7	343.3	2%	67%	31%
1997	433.2	5.0	132.9	295.3	1%	68%	31%
1998	440.3	5.3	132.2	302.8	1%	69%	30%
1999	424.4	5.4	137.5	281.6	1%	66%	32%
2000	535.9	9.4	175.5	351.0	2%	65%	33%
2002	551.5	19.0	242.2	290.3	3%	53%	44%
2003	554.6	13.2	206.3	335.2	2%	60%	37%
2004	573.3	46.7	220.0	306.6	8%	53%	38%
2006	723.4	14.1	272.2	437.0	2%	60%	38%
2007	550.7	11.4	170.1	369.2	2%	67%	31%
Average	605.1	13.6	211.7	379.7	2.2%	63.3%	34.6%

Table C2: Otto's Site (1.27 ha) -Proposed Conditions Water Budget

Year	Annual Rainfall (mm)	Site			Infiltration Trench		Annual Total			Annual Percentage		
		Runoff (mm)	Evaporation (mm)	Infiltration (mm)	Infiltration (mm)	Runoff (mm)	Runoff (mm)	Infiltration (mm)	Evaporation (mm)	Runoff (%)	Infiltration (%)	Evaporation (%)
1967	689.3	413.5	71.5	204.3	413.5	0.0	0.0	617.9	71.5	0%	90%	10%
1968	592.8	360.4	63.4	169.0	360.4	0.0	0.0	529.4	63.4	0%	89%	11%
1969	570.3	332.2	58.3	179.8	332.2	0.0	0.0	512.0	58.3	0%	90%	10%
1970	558.9	328.6	55.1	175.2	328.6	0.0	0.0	503.9	55.1	0%	90%	10%
1971	522.1	295.5	48.4	178.2	295.5	0.0	0.0	473.7	48.4	0%	91%	9%
1972	784.3	491.9	86.4	206.0	491.9	0.0	0.0	697.9	86.4	0%	89%	11%
1973	744.9	448.4	80.7	215.9	448.4	0.0	0.0	664.2	80.7	0%	89%	11%
1974	386.2	211.9	33.3	140.9	211.9	0.0	0.0	352.9	33.3	0%	91%	9%
1975	535.5	322.5	55.3	157.7	322.5	0.0	0.0	480.2	55.3	0%	90%	10%
1976	493.2	273.6	45.0	174.6	273.6	0.0	0.0	448.2	45.0	0%	91%	9%
1977	677.8	411.8	72.8	193.2	411.8	0.0	0.0	605.0	72.8	0%	89%	11%
1978	641.4	398.4	69.1	173.9	398.4	0.0	0.0	572.3	69.1	0%	89%	11%
1979	866.5	554.2	103.8	208.5	554.2	0.0	0.0	762.7	103.8	0%	88%	12%
1980	622.0	377.8	65.7	178.5	377.8	0.0	0.0	556.3	65.7	0%	89%	11%
1981	936.4	588.8	102.5	245.1	547.1	41.7	41.7	792.2	102.5	4%	85%	11%
1982	596.1	365.1	63.0	168.0	365.1	0.0	0.0	533.1	63.0	0%	89%	11%
1983	587.5	347.1	58.3	182.1	347.1	0.0	0.0	529.2	58.3	0%	90%	10%
1984	459.4	285.2	52.5	121.8	285.1	0.0	0.0	406.9	52.5	0%	89%	11%
1985	559.9	357.4	67.0	135.5	357.4	0.0	0.0	492.9	67.0	0%	88%	12%
1986	849.4	534.3	98.8	216.3	534.3	0.0	0.0	750.6	98.8	0%	88%	12%
1987	640.1	373.3	62.0	204.8	373.3	0.0	0.0	578.1	62.0	0%	90%	10%
1988	643.8	377.2	62.5	204.2	377.2	0.0	0.0	581.3	62.5	0%	90%	10%
1989	523.2	306.5	51.9	164.8	306.5	0.0	0.0	471.3	51.9	0%	90%	10%
1990	727.8	431.3	78.1	218.5	431.3	0.0	0.0	649.7	78.1	0%	89%	11%
1991	556.0	328.3	53.8	173.9	328.3	0.0	0.0	502.2	53.8	0%	90%	10%
1992	732.8	445.7	78.4	208.7	445.7	0.0	0.0	654.4	78.4	0%	89%	11%
1993	721.3	427.3	68.5	225.6	427.3	0.0	0.0	652.8	68.5	0%	91%	9%
1994	540.2	324.4	56.6	159.3	324.4	0.0	0.0	483.7	56.6	0%	90%	10%
1995	538.5	358.6	73.5	106.3	350.2	8.5	8.5	456.5	73.5	2%	85%	14%
1996	512.2	303.9	51.1	157.3	303.9	0.0	0.0	461.1	51.1	0%	90%	10%
1997	433.2	261.6	44.9	126.7	261.6	0.0	0.0	388.3	44.9	0%	90%	10%
1998	440.3	252.9	42.7	144.7	252.9	0.0	0.0	397.6	42.7	0%	90%	10%
1999	424.4	256.6	45.3	122.5	256.6	0.0	0.0	379.1	45.3	0%	89%	11%
2000	535.9	312.0	53.2	170.7	312.0	0.0	0.0	482.7	53.2	0%	90%	10%
2002	551.5	360.1	66.2	125.3	360.1	0.0	0.0	485.3	66.2	0%	88%	12%
2003	554.6	336.8	60.9	156.9	336.8	0.0	0.0	493.7	60.9	0%	89%	11%
2004	573.3	363.2	61.3	148.8	317.5	45.8	45.8	466.3	61.3	8%	81%	11%
2006	723.4	459.7	82.2	181.6	459.7	0.0	0.0	641.3	82.2	0%	89%	11%
2007	550.7	319.1	53.9	177.7	319.1	0.0	0.0	496.8	53.9	0%	90%	10%
Average	605.1	366.6	64.0	174.4	364.1	2.5	2.5	538.6	64.0	0.4%	89.1%	10.5%

Note: Analysis does not consider evaporation within the infiltration trench

```

1  20    Metric units / ID numbers OFF
2  *#*****
   *****
3  *#  SWMHYMO  / INPUT DATA FILE
4  *#*****
   *****
5  *#  Project Name: [OTTO's Parking Lot Expansion]    Project Number: [2128]
6  *#  Date       : 04-20-2021
7  *#  Modeller   : [M.M. ]
8  *#  Company    : JFSAinc.
9  *#  License #  : 2549237
10 *#*****
   *****
11 *#=====
12 *
   CONTINUOUS SIMULATIONS
13 *#=====
14 START           TZERO=[1967.0719],  METOUT=[2],  NSTORM=[0],  NRUN=[1967]
15 *%-----|-----
16 *# Ottawa International Airport - 19 July 1967 to 01 Nov 2007
17 READ AES DATA  AES_FILENAME=["YOW_1967_2007.123"],
18                   IELEM=[123],  START_DATE=[0],  END_DATE=[-364]
19 *%-----|-----
20 COMPUTE API    APII=[20],  APIK=[0.8]/day,
21 *%-----|-----
22 * SITE UNDER EXISTING CONDITIONS
23 CONTINUOUS NASHYD  NHYD=["EX"],  DT[5] (min),  AREA=[1.268] (ha)
24                   DWF=[0] (cms),  CN=[45],  IA=[4.67] (mm),  N=[3],  TP[0.4] (hrs),
25                   Continuous simulation parameters:
26                   IaRECper=[6] (hrs),  SMIN=[-1] (mm),  SMAX=[-1] (mm),  SK=[0.01]/(mm),
27                   InterEventTime=[12] (hrs),END=-1
28 *%-----|-----
29 * SITE UNDER EXISTING CONDITIONS - NO INFILTRATION
30 CONTINUOUS NASHYD  NHYD=["EX-IA"],  DT[5] (min),  AREA=[1.268] (ha)
31                   DWF=[0] (cms),  CN=[99.99],  IA=[4.67] (mm),  N=[3],  TP[0.4] (hrs),
32                   Continuous simulation parameters:
33                   IaRECper=[6] (hrs),  SMIN=[-1] (mm),  SMAX=[-1] (mm),  SK=[0.01]/(mm),
34                   InterEventTime=[12] (hrs),END=-1
35 *#=====
36 *
   CONTINUOUS SIMULATIONS
37 *#=====
38 START           TZERO=[1968.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1968]
39 START           TZERO=[1969.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1969]
40 START           TZERO=[1970.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1970]
41 START           TZERO=[1971.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1971]
42 START           TZERO=[1972.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1972]
43 START           TZERO=[1973.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1973]
44 START           TZERO=[1974.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1974]
45 START           TZERO=[1975.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1975]
46 START           TZERO=[1976.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1976]
47 START           TZERO=[1977.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1977]
48 START           TZERO=[1978.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1978]
49 START           TZERO=[1979.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1979]
50 START           TZERO=[1980.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1980]
51 START           TZERO=[1981.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1981]
52 START           TZERO=[1982.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1982]
53 START           TZERO=[1983.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1983]
54 START           TZERO=[1984.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1984]
55 START           TZERO=[1985.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1985]
56 START           TZERO=[1986.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1986]
57 START           TZERO=[1987.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1987]
58 START           TZERO=[1988.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1988]
59 START           TZERO=[1989.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1989]
60 START           TZERO=[1990.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1990]
61 START           TZERO=[1991.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1991]
62 START           TZERO=[1992.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1992]
63 START           TZERO=[1993.0101],  METOUT=[2],  NSTORM=[0],  NRUN=[1993]

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64	START	TZERO=[1994.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[1994]
65	START	TZERO=[1995.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[1995]
66	START	TZERO=[1996.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[1996]
67	START	TZERO=[1997.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[1997]
68	START	TZERO=[1998.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[1998]
69	START	TZERO=[1999.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[1999]
70	START	TZERO=[2000.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[2000]
71	START	TZERO=[2002.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[2002]
72	START	TZERO=[2003.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[2003]
73	START	TZERO=[2004.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[2004]
74	START	TZERO=[2006.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[2006]
75	START	TZERO=[2007.0101],	METOUT=[2],	NSTORM=[0],	NRUN=[2007]
76	FINISH				
77	*%----- -----				


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00361.....
00362.....
00363.....
00364.....
00365.....
00366.....
00367 # RUN#COMMAND#
00368 R1974:C0001-----
00369 # START
00370 [TZERO = .00 hrs on 19740101]
00371 [METOUT= 2 (1=Imperial, 2=metric output)]
00372 [NFORM= 0 ]
00373 [NSUN = 1974 ]
00374 # SWHYNO / INPUT DATA FILE
00375 #-----
00376 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00377 # Date : 04-20-2021
00378 # Modeller : [M.M.]
00379 # Company : JFSAinc.
00380 # License # : 2549237
00381 #-----
00382 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
00383 #-----
00384 # READ AES DATA
00385 [Filename = YOM_1967_2007.123 ]
00386 [Start_date= 1974.0101; End_date= 1974.1231]
00387 [DT= 60.min; Length= 8760.hrs; WetHrs= 489; DryHrs= 8271; PTO= 784.30]
00388 Maximum average rainfall intensities over
00389 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00390 34.80 36.80 37.60 37.90 40.00 41.50 41.50 41.80 44.40 mm/hr
00391 19740708 19740720 19740730 19740740 19740750 19740801 19740810 19740820 19740830 date
00392 Number of rainfall events per following interval time
00393 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00394 170 133 122 86 76 60 45 41 31
00395 Number of events with at least the following durations
00396 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00397 169 96 58 21 5 0 0 0 0
00400-----
00401 R1974:C0002-----
00402 # COMPUTE API
00403 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
00404 [APIMax= 78.78; APIMin= 9.92; APIMin= .00]
00405 R1974:C0004-----
00406 [DT= 60.min; Length= 8760.hrs; WetHrs= 489; DryHrs= 8271; PTO= 784.30]
00407 [AREAH= 45.0; N= 3.00; Tp= .40]
00408 [IAREC= 6.00; SMIN= 127.57; SMAX= 850.50; SK= .010]
00409 [InterEventTime= 12.00]
00410 R1974:C0005-----
00411 [DT= 60.min; Length= 8760.hrs; WetHrs= 489; DryHrs= 8271; PTO= 784.30]
00412 [AREAH= 45.0; N= 3.00; Tp= .40]
00413 [IAREC= 6.00; SMIN= 127.57; SMAX= 850.50; SK= .010]
00414 [InterEventTime= 12.00]
00415 #-----
00416 # END OF RUN : 1974
00417 #-----
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00459 #-----
00460 #-----
00461 R1974:C0003-----
00462 # COMPUTE API
00463 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
00464 [APIMax= 57.24; APIMin= 9.40; APIMin= .00]
00465 R1974:C0004-----
00466 [DT= 60.min; Length= 8760.hrs; WetHrs= 549; DryHrs= 8211; PTO= 744.90]
00467 [AREAH= 45.0; N= 3.00; Tp= .40]
00468 [IAREC= 6.00; SMIN= 127.57; SMAX= 850.50; SK= .010]
00469 [InterEventTime= 12.00]
00470 R1974:C0005-----
00471 [DT= 60.min; Length= 8760.hrs; WetHrs= 549; DryHrs= 8211; PTO= 744.90]
00472 [AREAH= 45.0; N= 3.00; Tp= .40]
00473 [IAREC= 6.00; SMIN= 127.57; SMAX= 850.50; SK= .010]
00474 [InterEventTime= 12.00]
00475 #-----
00476 # END OF RUN : 1974
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00541.....
00542.....
00543.....
00544 # RUN#COMMAND#
00545 R1975:C0001-----
00546 # START
00547 [TZERO = .00 hrs on 19750101]
00548 [METOUT= 2 (1=Imperial, 2=metric output)]
00549 [NFORM= 0 ]
00550 [NSUN = 1975 ]
00551 # SWHYNO / INPUT DATA FILE
00552 #-----
00553 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00554 # Date : 04-20-2021
00555 # Modeller : [M.M.]
00556 # Company : JFSAinc.
00557 # License # : 2549237
00558 #-----
00559 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
00560 #-----
00561 # READ AES DATA
00562 [Filename = YOM_1967_2007.123 ]
00563 [Start_date= 1975.0101; End_date= 1975.1231]
00564 [DT= 60.min; Length= 8760.hrs; WetHrs= 344; DryHrs= 8416; PTO= 535.50]
00565 Maximum average rainfall intensities over
00566 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00567 34.80 36.80 37.60 37.90 40.00 41.50 41.50 41.80 44.40 mm/hr
00568 19750708 19750720 19750730 19750740 19750750 19750801 19750810 19750820 19750830 date
00569 Number of rainfall events per following interval time
00570 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00571 136 116 111 89 78 61 49 40 23
00572 Number of events with at least the following durations
00573 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00574 135 70 40 17 1 0 0 0 0
00575 #-----
00576 #-----
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00635 #-----
00636 #-----
00637 #-----
00638 R1976:C0003-----
00639 # COMPUTE API
00640 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
00641 [APIMax= 46.44; APIMin= 6.87; APIMin= .00]
00642 R1976:C0004-----
00643 [DT= 60.min; Length= 8064.hrs; WetHrs= 390; DryHrs= 7674; PTO= 493.20]
00644 [AREAH= 45.0; N= 3.00; Tp= .40]
00645 [IAREC= 6.00; SMIN= 127.57; SMAX= 850.50; SK= .010]
00646 [InterEventTime= 12.00]
00647 R1976:C0005-----
00648 [DT= 60.min; Length= 8064.hrs; WetHrs= 390; DryHrs= 7674; PTO= 493.20]
00649 [AREAH= 45.0; N= 3.00; Tp= .40]
00650 [IAREC= 6.00; SMIN= 127.57; SMAX= 850.50; SK= .010]
00651 [InterEventTime= 12.00]
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00700 #-----
00701 R1977:C0004-----
00702 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
00703 [APIMax= 49.32; APIMin= 9.92; APIMin= .00]
00704 R1977:C0005-----
00705 [DT= 60.min; Length= 8760.hrs; WetHrs= 513; DryHrs= 7504; PTO= 671.80]
00706 [AREAH= 45.0; N= 3.00; Tp= .40]
00707 [IAREC= 6.00; SMIN= 127.57; SMAX= 850.50; SK= .010]
00708 [InterEventTime= 12.00]
00709 R1977:C0006-----
00710 [DT= 60.min; Length= 8760.hrs; WetHrs= 513; DryHrs= 7504; PTO= 671.80]
00711 [AREAH= 45.0; N= 3.00; Tp= .40]
00712 [IAREC= 6.00; SMIN= 127.57; SMAX= 850.50; SK= .010]
00713 [InterEventTime= 12.00]
00714 #-----
00715 #-----
00716 #-----
00717 #-----
00718 #-----
00719 #-----
00720 #-----
```

```

00721 RUN:COMMAND#
00722 R1978:CO000#
00723 START
00724 [TZERO = .00 hrs on 19780101]
00725 [METOUT= 2 (1=imperial, 2=metric output)]
00726 [INSTORM= 0]
00727 [NRUN= 1978]
00728 *****
00729 # SWHMYMO // INPUT DATA FILE
00730 # *****
00731 # Project Name: (OTTO's Parking Lot Expansion) Project Number: [2128]
00732 # Date : 04-20-2021
00733 # Modifier : [M.M.]
00734 # Company : JFSAinc.
00735 # License # : 2549237
00736 # *****
00737 #
00738 #
00739 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
00740 R1978:CO002#
00741 * READ AES DATA
00742 [Filename = YOM_1967_2007_123
00743 [Start_date= 1978.0101; End_date= 1978.1231]
00744 [DT= 60.min; Length= 8640.hrs; WetHrs= 409; DryHrs= 7631; PTOI= 641.40]
00745 Maximum average rainfall intensities over
00746 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00747 36.00 18.15 12.10 6.05 3.04 1.64 1.13 .87 .58 mm/hr
00748 36.00 36.30 36.30 36.30 36.50 39.40 40.60 41.60 41.60 mm/hr
00749 19780618 19780618 19780618 19780618 19780619 19780411 19780412 19780620 19780621 date
00750 Number of rainfall events per following interevent time
00751 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00752 184 128 118 97 71 58 51 46 33
00753 Number of events with at least the following durations
00754 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00755 184 75 55 35 25 19 16 14 13
00756 R1978:CO003#
00757 COMPUTE API
00758 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
00759 [APIMax= 49.47; APIAvg= 8.83; APImin= .00]
00760 R1978:CO004#
00761 CONTINUOUS NASHVD 5.0 01EX 1.27 .007 1978.0618,17:15 8.96 .014 .0000
00762 [CM= 45.0; N= 3.00; Tp= .40]
00763 [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
00764 [InterEventTime= 12.00]
00765 R1978:CO005#
00766 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .094 1978.0618,17:10 230.04 .359 .0000
00767 [CM=100.0; N= 3.00; Tp= .40]
00768 [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
00769 [InterEventTime= 12.00]
00770 *****
00771 ** END OF RUN : 1978
00772 *****
00773
00774
00775
00776
00777
00778
00779 RUN:COMMAND#
00780 R1979:CO001#
00781 START
00782 [TZERO = .00 hrs on 19790101]
00783 [METOUT= 2 (1=imperial, 2=metric output)]
00784 [INSTORM= 0]
00785 [NRUN= 1979]
00786 *****
00787 # SWHMYMO // INPUT DATA FILE
00788 # *****
00789 # Project Name: (OTTO's Parking Lot Expansion) Project Number: [2128]
00790 # Date : 04-20-2021
00791 # Modifier : [M.M.]
00792 # Company : JFSAinc.
00793 # License # : 2549237
00794 # *****
00795 #
00796 #
00797 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
00798 R1979:CO002#
00799 * READ AES DATA
00800 [Filename = YOM_1967_2007_123
00801 [Start_date= 1979.0101; End_date= 1979.1231]
00802 [DT= 60.min; Length= 8760.hrs; WetHrs= 546; DryHrs= 8214; PTOI= 866.50]
00803 Maximum average rainfall intensities over
00804 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00805 34.90 22.00 14.67 7.33 5.14 2.63 1.75 1.31 .88 mm/hr
00806 34.90 44.00 44.00 44.00 61.70 63.00 63.00 63.00 63.00 mm/hr
00807 19790616 19790616 19790616 19790914 19790915 19790915 19790915 19790917 date
00808 Number of rainfall events per following interevent time
00809 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00810 188 147 129 103 86 60 53 43 36
00811 188 147 129 103 86 60 53 43 36
00812 Number of events with at least the following durations
00813 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00814 187 97 65 25 6 1 0 0 0
00815 R1979:CO003#
00816 COMPUTE API
00817 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
00818 [APIMax= 63.82; APIAvg= 10.79; APImin= .00]
00819 R1979:CO004#
00820 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .009 1979.0616,11:15 25.01 .029 .0000
00821 [CM= 45.0; N= 3.00; Tp= .40]
00822 [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
00823 [InterEventTime= 12.00]
00824 R1979:CO005#
00825 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .009 1979.0616,11:15 398.29 .460 .0000
00826 [CM=100.0; N= 3.00; Tp= .40]
00827 [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
00828 [InterEventTime= 12.00]
00829 *****
00830 ** END OF RUN : 1979
00831 *****
00832
00833
00834
00835
00836
00837
00838
00839 RUN:COMMAND#
00840 R1980:CO001#
00841 START
00842 [TZERO = .00 hrs on 19800101]
00843 [METOUT= 2 (1=imperial, 2=metric output)]
00844 [INSTORM= 0]
00845 [NRUN= 1980]
00846 *****
00847 # SWHMYMO // INPUT DATA FILE
00848 # *****
00849 # Project Name: (OTTO's Parking Lot Expansion) Project Number: [2128]
00850 # Date : 04-20-2021
00851 # Modifier : [M.M.]
00852 # Company : JFSAinc.
00853 # License # : 2549237
00854 # *****
00855 #
00856 #
00857 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
00858 R1980:CO002#
00859 * READ AES DATA
00860 [Filename = YOM_1967_2007_123
00861 [Start_date= 1980.0101; End_date= 1980.1230]
00862 [DT= 60.min; Length= 8760.hrs; WetHrs= 427; DryHrs= 8333; PTOI= 622.00]
00863 Maximum average rainfall intensities over
00864 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00865 15.00 9.20 6.50 4.72 3.57 1.97 1.35 1.01 .86 mm/hr
00866 15.00 18.40 19.50 28.30 42.80 47.20 48.60 48.60 62.00 mm/hr
00867 19800830 19800830 19801025 19801026 19801026 19801027 19800902 date
00868 Number of rainfall events per following interevent time
00869 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00870 151 125 112 92 78 62 49 44 28
00871 Number of events with at least the following durations
00872 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00873 150 85 54 16 4 0 0 0 0
00874 R1980:CO003#
00875 COMPUTE API
00876 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
00877 [APIMax= 52.94; APIAvg= 7.92; APImin= .00]
00878 R1980:CO004#
00879 CONTINUOUS NASHVD 5.0 01EX 1.27 .002 1980.0901,20:15 10.22 .016 .0000
00880 [CM= 45.0; N= 3.00; Tp= .40]
00881 [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
00882 [InterEventTime= 12.00]
00883 R1980:CO005#
00884 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .029 1980.0901,20:10 217.93 .350 .0000
00885 [CM=100.0; N= 3.00; Tp= .40]
00886 [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
00887 [InterEventTime= 12.00]
00888 *****
00889 ** END OF RUN : 1980
00890 *****
00891
00892
00893
00894
00895
00896
00897
00898 RUN:COMMAND#
00899 R1981:CO001#
00900 START

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00901 [TZERO = .00 hrs on 19810101]
00902 [METOUT= 2 (1=imperial, 2=metric output)]
00903 [INSTORM= 0]
00904 [NRUN= 1981]
00905 *****
00906 # SWHMYMO // INPUT DATA FILE
00907 # *****
00908 # Project Name: (OTTO's Parking Lot Expansion) Project Number: [2128]
00909 # Date : 04-20-2021
00910 # Modifier : [M.M.]
00911 # Company : JFSAinc.
00912 # License # : 2549237
00913 # *****
00914 #
00915 #
00916 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
00917 R1981:CO002#
00918 * READ AES DATA
00919 [Filename = YOM_1967_2007_123
00920 [Start_date= 1981.0101; End_date= 1981.1231]
00921 [DT= 60.min; Length= 8760.hrs; WetHrs= 641; DryHrs= 8119; PTOI= 936.40]
00922 Maximum average rainfall intensities over
00923 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00924 35.30 31.85 26.20 18.15 9.27 4.83 3.22 2.41 1.62 mm/hr
00925 35.30 62.70 78.60 108.30 111.30 115.90 115.90 116.70 mm/hr
00926 19810805 19810805 19810805 19810805 19810805 19810805 19810806 19810806 date
00927 Number of rainfall events per following interevent time
00928 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00929 226 171 136 109 83 68 59 47 30
00930 Number of events with at least the following durations
00931 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00932 225 128 79 28 7 0 0 0 0
00933 R1981:CO003#
00934 COMPUTE API
00935 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
00936 [APIMax=113.73; APIAvg= 11.79; APImin= .00]
00937 R1981:CO004#
00938 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .032 1981.0805, 21:15 14.24 .044 .0000
00939 [CM= 45.0; N= 3.00; Tp= .40]
00940 [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
00941 [InterEventTime= 12.00]
00942 R1981:CO005#
00943 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .123 1981.0805, 21:05 408.35 436 .0000
00944 [CM=100.0; N= 3.00; Tp= .40]
00945 [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
00946 [InterEventTime= 12.00]
00947 *****
00948 ** END OF RUN : 1981
00949 *****
00950
00951
00952
00953
00954
00955
00956
00957 RUN:COMMAND#
00958 R1982:CO001#
00959 START
00960 [TZERO = .00 hrs on 19820101]
00961 [METOUT= 2 (1=imperial, 2=metric output)]
00962 [INSTORM= 0]
00963 [NRUN= 1982]
00964 *****
00965 # SWHMYMO // INPUT DATA FILE
00966 # *****
00967 # Project Name: (OTTO's Parking Lot Expansion) Project Number: [2128]
00968 # Date : 04-20-2021
00969 # Modifier : [M.M.]
00970 # Company : JFSAinc.
00971 # License # : 2549237
00972 # *****
00973 #
00974 #
00975 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
00976 R1982:CO002#
00977 * READ AES DATA
00978 [Filename = YOM_1967_2007_123
00979 [Start_date= 1982.0101; End_date= 1982.1231]
00980 [DT= 60.min; Length= 8760.hrs; WetHrs= 438; DryHrs= 8324; PTOI= 596.10]
00981 Maximum average rainfall intensities over
00982 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00983 19.80 10.75 7.60 5.83 3.36 1.68 1.12 .96 .90 mm/hr
00984 19.80 21.50 22.80 35.00 40.30 40.30 46.30 47.30 mm/hr
00985 19820101 19820901 19820925 19820925 19820925 19820925 19820925 19820925 date
00986 Number of rainfall events per following interevent time
00987 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00988 134 110 98 78 66 57 48 41 33
00989 Number of events with at least the following durations
00990 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00991 133 81 58 18 4 1 1 0 0
00992 R1982:CO003#
00993 COMPUTE API
00994 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
00995 [APIMax= 48.37; APIAvg= 7.60; APImin= .00]
00996 R1982:CO004#
00997 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .002 1982.0825,11:10 8.20 .014 .0000
00998 [CM= 45.0; N= 3.00; Tp= .40]
00999 [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
01000 [InterEventTime= 12.00]
01001 R1982:CO005#
01002 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .040 1982.0801,15:10 195.37 328 .0000
01003 [CM=100.0; N= 3.00; Tp= .40]
01004 [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
01005 [InterEventTime= 12.00]
01006 *****
01007 ** END OF RUN : 1982
01008 *****
01009
01010
01011
01012
01013
01014
01015
01016 RUN:COMMAND#
01017 R1983:CO001#
01018 START
01019 [TZERO = .00 hrs on 19830101]
01020 [METOUT= 2 (1=imperial, 2=metric output)]
01021 [INSTORM= 0]
01022 [NRUN= 1983]
01023 *****
01024 # SWHMYMO // INPUT DATA FILE
01025 # *****
01026 # Project Name: (OTTO's Parking Lot Expansion) Project Number: [2128]
01027 # Date : 04-20-2021
01028 # Modifier : [M.M.]
01029 # Company : JFSAinc.
01030 # License # : 2549237
01031 # *****
01032 #
01033 #
01034 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
01035 R1983:CO002#
01036 * READ AES DATA
01037 [Filename = YOM_1967_2007_123
01038 [Start_date= 1983.0101; End_date= 1983.1231]
01039 [DT= 60.min; Length= 8760.hrs; WetHrs= 462; DryHrs= 8298; PTOI= 587.50]
01040 Maximum average rainfall intensities over
01041 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01042 10.40 9.70 7.50 5.43 3.18 2.36 1.68 1.22 .52 mm/hr
01043 10.40 19.40 22.60 32.60 38.20 38.20 56.70 60.40 66.00 mm/hr
01044 19831004 19830921 19830921 19810005 19810005 19810005 19831005 19831006 19831008 date
01045 Number of rainfall events per following interevent time
01046 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01047 143 115 103 85 70 55 50 45 35
01048 Number of events with at least the following durations
01049 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01050 142 87 56 28 9 0 0 0 0
01051 R1983:CO003#
01052 COMPUTE API
01053 [APIIn= 20.00; APIKdy= .8000; APIKdt= .9907]
01054 [APIMax= 57.49; APIAvg= 7.49; APImin= .00]
01055 R1983:CO004#
01056 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .003 1983.1005,15:15 9.25 .016 .0000
01057 [CM= 45.0; N= 3.00; Tp= .40]
01058 [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
01059 [InterEventTime= 12.00]
01060 R1983:CO005#
01061 CONTINUOUS NASHVD 5.0 01EX-IA 1.27 .034 1983.1005,15:05 186.31 317 .0000
01062 [CM=100.0; N= 3.00; Tp= .40]
01063 [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
01064 [InterEventTime= 12.00]
01065 *****
01066 ** END OF RUN : 1983
01067 *****
01068
01069
01070
01071
01072
01073
01074
01075
01076 RUN:COMMAND#
01077 R1984:CO001#
01078 START
01079 [TZERO = .00 hrs on 19840101]
01080 [METOUT= 2 (1=imperial, 2=metric output)]

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01081 [NRUN = 1984]
01082 *****
01083 # SWHYMO / INPUT DATA FILE
01084 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
01085 # Date : 04-20-2021
01086 # Modeller : [M.M.]
01087 # Company : JFSAinc.
01088 # License # : 2549237
01089 *****
01090 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
01091 # R1984C0002-----
01092 # READ AES DATA
01093 # [Filename = YOM_1967_2007_123]
01094 # [Start_date= 1984.0101; End_date= 1984.1231]
01095 # [DT= 60.min; Length= 8760.hrs; WetHrs= 3081; DryHrs= 8452; PTOF= 640.10]
01096 # Maximum average rainfall intensities over
01097 # 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01098 # 17.80 19.40 22.70 26.00 36.10 44.30 57.00 57.00 72.20 mm/hr
01099 # 19840812 19840812 19840812 19840812 19840812 19840812 19840812 19840812 19840812 date
01100 # Number of rainfall events per following interevent time
01101 # 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01102 # 96 80 75 63 55 48 40 34 26
01103 # Number of events with at least the following durations
01104 # 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01105 # 97 88 84 74 69 56 49 43 32
01106 # *****
01107 # *****
01108 # *****
01109 # *****
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01439 # *****
01440 # *****


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01441 # Modeler [ J.F. Sabourin ]
01442 # Company [ JFSAinc. ]
01443 # License # [ 2549237 ]
01444 # *****
01445 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
01446 # *****
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01801 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
01802 R1996:C0002-----
01803 # READ AES DATA
01804 [Filename = YOM_1967_2007_123 ]
01805 [Start_date = 1996-01-01; End_date = 1996-12-30]
01806 [DT= 60;min; Length= 5552;hrs; WetHrs= 387; DryHrs= 6165; PTOT= 532.20]
01807 Maximum average rainfall intensities over
01808 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01809 18.50 13.55 9.03 5.42 2.93 1.84 1.32 1.02 7.0 mm/hr
01810 19.10 27.10 31.50 35.10 44.10 47.50 49.00 50.30 mm
01811 19960731 19960731 19960731 19960731 1996109 1996109 1996109 1996109 date
01812 Number of rainfall events per following interevent time
01813 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01814 132 104 93 71 58 48 31 24
01815 Number of events with at least the following durations
01816 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01817 72 50 19 2 1 0 0 0
01818 R1996:C0003-----
01819 COMPUTE API
01820 [APIIn= 20.00; APIKdy= 8600; APIKdt= 9907]
01821 [APIMax= 47.99; APIAvg= 8.79; APImin= .00]
01822 R1996:C0004-----
01823 CONTINUOUS NASHDY 5.0 01:EX 1.27 .002 1996.0731;16:05 8.20 .016 .000
01824 [CN= 45.0; N= 3.00; Tp= .40]
01825 [IAREC= 6.00; SMIN=127.57; SMAK=850.50; SK= .010]
01826 [InterEventTime= 12.00]
01827 R1996:C0005-----
01828 CONTINUOUS NASHDY 5.0 01:EX-1A 1.27 .046 1996.0731;15:15 168.86 .330 .000
01829 [CN=100.0; N= 3.00; Tp= .40]
01830 [IAREC= 6.00; SMIN= 1.39; SMAK= 9.24; SK= .010]
01831 [InterEventTime= 12.00]
01832 *****
01833 ** END OF RUN : 1999
01834 *****
01835
01836
01837
01838
01839
01840
01841
01842 RUN#COMMAND#
01843 R1997:C0001-----
01844 START
01845 [TZERO = .00 hrs on 19970101]
01846 [METOUT= 2 (1=Imperial, 2=metric output)]
01847 [NETFORM= 0 ]
01848 [NRUN = 1997 ]
01849 *****
01850 # SWSHYNO / INPUT DATA FILE
01851 *****
01852 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
01853 # Date : 04-20-2021
01854 # Modeler : [J.F. Sabourin]
01855 # Company : JFSAinc.
01856 # License # : 2549237
01857 *****
01858
01859
01860 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
01861 R1997:C0002-----
01862 # READ AES DATA
01863 [Filename = YOM_1967_2007_123 ]
01864 [Start_date = 1997-01-01; End_date = 1997-12-31]
01865 [DT= 60;min; Length= 8640;hrs; WetHrs= 379; DryHrs= 7661; PTOT= 433.20]
01866 Maximum average rainfall intensities over
01867 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01868 12.50 7.60 5.67 4.43 2.91 1.68 1.12 .84 .63 mm/hr
01869 12.50 15.20 37.00 26.60 34.90 40.40 40.40 40.40 45.30 mm
01870 1997022 1997022 1997022 1997022 1997022 1997022 1997022 1997022 date
01871 Number of rainfall events per following interevent time
01872 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01873 113 92 83 67 61 55 48 43 30
01874 Number of events with at least the following durations
01875 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01876 112 70 46 20 4 0 0 0 0
01877 R1997:C0003-----
01878 COMPUTE API
01879 [APIIn= 20.00; APIKdy= 8600; APIKdt= 9907]
01880 [APIMax= 41.09; APIAvg= 6.99; APImin= .00]
01881 R1997:C0004-----
01882 CONTINUOUS NASHDY 5.0 01:EX 1.27 .002 1997.0222; 11:10 5.01 .012 .000
01883 [CN= 45.0; N= 3.00; Tp= .40]
01884 [IAREC= 6.00; SMIN=127.57; SMAK=850.50; SK= .010]
01885 [InterEventTime= 12.00]
01886 R1997:C0005-----
01887 CONTINUOUS NASHDY 5.0 01:EX-1A 1.27 .029 1997.0222; 4:05 137.95 .318 .000
01888 [CN=100.0; N= 3.00; Tp= .40]
01889 [IAREC= 6.00; SMIN= 1.39; SMAK= 9.24; SK= .010]
01890 [InterEventTime= 12.00]
01891 *****
01892 ** END OF RUN : 1997
01893 *****
01894
01895
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01900
01901 RUN#COMMAND#
01902 R1998:C0001-----
01903 START
01904 [TZERO = .00 hrs on 19980101]
01905 [METOUT= 2 (1=Imperial, 2=metric output)]
01906 [NETFORM= 0 ]
01907 [NRUN = 1998 ]
01908 *****
01909 # SWSHYNO / INPUT DATA FILE
01910 *****
01911 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
01912 # Date : 04-20-2021
01913 # Modeler : [J.F. Sabourin]
01914 # Company : JFSAinc.
01915 # License # : 2549237
01916 *****
01917
01918
01919 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
01920 R1998:C0002-----
01921 # READ AES DATA
01922 [Filename = YOM_1967_2007_123 ]
01923 [Start_date = 1998-01-01; End_date = 1998-12-31]
01924 [DT= 60;min; Length= 5088;hrs; WetHrs= 291; DryHrs= 4797; PTOT= 440.30]
01925 Maximum average rainfall intensities over
01926 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01927 15.80 11.80 7.60 4.00 2.54 1.82 1.27 .95 .76 mm/hr
01928 15.80 17.80 22.80 24.00 30.50 43.60 45.80 45.80 54.60 mm
01929 19980716 19980727 19980927 19980927 19980927 19980928 19980928 19980915 date
01930 Number of rainfall events per following interevent time
01931 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01932 125 104 95 78 63 52 37 32 21
01933 Number of events with at least the following durations
01934 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01935 125 64 43 1 0 0 0 0
01936 R1998:C0003-----
01937 COMPUTE API
01938 [APIIn= 20.00; APIKdy= 8600; APIKdt= 9907]
01939 [APIMax= 43.11; APIAvg= 9.64; APImin= .00]
01940 R1998:C0004-----
01941 CONTINUOUS NASHDY 5.0 01:EX 1.27 .003 1998.0927;14:15 5.26 .012 .000
01942 [CN= 45.0; N= 3.00; Tp= .40]
01943 [IAREC= 6.00; SMIN=127.57; SMAK=850.50; SK= .010]
01944 [InterEventTime= 12.00]
01945 R1998:C0005-----
01946 CONTINUOUS NASHDY 5.0 01:EX-1A 1.27 .036 1998.0627; 11:10 137.50 .312 .000
01947 [CN=100.0; N= 3.00; Tp= .40]
01948 [IAREC= 6.00; SMIN= 1.39; SMAK= 9.24; SK= .010]
01949 [InterEventTime= 12.00]
01950 *****
01951 ** END OF RUN : 1998
01952 *****
01953
01954
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01959
01960 RUN#COMMAND#
01961 R1999:C0001-----
01962 START
01963 [TZERO = .00 hrs on 19990101]
01964 [METOUT= 2 (1=Imperial, 2=metric output)]
01965 [NETFORM= 0 ]
01966 [NRUN = 1999 ]
01967 *****
01968 # SWSHYNO / INPUT DATA FILE
01969 *****
01970 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
01971 # Date : 04-20-2021
01972 # Modeler : [J.F. Sabourin]
01973 # Company : JFSAinc.
01974 # License # : 2549237
01975 *****
01976
01977
01978 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
01979 R1999:C0002-----
01980 # READ AES DATA
01981 [Filename = YOM_1967_2007_123 ]
01982 [Start_date = 1999-01-01; End_date = 1999-12-31]
01983 [DT= 60;min; Length= 4440;hrs; WetHrs= 247; DryHrs= 424.40]
01984 Maximum average rainfall intensities over
01985 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01986 17.50 10.10 9.03 6.57 3.31 1.65 1.45 1.22 .97 mm/hr
01987 17.50 23.00 27.10 29.70 39.70 39.70 52.20 55.60 63.50 mm
01988 19990717 19990717 19990906 19990906 19990906 19990907 19990908 19990908 date
01989 Number of rainfall events per following interevent time
01990 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01991 102 80 70 63 56 39 31 28 18
01992 Number of events with at least the following durations
01993 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01994 121 57 31 10 1 0 0 0 0
01995 R1999:C0003-----
01996 COMPUTE API
01997 [APIIn= 20.00; APIKdy= 8600; APIKdt= 9907]
01998 [APIMax= 52.47; APIAvg= 10.74; APImin= .06]
01999 R1999:C0004-----
02000 CONTINUOUS NASHDY 5.0 01:EX-1A 1.27 .018 2000.0628;14:05 19.04 .035 .000
02001 [CN= 45.0; N= 3.00; Tp= .40]
02002 [IAREC= 6.00; SMIN=127.57; SMAK=850.50; SK= .010]
02003 [InterEventTime= 12.00]
02004 R1999:C0005-----
02005 CONTINUOUS NASHDY 5.0 01:EX-1A 1.27 .140 2000.0628;14:05 261.22 .474 .000
02006 [CN=100.0; N= 3.00; Tp= .40]
02007 [IAREC= 6.00; SMIN= 1.39; SMAK= 9.24; SK= .010]
02008 [InterEventTime= 12.00]
02009 *****
02010 ** END OF RUN : 1999
02011 *****
02012
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02015
02016
02017
02018
02019 RUN#COMMAND#
02020 R2000:C0001-----
02021 START
02022 [TZERO = .00 hrs on 20000101]
02023 [METOUT= 2 (1=Imperial, 2=metric output)]
02024 [NETFORM= 0 ]
02025 [NRUN = 2000 ]
02026 *****
02027 # SWSHYNO / INPUT DATA FILE
02028 *****
02029 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
02030 # Date : 04-20-2021
02031 # Modeler : [J.F. Sabourin]
02032 # Company : JFSAinc.
02033 # License # : 2549237
02034 *****
02035
02036
02037 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
02038 R2000:C0002-----
02039 # READ AES DATA
02040 [Filename = YOM_1967_2007_123 ]
02041 [Start_date = 2000-01-01; End_date = 2000-12-31]
02042 [DT= 60;min; Length= 5160;hrs; WetHrs= 401; DryHrs= 4759; PTOT= 535.90]
02043 Maximum average rainfall intensities over
02044 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02045 14.70 9.40 8.03 6.43 3.89 1.95 1.30 1.03 .84 mm/hr
02046 14.70 19.20 24.10 36.60 46.70 46.70 46.80 49.30 60.40 mm
02047 20000225 20000225 20000225 20000225 20000225 20000225 20000225 20000225 date
02048 Number of rainfall events per following interevent time
02049 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02050 146 125 110 86 67 46 34 30 23
02051 Number of events with at least the following durations
02052 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02053 155 82 49 16 2 0 0 0 0
02054 R2000:C0003-----
02055 COMPUTE API
02056 [APIIn= 20.00; APIKdy= 8600; APIKdt= 9907]
02057 [APIMax= 58.04; APIAvg= 11.60; APImin= .29]
02058 R2000:C0004-----
02059 CONTINUOUS NASHDY 5.0 01:EX 1.27 .006 2000.0628;10:10 9.42 .018 .000
02060 [CN= 45.0; N= 3.00; Tp= .40]
02061 [IAREC= 6.00; SMIN=127.57; SMAK=850.50; SK= .010]
02062 [InterEventTime= 12.00]
02063 R2000:C0005-----
02064 CONTINUOUS NASHDY 5.0 01:EX-1A 1.27 .048 2000.0628;10:05 184.89 .345 .000
02065 [CN=100.0; N= 3.00; Tp= .40]
02066 [IAREC= 6.00; SMIN= 1.39; SMAK= 9.24; SK= .010]
02067 [InterEventTime= 12.00]
02068 *****
02069 ** END OF RUN : 2001
02070 *****
02071
02072
02073
02074
02075
02076
02077
02078 RUN#COMMAND#
02079 R2000:C0001-----
02080 START
02081 [TZERO = .00 hrs on 20020101]
02082 [METOUT= 2 (1=Imperial, 2=metric output)]
02083 [NETFORM= 0 ]
02084 [NRUN = 2002 ]
02085 *****
02086 # SWSHYNO / INPUT DATA FILE
02087 *****
02088 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
02089 # Date : 04-20-2021
02090 # Modeler : [J.F. Sabourin]
02091 # Company : JFSAinc.
02092 # License # : 2549237
02093 *****
02094
02095
02096 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
02097 R2000:C0002-----
02098 # READ AES DATA
02099 [Filename = YOM_1967_2007_123 ]
02100 [Start_date = 2002-01-01; End_date = 2002-12-31]
02101 [DT= 60;min; Length= 5088;hrs; WetHrs= 304; DryHrs= 4784; PTOT= 551.50]
02102 Maximum average rainfall intensities over
02103 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02104 45.00 26.75 18.40 9.48 4.74 2.48 2.08 1.56 1.04 mm/hr
02105 45.00 55.20 55.20 56.90 56.90 59.50 74.90 74.90 74.90 mm
02106 20020627 20020627 20020627 20020627 20020627 20020627 20020628 20020628 date
02107 Number of rainfall events per following interevent time
02108 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02109 100 76 56 47 41 36 34 25
02110 Number of events with at least the following durations
02111 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02112 100 59 39 13 5 0 0 0 0
02113 R2000:C0003-----
02114 COMPUTE API
02115 [APIIn= 20.00; APIKdy= 8600; APIKdt= 9907]
02116 [APIMax= 81.99; APIAvg= 12.07; APImin= .40]
02117 R2000:C0004-----
02118 CONTINUOUS NASHDY 5.0 01:EX 1.27 .018 2002.0627;14:15 19.04 .035 .000
02119 [CN= 45.0; N= 3.00; Tp= .40]
02120 [IAREC= 6.00; SMIN=127.57; SMAK=850.50; SK= .010]
02121 [InterEventTime= 12.00]
02122 R2000:C0005-----
02123 CONTINUOUS NASHDY 5.0 01:EX-1A 1.27 .140 2002.0628;14:05 261.22 .474 .000
02124 [CN=100.0; N= 3.00; Tp= .40]
02125 [IAREC= 6.00; SMIN= 1.39; SMAK= 9.24; SK= .010]
02126 [InterEventTime= 12.00]
02127 *****
02128 ** END OF RUN : 2002
02129 *****
02130
02131
02132
02133
02134
02135
02136
02137 RUN#COMMAND#
02138 R2003:C0001-----
02139 START
02140 [TZERO = .00 hrs on 20030101]
02141 [METOUT= 2 (1=Imperial, 2=metric output)]
02142 [NETFORM= 0 ]
02143 [NRUN = 2003 ]
02144 *****
02145 # SWSHYNO / INPUT DATA FILE
02146 *****
02147 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
02148 # Date : 04-20-2021
02149 # Modeler : [J.F. Sabourin]
02150 # Company : JFSAinc.
02151 # License # : 2549237
02152 *****
02153
02154
02155 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
02156 R2003:C0002-----
02157 # READ AES DATA
02158 [Filename = YOM_1967_2007_123 ]
02159 [Start_date = 2003-01-01; End_date = 2003-12-31]
02160 [DT= 60;min; Length= 4440;hrs; WetHrs= 406; DryHrs= 4034; PTOT= 554.60]

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02161# Maximum average rainfall intensities over
02162# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02163# 15.10 10.00 7.13 4.28 3.18 1.86 1.25 .94 .81 mm/hr
02164# 15.10 20.00 21.40 25.70 38.20 44.60 44.90 45.10 58.30 mm
02165# 20030711 20030711 20030711 20030711 20030711 20030726 20030726 20030726 date
02166# Number of rainfall events per following interevent time
02167# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02168# 145 127 109 86 64 45 38 25 15
02169# Number of events with at least the following durations
02170# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02171# 144 80 43 13 5 1 0 0 0
02172# R2003:C00002-----
02173# COMPUTE API
02174# [APIini= 20.00; APIkdy= .8000; APIkdt= .9900]
02175# [APImax= 63.84; APIavg= 12.44; APImin= .88]
02176# R2003:C00004-----DtmIn-ID:NMVY-----AREAh-QFEARcns=PeakDate_hh:mm-----Rvnm-R.C-----DWFCns
02177# CONTINUOUS NASHVD 5.0 01:EX 1.27 .095 2003.0711,17:10 13.18 .024 .000
02178# [CN= 45.0; N= 3.00; Tp= .40]
02179# [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
02180# [InterEventTime= 12.00]
02181# R2003:C00005-----DtmIn-ID:NMVY-----AREAh-QFEARcns=PeakDate_hh:mm-----Rvnm-R.C-----DWFCns
02182# CONTINUOUS NASHVD 5.0 01:EX-IA 1.27 .049 2003.0711,17:05 219.43 .396 .000
02183# [CN=100.0; N= 3.00; Tp= .40]
02184# [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
02185# [InterEventTime= 12.00]
02186# -----
02187# *****
02188# ** END OF RUN : 2003
02189# -----
02190# -----
02191# -----
02192# -----
02193# -----
02194# -----
02195# -----
02196# RUN# :COMMAND#
02197# R2004:C00002-----
02198# START
02199# [TZERO = .00 hrs on 20040101]
02200# [METOUT= 2 (1=imperial, 2=metric output)]
02201# [NRUN = 0]
02202# *****
02203# # SWHYND / INPUT DATA FILE
02204# #-----
02205# # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
02206# # Date : 04-20-2021
02207# # Modeller : [J.F. Sabourin]
02208# # Company : JFSAinc.
02209# # License # : 2549237
02210# #-----
02211# #-----
02212# #-----
02213# #-----
02214# # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
02215# R2004:C00002-----
02216# * READ AES DATA
02217# [Filename = YOR_1967_2007_123 ]
02218# [Start_date= 2004.0101; End_date= 2004.1230]
02219# [DT= 60.min; Length= 5064.hrs; WetHrs= 1527; DryHrs= 4737; PTOT= 573.30]
02220# Maximum average rainfall intensities over
02221# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02222# 20.30 23.40 20.23 15.87 10.42 5.89 3.79 2.85 1.98 mm/hr
02223# 30.30 46.80 60.70 95.20 125.00 136.60 136.60 142.30 date
02224# 20040909 20040909 20040909 20040909 20040909 20040910 20040910 20040910 date
02225# Number of rainfall events per following interevent time
02226# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02227# 121 99 88 68 57 49 40 27 20
02228# Number of events with at least the following durations
02229# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02230# 120 74 41 11 1 0 0 0
02231# R2004:C00003-----
02232# COMPUTE API
02233# [APIini= 20.00; APIkdy= .8000; APIkdt= .9900]
02234# [APImax=127.56; APIavg= 12.44; APImin= .88]
02235# R2004:C00004-----DtmIn-ID:NMVY-----AREAh-QFEARcns=PeakDate_hh:mm-----Rvnm-R.C-----DWFCns
02236# CONTINUOUS NASHVD 5.0 01:EX 1.27 .023 2004.0909,15:10 46.72 .081 .000
02237# [CN= 45.0; N= 3.00; Tp= .40]
02238# [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
02239# [InterEventTime= 12.00]
02240# R2004:C00005-----DtmIn-ID:NMVY-----AREAh-QFEARcns=PeakDate_hh:mm-----Rvnm-R.C-----DWFCns
02241# CONTINUOUS NASHVD 5.0 01:EX-IA 1.27 .103 2004.0909,10:05 266.73 .465 .000
02242# [CN=100.0; N= 3.00; Tp= .40]
02243# [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
02244# [InterEventTime= 12.00]
02245# -----
02246# *****
02247# ** END OF RUN : 2005
02248# -----
02249# -----
02250# -----
02251# -----
02252# -----
02253# -----
02254# -----
02255# RUN# :COMMAND#
02256# R2006:C00001-----
02257# START
02258# [TZERO = .00 hrs on 20060101]
02259# [METOUT= 2 (1=imperial, 2=metric output)]
02260# [NRUN = 2006 ]
02261# [NRUN = 2006 ]
02262# *****
02263# # SWHYND / INPUT DATA FILE
02264# #-----
02265# # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
02266# # Date : 04-20-2021
02267# # Modeller : [J.F. Sabourin]
02268# # Company : JFSAinc.
02269# # License # : 2549237
02270# #-----
02271# #-----
02272# #-----
02273# # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
02274# R2006:C00002-----
02275# * READ AES DATA
02276# [Filename = YOR_1967_2007_123 ]
02277# [Start_date= 2006.0101; End_date= 2006.1231]
02278# [DT= 60.min; Length= 5136.hrs; WetHrs= 4771; DryHrs= 4659; PTOT= 723.40]
02279# Maximum average rainfall intensities over
02280# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02281# 16.90 10.40 9.23 6.67 3.84 2.11 1.49 1.32 1.03 mm/hr
02282# 16.90 21.20 21.60 46.10 60.70 51.60 61.50 74.20 mm
02283# 20060801 20060903 20060903 20060903 20060903 20060904 20060904 20060903 date
02284# Number of rainfall events per following interevent time
02285# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02286# 141 113 98 74 60 47 40 30 21
02287# Number of events with at least the following durations
02288# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02289# 140 88 58 22 9 0 0 0 0
02290# R2006:C00003-----
02291# COMPUTE API
02292# [APIini= 20.00; APIkdy= .8000; APIkdt= .9900]
02293# [APImax= 63.68; APIavg= 15.38; APImin= 1.10]
02294# R2006:C00004-----DtmIn-ID:NMVY-----AREAh-QFEARcns=PeakDate_hh:mm-----Rvnm-R.C-----DWFCns
02295# CONTINUOUS NASHVD 5.0 01:EX 1.27 .05 2006.0801, 3:10 34.14 .820 .000
02296# [CN= 45.0; N= 3.00; Tp= .40]
02297# [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
02298# [InterEventTime= 12.00]
02299# R2006:C00005-----DtmIn-ID:NMVY-----AREAh-QFEARcns=PeakDate_hh:mm-----Rvnm-R.C-----DWFCns
02300# CONTINUOUS NASHVD 5.0 01:EX-IA 1.27 .054 2006.0801, 3:05 286.18 .396 .000
02301# [CN=100.0; N= 3.00; Tp= .40]
02302# [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
02303# [InterEventTime= 12.00]
02304# -----
02305# *****
02306# ** END OF RUN : 2006
02307# -----
02308# -----
02309# -----
02310# -----
02311# -----
02312# -----
02313# -----
02314# RUN# :COMMAND#
02315# R2007:C00001-----
02316# START
02317# [TZERO = .00 hrs on 20070101]
02318# [METOUT= 2 (1=imperial, 2=metric output)]
02319# [NRUN = 2007 ]
02320# [NRUN = 2007 ]
02321# *****
02322# # SWHYND / INPUT DATA FILE
02323# #-----
02324# # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
02325# # Date : 04-20-2021
02326# # Modeller : [J.F. Sabourin]
02327# # Company : JFSAinc.
02328# # License # : 2549237
02329# #-----
02330# #-----
02331# #-----
02332# # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
02333# R2007:C00002-----
02334# * READ AES DATA
02335# [Filename = YOR_1967_2007_123 ]
02336# [Start_date= 2007.0101; End_date= 2007.1231]
02337# [DT= 60.min; Length= 5160.hrs; WetHrs= 4171; DryHrs= 4743; PTOT= 550.70]
02338# Maximum average rainfall intensities over
02339# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02340# 23.20 11.60 7.80 7.13 5.63 2.82 1.90 1.45 .97 mm/hr

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02341# 23.20 23.20 23.40 42.80 67.50 67.70 68.30 69.80 69.80 mm
02342# 20070829 20070829 20070829 20070829 20070829 20070829 20070829 20070829 20070829 date
02343# Number of rainfall events per following interevent time
02344# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02345# 158 120 109 82 64 49 36 29 20
02346# Number of events with at least the following durations
02347# 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02348# 157 84 53 15 4 0 0 0 0
02349# R2007:C00003-----
02350# COMPUTE API
02351# [APIini= 20.00; APIkdy= .8000; APIkdt= .9900]
02352# [APImax= 71.02; APIavg= 11.76; APImin= .89]
02353# R2007:C00004-----DtmIn-ID:NMVY-----AREAh-QFEARcns=PeakDate_hh:mm-----Rvnm-R.C-----DWFCns
02354# CONTINUOUS NASHVD 5.0 01:EX 1.27 .004 2007.0720,11:15 11.42 .021 .000
02355# [CN= 45.0; N= 3.00; Tp= .40]
02356# [IAREC= 6.00; SMIN=127.57; SMAX=850.50; EK= .010]
02357# [InterEventTime= 12.00]
02358# R2007:C00005-----DtmIn-ID:NMVY-----AREAh-QFEARcns=PeakDate_hh:mm-----Rvnm-R.C-----DWFCns
02359# CONTINUOUS NASHVD 5.0 01:EX-IA 1.27 .052 2007.0829,18:10 181.49 .330 .000
02360# [CN=100.0; N= 3.00; Tp= .40]
02361# [IAREC= 6.00; SMIN= 1.39; SMAX= 9.24; EK= .010]
02362# [InterEventTime= 12.00]
02363# -----
02364# *****
02365# R2007:C00002-----
02366# FINISH
02367# *****
02368# -----
02369# -----
02370# -----
02371# R1967:C00002 READ AES DATA
02372# ** WARNING: Missing rainfall increments were set to 0.
02373# ** WARNING: Missing rainfall increments were set to 0.
02374# ** WARNING: Missing rainfall increments were set to 0.
02375# ** WARNING: Missing rainfall increments were set to 0.
02376# ** WARNING: Missing rainfall increments were set to 0.
02377# ** WARNING: Missing rainfall increments were set to 0.
02378# ** WARNING: Missing rainfall increments were set to 0.
02379# ** WARNING: Missing rainfall increments were set to 0.
02380# ** WARNING: Missing rainfall increments were set to 0.
02381# ** WARNING: Missing rainfall increments were set to 0.
02382# ** WARNING: Requested start date is less than start date in file.
02383# ** WARNING: Missing rainfall increments were set to 0.
02384# ** WARNING: Missing rainfall increments were set to 0.
02385# ** WARNING: Missing rainfall increments were set to 0.
02386# ** WARNING: Missing rainfall increments were set to 0.
02387# ** WARNING: Missing rainfall increments were set to 0.
02388# ** WARNING: Missing rainfall increments were set to 0.
02389# ** WARNING: Missing rainfall increments were set to 0.
02390# ** WARNING: Missing rainfall increments were set to 0.
02391# ** WARNING: Missing rainfall increments were set to 0.
02392# ** WARNING: Missing rainfall increments were set to 0.
02393# ** WARNING: Requested start date is less than start date in file.
02394# ** WARNING: Missing rainfall increments were set to 0.
02395# ** WARNING: Missing rainfall increments were set to 0.
02396# ** WARNING: Missing rainfall increments were set to 0.
02397# ** WARNING: Requested start date is less than start date in file.
02398# ** WARNING: Missing rainfall increments were set to 0.
02399# ** WARNING: Missing rainfall increments were set to 0.
02400# ** WARNING: Missing rainfall increments were set to 0.
02401# ** WARNING: Missing rainfall increments were set to 0.
02402# ** WARNING: Missing rainfall increments were set to 0.
02403# ** WARNING: Missing rainfall increments were set to 0.
02404# ** WARNING: Requested start date is less than start date in file.
02405# ** WARNING: Missing rainfall increments were set to 0.
02406# ** WARNING: Missing rainfall increments were set to 0.
02407# ** WARNING: Missing rainfall increments were set to 0.
02408# ** WARNING: Missing rainfall increments were set to 0.
02409# ** WARNING: Requested start date is less than start date in file.
02410# ** WARNING: Missing rainfall increments were set to 0.
02411# ** WARNING: Requested start date is less than start date in file.
02412# ** WARNING: Missing rainfall increments were set to 0.
02413# ** WARNING: Requested start date is less than start date in file.
02414# ** WARNING: Missing rainfall increments were set to 0.
02415# ** WARNING: Requested start date is less than start date in file.
02416# ** WARNING: Missing rainfall increments were set to 0.
02417# ** WARNING: Requested start date is less than start date in file.
02418# ** WARNING: Missing rainfall increments were set to 0.
02419# ** WARNING: Requested start date is less than start date in file.
02420# ** WARNING: Missing rainfall increments were set to 0.
02421# ** WARNING: Requested start date is less than start date in file.
02422# ** WARNING: Specified end date is beyond the end date in file.
02423# ** WARNING: Missing rainfall increments were set to 0.
02424# Simulation ended on 2021-04-29 at 09:30:03
02425# -----
02426# -----

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1  20      Metric units
2  *#*****
3  *# Project Name: [OTTO's Parking Lot Expansion]      Project Number: [2128]
4  *# Date       : 2021-04-23
5  *# Modeller   : [M. M.]
6  *# Company    : JFSAinc.
7  *# License #  : 2549237
8  *#*****
9  *#=====
10 *
11 *#----- CONTINUOUS SIMULATIONS -----
12 *#-----
13 START                TZERO=[1967.0719], METOUT=[2], NSTORM=[0], NRUN=[1967]
14 *#-----|-----|
15 *# Ottawa International Airport - 19 July 1967 to 01 Nov 2007
16 READ AES DATA      AES_FILENAME=["YOW_1967_2007.123"],
17 *#-----|-----|
18 *# IELEM=[123], START_DATE=[0], END_DATE=[-364]
19 *#-----|-----|
20 COMPUTE API        APII=[20], APIK=[0.8]/day,
21 *#-----|-----|
22 * TOTAL SITE RUNOFF
23 CONTINUOUS STANDHYD NHYD=["PRO"], DT=[5] (min), AREA=[1.268] (ha),
24 *#-----|-----|
25 *# XIMP=[0.8], TIMP=[0.8], DWF=[0] (cms),
26 *# LOSS=[1]: Horton: Fo=[76.2] (mm/hr), Fc=[13.2] (mm/hr),
27 *# DCAY=[4.14] (/hr), F=[0] (mm),
28 *# Pervious surfaces: IAper=[4.67] (mm), SLPP=[0.5] (%),
29 *# LGP=[40] (m), MNP=[0.25], SCP=[0] (min),
30 *# Impervious surfaces: IAimp=[1.57] (mm), SLPI=[1.1] (%),
31 *# LGI=[160] (m), MNI=[0.013], SCI=[0] (min),
32 *# Continuous simulation parameters:
33 *# IaRECper=[6] (hrs), IaRECimp=[1.5] (hrs),
34 *# InterEventTime=[12] (hrs), END=-1
35 *#-----|-----|
36 * TOTAL SITE RUNOFF - NO INFILTRATION
37 CONTINUOUS STANDHYD NHYD=["PRO-IA"], DT=[5] (min), AREA=[1.268] (ha),
38 *#-----|-----|
39 *# XIMP=[0.8], TIMP=[0.8], DWF=[0] (cms),
40 *# LOSS=[1]: Horton: Fo=[0.0001] (mm/hr), Fc=[0.0001] (mm/hr),
41 *# DCAY=[4.14] (/hr), F=[0] (mm),
42 *# Pervious surfaces: IAper=[4.67] (mm), SLPP=[0.5] (%),
43 *# LGP=[40] (m), MNP=[0.25], SCP=[0] (min),
44 *# Impervious surfaces: IAimp=[1.57] (mm), SLPI=[1.1] (%),
45 *# LGI=[160] (m), MNI=[0.013], SCI=[0] (min),
46 *# Continuous simulation parameters:
47 *# IaRECper=[6] (hrs), IaRECimp=[1.5] (hrs),
48 *# InterEventTime=[12] (hrs), END=-1
49 *#-----|-----|
50 * ROUTE FLOW WITHIN INFILTRATION TRENCH
51 * - OUTFLOW IS EXFILTRATION THROUGH SOIL
52 * - OVERFLOW IS EXCESS TO THE DRAIN
53 ROUTE RESERVOIR    NHYDout=["Exfil"], NHYDin=["PRO"], RDT=[5] (min),
54 *#-----|-----|
55 *# TABLE of ( OUTFLOW-STORAGE ) values
56 *# (cms) - (ha-m)
57 *# [ 0.0 , 0.0 ]
58 *# [0.00149 , 0.00010]
59 *# [0.00154 , 0.00083]
60 *# [0.00159 , 0.00197]
61 *# [0.00163 , 0.00345]
62 *# [0.00168 , 0.00528]
63 *# [0.00174 , 0.00746]
64 *# [0.00179 , 0.01001]
65 *# [0.00188 , 0.01304]
66 *# [0.00201 , 0.01684]
67 *# [0.0022 , 0.02174]
68 *# [0.00245 , 0.02814]
69 *# [0.00277 , 0.03651]
70 *# [0.00317 , 0.0474]
71 *# [0.00368 , 0.06142]

```

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65          [ -1 , -1 ] (maximum one hundred pairs of points)
66          NHYDovf=["Runoff"]
67  *%-----|-----|
68  * ROUTE REMAINING (NON INFILTRATED FLOWS) THROUGH OUTLET STRUCTURE TO EXISTING DITCH
69  * OUTLET STRUCTURE 1m BROAD CRESTED WEIR AT ELEVATION 100.6 m
70  ROUTE RESERVOIR      NHYDout=["Outflow"], NHYDin=["Runoff"], RDT=[5](min),
71          TABLE of ( OUTFLOW-STORAGE ) values
72          (cms) - (ha-m)
73          [ 0.0 , 0.0 ]
74          [0.01864 , 0.04896]
75          [0.04033 , 0.13567]
76          [ -1 , -1 ] (maximum one hundred pairs of points)
77          NHYDovf=["Overflow"]
78  *%-----|-----|
79  ADD HYD              NHYDsum=["Out"], NHYDs to add=["Outflow"+"Overflow"]
80  *%-----|-----|
81  *#=====|=====|
82  *
83  *#=====|=====|
84  START              TZERO=[1968.0101], METOUT=[2], NSTORM=[0], NRUN=[1968]
85  START              TZERO=[1969.0101], METOUT=[2], NSTORM=[0], NRUN=[1969]
86  START              TZERO=[1970.0101], METOUT=[2], NSTORM=[0], NRUN=[1970]
87  START              TZERO=[1971.0101], METOUT=[2], NSTORM=[0], NRUN=[1971]
88  START              TZERO=[1972.0101], METOUT=[2], NSTORM=[0], NRUN=[1972]
89  START              TZERO=[1973.0101], METOUT=[2], NSTORM=[0], NRUN=[1973]
90  START              TZERO=[1974.0101], METOUT=[2], NSTORM=[0], NRUN=[1974]
91  START              TZERO=[1975.0101], METOUT=[2], NSTORM=[0], NRUN=[1975]
92  START              TZERO=[1976.0101], METOUT=[2], NSTORM=[0], NRUN=[1976]
93  START              TZERO=[1977.0101], METOUT=[2], NSTORM=[0], NRUN=[1977]
94  START              TZERO=[1978.0101], METOUT=[2], NSTORM=[0], NRUN=[1978]
95  START              TZERO=[1979.0101], METOUT=[2], NSTORM=[0], NRUN=[1979]
96  START              TZERO=[1980.0101], METOUT=[2], NSTORM=[0], NRUN=[1980]
97  START              TZERO=[1981.0101], METOUT=[2], NSTORM=[0], NRUN=[1981]
98  START              TZERO=[1982.0101], METOUT=[2], NSTORM=[0], NRUN=[1982]
99  START              TZERO=[1983.0101], METOUT=[2], NSTORM=[0], NRUN=[1983]
100 START              TZERO=[1984.0101], METOUT=[2], NSTORM=[0], NRUN=[1984]
101 START              TZERO=[1985.0101], METOUT=[2], NSTORM=[0], NRUN=[1985]
102 START              TZERO=[1986.0101], METOUT=[2], NSTORM=[0], NRUN=[1986]
103 START              TZERO=[1987.0101], METOUT=[2], NSTORM=[0], NRUN=[1987]
104 START              TZERO=[1988.0101], METOUT=[2], NSTORM=[0], NRUN=[1988]
105 START              TZERO=[1989.0101], METOUT=[2], NSTORM=[0], NRUN=[1989]
106 START              TZERO=[1990.0101], METOUT=[2], NSTORM=[0], NRUN=[1990]
107 START              TZERO=[1991.0101], METOUT=[2], NSTORM=[0], NRUN=[1991]
108 START              TZERO=[1992.0101], METOUT=[2], NSTORM=[0], NRUN=[1992]
109 START              TZERO=[1993.0101], METOUT=[2], NSTORM=[0], NRUN=[1993]
110 START              TZERO=[1994.0101], METOUT=[2], NSTORM=[0], NRUN=[1994]
111 START              TZERO=[1995.0101], METOUT=[2], NSTORM=[0], NRUN=[1995]
112 START              TZERO=[1996.0101], METOUT=[2], NSTORM=[0], NRUN=[1996]
113 START              TZERO=[1997.0101], METOUT=[2], NSTORM=[0], NRUN=[1997]
114 START              TZERO=[1998.0101], METOUT=[2], NSTORM=[0], NRUN=[1998]
115 START              TZERO=[1999.0101], METOUT=[2], NSTORM=[0], NRUN=[1999]
116 START              TZERO=[2000.0101], METOUT=[2], NSTORM=[0], NRUN=[2000]
117 START              TZERO=[2002.0101], METOUT=[2], NSTORM=[0], NRUN=[2002]
118 START              TZERO=[2003.0101], METOUT=[2], NSTORM=[0], NRUN=[2003]
119 START              TZERO=[2004.0101], METOUT=[2], NSTORM=[0], NRUN=[2004]
120 START              TZERO=[2006.0101], METOUT=[2], NSTORM=[0], NRUN=[2006]
121 START              TZERO=[2007.0101], METOUT=[2], NSTORM=[0], NRUN=[2007]
122 FINISH
123 *%-----|-----|
124

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```
00001 -----
00002
00003 SSSSS W W M M H H Y Y M M O O O 222 000 11 5555
00004 S W W M M M M H H Y Y M M M O O 2 0 0 11 5
00005 SSSSS W W M M M H H H H Y Y M M M O O 2 0 0 11 5 Ver 5.500
00006 S W W M M M H H Y Y M M M O O 222 0 0 11 555 FEB 2013
00007 SSSSS W W M M H H Y Y M M M O O 2 0 0 11 5
00008 2 0 0 11 5 2549237
00009 Stormwater Management Hydrologic Model 222 000 11 555
00010
00011
00012 ***** SUMMARY *****
00013 ***** based on the principles of HYMO and its successors *****
00014 ***** distributed by: J.F. Sabourin and Associates Inc. *****
00015 ***** Ottawa, Ontario: (613) 856-3884 *****
00016 ***** Gatineau, Quebec: (819) 243-6888 *****
00017 ***** E-mail: jsabour@jfsa.com *****
00018 *****
00019 *****
00020 *****
00021 *****
00022 *****
00023 ***** Licensed user: JFSAinc. *****
00024 ***** SERIAL#: 2549237 *****
00025 *****
00026 *****
00027 *****
00028 ***** PROGRAM ARRAY DIMENSIONS *****
00029 ***** Maximum value for ID numbers: 31 *****
00030 ***** Max. number of rainfall points: 105408 *****
00031 ***** Max. number of flow points: 105408 *****
00032 *****
00033 *****
00034 *****
00035 ***** S U M M A R Y O U T P U T *****
00036 *****
00037 ***** RUN DATE: 2021-04-27 TIME: 17:10:48 RUN COUNTER: 000889 *****
00038 *****
00039 ***** Input file: C:\Temp\20210420-Post Development\Cont\POST_DEV_V01-Cont.DAT *****
00040 ***** Output file: C:\Temp\20210420-Post Development\Cont\POST_DEV_V01-Cont.out *****
00041 ***** Summary file: C:\Temp\20210420-Post Development\Cont\POST_DEV_V01-Cont.sum *****
00042 ***** User comments: *****
00043 ***** 1: *****
00044 ***** 2: *****
00045 ***** 3: *****
00046 *****
00047 *****
00048 *****
00049 *****
00050 *****
00051 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00052 # Date : [2021-04-23]
00053 # Modelier : [M. M.]
00054 # Company : JFSAinc.
00055 # License # : 2549237
00056 *****
00057 *****
00058 *****
00059 ***** END OF RUN : 1967 *****
00060 *****
00061 *****
00062 *****
00063 *****
00064 *****
00065 *****
00066 *****
00067 *****
00068 *****
00069 *****
00070 *****
00071 *****
00072 *****
00073 *****
00074 *****
00075 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00076 # Date : [2021-04-23]
00077 # Modelier : [M. M.]
00078 # Company : JFSAinc.
00079 # License # : 2549237
00080 *****
00081 *****
00082 *****
00083 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
00084 *****
00085 ***** READ ASSE DATA *****
00086 [Filename = YOM_1967_2007_123 ]
00087 [Start_date = 1967.0719; End_Date = 1968.0718]
00088 [DT= 60.0min; Length= 8760.0hrs; WetHrs= 519; DryHrs= 8241; PTDOT= 689.30]
00089 *****
00090 ***** Maximum average rainfall intensities over *****
00091 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00092 24.60 17.65 13.20 7.25 3.83 2.36 1.73 1.32 .90 mm/hr
00093 24.60 35.20 39.60 42.50 46.00 66.60 62.20 63.20 64.90 mm
00094 19670921 19670921 19670921 19670921 19670922 19670922 19670923 19670924 date
00095 24.60 17.65 13.20 7.25 3.83 2.36 1.73 1.32 .90 mm
00096 24.60 35.20 39.60 42.50 46.00 66.60 62.20 63.20 64.90 mm
00097 19670921 19670921 19670921 19670921 19680622 19670922 19670922 19670924 date
00098 *****
00099 ***** Number of events with at least the following durations *****
00100 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00101 184 129 111 91 75 50 42 36
00102 *****
00103 *****
00104 *****
00105 *****
00106 *****
00107 *****
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00148 *****
00149 *****
00150 *****
00151 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00152 # Date : [2021-04-23]
00153 # Modelier : [M. M.]
00154 # Company : JFSAinc.
00155 # License # : 2549237
00156 *****
00157 *****
00158 *****
00159 *****
00160 *****
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00219 *****
00220 *****
00221 *****
00222 *****
00223 *****
00224 *****
00225 *****
00226 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
00227 # Date : [2021-04-23]
00228 # Modelier : [M. M.]
00229 # Company : JFSAinc.
00230 # License # : 2549237
00231 *****
00232 *****
00233 *****
00234 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
00235 *****
00236 ***** READ ASSE DATA *****
00237 [Filename = YOM_1967_2007_123 ]
00238 [Start_date = 1969.0101; End_Date = 1969.1231]
00239 [DT= 60.0min; Length= 8760.0hrs; WetHrs= 470; DryHrs= 8290; PTDOT= 570.30]
00240 *****
00241 ***** Maximum average rainfall intensities over *****
00242 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00243 21.0 14.75 10.75 6.25 3.93 2.10 1.40 1.09 .75 mm/hr
00244 21.0 32.50 32.50 46.70 47.20 50.30 50.30 52.10 54.00 mm
00245 19690818 19690818 19690818 19690819 19690819 19690819 19690819 19690819 19690819 date
00246 21.0 32.50 32.50 46.70 47.20 50.30 50.30 52.10 54.00 mm
00247 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00248 127 119 107 92 78 58 49 43 32
00249 *****
00250 ***** Number of events with at least the following durations *****
00251 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00252 156 84 58 21 5 0 0 0 0
00253 *****
00254 *****
00255 *****
00256 *****
00257 *****
00258 *****
00259 *****
00260 *****
00261 *****
00262 *****
00263 *****
00264 *****
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00358 *****
00359 *****
00360 *****
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00361) Number of rainfall events per following interevent time
00362) 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00363) 200 164 143 108 79 61 54 43 37
00364) Number of events with at least the following durations
00365) 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
00366) 200 102 66 20 4 0 0 0 0
00367) R1973C0000

... [The text continues with a dense sequence of similar data and command blocks, showing rainfall event statistics and model execution details for various scenarios.] ...

007221 overflow <= 5.0 02:overflow .00 1975.0101.0:00 .00 n/a .000
007222 (Mset0used=0000E+00 m3, TotDuVVol=0.0000E+00 m3, N-Ovrf= 0. TotDuVVol=
007223 R1976C00008-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
007224 ADD HYD + 5.0 02:overflow .00 .000 1975.0101.0:00 .00 n/a .000
007225 * 5.0 02:overflow .00 .000 1975.0101.0:00 .00 n/a .000
007226 -----
007227 ** END OF RUN : 1975
007228 -----
007229 -----
007230 -----
007231 -----
007232 -----
007233 -----
007234 -----
007235 -----
007236 RUN:COMMAND#
007237 R1976C00001-----
007238 START
007239 (TZRO = .00 hrs on 19750101)
007240 (MSETOUT = 2 (1=imperial, 2=metric output))
007241 (INFORM = 0)
007242 (NRUN = 1975)
007243 *****
007244 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
007245 # Date : 2021-04-23
007246 # Modeller : [M. M.]
007247 # Company : JFSAInc.
007248 # License # : 2549237
007249 *****
007250 -----
007251 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
007252 R1976C00002-----
007253 # READ AS DATA
007254 (Filename = YOM_1967_2007_123)
007255 (Start_date = 1976.0101:End_Date = 1975.1230)
007256 (DTR=60,min:Length=804,hrs:WetHrs= 390, DryHrs= 7674; PTOT= 493.20)
007257 Maximum average rainfall intensities over
007258 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
007259 14.80 8.30 4.63 2.38 1.19 .87 .59 .80 mm/hr
007260 14.00 17.80 19.30 27.90 28.20 33.30 35.10 47.60 57.50
007261 1976028 1976028 1976028 1976028 1976028 1976028 1976028 1976028 date
007262 Number of rainfall events per following interval time
007263 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
007264 164 133 117 89 72 62 46 40 28
007265 Number of events with at least the following durations
007266 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
007267 163 133 117 89 72 62 46 40 28
007268 *****
007269 R1976C00003-----
007270 COMPUTE API
007271 (APIIn= 20.00; APIKey= .8000; APIAct= .9907)
007272 (APIMax= 49.47; APIAvg= 8.81; APImin= .00)
007273 R1976C00004-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
007274 # CONTINUOUS STANDYD 5.0 01:PRG 1.27 .039 1976.0828.19:00 273.64 355 .000
007275 (XIMP=80;ITM=80)
007276 (Horton parameters: Fw= 76.20;Fc= 13.20;DCAY=4.14; Fv= .00)
007277 (Previous area: IArea= 4.67;SFP= .50;LGP= 40.0;MP=250;SCF= .0)
007278 (Impervious area: IAimp= 1.57;SIP= 1.10;LGI= 160.0;MI=.013;SC= .0)
007279 (IAreScmp= 1.50; IAReCP= 6.00)
007280 R1976C00005-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
007281 CONTINUOUS STANDYD 5.0 01:PRG-IA 1.27 .045 1976.0828.19:00 318.61 646 .000
007282 (XIMP=80;ITM=80)
007283 (Horton parameters: Fw= .00;Fc= .00;DCAY=4.14; Fv= .00)
007284 (Previous area: IArea= 4.67;SFP= .50;LGP= 40.0;MP=250;SCF= .0)
007285 (Impervious area: IAimp= 1.57;SIP= 1.10;LGI= 160.0;MI=.013;SC= .0)
007286 (IAreScmp= 1.50; IAReCP= 6.00)
007287 R1976C00006-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
007288 ROUTE RESERVOIR -> 5.0 02:PRG 1.27 .039 1976.0828.19:00 273.64 n/a .000
007289 out <= 5.0 01:Rkfil 1.27 .002 1976.0828.23:10 273.64 n/a .000
007290 out <= 5.0 03:Runoff .00 .000 1976.0101.0:00 .00 n/a .000
007291 (Mset0used=2302E-01 m3, TotDuVVol=0.0000E+00 m3, N-Ovrf= 0. TotDuVVol= 0 hrs)
007292 R1976C00007-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
007293 ROUTE RESERVOIR -> 5.0 02:Runoff .00 .000 1976.0101.0:00 .00 n/a .000
007294 out <= 5.0 01:Outflow .00 .000 1976.0101.0:00 .00 n/a .000
007295 out <= 5.0 03:Overflow .00 .000 1976.0101.0:00 .00 n/a .000
007296 (Mset0used=0.0000E+00 m3, TotDuVVol=0.0000E+00 m3, N-Ovrf= 0. TotDuVVol= 0 hrs)
007297 R1976C00008-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
007298 ADD HYD + 5.0 02:overflow .00 .000 1976.0101.0:00 .00 n/a .000
007299 * 5.0 02:overflow .00 .000 1976.0101.0:00 .00 n/a .000
007300 -----
008011 *****
008012 ** END OF RUN : 1976
008013 -----
008014 -----
008015 -----
008016 -----
008017 -----
008018 -----
008019 -----
008020 RUN:COMMAND#
008021 R1977C00001-----
008022 START
008023 (TZRO = .00 hrs on 19770101)
008024 (MSETOUT = 2 (1=imperial, 2=metric output))
008025 (INFORM = 0)
008026 (NRUN = 1977)
008027 *****
008028 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
008029 # Date : 2021-04-23
008030 # Modeller : [M. M.]
008031 # Company : JFSAInc.
008032 # License # : 2549237
008033 *****
008034 -----
008035 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
008036 R1977C00002-----
008037 # READ AS DATA
008038 (Filename = YOM_1967_2007_123)
008039 (Start_date = 1977.0101:End_Date = 1979.1231)
008040 (DTR=60,min:Length=876,hrs:WetHrs= 546; DryHrs= 8214; PTOT= 866.50)
008041 Maximum average rainfall intensities over
008042 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
008043 34.90 21.30 11.78 5.14 2.63 1.75 1.21 .88 mm/hr
008044 34.90 44.00 44.00 44.00 44.00 61.70 63.00 63.00 63.00
008045 1979016 1979016 1979016 1979016 1979016 1979016 1979016 1979016 1979016 date
008046 Number of rainfall events per following interval time
008047 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
008048 147 129 116 60 40 36 34 32 24
008049 Number of events with at least the following durations
008050 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
008051 147 129 116 60 40 36 34 32 24
008052 *****
008053 R1977C00003-----
008054 COMPUTE API
008055 (APIIn= 20.00; APIKey= .8000; APIAct= .9907)
008056 (APIMax= 49.32; APIAvg= 9.39; APImin= .00)
008057 R1977C00004-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
008058 CONTINUOUS STANDYD 5.0 01:PRG 1.27 .060 1977.0717.16:00 411.77 608 .000
008059 (XIMP=80;ITM=80)
008060 (Horton parameters: Fw= 76.20;Fc= 13.20;DCAY=4.14; Fv= .00)
008061 (Previous area: IArea= 4.67;SFP= .50;LGP= 40.0;MP=250;SCF= .0)
008062 (Impervious area: IAimp= 1.57;SIP= 1.10;LGI= 160.0;MI=.013;SC= .0)
008063 (IAreScmp= 1.50; IAReCP= 6.00)
008064 R1977C00005-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
008065 CONTINUOUS STANDYD 5.0 01:PRG-IA 1.27 .071 1977.0717.16:00 484.37 715 .000
008066 (XIMP=80;ITM=80)
008067 (Horton parameters: Fw= .00;Fc= .00;DCAY=4.14; Fv= .00)
008068 (Previous area: IArea= 4.67;SFP= .50;LGP= 40.0;MP=250;SCF= .0)
008069 (Impervious area: IAimp= 1.57;SIP= 1.10;LGI= 160.0;MI=.013;SC= .0)
008070 (IAreScmp= 1.50; IAReCP= 6.00)
008071 R1977C00006-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
008072 ROUTE RESERVOIR -> 5.0 02:PRG 1.27 .060 1977.0717.16:00 411.77 n/a .000
008073 out <= 5.0 01:Rkfil 1.27 .003 1977.0901.23:20 411.77 n/a .000
008074 out <= 5.0 03:Runoff .00 .000 1977.0201.0:00 .00 n/a .000
008075 (Mset0used=147E-01 m3, TotDuVVol=0.0000E+00 m3, N-Ovrf= 0. TotDuVVol= 0 hrs)
008076 R1977C00007-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
008077 ROUTE RESERVOIR -> 5.0 02:Runoff .00 .000 1977.0201.0:00 .00 n/a .000
008078 out <= 5.0 01:Outflow .00 .000 1977.0201.0:00 .00 n/a .000
008079 out <= 5.0 03:Overflow .00 .000 1977.0201.0:00 .00 n/a .000
008080 (Mset0used=0.0000E+00 m3, TotDuVVol=0.0000E+00 m3, N-Ovrf= 0. TotDuVVol= 0 hrs)
008081 R1977C00008-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
008082 ADD HYD + 5.0 02:overflow .00 .000 1977.0201.0:00 .00 n/a .000
008083 * 5.0 02:overflow .00 .000 1977.0201.0:00 .00 n/a .000
008084 *****
008085 R1977C00009-----
008086 COMPUTE API
008087 (APIIn= 20.00; APIKey= .8000; APIAct= .9907)
008088 (APIMax= 49.32; APIAvg= 9.39; APImin= .00)
008089 R1977C00010-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
008090 CONTINUOUS STANDYD 5.0 01:PRG 1.27 .060 1977.0717.16:00 411.77 608 .000
008091 (XIMP=80;ITM=80)
008092 (Horton parameters: Fw= 76.20;Fc= 13.20;DCAY=4.14; Fv= .00)
008093 (Previous area: IArea= 4.67;SFP= .50;LGP= 40.0;MP=250;SCF= .0)
008094 (Impervious area: IAimp= 1.57;SIP= 1.10;LGI= 160.0;MI=.013;SC= .0)
008095 (IAreScmp= 1.50; IAReCP= 6.00)
008096 R1977C00011-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
008097 CONTINUOUS STANDYD 5.0 01:PRG-IA 1.27 .071 1977.0717.16:00 484.37 715 .000
008098 (XIMP=80;ITM=80)
008099 (Horton parameters: Fw= .00;Fc= .00;DCAY=4.14; Fv= .00)
008100 (Previous area: IArea= 4.67;SFP= .50;LGP= 40.0;MP=250;SCF= .0)
008101 (Impervious area: IAimp= 1.57;SIP= 1.10;LGI= 160.0;MI=.013;SC= .0)
008102 (IAreScmp= 1.50; IAReCP= 6.00)
008103 R1980C00001-----
008104 START
008105 (TZRO = .00 hrs on 19800101)
008106 (MSETOUT = 2 (1=imperial, 2=metric output))
008107 (INFORM = 0)
008108 (NRUN = 1980)
008109 *****
008110 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [2128]
008111 # Date : 2021-04-23
008112 # Modeller : [M. M.]
008113 # Company : JFSAInc.
008114 # License # : 2549237
008115 *****
008116 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
008117 R1980C00002-----
008118 # READ AS DATA
008119 (Filename = YOM_1967_2007_123)
008120 (Start_date = 1980.0101:End_Date = 1980.1230)
008121 (DTR=60,min:Length=876,hrs:WetHrs= 427; DryHrs= 8333; PTOT= 622.00)
008122 Maximum average rainfall intensities over
008123 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
008124 15.00 9.20 4.50 2.22 1.37 1.02 0.76 0.66 mm/hr
008125 15.00 18.20 19.50 28.20 42.80 48.60 48.60 62.60
008126 1980083 1980083 19801025 19801025 19801026 19801026 19801026 19801026 date
008127 Number of rainfall events per following interval time
008128 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
008129 151 125 112 73 79 62 49 44 28
008130 Number of events with at least the following durations
008131 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
008132 150 85 54 16 4 0 0 0 0
008133 *****
008134 R1980C00003-----
008135 COMPUTE API
008136 (APIIn= 20.00; APIKey= .8000; APIAct= .9907)
008137 (APIMax= 52.94; APIAvg= 7.92; APImin= .00)
008138 R1980C00004-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
008139 CONTINUOUS STANDYD 5.0 01:PRG 1.27 .104 1980.0831.14:00 554.19 640 .000
008140 (XIMP=80;ITM=80)
008141 (Horton parameters: Fw= 76.20;Fc= 13.20;DCAY=4.14; Fv= .00)
008142 (Previous area: IArea= 4.67;SFP= .50;LGP= 40.0;MP=250;SCF= .0)
008143 (Impervious area: IAimp= 1.57;SIP= 1.10;LGI= 160.0;MI=.013;SC= .0)
008144 (IAreScmp= 1.50; IAReCP= 6.00)
008145 R1980C00005-----DTMIN-ID:INHYD-----AREHA-GPEARCS-TPeakDate_hh:mm-----RvM-R-C-----DMFCS
008146 CONTINUOUS STANDYD 5.0 01:PRG-IA 1.27 .048 1980.0830.14:00 443.56 713 .000
008147 (XIMP=80;ITM=80)
008148 (Horton parameters: Fw= .00;Fc= .00;DCAY=4.14; Fv= .00)
008149 (Previous area: IArea= 4.67;SFP= .50;LGP= 40.0;MP=250;SCF= .0)


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01081 [Impervious area IAlmp=1.57;SLEP=1.10;I=160.0;M=1.013;SICI= .0]
01082 [XIMP=80;TIMP=80]
01083 ROUTE RESERVOIR -> 5.0 0.02PRDF 1.27 .042 1980.0830.1400 377.80 n/a .000
01084 out <= 5.0 0.03Outflow .00 .000 1980.0101.0100 .00 n/a .000
01085 overflow <= 5.0 0.03Runoff .00 .000 1980.0101.0100 .00 n/a .000
01086 [MtsToSsd= .3304E-01 n3, TotVolToVol=0.0000E+00 n3, N=ov= 0, TotDuvDv= 0.0hrs]
01087 ROUTE RESERVOIR -> 5.0 0.02PRDF 1.27 .042 1980.0830.1400 377.80 n/a .000
01088 out <= 5.0 0.03Outflow .00 .000 1980.0101.0100 .00 n/a .000
01089 overflow <= 5.0 0.03Runoff .00 .000 1980.0101.0100 .00 n/a .000
01090 [MtsToSsd= .3304E-01 n3, TotVolToVol=0.0000E+00 n3, N=ov= 0, TotDuvDv= 0.0hrs]
01091 ROUTE RESERVOIR -> 5.0 0.02PRDF 1.27 .042 1980.0830.1400 377.80 n/a .000
01092 out <= 5.0 0.03Outflow .00 .000 1980.0101.0100 .00 n/a .000
01093 overflow <= 5.0 0.03Runoff .00 .000 1980.0101.0100 .00 n/a .000
01094 [MtsToSsd= .3304E-01 n3, TotVolToVol=0.0000E+00 n3, N=ov= 0, TotDuvDv= 0.0hrs]
01095 ADD HYD + 5.0 0.02OverFlow .00 .000 1980.0101.0100 .00 n/a .000
01096 * 5.0 0.02OverFlow .00 .000 1980.0101.0100 .00 n/a .000
01097 * 5.0 0.02OverFlow .00 .000 1980.0101.0100 .00 n/a .000
01098 ** END OF RUN : 1980
01099 *****
01100 *****
01101 *****
01102 *****
01103 *****
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02161 [NRUN = 1983]
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02260 *****

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01801 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01802 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01803 Number of events with at least the following durations
01804 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01805 203 116 75 31 6 1 0 0 0
01806 R1990C0003
01807 *****
01808 COMPUTE API
01809 [APIIn= 20.00; APIQty= .8000; APIkdt= .9900]
01810 [APIMax= 57.75; APIAvg= 10.84; APIMin= .25]
01811 CONTINUOUS STANDBY 5.0 01:PR0 1.27 .058 1990.0720,5:00 431.27 593 .000
01812 [XIMP=80;TIMP=80]
01813 [Horton parameters: Fw= 76.20;Fv= 13.20;DCAY=4.14; Fv=.00]
01814 [Previous area: IAPer= 4.67;SLPF= .50;LSP= 40.0;MNF= 250;SCF= .0]
01815 [Impervious area: IAlmp= 1.57;SLPI= 1.10;LGI= 160.0;MNI= .013;SCI= .0]
01816 [IARECimp= 1.50; IARECPer= 6.00]
01817 R1990C0004 *****
01818 CONTINUOUS STANDBY 5.0 01:PR0-1A 1.27 .070 1990.0720,5:00 509.35 700 .000
01819 [XIMP=80;TIMP=80]
01820 [Horton parameters: Fw= .00;Fv= .00;DCAY=4.14; Fv=.00]
01821 [Previous area: IAPer= 4.67;SLPF= .50;LSP= 40.0;MNF= 250;SCF= .0]
01822 [Impervious area: IAlmp= 1.57;SLPI= 1.10;LGI= 160.0;MNI= .013;SCI= .0]
01823 [IARECimp= 1.50; IARECPer= 6.00]
01824 R1990C0006 *****
01825 ROUTE RESERVOIR -> 5.0 02:PR0 *****
01826 out <= 5.0 01:Exfil 1.27 .003 1990.0720,4:10 431.27 n/a .000
01827 overflow <= 5.0 03:Runoff .00 .000 1990.0301,0:00 .00 n/a .000
01828 [MxStoUsed= 4369E-01 m3, TotDvVol= 0.000E+00 m3, N-Ovf= 0, TotDvOvf= 0 hrs]
01829 R1990C0007 *****
01830 ROUTE RESERVOIR -> 5.0 02:PR0 *****
01831 out <= 5.0 01:Outflow .00 .000 1990.0301,0:00 .00 n/a .000
01832 overflow <= 5.0 03:Overflow .00 .000 1990.0301,0:00 .00 n/a .000
01833 [MxStoUsed= 0.000E+00 m3, TotDvVol= 0.000E+00 m3, N-Ovf= 0, TotDvOvf= 0 hrs]
01834 R1990C0008 *****
01835 ADD HYD + 5.0 02:Overflow .00 .000 1990.0301,0:00 .00 n/a .000
01836 *****
01837 *****
01838 *****
01839 ** END OF RUN : 1990
01840 *****
01841 *****
01842 *****
01843 *****
01844 *****
01845 *****
01846 *****
01847 R1991C0001 *****
01848 R1991C0001 *****
01849 START
01850 [TZERO = .00 hrs on 1990101]
01851 [METOUT= 2 (1=Imperial, 2=metric output)]
01852 [INSTORM= 0]
01853 [NRUN = 1991]
01854 *****
01855 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [1218]
01856 # Date : 2021-04-23
01857 # Modeler : [M. M.]
01858 # Company : JFSAinc.
01859 # License # : 2549237
01860 *****
01861 *****
01862 *****
01863 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
01864 *****
01865 # HEAD ARE DATA
01866 [Filename = YOM_1967_2007_123 ]
01867 [Start_date= 1991.0101; End_date= 1991.1231]
01868 [DT= 60,min; Length= 8640,hrs; WetHrs= 486; DryHrs= 7554; PTOT= 556.00]
01869 Maximum average rainfall intensities over
01870 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01871 11.30 9.90 6.87 4.10 2.53 1.72 1.28 1.08 79 mm/hr
01872 11.20 20.60 24.60 30.40 41.30 46.00 51.60 57.00 mm
01873 19910409 19910409 19910409 19910410 19910422 19910410 19910410 19910423 date
01874 Number of rainfall events per following interval time
01875 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01876 155 137 127 102 80 63 52 45 38
01877 Number of events with at least the following durations
01878 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
01879 164 89 56 21 6 1 0 0 0
01880 R1991C0003 *****
01881 COMPUTE API
01882 [APIIn= 20.00; APIQty= .8000; APIkdt= .9900]
01883 [APIMax= 52.21; APIAvg= 7.68; APIMin= .00]
01884 CONTINUOUS STANDBY *****
01885 CONTINUOUS STANDBY *****
01886 [XIMP=80;TIMP=80]
01887 [Horton parameters: Fw= 76.20;Fv= 13.20;DCAY=4.14; Fv=.00]
01888 [Previous area: IAPer= 4.67;SLPF= .50;LSP= 40.0;MNF= 250;SCF= .0]
01889 [Impervious area: IAlmp= 1.57;SLPI= 1.10;LGI= 160.0;MNI= .013;SCI= .0]
01890 [IARECimp= 1.50; IARECPer= 6.00]
01891 R1991C0005 *****
01892 CONTINUOUS STANDBY 5.0 01:PR0-1A 1.27 .039 1991.0409,1:00 328.12 494 .000
01893 [XIMP=80;TIMP=80]
01894 [Horton parameters: Fw= .00;Fv= .00;DCAY=4.14; Fv=.00]
01895 [Previous area: IAPer= 4.67;SLPF= .50;LSP= 40.0;MNF= 250;SCF= .0]
01896 [Impervious area: IAlmp= 1.57;SLPI= 1.10;LGI= 160.0;MNI= .013;SCI= .0]
01897 [IARECimp= 1.50; IARECPer= 6.00]
01898 R1991C0006 *****
01899 ROUTE RESERVOIR -> 5.0 02:PR0 *****
01900 out <= 5.0 01:Exfil 1.27 .002 1991.0409,1:00 328.12 n/a .000
01901 overflow <= 5.0 03:Runoff .00 .000 1991.0101,0:00 .00 n/a .000
01902 [MxStoUsed= 2433E-01 m3, TotDvVol= 0.000E+00 m3, N-Ovf= 0, TotDvOvf= 0 hrs]
01903 R1991C0007 *****
01904 ROUTE RESERVOIR -> 5.0 02:PR0 *****
01905 out <= 5.0 01:Outflow .00 .000 1991.0101,0:00 .00 n/a .000
01906 overflow <= 5.0 03:Overflow .00 .000 1991.0101,0:00 .00 n/a .000
01907 [MxStoUsed= 0.000E+00 m3, TotDvVol= 0.000E+00 m3, N-Ovf= 0, TotDvOvf= 0 hrs]
01908 R1991C0008 *****
01909 ADD HYD + 5.0 02:Overflow .00 .000 1991.0101,0:00 .00 n/a .000
01910 *****
01911 *****
01912 *****
01913 ** END OF RUN : 1991
01914 *****
01915 *****
01916 *****
01917 *****
01918 *****
01919 *****
01920 *****
01921 R1992C0001 *****
01922 R1992C0001 *****
01923 START
01924 [TZERO = .00 hrs on 19920101]
01925 [METOUT= 2 (1=Imperial, 2=metric output)]
01926 [INSTORM= 0]
01927 [NRUN = 1992]
01928 *****
01929 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [1218]
01930 # Date : 2021-04-23
01931 # Modeler : [M. M.]
01932 # Company : JFSAinc.
01933 # License # : 2549237
01934 *****
01935 *****
01936 *****
01937 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
01938 R1992C0002 *****
01939 *****
01940 *****
01941 *****
01942 *****
01943 *****
01944 *****
01945 *****
01946 *****
01947 *****
01948 *****
01949 *****
01950 *****
01951 *****
01952 *****
01953 *****
01954 R1992C0003 *****
01955 COMPUTE API
01956 [APIIn= 20.00; APIQty= .8000; APIkdt= .9900]
01957 [APIMax= 61.29; APIAvg= 9.28; APIMin= .40]
01958 CONTINUOUS STANDBY *****
01959 CONTINUOUS STANDBY *****
01960 [XIMP=80;TIMP=80]
01961 [Horton parameters: Fw= 76.20;Fv= 13.20;DCAY=4.14; Fv=.00]
01962 [Previous area: IAPer= 4.67;SLPF= .50;LSP= 40.0;MNF= 250;SCF= .0]
01963 [Impervious area: IAlmp= 1.57;SLPI= 1.10;LGI= 160.0;MNI= .013;SCI= .0]
01964 [IARECimp= 1.50; IARECPer= 6.00]
01965 R1992C0004 *****
01966 CONTINUOUS STANDBY 5.0 01:PR0-1A 1.27 .109 1992.0804,14:00 524.13 715 .000
01967 [XIMP=80;TIMP=80]
01968 [Horton parameters: Fw= .00;Fv= .00;DCAY=4.14; Fv=.00]
01969 [Previous area: IAPer= 4.67;SLPF= .50;LSP= 40.0;MNF= 250;SCF= .0]
01970 [Impervious area: IAlmp= 1.57;SLPI= 1.10;LGI= 160.0;MNI= .013;SCI= .0]
01971 [IARECimp= 1.50; IARECPer= 6.00]
01972 R1992C0005 *****
01973 ROUTE RESERVOIR -> 5.0 02:PR0 *****
01974 out <= 5.0 01:Exfil 1.27 .092 1992.0804,14:00 445.69 n/a .000
01975 overflow <= 5.0 03:Runoff .00 .000 1992.0301,0:00 .00 n/a .000
01976 [MxStoUsed= 4341E-01 m3, TotDvVol= 0.000E+00 m3, N-Ovf= 0, TotDvOvf= 0 hrs]
01977 R1992C0007 *****
01978 ROUTE RESERVOIR -> 5.0 02:PR0 *****
01979 out <= 5.0 01:Outflow .00 .000 1992.0101,0:00 .00 n/a .000
01980 overflow <= 5.0 03:Overflow .00 .000 1992.0101,0:00 .00 n/a .000
01981 *****
01982 *****
01983 *****
01984 *****
01985 *****
01986 *****
01987 *****
01988 *****
01989 *****
01990 *****
01991 *****
01992 *****
01993 *****
01994 *****
01995 *****
01996 *****
01997 *****
01998 *****
01999 *****
02000 *****
02001 *****
02002 *****
02003 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [1218]
02004 # Date : 2021-04-23
02005 # Modeler : [M. M.]
02006 # Company : JFSAinc.
02007 # License # : 2549237
02008 *****
02009 *****
02010 *****
02011 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
02012 *****
02013 *****
02014 *****
02015 [File name = YOM_1967_2007_123 ]
02016 [Start_date= 1991.0101; End_date= 1991.1231]
02017 [DT= 60,min; Length= 8760,hrs; WetHrs= 585; DryHrs= 8175; PTOT= 721.30]
02018 Maximum average rainfall intensities over
02019 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02020 12.60 6.60 4.80 3.72 3.58 2.31 1.61 1.21 .81 mm/hr
02021 12.60 13.20 14.50 22.10 41.00 55.50 58.10 58.10 58.10 mm
02022 19930703 19930703 19931127 19931128 19931128 19931128 19931128 19931128 19931128 date
02023 Number of rainfall events per following interval time
02024 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02025 191 154 137 111 91 73 57 48 34
02026 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02027 180 110 66 27 7 2 0 0 0
02028 R1993C0003 *****
02029 *****
02030 *****
02031 COMPUTE API
02032 [APIIn= 20.00; APIQty= .8000; APIkdt= .9900]
02033 [APIMax= 51.31; APIAvg= 9.14; APIMin= .00]
02034 CONTINUOUS STANDBY *****
02035 CONTINUOUS STANDBY *****
02036 [XIMP=80;TIMP=80]
02037 [Horton parameters: Fw= 76.20;Fv= 13.20;DCAY=4.14; Fv=.00]
02038 [Previous area: IAPer= 4.67;SLPF= .50;LSP= 40.0;MNF= 250;SCF= .0]
02039 [Impervious area: IAlmp= 1.57;SLPI= 1.10;LGI= 160.0;MNI= .013;SCI= .0]
02040 [IARECimp= 1.50; IARECPer= 6.00]
02041 R1993C0005 *****
02042 CONTINUOUS STANDBY *****
02043 CONTINUOUS STANDBY *****
02044 [XIMP=80;TIMP=80]
02045 [Horton parameters: Fw= .00;Fv= .00;DCAY=4.14; Fv=.00]
02046 [Previous area: IAPer= 4.67;SLPF= .50;LSP= 40.0;MNF= 250;SCF= .0]
02047 [Impervious area: IAlmp= 1.57;SLPI= 1.10;LGI= 160.0;MNI= .013;SCI= .0]
02048 [IARECimp= 1.50; IARECPer= 6.00]
02049 R1993C0006 *****
02050 ROUTE RESERVOIR -> 5.0 02:PR0 *****
02051 out <= 5.0 01:Exfil 1.27 .003 1993.0703,9:00 427.25 n/a .000
02052 overflow <= 5.0 03:Runoff .00 .000 1993.0101,0:00 .00 n/a .000
02053 [MxStoUsed= 1897E-01 m3, TotDvVol= 0.000E+00 m3, N-Ovf= 0, TotDvOvf= 0 hrs]
02054 R1993C0007 *****
02055 ROUTE RESERVOIR -> 5.0 02:PR0 *****
02056 out <= 5.0 01:Outflow .00 .000 1993.0101,0:00 .00 n/a .000
02057 overflow <= 5.0 03:Overflow .00 .000 1993.0101,0:00 .00 n/a .000
02058 [MxStoUsed= 0.000E+00 m3, TotDvVol= 0.000E+00 m3, N-Ovf= 0, TotDvOvf= 0 hrs]
02059 R1993C0008 *****
02060 ADD HYD + 5.0 02:Overflow .00 .000 1993.0101,0:00 .00 n/a .000
02061 *****
02062 *****
02063 *****
02064 *****
02065 *****
02066 *****
02067 *****
02068 *****
02069 *****
02070 R1994C0001 *****
02071 START
02072 [TZERO = .00 hrs on 19940101]
02073 [METOUT= 2 (1=Imperial, 2=metric output)]
02074 [INSTORM= 0]
02075 [NRUN = 1994]
02076 *****
02077 # Project Name: [OTTO's Parking Lot Expansion] Project Number: [1218]
02078 # Date : 2021-04-23
02079 # Modeler : [M. M.]
02080 # Company : JFSAinc.
02081 # License # : 2549237
02082 *****
02083 *****
02084 *****
02085 # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
02086 R1994C0002 *****
02087 *****
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02881)
02882)
02883)
02884)
02885) R0NF:CONMAN#
02886) R2007:CO001
02887) START
02888) [TZERO = .00 hrs on 20070101]
02889) [MOUT= 2 (1=Imperial, 2=metric output)]
02890) [INTORM= 0]
02891) [NRUN = 2007]
02892) *****
02893) # Project Name: [OTTD's Parking Lot Expansion] Project Number: [2128]
02894) # Date: [2021-04-23]
02895) # Modeler: [J.F. Sabourin]
02896) # Company: [JFSAinc.]
02897) # License #: [294923]
02898) *****
02899) *****
02900) *****
02901) # Ottawa International Airport - 19 July 1967 to 01 Nov 2007
02902) R2007:CO002
02903) * READ AES DATA
02904) [Filename = Y0R_1967_2007_123]
02905) [START= 2007.0101; EndDate= 2007.1231]
02906) [DTX= 60.min; Length= 5160.hrs; WetHrs= 417; DryHrs= 4743; PTD= 550.70]
02907) *****
02908) Maximum average rainfall intensities over
02909) 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02910) 23.20 11.60 7.80 7.13 5.63 2.82 1.90 1.45 .97
02911) 20070829 20070829 20070829 20070720 20070720 20070721 20070720 20070720 20070721 date
02912) *****
02913) Number of rainfall events per following increment time
02914) 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02915) 158 120 109 82 64
02916) *****
02917) Number of events with at least the following durations
02918) 1 hr 2 hrs 3 hrs 6 hrs 12 hrs 24 hrs 36 hrs 48 hrs 72 hrs
02919) 84 59 15 4 0 0 0 0
02920) *****
02921) R2007:CO003
02922) COMPUTE API
02923) [API= 0.00; APIKEY= .8000; APIKID= .9907]
02924) [APIFAX= 71.02; APIAYE= 11.76; APIFIN= .39]
02925) *****
02926) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .065 2007.0829.18:00 319.12 .579 .000
02927) [XMP= 80:TIMP=.80]
02928) [Histon parameters: Fw= 76.20; Fc= 13.20; DCAV= 4.14; Fw= .00]
02929) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
02930) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
02931) [IAreaImp= 1.50; IAreaSpec= 6.00]
02932) *****
02933) R2007:CO004
02934) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .078 2007.0829.18:00 372.48 .677 .000
02935) [XMP= 80:TIMP=.80]
02936) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
02937) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
02938) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
02939) [IAreaImp= 1.50; IAreaSpec= 6.00]
02940) *****
02941) R2007:CO005
02942) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .065 2007.0829.18:00 319.12 n/a .000
02943) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
02944) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
02945) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
02946) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
02947) [IAreaImp= 1.50; IAreaSpec= 6.00]
02948) *****
02949) R2007:CO006
02950) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .078 2007.0829.18:00 372.48 n/a .000
02951) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
02952) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
02953) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
02954) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
02955) [IAreaImp= 1.50; IAreaSpec= 6.00]
02956) *****
02957) R2007:CO007
02958) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .065 2007.0829.18:00 319.12 n/a .000
02959) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
02960) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
02961) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
02962) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
02963) [IAreaImp= 1.50; IAreaSpec= 6.00]
02964) *****
02965) R2007:CO008
02966) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .078 2007.0829.18:00 372.48 n/a .000
02967) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
02968) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
02969) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
02970) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
02971) [IAreaImp= 1.50; IAreaSpec= 6.00]
02972) *****
02973) R2007:CO009
02974) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .065 2007.0829.18:00 319.12 n/a .000
02975) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
02976) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
02977) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
02978) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
02979) [IAreaImp= 1.50; IAreaSpec= 6.00]
02980) *****
02981) R2007:CO010
02982) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .078 2007.0829.18:00 372.48 n/a .000
02983) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
02984) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
02985) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
02986) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
02987) [IAreaImp= 1.50; IAreaSpec= 6.00]
02988) *****
02989) R2007:CO011
02990) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .065 2007.0829.18:00 319.12 n/a .000
02991) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
02992) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
02993) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
02994) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
02995) [IAreaImp= 1.50; IAreaSpec= 6.00]
02996) *****
02997) R2007:CO012
02998) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .078 2007.0829.18:00 372.48 n/a .000
02999) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
03000) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
03001) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
03002) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
03003) [IAreaImp= 1.50; IAreaSpec= 6.00]
03004) *****
03005) R2007:CO013
03006) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .065 2007.0829.18:00 319.12 n/a .000
03007) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
03008) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
03009) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
03010) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
03011) [IAreaImp= 1.50; IAreaSpec= 6.00]
03012) *****
03013) R2007:CO014
03014) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .078 2007.0829.18:00 372.48 n/a .000
03015) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
03016) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
03017) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
03018) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
03019) [IAreaImp= 1.50; IAreaSpec= 6.00]
03020) *****
03021) R2007:CO015
03022) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .065 2007.0829.18:00 319.12 n/a .000
03023) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
03024) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
03025) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
03026) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
03027) [IAreaImp= 1.50; IAreaSpec= 6.00]
03028) *****
03029) R2007:CO016
03030) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .078 2007.0829.18:00 372.48 n/a .000
03031) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
03032) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
03033) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
03034) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
03035) [IAreaImp= 1.50; IAreaSpec= 6.00]
03036) *****
03037) R2007:CO017
03038) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .065 2007.0829.18:00 319.12 n/a .000
03039) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
03040) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
03041) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
03042) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
03043) [IAreaImp= 1.50; IAreaSpec= 6.00]
03044) *****
03045) R2007:CO018
03046) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .078 2007.0829.18:00 372.48 n/a .000
03047) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
03048) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
03049) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
03050) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
03051) [IAreaImp= 1.50; IAreaSpec= 6.00]
03052) *****
03053) R2007:CO019
03054) CONTINUOUS STANDHYD 5.0 01:PR0VA 1.27 .065 2007.0829.18:00 319.12 n/a .000
03055) [out <= 5.0 01:outflow .00 .000 2007.0401.0:00 .00 n/a .000]
03056) [Histon parameters: Fw= .00; Fc= .00; DCAV= 4.14; Fw= .00]
03057) [Previous area: IArea= 4.67; SLPF= .50; IUP= 40.; MNP= 250; SPC= .0]
03058) [Imperv area: IArea= 1.57; SLPF= 1.10; IUP= 160.; MNP= .01; SPC= .0]
03059) [IAreaImp= 1.50; IAreaSpec= 6.00]
03060) *****

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03061) *** WARNING: Inflow hydrograph is dry.
03062) R198:CO002 READ AES DATA
03063) *** WARNING: Missing rainfall increments were set to 0.
03064) R198:CO007 ROUTE RESERVOIR
03065) *** WARNING: Inflow hydrograph is dry.
03066) R198:CO002 READ AES DATA
03067) *** WARNING: Requested start date is less than start date in file.
03068) *** WARNING: Missing rainfall increments were set to 0.
03069) R198:CO007 ROUTE RESERVOIR
03070) *** WARNING: Inflow hydrograph is dry.
03071) R198:CO002 READ AES DATA
03072) *** WARNING: Missing rainfall increments were set to 0.
03073) R198:CO007 ROUTE RESERVOIR
03074) *** WARNING: Inflow hydrograph is dry.
03075) R198:CO002 READ AES DATA
03076) *** WARNING: Missing rainfall increments were set to 0.
03077) R198:CO007 ROUTE RESERVOIR
03078) *** WARNING: Inflow hydrograph is dry.
03079) R198:CO002 READ AES DATA
03080) *** WARNING: Requested start date is less than start date in file.
03081) *** WARNING: Missing rainfall increments were set to 0.
03082) R198:CO007 ROUTE RESERVOIR
03083) *** WARNING: Inflow hydrograph is dry.
03084) R198:CO002 READ AES DATA
03085) *** WARNING: Missing rainfall increments were set to 0.
03086) R198:CO004 CONTINUOUS STANDHYD
03087) *** NOTE: The pervious area has no runoff.
03088) R198:CO007 ROUTE RESERVOIR
03089) *** WARNING: Inflow hydrograph is dry.
03090) R198:CO002 READ AES DATA
03091) *** WARNING: Missing rainfall increments were set to 0.
03092) R198:CO007 ROUTE RESERVOIR
03093) *** WARNING: Inflow hydrograph is dry.
03094) R198:CO002 READ AES DATA
03095) *** WARNING: Missing rainfall increments were set to 0.
03096) R198:CO004 CONTINUOUS STANDHYD
03097) *** NOTE: The pervious area has no runoff.
03098) R198:CO007 ROUTE RESERVOIR
03099) *** WARNING: Inflow hydrograph is dry.
03100) R198:CO002 READ AES DATA
03101) *** WARNING: Missing rainfall increments were set to 0.
03102) R198:CO004 CONTINUOUS STANDHYD
03103) *** NOTE: The pervious area has no runoff.
03104) R198:CO007 ROUTE RESERVOIR
03105) *** WARNING: Inflow hydrograph is dry.
03106) R198:CO002 READ AES DATA
03107) *** WARNING: Missing rainfall increments were set to 0.
03108) R198:CO007 ROUTE RESERVOIR
03109) *** WARNING: Requested start date is less than start date in file.
03110) R198:CO002 READ AES DATA
03111) *** WARNING: Missing rainfall increments were set to 0.
03112) R198:CO004 CONTINUOUS STANDHYD
03113) *** WARNING: Inflow hydrograph is dry.
03114) R198:CO002 READ AES DATA
03115) *** WARNING: Missing rainfall increments were set to 0.
03116) R198:CO004 CONTINUOUS STANDHYD
03117) *** WARNING: Missing rainfall increments were set to 0.
03118) R198:CO007 ROUTE RESERVOIR
03119) *** WARNING: Inflow hydrograph is dry.
03120) R198:CO002 READ AES DATA
03121) *** WARNING: Requested start date is less than start date in file.
03122) *** WARNING: Missing rainfall increments were set to 0.
03123) R198:CO004 CONTINUOUS STANDHYD
03124) *** NOTE: The pervious area has no runoff.
03125) R198:CO007 ROUTE RESERVOIR
03126) *** WARNING: Inflow hydrograph is dry.
03127) R198:CO002 READ AES DATA
03128) *** WARNING: Requested start date is less than start date in file.
03129) *** WARNING: Missing rainfall increments were set to 0.
03130) R198:CO004 CONTINUOUS STANDHYD
03131) *** NOTE: The pervious area has no runoff.
03132) R198:CO007 ROUTE RESERVOIR
03133) *** WARNING: Inflow hydrograph is dry.
03134) R200:CO002 READ AES DATA
03135) *** WARNING: Requested start date is less than start date in file.
03136) *** WARNING: Missing rainfall increments were set to 0.
03137) R200:CO007 ROUTE RESERVOIR
03138) *** WARNING: Inflow hydrograph is dry.
03139) R200:CO002 READ AES DATA
03140) *** WARNING: Requested start date is less than start date in file.
03141) *** WARNING: Missing rainfall increments were set to 0.
03142) R200:CO004 CONTINUOUS STANDHYD
03143) *** WARNING: Storage Coefficient is smaller than DT Use a smaller DT or a larger area.
03144) R200:CO005 CONTINUOUS STANDHYD
03145) *** WARNING: Storage Coefficient is smaller than DT Use a smaller DT or a larger area.
03146) R200:CO007 ROUTE RESERVOIR
03147) *** WARNING: Inflow hydrograph is dry.
03148) R200:CO002 READ AES DATA
03149) *** WARNING: Requested start date is less than start date in file.
03150) *** WARNING: Missing rainfall increments were set to 0.
03151) R200:CO007 ROUTE RESERVOIR
03152) *** WARNING: Inflow hydrograph is dry.
03153) R200:CO002 READ AES DATA
03154) *** WARNING: Requested start date is less than start date in file.
03155) *** WARNING: Missing rainfall increments were set to 0.
03156) *** WARNING: Requested start date is less than start date in file.
03157) *** WARNING: Missing rainfall increments were set to 0.
03158) R200:CO007 ROUTE RESERVOIR
03159) *** WARNING: Inflow hydrograph is dry.
03160) R200:CO002 READ AES DATA
03161) *** WARNING: Requested start date is less than start date in file.
03162) *** WARNING: Specified end date is beyond the end date in file.
03163) *** WARNING: Missing rainfall increments were set to 0.
03164) R200:CO004 CONTINUOUS STANDHYD
03165) *** NOTE: The pervious area has no runoff.
03166) R200:CO007 ROUTE RESERVOIR
03167) *** WARNING: Inflow hydrograph is dry.
03168) Simulation ended on 2021-04-27 at 17:10:56
03169)
03170)

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Attachment D

HEC-RAS Modelling



Legend

- OFAT Drainage Area
- OFAT Corrections:
- Lands Outside of Drainage Area
- Lands Inside of Drainage Area

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NOVATECH
 Engineers, Planners & Landscape Architects

SCALE : 1:12,500
 0 250 500 750 m

PROJECT :
 Ottawa BMW Parking Lot Expansion

TITLE :
 Figure D1:
 OFAT Drainage Area Review

PROJECT	2128
DRAWN:	JB
DATE:	APRIL 2021



- Legend**
- River
 - Cross Section
 - Parking Lot
 - Proposed Crossing

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NOVATECH
 Engineers, Planners & Landscape Architects

SCALE : 1:3,000
 0 50 100 150 m

PROJECT :
 Ottawa BMW Parking Lot Expansion

TITLE :
 Figure D2:
 HEC-RAS Model Overview

PROJECT	2128
DRAWN:	JB
DATE:	APRIL 2021

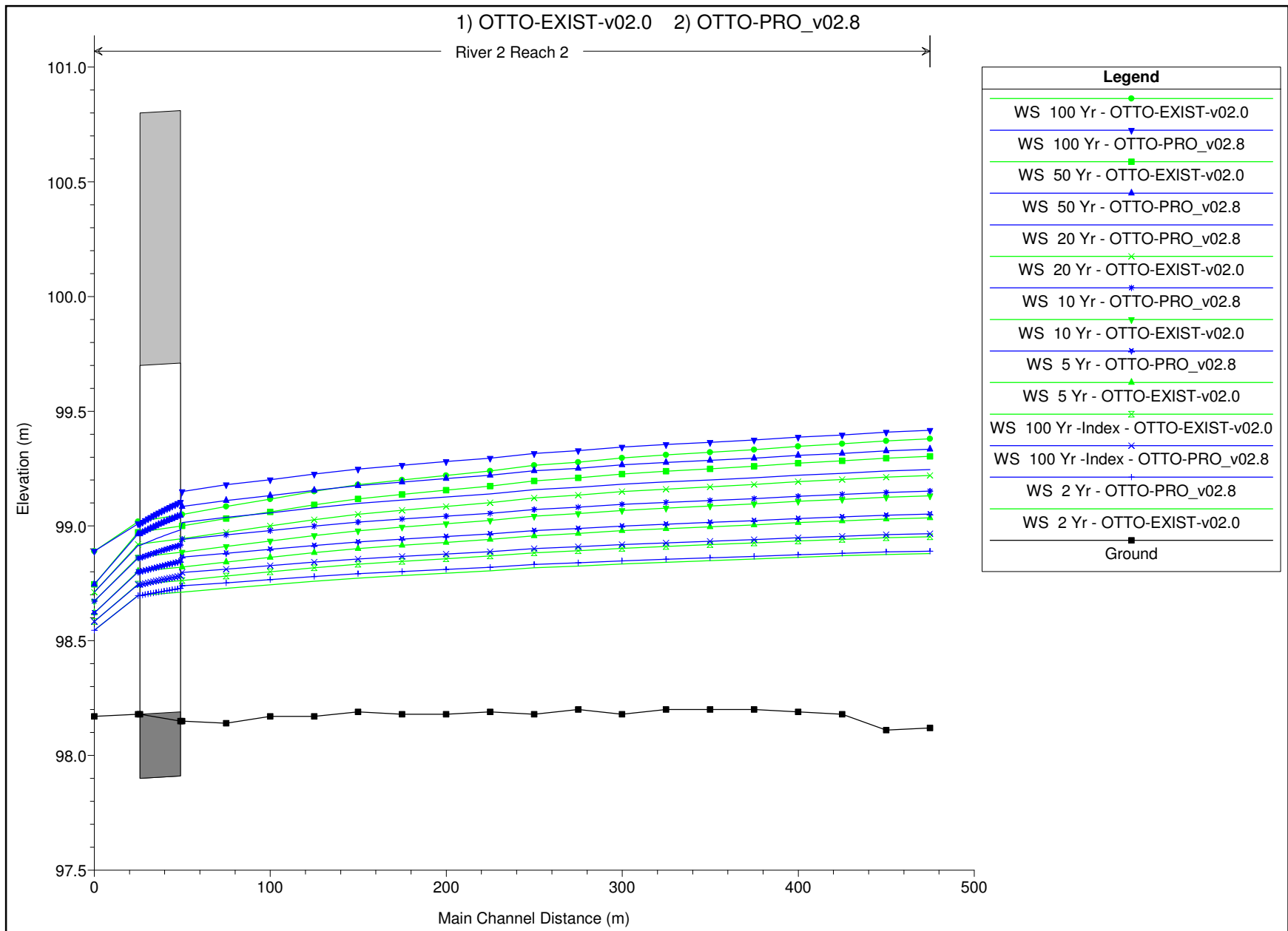


Table D1: Existing Conditions Summary Table(OTTO-EXIST_v02.0)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach 2	475	2 Yr	1.46	98.12	98.88		98.88	0.0001	0.22	6.52	10.44	0.09
Reach 2	475	5 Yr	2.35	98.12	99.04		99.04	0.0002	0.29	8.18	10.83	0.11
Reach 2	475	10 Yr	3.02	98.12	99.13		99.14	0.0002	0.33	9.23	11.07	0.11
Reach 2	475	20 Yr	3.73	98.12	99.22		99.23	0.0002	0.36	10.22	11.29	0.12
Reach 2	475	50 Yr	4.47	98.12	99.30		99.31	0.0002	0.40	11.17	11.51	0.13
Reach 2	475	100 Yr	5.22	98.12	99.38		99.39	0.0002	0.43	12.05	11.73	0.14
Reach 2	475	100 Yr -Index	1.85	98.12	98.95		98.96	0.0001	0.25	7.29	10.63	0.10
Reach 2	450	2 Yr	1.46	98.11	98.88		98.88	0.0001	0.24	6.03	9.13	0.10
Reach 2	450	5 Yr	2.35	98.11	99.03		99.04	0.0002	0.31	7.47	9.51	0.11
Reach 2	450	10 Yr	3.02	98.11	99.13		99.13	0.0002	0.36	8.39	9.75	0.12
Reach 2	450	20 Yr	3.73	98.11	99.21		99.22	0.0002	0.40	9.25	9.98	0.13
Reach 2	450	50 Yr	4.47	98.11	99.30		99.31	0.0003	0.44	10.08	10.19	0.14
Reach 2	450	100 Yr	5.22	98.11	99.37		99.38	0.0003	0.48	10.86	10.39	0.15
Reach 2	450	100 Yr -Index	1.85	98.11	98.95		98.95	0.0002	0.28	6.70	9.32	0.10
Reach 2	425	2 Yr	1.46	98.18	98.87		98.87	0.0002	0.30	4.87	8.58	0.13
Reach 2	425	5 Yr	2.35	98.18	99.02		99.03	0.0003	0.38	6.22	9.13	0.15
Reach 2	425	10 Yr	3.02	98.18	99.12		99.13	0.0003	0.43	7.09	9.48	0.16
Reach 2	425	20 Yr	3.73	98.18	99.20		99.21	0.0004	0.47	7.93	9.81	0.17
Reach 2	425	50 Yr	4.47	98.18	99.28		99.30	0.0004	0.51	8.73	10.12	0.18
Reach 2	425	100 Yr	5.22	98.18	99.36		99.37	0.0004	0.55	9.50	10.40	0.18
Reach 2	425	100 Yr -Index	1.85	98.18	98.94		98.95	0.0003	0.34	5.50	8.83	0.14
Reach 2	400	2 Yr	1.46	98.19	98.86		98.87	0.0003	0.30	4.88	8.98	0.13
Reach 2	400	5 Yr	2.35	98.19	99.01		99.02	0.0003	0.37	6.28	9.57	0.15
Reach 2	400	10 Yr	3.02	98.19	99.11		99.12	0.0004	0.42	7.18	9.94	0.16
Reach 2	400	20 Yr	3.73	98.19	99.19		99.20	0.0004	0.46	8.05	10.29	0.17
Reach 2	400	50 Yr	4.47	98.19	99.27		99.29	0.0004	0.50	8.89	10.61	0.18
Reach 2	400	100 Yr	5.22	98.19	99.35		99.36	0.0004	0.54	9.69	10.91	0.18
Reach 2	400	100 Yr -Index	1.85	98.19	98.93		98.94	0.0003	0.33	5.53	9.27	0.14
Reach 2	375	2 Yr	1.46	98.20	98.86		98.86	0.0003	0.32	4.53	8.44	0.14
Reach 2	375	5 Yr	2.35	98.20	99.01		99.01	0.0004	0.40	5.83	9.00	0.16
Reach 2	375	10 Yr	3.02	98.20	99.10		99.11	0.0004	0.45	6.67	9.35	0.17
Reach 2	375	20 Yr	3.73	98.20	99.18		99.19	0.0005	0.50	7.47	9.67	0.18
Reach 2	375	50 Yr	4.47	98.20	99.26		99.27	0.0005	0.54	8.25	9.97	0.19
Reach 2	375	100 Yr	5.22	98.20	99.33		99.35	0.0005	0.58	8.98	10.24	0.20
Reach 2	375	100 Yr -Index	1.85	98.20	98.93		98.93	0.0003	0.36	5.13	8.71	0.15
Reach 2	350	2 Yr	1.46	98.20	98.85		98.85	0.0003	0.30	4.80	8.95	0.13
Reach 2	350	5 Yr	2.35	98.20	99.00		99.00	0.0003	0.38	6.16	9.49	0.15
Reach 2	350	10 Yr	3.02	98.20	99.09		99.10	0.0004	0.43	7.03	9.81	0.16
Reach 2	350	20 Yr	3.73	98.20	99.17		99.18	0.0004	0.47	7.86	10.10	0.17
Reach 2	350	50 Yr	4.47	98.20	99.25		99.26	0.0004	0.52	8.67	10.38	0.18
Reach 2	350	100 Yr	5.22	98.20	99.32		99.34	0.0005	0.55	9.42	10.64	0.19
Reach 2	350	100 Yr -Index	1.85	98.20	98.92		98.92	0.0003	0.34	5.43	9.21	0.14
Reach 2	325	2 Yr	1.46	98.20	98.84		98.85	0.0003	0.31	4.71	9.42	0.14
Reach 2	325	5 Yr	2.35	98.20	98.99		99.00	0.0004	0.38	6.13	9.99	0.16
Reach 2	325	10 Yr	3.02	98.20	99.08		99.09	0.0004	0.43	7.04	10.37	0.17
Reach 2	325	20 Yr	3.73	98.20	99.16		99.17	0.0004	0.47	7.92	10.71	0.17
Reach 2	325	50 Yr	4.47	98.20	99.24		99.25	0.0005	0.51	8.76	10.98	0.18
Reach 2	325	100 Yr	5.22	98.20	99.31		99.32	0.0005	0.55	9.56	11.24	0.19
Reach 2	325	100 Yr -Index	1.85	98.20	98.91		98.92	0.0003	0.34	5.37	9.69	0.15
Reach 2	300	2 Yr	1.46	98.18	98.83		98.84	0.0003	0.31	4.78	9.03	0.13
Reach 2	300	5 Yr	2.35	98.18	98.98		98.99	0.0003	0.38	6.13	9.55	0.15
Reach 2	300	10 Yr	3.02	98.18	99.07		99.08	0.0004	0.43	6.99	9.85	0.16
Reach 2	300	20 Yr	3.73	98.18	99.15		99.16	0.0004	0.48	7.80	10.13	0.17
Reach 2	300	50 Yr	4.47	98.18	99.23		99.24	0.0005	0.52	8.59	10.40	0.18
Reach 2	300	100 Yr	5.22	98.18	99.30		99.31	0.0005	0.56	9.33	10.64	0.19
Reach 2	300	100 Yr -Index	1.85	98.18	98.90		98.91	0.0003	0.34	5.41	9.28	0.14
Reach 2	275	2 Yr	1.46	98.20	98.83		98.83	0.0004	0.34	4.25	8.20	0.15
Reach 2	275	5 Yr	2.35	98.20	98.97		98.98	0.0004	0.43	5.44	8.65	0.17
Reach 2	275	10 Yr	3.02	98.20	99.05		99.07	0.0005	0.49	6.20	8.91	0.19
Reach 2	275	20 Yr	3.73	98.20	99.13		99.15	0.0005	0.54	6.93	9.15	0.20
Reach 2	275	50 Yr	4.47	98.20	99.21		99.23	0.0006	0.59	7.63	9.37	0.21
Reach 2	275	100 Yr	5.22	98.20	99.28		99.30	0.0006	0.63	8.28	9.57	0.22
Reach 2	275	100 Yr -Index	1.85	98.20	98.89		98.90	0.0004	0.39	4.80	8.41	0.16

Table D1: Existing Conditions Summary Table(OTTO-EXIST_v02.0)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach 2	250	2 Yr	1.46	98.18	98.82		98.82	0.0003	0.33	4.49	8.55	0.14
Reach 2	250	5 Yr	2.35	98.18	98.96		98.97	0.0004	0.41	5.72	9.03	0.16
Reach 2	250	10 Yr	3.02	98.18	99.04		99.05	0.0005	0.46	6.51	9.33	0.18
Reach 2	250	20 Yr	3.73	98.18	99.12		99.14	0.0005	0.51	7.25	9.59	0.19
Reach 2	250	50 Yr	4.47	98.18	99.20		99.21	0.0005	0.56	7.97	9.82	0.20
Reach 2	250	100 Yr	5.22	98.18	99.26		99.28	0.0006	0.60	8.65	10.03	0.21
Reach 2	250	100 Yr -Index	1.85	98.18	98.88		98.89	0.0004	0.37	5.06	8.78	0.15
Reach 2	225	2 Yr	1.46	98.19	98.80		98.81	0.0005	0.39	3.72	7.72	0.18
Reach 2	225	5 Yr	2.35	98.19	98.94		98.95	0.0006	0.49	4.81	8.21	0.20
Reach 2	225	10 Yr	3.02	98.19	99.02		99.04	0.0007	0.55	5.50	8.51	0.22
Reach 2	225	20 Yr	3.73	98.19	99.10		99.12	0.0008	0.60	6.17	8.78	0.23
Reach 2	225	50 Yr	4.47	98.19	99.17		99.20	0.0008	0.66	6.81	9.04	0.24
Reach 2	225	100 Yr	5.22	98.19	99.24		99.26	0.0009	0.70	7.41	9.26	0.25
Reach 2	225	100 Yr -Index	1.85	98.19	98.87		98.88	0.0006	0.44	4.23	7.95	0.19
Reach 2	200	2 Yr	1.46	98.18	98.79		98.80	0.0004	0.36	4.06	7.96	0.16
Reach 2	200	5 Yr	2.35	98.18	98.93		98.94	0.0005	0.46	5.16	8.42	0.19
Reach 2	200	10 Yr	3.02	98.18	99.01		99.02	0.0006	0.52	5.86	8.69	0.20
Reach 2	200	20 Yr	3.73	98.18	99.09		99.10	0.0006	0.57	6.52	8.95	0.21
Reach 2	200	50 Yr	4.47	98.18	99.16		99.18	0.0007	0.62	7.17	9.19	0.23
Reach 2	200	100 Yr	5.22	98.18	99.22		99.24	0.0008	0.67	7.76	9.41	0.24
Reach 2	200	100 Yr -Index	1.85	98.18	98.86		98.87	0.0005	0.40	4.57	8.19	0.17
Reach 2	175	2 Yr	1.46	98.18	98.78	98.38	98.79	0.0004	0.36	4.08	8.07	0.16
Reach 2	175	5 Yr	2.35	98.18	98.92	98.45	98.93	0.0005	0.45	5.17	8.47	0.19
Reach 2	175	10 Yr	3.02	98.18	99.00	98.49	99.01	0.0006	0.52	5.85	8.72	0.20
Reach 2	175	20 Yr	3.73	98.18	99.07	98.54	99.09	0.0007	0.57	6.50	8.94	0.21
Reach 2	175	50 Yr	4.47	98.18	99.14	98.57	99.16	0.0007	0.63	7.13	9.16	0.23
Reach 2	175	100 Yr	5.22	98.18	99.20	98.61	99.22	0.0008	0.68	7.71	9.38	0.24
Reach 2	175	100 Yr -Index	1.85	98.18	98.85	98.41	98.85	0.0005	0.40	4.59	8.26	0.17
Reach 2	150	2 Yr	1.46	98.19	98.77	98.38	98.78	0.0005	0.37	3.93	8.16	0.17
Reach 2	150	5 Yr	2.35	98.19	98.90	98.45	98.91	0.0006	0.47	5.02	8.74	0.20
Reach 2	150	10 Yr	3.02	98.19	98.98	98.50	98.99	0.0007	0.53	5.71	9.08	0.21
Reach 2	150	20 Yr	3.73	98.19	99.05	98.54	99.07	0.0007	0.59	6.37	9.40	0.23
Reach 2	150	50 Yr	4.47	98.19	99.12	98.58	99.14	0.0008	0.64	7.02	9.68	0.24
Reach 2	150	100 Yr	5.22	98.19	99.18	98.62	99.20	0.0009	0.69	7.62	9.95	0.25
Reach 2	150	100 Yr -Index	1.85	98.19	98.83	98.42	98.84	0.0005	0.42	4.43	8.43	0.18
Reach 2	125	2 Yr	1.46	98.17	98.76		98.77	0.0005	0.39	3.71	7.62	0.18
Reach 2	125	5 Yr	2.35	98.17	98.88		98.90	0.0007	0.50	4.68	8.03	0.21
Reach 2	125	10 Yr	3.02	98.17	98.96		98.98	0.0008	0.57	5.29	8.25	0.23
Reach 2	125	20 Yr	3.73	98.17	99.03		99.05	0.0009	0.64	5.87	8.46	0.24
Reach 2	125	50 Yr	4.47	98.17	99.09		99.12	0.0009	0.70	6.42	8.67	0.26
Reach 2	125	100 Yr	5.22	98.17	99.15		99.18	0.0010	0.75	6.93	8.87	0.27
Reach 2	125	100 Yr -Index	1.85	98.17	98.82		98.83	0.0006	0.44	4.16	7.82	0.19
Reach 2	100	2 Yr	1.46	98.17	98.74		98.75	0.0006	0.42	3.45	7.34	0.20
Reach 2	100	5 Yr	2.35	98.17	98.86		98.88	0.0008	0.54	4.35	7.80	0.23
Reach 2	100	10 Yr	3.02	98.17	98.93		98.95	0.0009	0.61	4.92	8.08	0.25
Reach 2	100	20 Yr	3.73	98.17	99.00		99.02	0.0011	0.68	5.46	8.33	0.27
Reach 2	100	50 Yr	4.47	98.17	99.06		99.09	0.0012	0.75	5.98	8.57	0.29
Reach 2	100	100 Yr	5.22	98.17	99.12		99.15	0.0013	0.81	6.46	8.78	0.30
Reach 2	100	100 Yr -Index	1.85	98.17	98.80		98.81	0.0007	0.48	3.87	7.56	0.21
Reach 2	75	2 Yr	1.46	98.14	98.73		98.74	0.0007	0.42	3.45	7.87	0.20
Reach 2	75	5 Yr	2.35	98.14	98.84		98.86	0.0009	0.54	4.37	8.33	0.24
Reach 2	75	10 Yr	3.02	98.14	98.91		98.93	0.0010	0.61	4.95	8.59	0.26
Reach 2	75	20 Yr	3.73	98.14	98.97		99.00	0.0011	0.68	5.50	8.82	0.27
Reach 2	75	50 Yr	4.47	98.14	99.03		99.06	0.0012	0.74	6.02	9.04	0.29
Reach 2	75	100 Yr	5.22	98.14	99.08		99.12	0.0013	0.80	6.51	9.24	0.31
Reach 2	75	100 Yr -Index	1.85	98.14	98.78		98.79	0.0008	0.48	3.87	8.11	0.22
Reach 2	50	2 Yr	1.46	98.15	98.71		98.72	0.0006	0.42	3.51	7.89	0.20
Reach 2	50	5 Yr	2.35	98.15	98.82		98.84	0.0009	0.53	4.40	8.37	0.24
Reach 2	50	10 Yr	3.02	98.15	98.89		98.90	0.0010	0.61	4.95	8.65	0.26
Reach 2	50	20 Yr	3.73	98.15	98.94		98.97	0.0011	0.68	5.47	8.90	0.28
Reach 2	50	50 Yr	4.47	98.15	99.00		99.03	0.0013	0.75	5.97	9.13	0.30
Reach 2	50	100 Yr	5.22	98.15	99.05		99.08	0.0014	0.81	6.43	9.34	0.31
Reach 2	50	100 Yr -Index	1.85	98.15	98.76		98.77	0.0007	0.47	3.92	8.12	0.22

Table D1: Existing Conditions Summary Table(OTTO-EXIST_v02.0)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach 2	25	2 Yr	1.46	98.18	98.70		98.70	0.0006	0.38	3.81	8.58	0.18
Reach 2	25	5 Yr	2.35	98.18	98.80		98.81	0.0007	0.50	4.72	8.94	0.22
Reach 2	25	10 Yr	3.02	98.18	98.86		98.88	0.0009	0.57	5.28	9.16	0.24
Reach 2	25	20 Yr	3.73	98.18	98.92		98.94	0.0010	0.64	5.80	9.36	0.26
Reach 2	25	50 Yr	4.47	98.18	98.97		99.00	0.0011	0.71	6.30	9.55	0.28
Reach 2	25	100 Yr	5.22	98.18	99.02		99.05	0.0013	0.77	6.75	9.72	0.30
Reach 2	25	100 Yr -Index	1.85	98.18	98.75		98.76	0.0006	0.44	4.23	8.75	0.20
Reach 2	0	2 Yr	1.46	98.17	98.55	98.55	98.64	0.0241	1.34	1.09	6.12	1.02
Reach 2	0	5 Yr	2.35	98.17	98.62	98.62	98.73	0.0215	1.48	1.59	7.09	1.00
Reach 2	0	10 Yr	3.02	98.17	98.67	98.67	98.79	0.0212	1.52	1.99	8.55	1.00
Reach 2	0	20 Yr	3.73	98.17	98.71	98.71	98.84	0.0211	1.59	2.34	9.36	1.02
Reach 2	0	50 Yr	4.47	98.17	98.75	98.75	98.89	0.0207	1.67	2.67	9.76	1.02
Reach 2	0	100 Yr	5.22	98.17	98.89	98.78	98.97	0.0073	1.27	4.12	10.38	0.64
Reach 2	0	100 Yr -Index	1.85	98.17	98.58	98.58	98.68	0.0225	1.39	1.33	6.74	1.00

Table D2: Proposed Conditions Summary Table (OTTO-PRO_v02.8)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach 2	475	2 Yr	1.46	98.12	98.89	0.00	98.89	0.0001	0.22	6.63	10.47	0.09
Reach 2	475	5 Yr	2.35	98.12	99.05	0.00	99.06	0.0001	0.28	8.35	10.87	0.10
Reach 2	475	10 Yr	3.02	98.12	99.15	0.00	99.16	0.0002	0.32	9.45	11.12	0.11
Reach 2	475	20 Yr	3.73	98.12	99.25	0.00	99.25	0.0002	0.35	10.51	11.35	0.12
Reach 2	475	50 Yr	4.47	98.12	99.33	0.00	99.34	0.0002	0.39	11.53	11.60	0.12
Reach 2	475	100 Yr	5.22	98.12	99.42	0.00	99.43	0.0002	0.42	12.49	11.84	0.13
Reach 2	475	100 Yr -Index	1.85	98.12	98.97	0.00	98.97	0.0001	0.25	7.43	10.66	0.10
Reach 2	450	2 Yr	1.46	98.11	98.89	0.00	98.89	0.0001	0.24	6.13	9.16	0.09
Reach 2	450	5 Yr	2.35	98.11	99.05	0.00	99.05	0.0002	0.31	7.63	9.55	0.11
Reach 2	450	10 Yr	3.02	98.11	99.15	0.00	99.15	0.0002	0.35	8.59	9.81	0.12
Reach 2	450	20 Yr	3.73	98.11	99.24	0.00	99.25	0.0002	0.39	9.51	10.05	0.13
Reach 2	450	50 Yr	4.47	98.11	99.33	0.00	99.34	0.0002	0.43	10.41	10.28	0.14
Reach 2	450	100 Yr	5.22	98.11	99.41	0.00	99.42	0.0003	0.46	11.25	10.49	0.14
Reach 2	450	100 Yr -Index	1.85	98.11	98.96	0.00	98.97	0.0001	0.27	6.82	9.35	0.10
Reach 2	425	2 Yr	1.46	98.18	98.88	0.00	98.89	0.0002	0.29	4.97	8.62	0.12
Reach 2	425	5 Yr	2.35	98.18	99.04	0.00	99.05	0.0003	0.37	6.37	9.19	0.14
Reach 2	425	10 Yr	3.02	98.18	99.14	0.00	99.15	0.0003	0.41	7.30	9.56	0.15
Reach 2	425	20 Yr	3.73	98.18	99.23	0.00	99.24	0.0003	0.46	8.19	9.91	0.16
Reach 2	425	50 Yr	4.47	98.18	99.32	0.00	99.33	0.0004	0.49	9.07	10.24	0.17
Reach 2	425	100 Yr	5.22	98.18	99.40	0.00	99.41	0.0004	0.53	9.90	10.54	0.17
Reach 2	425	100 Yr -Index	1.85	98.18	98.96	0.00	98.96	0.0003	0.33	5.61	8.88	0.13
Reach 2	400	2 Yr	1.46	98.19	98.88	0.00	98.88	0.0002	0.29	4.98	9.03	0.13
Reach 2	400	5 Yr	2.35	98.19	99.03	0.00	99.04	0.0003	0.36	6.45	9.64	0.14
Reach 2	400	10 Yr	3.02	98.19	99.13	0.00	99.14	0.0003	0.41	7.41	10.03	0.15
Reach 2	400	20 Yr	3.73	98.19	99.22	0.00	99.23	0.0003	0.45	8.34	10.40	0.16
Reach 2	400	50 Yr	4.47	98.19	99.31	0.00	99.32	0.0004	0.48	9.26	10.75	0.17
Reach 2	400	100 Yr	5.22	98.19	99.39	0.00	99.40	0.0004	0.52	10.13	11.07	0.17
Reach 2	400	100 Yr -Index	1.85	98.19	98.95	0.00	98.95	0.0003	0.33	5.66	9.32	0.13
Reach 2	375	2 Yr	1.46	98.20	98.87	0.00	98.87	0.0003	0.32	4.63	8.49	0.14
Reach 2	375	5 Yr	2.35	98.20	99.02	0.00	99.03	0.0003	0.39	6.00	9.07	0.15
Reach 2	375	10 Yr	3.02	98.20	99.12	0.00	99.13	0.0004	0.44	6.89	9.43	0.16
Reach 2	375	20 Yr	3.73	98.20	99.21	0.00	99.22	0.0004	0.48	7.76	9.78	0.17
Reach 2	375	50 Yr	4.47	98.20	99.30	0.00	99.31	0.0004	0.52	8.61	10.10	0.18
Reach 2	375	100 Yr	5.22	98.20	99.37	0.00	99.39	0.0005	0.55	9.42	10.40	0.19
Reach 2	375	100 Yr -Index	1.85	98.20	98.94	0.00	98.95	0.0003	0.35	5.26	8.76	0.14
Reach 2	350	2 Yr	1.46	98.20	98.86	0.00	98.87	0.0003	0.30	4.91	9.00	0.13
Reach 2	350	5 Yr	2.35	98.20	99.02	0.00	99.02	0.0003	0.37	6.34	9.55	0.15
Reach 2	350	10 Yr	3.02	98.20	99.11	0.00	99.12	0.0003	0.42	7.27	9.89	0.15
Reach 2	350	20 Yr	3.73	98.20	99.20	0.00	99.21	0.0004	0.46	8.17	10.21	0.16
Reach 2	350	50 Yr	4.47	98.20	99.29	0.00	99.30	0.0004	0.49	9.05	10.51	0.17
Reach 2	350	100 Yr	5.22	98.20	99.36	0.00	99.38	0.0004	0.53	9.89	10.79	0.18
Reach 2	350	100 Yr -Index	1.85	98.20	98.93	0.00	98.94	0.0003	0.33	5.57	9.26	0.14
Reach 2	325	2 Yr	1.46	98.20	98.85	0.00	98.86	0.0003	0.30	4.84	9.47	0.13
Reach 2	325	5 Yr	2.35	98.20	99.01	0.00	99.01	0.0003	0.37	6.33	10.08	0.15
Reach 2	325	10 Yr	3.02	98.20	99.10	0.00	99.11	0.0004	0.41	7.31	10.48	0.16
Reach 2	325	20 Yr	3.73	98.20	99.19	0.00	99.20	0.0004	0.45	8.26	10.82	0.17
Reach 2	325	50 Yr	4.47	98.20	99.28	0.00	99.29	0.0004	0.49	9.19	11.12	0.17
Reach 2	325	100 Yr	5.22	98.20	99.36	0.00	99.37	0.0004	0.52	10.07	11.40	0.18
Reach 2	325	100 Yr -Index	1.85	98.20	98.93	0.00	98.93	0.0003	0.33	5.52	9.75	0.14
Reach 2	300	2 Yr	1.46	98.18	98.85	0.00	98.85	0.0003	0.30	4.90	9.08	0.13
Reach 2	300	5 Yr	2.35	98.18	99.00	0.00	99.01	0.0003	0.37	6.32	9.62	0.15
Reach 2	300	10 Yr	3.02	98.18	99.09	0.00	99.10	0.0003	0.42	7.24	9.94	0.16
Reach 2	300	20 Yr	3.73	98.18	99.18	0.00	99.19	0.0004	0.46	8.14	10.25	0.16
Reach 2	300	50 Yr	4.47	98.18	99.27	0.00	99.28	0.0004	0.50	9.01	10.54	0.17
Reach 2	300	100 Yr	5.22	98.18	99.34	0.00	99.36	0.0004	0.53	9.84	10.80	0.18
Reach 2	300	100 Yr -Index	1.85	98.18	98.92	0.00	98.92	0.0003	0.33	5.56	9.34	0.14
Reach 2	275	2 Yr	1.46	98.20	98.84	0.00	98.85	0.0003	0.33	4.36	8.24	0.15
Reach 2	275	5 Yr	2.35	98.20	98.99	0.00	99.00	0.0004	0.42	5.63	8.72	0.17
Reach 2	275	10 Yr	3.02	98.20	99.08	0.00	99.09	0.0004	0.47	6.45	9.00	0.18
Reach 2	275	20 Yr	3.73	98.20	99.17	0.00	99.18	0.0005	0.51	7.24	9.25	0.19
Reach 2	275	50 Yr	4.47	98.20	99.25	0.00	99.27	0.0005	0.56	8.02	9.50	0.19
Reach 2	275	100 Yr	5.22	98.20	99.33	0.00	99.35	0.0005	0.60	8.76	9.72	0.20
Reach 2	275	100 Yr -Index	1.85	98.20	98.91	0.00	98.92	0.0004	0.37	4.94	8.47	0.16

Table D2: Proposed Conditions Summary Table (OTTO-PRO_v02.8)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach 2	250	2 Yr	1.46	98.18	98.83	0.00	98.84	0.0003	0.32	4.61	8.60	0.14
Reach 2	250	5 Yr	2.35	98.18	98.98	0.00	98.99	0.0004	0.40	5.92	9.11	0.16
Reach 2	250	10 Yr	3.02	98.18	99.07	0.00	99.08	0.0004	0.45	6.78	9.42	0.17
Reach 2	250	20 Yr	3.73	98.18	99.16	0.00	99.17	0.0004	0.49	7.60	9.70	0.18
Reach 2	250	50 Yr	4.47	98.18	99.24	0.00	99.25	0.0005	0.53	8.41	9.96	0.18
Reach 2	250	100 Yr	5.22	98.18	99.32	0.00	99.33	0.0005	0.57	9.17	10.19	0.19
Reach 2	250	100 Yr -Index	1.85	98.18	98.90	0.00	98.91	0.0003	0.35	5.22	8.84	0.15
Reach 2	225	2 Yr	1.46	98.19	98.82	0.00	98.83	0.0005	0.38	3.84	7.78	0.17
Reach 2	225	5 Yr	2.35	98.19	98.97	0.00	98.98	0.0006	0.47	5.01	8.30	0.19
Reach 2	225	10 Yr	3.02	98.19	99.06	0.00	99.07	0.0006	0.52	5.77	8.62	0.20
Reach 2	225	20 Yr	3.73	98.19	99.14	0.00	99.16	0.0006	0.57	6.51	8.92	0.21
Reach 2	225	50 Yr	4.47	98.19	99.22	0.00	99.24	0.0007	0.62	7.24	9.20	0.22
Reach 2	225	100 Yr	5.22	98.19	99.30	0.00	99.32	0.0007	0.66	7.94	9.45	0.23
Reach 2	225	100 Yr -Index	1.85	98.19	98.89	0.00	98.90	0.0005	0.42	4.38	8.02	0.18
Reach 2	200	2 Yr	1.46	98.18	98.81	0.00	98.82	0.0004	0.35	4.20	8.02	0.15
Reach 2	200	5 Yr	2.35	98.18	98.95	0.00	98.96	0.0005	0.44	5.38	8.50	0.18
Reach 2	200	10 Yr	3.02	98.18	99.04	0.00	99.06	0.0005	0.49	6.15	8.81	0.19
Reach 2	200	20 Yr	3.73	98.18	99.13	0.00	99.14	0.0006	0.54	6.90	9.09	0.20
Reach 2	200	50 Yr	4.47	98.18	99.21	0.00	99.22	0.0006	0.59	7.63	9.36	0.21
Reach 2	200	100 Yr	5.22	98.18	99.28	0.00	99.30	0.0006	0.63	8.34	9.61	0.21
Reach 2	200	100 Yr -Index	1.85	98.18	98.88	0.00	98.89	0.0004	0.39	4.74	8.25	0.16
Reach 2	175	2 Yr	1.46	98.18	98.80	98.38	98.81	0.0004	0.35	4.22	8.12	0.15
Reach 2	175	5 Yr	2.35	98.18	98.94	98.45	98.95	0.0005	0.44	5.40	8.55	0.17
Reach 2	175	10 Yr	3.02	98.18	99.03	98.49	99.04	0.0005	0.49	6.16	8.82	0.19
Reach 2	175	20 Yr	3.73	98.18	99.11	98.54	99.13	0.0006	0.54	6.90	9.08	0.20
Reach 2	175	50 Yr	4.47	98.18	99.19	98.57	99.21	0.0006	0.59	7.63	9.35	0.21
Reach 2	175	100 Yr	5.22	98.18	99.26	98.61	99.28	0.0006	0.63	8.32	9.61	0.22
Reach 2	175	100 Yr -Index	1.85	98.18	98.87	98.41	98.88	0.0004	0.39	4.77	8.32	0.16
Reach 2	150	2 Yr	1.46	98.19	98.79	98.38	98.80	0.0004	0.36	4.09	8.25	0.16
Reach 2	150	5 Yr	2.35	98.19	98.93	98.45	98.94	0.0005	0.45	5.27	8.87	0.18
Reach 2	150	10 Yr	3.02	98.19	99.02	98.50	99.03	0.0006	0.50	6.05	9.25	0.20
Reach 2	150	20 Yr	3.73	98.19	99.10	98.54	99.11	0.0006	0.55	6.82	9.60	0.21
Reach 2	150	50 Yr	4.47	98.19	99.18	98.58	99.19	0.0006	0.59	7.58	9.93	0.22
Reach 2	150	100 Yr	5.22	98.19	99.25	98.62	99.27	0.0007	0.63	8.31	10.24	0.22
Reach 2	150	100 Yr -Index	1.85	98.19	98.86	98.42	98.86	0.0005	0.40	4.63	8.53	0.17
Reach 2	125	2 Yr	1.46	98.17	98.78	0.00	98.79	0.0005	0.38	3.87	7.69	0.17
Reach 2	125	5 Yr	2.35	98.17	98.92	0.00	98.93	0.0006	0.48	4.94	8.12	0.19
Reach 2	125	10 Yr	3.02	98.17	99.00	0.00	99.01	0.0006	0.54	5.63	8.37	0.21
Reach 2	125	20 Yr	3.73	98.17	99.08	0.00	99.10	0.0007	0.59	6.31	8.63	0.22
Reach 2	125	50 Yr	4.47	98.17	99.16	0.00	99.18	0.0007	0.64	6.97	8.88	0.23
Reach 2	125	100 Yr	5.22	98.17	99.23	0.00	99.25	0.0008	0.69	7.61	9.12	0.24
Reach 2	125	100 Yr -Index	1.85	98.17	98.84	0.00	98.85	0.0005	0.42	4.36	7.90	0.18
Reach 2	100	2 Yr	1.46	98.17	98.77	0.00	98.77	0.0005	0.40	3.62	7.43	0.18
Reach 2	100	5 Yr	2.35	98.17	98.90	0.00	98.91	0.0007	0.51	4.63	7.94	0.21
Reach 2	100	10 Yr	3.02	98.17	98.98	0.00	99.00	0.0008	0.57	5.29	8.25	0.23
Reach 2	100	20 Yr	3.73	98.17	99.06	0.00	99.08	0.0008	0.63	5.94	8.55	0.24
Reach 2	100	50 Yr	4.47	98.17	99.13	0.00	99.16	0.0009	0.68	6.59	8.84	0.25
Reach 2	100	100 Yr	5.22	98.17	99.20	0.00	99.23	0.0009	0.72	7.21	9.11	0.26
Reach 2	100	100 Yr -Index	1.85	98.17	98.83	0.00	98.84	0.0006	0.45	4.08	7.66	0.20
Reach 2	75	2 Yr	1.46	98.14	98.75	98.39	98.76	0.0006	0.40	3.64	8.00	0.19
Reach 2	75	5 Yr	2.35	98.14	98.88	98.46	98.89	0.0007	0.50	4.70	8.48	0.21
Reach 2	75	10 Yr	3.02	98.14	98.96	98.51	98.98	0.0008	0.56	5.39	8.78	0.23
Reach 2	75	20 Yr	3.73	98.14	99.04	98.55	99.06	0.0008	0.61	6.07	9.06	0.24
Reach 2	75	50 Yr	4.47	98.14	99.11	98.59	99.13	0.0009	0.66	6.75	9.34	0.25
Reach 2	75	100 Yr	5.22	98.14	99.18	98.63	99.20	0.0009	0.71	7.40	9.60	0.26
Reach 2	75	100 Yr -Index	1.85	98.14	98.81	98.42	98.82	0.0006	0.45	4.12	8.22	0.20
Reach 2	50	2 Yr	1.46	98.15	98.74	98.38	98.75	0.0005	0.40	3.69	8.01	0.18
Reach 2	50	5 Yr	2.35	98.15	98.86	98.44	98.88	0.0006	0.51	4.61	8.56	0.21
Reach 2	50	10 Yr	3.02	98.15	98.94	98.49	98.96	0.0007	0.58	5.18	8.88	0.22
Reach 2	50	20 Yr	3.73	98.15	99.01	98.53	99.04	0.0008	0.65	5.72	9.19	0.24
Reach 2	50	50 Yr	4.47	98.15	99.08	98.57	99.11	0.0008	0.72	6.25	9.49	0.25
Reach 2	50	100 Yr	5.22	98.15	99.15	98.61	99.18	0.0009	0.78	6.73	9.77	0.26
Reach 2	50	100 Yr -Index	1.85	98.15	98.80	98.41	98.81	0.0006	0.45	4.11	8.27	0.19
			0.00	0.00	0.00	0.00	0.00	0.0000	0.00	0.00	0.00	0.00

Table D2: Proposed Conditions Summary Table (OTTO-PRO_v02.8)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach 2	26		Culvert									
Reach 2	25	2 Yr	1.46	98.18	98.70	98.37	98.70	0.0006	0.41	3.58	8.57	0.19
Reach 2	25	5 Yr	2.35	98.18	98.80	98.43	98.81	0.0007	0.54	4.36	8.93	0.23
Reach 2	25	10 Yr	3.02	98.18	98.86	98.47	98.88	0.0009	0.63	4.81	9.15	0.25
Reach 2	25	20 Yr	3.73	98.18	98.91	98.51	98.94	0.0010	0.71	5.22	9.35	0.27
Reach 2	25	50 Yr	4.47	98.18	98.97	98.55	99.00	0.0012	0.80	5.60	9.53	0.30
Reach 2	25	100 Yr	5.22	98.18	99.01	98.59	99.05	0.0013	0.88	5.93	9.69	0.32
Reach 2	25	100 Yr -Index	1.85	98.18	98.74	98.40	98.76	0.0006	0.47	3.94	8.74	0.21
Reach 2	0	2 Yr	1.46	98.17	98.55	98.55	98.64	0.0241	1.34	1.09	6.12	1.02
Reach 2	0	5 Yr	2.35	98.17	98.62	98.62	98.73	0.0215	1.48	1.59	7.09	1.00
Reach 2	0	10 Yr	3.02	98.17	98.67	98.67	98.79	0.0212	1.52	1.99	8.55	1.00
Reach 2	0	20 Yr	3.73	98.17	98.71	98.71	98.84	0.0211	1.59	2.34	9.36	1.02
Reach 2	0	50 Yr	4.47	98.17	98.75	98.75	98.89	0.0207	1.67	2.67	9.76	1.02

Table D3: Difference Summary Table (Proposed - Existing)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach 2	475	2 Yr	1.46	98.12	0.01	0.00	0.01	0.0000	0.00	0.11	0.03	0.00
Reach 2	475	5 Yr	2.35	98.12	0.01	0.00	0.02	0.0000	-0.01	0.17	0.04	-0.01
Reach 2	475	10 Yr	3.02	98.12	0.02	0.00	0.02	0.0000	-0.01	0.22	0.05	0.00
Reach 2	475	20 Yr	3.73	98.12	0.03	0.00	0.02	0.0000	-0.01	0.29	0.06	0.00
Reach 2	475	50 Yr	4.47	98.12	0.03	0.00	0.03	0.0000	-0.01	0.36	0.09	-0.01
Reach 2	475	100 Yr	5.22	98.12	0.04	0.00	0.04	0.0000	-0.01	0.44	0.11	-0.01
Reach 2	475	100 Yr -Index	1.85	98.12	0.02	0.00	0.01	0.0000	0.00	0.14	0.03	0.00
Reach 2	450	2 Yr	1.46	98.11	0.01	0.00	0.01	0.0000	0.00	0.10	0.03	-0.01
Reach 2	450	5 Yr	2.35	98.11	0.02	0.00	0.01	0.0000	0.00	0.16	0.04	0.00
Reach 2	450	10 Yr	3.02	98.11	0.02	0.00	0.02	0.0000	-0.01	0.20	0.06	0.00
Reach 2	450	20 Yr	3.73	98.11	0.03	0.00	0.03	0.0000	-0.01	0.26	0.07	0.00
Reach 2	450	50 Yr	4.47	98.11	0.03	0.00	0.03	0.0000	-0.01	0.33	0.09	0.00
Reach 2	450	100 Yr	5.22	98.11	0.04	0.00	0.04	0.0000	-0.02	0.39	0.10	-0.01
Reach 2	450	100 Yr -Index	1.85	98.11	0.01	0.00	0.02	0.0000	-0.01	0.12	0.03	0.00
Reach 2	425	2 Yr	1.46	98.18	0.01	0.00	0.02	0.0000	-0.01	0.10	0.04	-0.01
Reach 2	425	5 Yr	2.35	98.18	0.02	0.00	0.02	0.0000	-0.01	0.15	0.06	-0.01
Reach 2	425	10 Yr	3.02	98.18	0.02	0.00	0.02	0.0000	-0.02	0.21	0.08	-0.01
Reach 2	425	20 Yr	3.73	98.18	0.03	0.00	0.03	0.0000	-0.01	0.26	0.10	-0.01
Reach 2	425	50 Yr	4.47	98.18	0.04	0.00	0.03	0.0000	-0.02	0.34	0.12	-0.01
Reach 2	425	100 Yr	5.22	98.18	0.04	0.00	0.04	-0.0001	-0.02	0.40	0.14	-0.01
Reach 2	425	100 Yr -Index	1.85	98.18	0.02	0.00	0.01	0.0000	-0.01	0.11	0.05	-0.01
Reach 2	400	2 Yr	1.46	98.19	0.02	0.00	0.01	0.0000	-0.01	0.10	0.05	0.00
Reach 2	400	5 Yr	2.35	98.19	0.02	0.00	0.02	0.0000	-0.01	0.17	0.07	-0.01
Reach 2	400	10 Yr	3.02	98.19	0.02	0.00	0.02	0.0000	-0.01	0.23	0.09	-0.01
Reach 2	400	20 Yr	3.73	98.19	0.03	0.00	0.03	0.0000	-0.01	0.29	0.11	-0.01
Reach 2	400	50 Yr	4.47	98.19	0.04	0.00	0.03	0.0000	-0.02	0.37	0.14	-0.01
Reach 2	400	100 Yr	5.22	98.19	0.04	0.00	0.04	-0.0001	-0.02	0.44	0.16	-0.01
Reach 2	400	100 Yr -Index	1.85	98.19	0.02	0.00	0.01	0.0000	0.00	0.13	0.05	-0.01
Reach 2	375	2 Yr	1.46	98.20	0.01	0.00	0.01	0.0000	0.00	0.10	0.05	0.00
Reach 2	375	5 Yr	2.35	98.20	0.01	0.00	0.02	0.0000	-0.01	0.17	0.07	-0.01
Reach 2	375	10 Yr	3.02	98.20	0.02	0.00	0.02	0.0000	-0.01	0.22	0.08	-0.01
Reach 2	375	20 Yr	3.73	98.20	0.03	0.00	0.03	0.0000	-0.02	0.29	0.11	-0.01
Reach 2	375	50 Yr	4.47	98.20	0.04	0.00	0.04	-0.0001	-0.02	0.36	0.13	-0.01
Reach 2	375	100 Yr	5.22	98.20	0.04	0.00	0.04	-0.0001	-0.03	0.44	0.16	-0.01
Reach 2	375	100 Yr -Index	1.85	98.20	0.01	0.00	0.02	0.0000	-0.01	0.13	0.05	-0.01
Reach 2	350	2 Yr	1.46	98.20	0.01	0.00	0.02	0.0000	0.00	0.11	0.05	0.00
Reach 2	350	5 Yr	2.35	98.20	0.02	0.00	0.02	0.0000	-0.01	0.18	0.06	0.00
Reach 2	350	10 Yr	3.02	98.20	0.02	0.00	0.02	0.0000	-0.01	0.24	0.08	-0.01
Reach 2	350	20 Yr	3.73	98.20	0.03	0.00	0.03	0.0000	-0.01	0.31	0.11	-0.01
Reach 2	350	50 Yr	4.47	98.20	0.04	0.00	0.04	-0.0001	-0.03	0.38	0.13	-0.01
Reach 2	350	100 Yr	5.22	98.20	0.04	0.00	0.04	-0.0001	-0.02	0.47	0.15	-0.01
Reach 2	350	100 Yr -Index	1.85	98.20	0.01	0.00	0.02	0.0000	-0.01	0.14	0.05	0.00
Reach 2	325	2 Yr	1.46	98.20	0.01	0.00	0.01	0.0000	-0.01	0.13	0.05	-0.01
Reach 2	325	5 Yr	2.35	98.20	0.02	0.00	0.01	0.0000	-0.01	0.20	0.09	-0.01
Reach 2	325	10 Yr	3.02	98.20	0.02	0.00	0.02	0.0000	-0.02	0.27	0.11	-0.01
Reach 2	325	20 Yr	3.73	98.20	0.03	0.00	0.03	0.0000	-0.02	0.34	0.11	0.00
Reach 2	325	50 Yr	4.47	98.20	0.04	0.00	0.04	-0.0001	-0.02	0.43	0.14	-0.01
Reach 2	325	100 Yr	5.22	98.20	0.05	0.00	0.05	-0.0001	-0.03	0.51	0.16	-0.01
Reach 2	325	100 Yr -Index	1.85	98.20	0.02	0.00	0.01	0.0000	-0.01	0.15	0.06	-0.01
Reach 2	300	2 Yr	1.46	98.18	0.02	0.00	0.01	0.0000	-0.01	0.12	0.05	0.00
Reach 2	300	5 Yr	2.35	98.18	0.02	0.00	0.02	0.0000	-0.01	0.19	0.07	0.00
Reach 2	300	10 Yr	3.02	98.18	0.02	0.00	0.02	0.0000	-0.01	0.25	0.09	0.00
Reach 2	300	20 Yr	3.73	98.18	0.03	0.00	0.03	0.0000	-0.02	0.34	0.12	-0.01
Reach 2	300	50 Yr	4.47	98.18	0.04	0.00	0.04	-0.0001	-0.02	0.42	0.14	-0.01
Reach 2	300	100 Yr	5.22	98.18	0.04	0.00	0.05	-0.0001	-0.03	0.51	0.16	-0.01
Reach 2	300	100 Yr -Index	1.85	98.18	0.02	0.00	0.01	0.0000	-0.01	0.15	0.06	0.00
Reach 2	275	2 Yr	1.46	98.20	0.01	0.00	0.02	0.0000	-0.01	0.11	0.04	0.00
Reach 2	275	5 Yr	2.35	98.20	0.02	0.00	0.02	0.0000	-0.01	0.19	0.07	0.00
Reach 2	275	10 Yr	3.02	98.20	0.03	0.00	0.02	-0.0001	-0.02	0.25	0.09	-0.01
Reach 2	275	20 Yr	3.73	98.20	0.04	0.00	0.03	-0.0001	-0.03	0.31	0.10	-0.01
Reach 2	275	50 Yr	4.47	98.20	0.04	0.00	0.04	-0.0001	-0.03	0.39	0.13	-0.02
Reach 2	275	100 Yr	5.22	98.20	0.05	0.00	0.05	-0.0001	-0.03	0.48	0.15	-0.02
Reach 2	275	100 Yr -Index	1.85	98.20	0.02	0.00	0.02	0.0000	-0.02	0.14	0.06	0.00

Table D3: Difference Summary Table (Proposed - Existing)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach 2	250	2 Yr	1.46	98.18	0.01	0.00	0.02	0.0000	-0.01	0.12	0.05	0.00
Reach 2	250	5 Yr	2.35	98.18	0.02	0.00	0.02	0.0000	-0.01	0.20	0.08	0.00
Reach 2	250	10 Yr	3.02	98.18	0.03	0.00	0.03	-0.0001	-0.01	0.27	0.09	-0.01
Reach 2	250	20 Yr	3.73	98.18	0.04	0.00	0.03	-0.0001	-0.02	0.35	0.11	-0.01
Reach 2	250	50 Yr	4.47	98.18	0.04	0.00	0.04	-0.0001	-0.03	0.44	0.14	-0.02
Reach 2	250	100 Yr	5.22	98.18	0.06	0.00	0.05	-0.0001	-0.03	0.52	0.16	-0.02
Reach 2	250	100 Yr -Index	1.85	98.18	0.02	0.00	0.02	0.0000	-0.02	0.16	0.06	0.00
Reach 2	225	2 Yr	1.46	98.19	0.02	0.00	0.02	0.0000	-0.01	0.12	0.06	-0.01
Reach 2	225	5 Yr	2.35	98.19	0.03	0.00	0.03	-0.0001	-0.02	0.20	0.09	-0.01
Reach 2	225	10 Yr	3.02	98.19	0.04	0.00	0.03	-0.0001	-0.03	0.27	0.11	-0.02
Reach 2	225	20 Yr	3.73	98.19	0.04	0.00	0.04	-0.0001	-0.03	0.34	0.14	-0.02
Reach 2	225	50 Yr	4.47	98.19	0.05	0.00	0.04	-0.0001	-0.04	0.43	0.16	-0.02
Reach 2	225	100 Yr	5.22	98.19	0.06	0.00	0.06	-0.0002	-0.04	0.53	0.19	-0.02
Reach 2	225	100 Yr -Index	1.85	98.19	0.02	0.00	0.02	-0.0001	-0.02	0.15	0.07	-0.01
Reach 2	200	2 Yr	1.46	98.18	0.02	0.00	0.02	0.0000	-0.01	0.14	0.06	-0.01
Reach 2	200	5 Yr	2.35	98.18	0.02	0.00	0.02	-0.0001	-0.02	0.22	0.08	-0.01
Reach 2	200	10 Yr	3.02	98.18	0.03	0.00	0.04	-0.0001	-0.03	0.29	0.12	-0.01
Reach 2	200	20 Yr	3.73	98.18	0.04	0.00	0.04	-0.0001	-0.03	0.38	0.14	-0.01
Reach 2	200	50 Yr	4.47	98.18	0.05	0.00	0.04	-0.0001	-0.03	0.46	0.17	-0.02
Reach 2	200	100 Yr	5.22	98.18	0.06	0.00	0.06	-0.0001	-0.04	0.58	0.20	-0.03
Reach 2	200	100 Yr -Index	1.85	98.18	0.02	0.00	0.02	0.0000	-0.01	0.17	0.06	-0.01
Reach 2	175	2 Yr	1.46	98.18	0.02	0.00	0.02	0.0000	-0.01	0.14	0.05	-0.01
Reach 2	175	5 Yr	2.35	98.18	0.02	0.00	0.02	-0.0001	-0.01	0.23	0.08	-0.02
Reach 2	175	10 Yr	3.02	98.18	0.03	0.00	0.03	-0.0001	-0.03	0.31	0.10	-0.01
Reach 2	175	20 Yr	3.73	98.18	0.04	0.00	0.04	-0.0001	-0.03	0.40	0.14	-0.01
Reach 2	175	50 Yr	4.47	98.18	0.05	0.00	0.05	-0.0001	-0.04	0.50	0.19	-0.02
Reach 2	175	100 Yr	5.22	98.18	0.06	0.00	0.06	-0.0002	-0.05	0.61	0.23	-0.02
Reach 2	175	100 Yr -Index	1.85	98.18	0.02	0.00	0.03	-0.0001	-0.01	0.18	0.06	-0.01
Reach 2	150	2 Yr	1.46	98.19	0.02	0.00	0.02	-0.0001	-0.01	0.16	0.09	-0.01
Reach 2	150	5 Yr	2.35	98.19	0.03	0.00	0.03	-0.0001	-0.02	0.25	0.13	-0.02
Reach 2	150	10 Yr	3.02	98.19	0.04	0.00	0.04	-0.0001	-0.03	0.34	0.17	-0.01
Reach 2	150	20 Yr	3.73	98.19	0.05	0.00	0.04	-0.0001	-0.04	0.45	0.20	-0.02
Reach 2	150	50 Yr	4.47	98.19	0.06	0.00	0.05	-0.0002	-0.05	0.56	0.25	-0.02
Reach 2	150	100 Yr	5.22	98.19	0.07	0.00	0.07	-0.0002	-0.06	0.69	0.29	-0.03
Reach 2	150	100 Yr -Index	1.85	98.19	0.03	0.00	0.02	-0.0001	-0.02	0.20	0.10	-0.01
Reach 2	125	2 Yr	1.46	98.17	0.02	0.00	0.02	-0.0001	-0.01	0.16	0.07	-0.01
Reach 2	125	5 Yr	2.35	98.17	0.04	0.00	0.03	-0.0001	-0.02	0.26	0.09	-0.02
Reach 2	125	10 Yr	3.02	98.17	0.04	0.00	0.03	-0.0001	-0.03	0.34	0.12	-0.02
Reach 2	125	20 Yr	3.73	98.17	0.05	0.00	0.05	-0.0002	-0.05	0.44	0.17	-0.02
Reach 2	125	50 Yr	4.47	98.17	0.07	0.00	0.06	-0.0002	-0.06	0.55	0.21	-0.03
Reach 2	125	100 Yr	5.22	98.17	0.08	0.00	0.07	-0.0002	-0.06	0.68	0.25	-0.03
Reach 2	125	100 Yr -Index	1.85	98.17	0.02	0.00	0.02	-0.0001	-0.02	0.20	0.08	-0.01
Reach 2	100	2 Yr	1.46	98.17	0.03	0.00	0.02	-0.0001	-0.02	0.17	0.09	-0.02
Reach 2	100	5 Yr	2.35	98.17	0.04	0.00	0.03	-0.0001	-0.03	0.28	0.14	-0.02
Reach 2	100	10 Yr	3.02	98.17	0.05	0.00	0.05	-0.0002	-0.04	0.37	0.17	-0.02
Reach 2	100	20 Yr	3.73	98.17	0.06	0.00	0.06	-0.0002	-0.05	0.48	0.22	-0.03
Reach 2	100	50 Yr	4.47	98.17	0.07	0.00	0.07	-0.0003	-0.07	0.61	0.27	-0.04
Reach 2	100	100 Yr	5.22	98.17	0.08	0.00	0.08	-0.0003	-0.09	0.75	0.33	-0.04
Reach 2	100	100 Yr -Index	1.85	98.17	0.03	0.00	0.03	-0.0001	-0.03	0.21	0.10	-0.01
Reach 2	75	2 Yr	1.46	98.14	0.02	98.39	0.02	-0.0001	-0.02	0.19	0.13	-0.01
Reach 2	75	5 Yr	2.35	98.14	0.04	98.46	0.03	-0.0002	-0.04	0.33	0.15	-0.03
Reach 2	75	10 Yr	3.02	98.14	0.05	98.51	0.05	-0.0002	-0.05	0.44	0.19	-0.03
Reach 2	75	20 Yr	3.73	98.14	0.07	98.55	0.06	-0.0003	-0.07	0.57	0.24	-0.03
Reach 2	75	50 Yr	4.47	98.14	0.08	98.59	0.07	-0.0003	-0.08	0.73	0.30	-0.04
Reach 2	75	100 Yr	5.22	98.14	0.10	98.63	0.08	-0.0004	-0.09	0.89	0.36	-0.05
Reach 2	75	100 Yr -Index	1.85	98.14	0.03	98.42	0.03	-0.0001	-0.03	0.25	0.11	-0.02
Reach 2	50	2 Yr	1.46	98.15	0.03	98.38	0.03	-0.0001	-0.02	0.18	0.12	-0.02
Reach 2	50	5 Yr	2.35	98.15	0.04	98.44	0.04	-0.0002	-0.02	0.21	0.19	-0.03
Reach 2	50	10 Yr	3.02	98.15	0.05	98.49	0.06	-0.0003	-0.03	0.23	0.23	-0.04
Reach 2	50	20 Yr	3.73	98.15	0.07	98.53	0.07	-0.0004	-0.03	0.25	0.29	-0.04
Reach 2	50	50 Yr	4.47	98.15	0.08	98.57	0.08	-0.0005	-0.03	0.28	0.36	-0.05
Reach 2	50	100 Yr	5.22	98.15	0.10	98.61	0.10	-0.0005	-0.03	0.30	0.43	-0.05
Reach 2	50	100 Yr -Index	1.85	98.15	0.04	98.41	0.04	-0.0002	-0.02	0.19	0.15	-0.03

Table D3: Difference Summary Table (Proposed - Existing)

Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
Reach 2	26		0.00									
Reach 2	25	2 Yr	1.46	98.18	0.00	98.37	0.00	0.0000	0.03	-0.23	-0.01	0.01
Reach 2	25	5 Yr	2.35	98.18	0.00	98.43	0.00	0.0000	0.04	-0.36	-0.01	0.01
Reach 2	25	10 Yr	3.02	98.18	0.00	98.47	0.00	0.0000	0.06	-0.47	-0.01	0.01
Reach 2	25	20 Yr	3.73	98.18	-0.01	98.51	0.00	0.0000	0.07	-0.58	-0.01	0.01
Reach 2	25	50 Yr	4.47	98.18	0.00	98.55	0.00	0.0000	0.09	-0.70	-0.02	0.02
Reach 2	25	100 Yr	5.22	98.18	-0.01	98.59	0.00	0.0001	0.11	-0.82	-0.03	0.02
Reach 2	25	100 Yr -Index	1.85	98.18	-0.01	98.40	0.00	0.0000	0.03	-0.29	-0.01	0.01
Reach 2	0	2 Yr	1.46	98.17	0.00	0.00	0.00	0.0000	0.00	0.00	0.00	0.00
Reach 2	0	5 Yr	2.35	98.17	0.00	0.00	0.00	0.0000	0.00	0.00	0.00	0.00
Reach 2	0	10 Yr	3.02	98.17	0.00	0.00	0.00	0.0000	0.00	0.00	0.00	0.00
Reach 2	0	20 Yr	3.73	98.17	0.00	0.00	0.00	0.0000	0.00	0.00	0.00	0.00
Reach 2	0	50 Yr	4.47	98.17	0.00	0.00	0.00	0.0000	0.00	0.00	0.00	0.00

