



July 27, 2011

Clinton River Spillway Inter-County Drainage Board
c/o Office of the Macomb County Public Works Commissioner
21777 Dunham Road
Clinton Township, MI 48036

Attention:

Members of the Clinton River Spillway Inter-County Drainage Board
John McCullough, Oakland County Water Resources Commissioner
Anthony Marrocco, Macomb County Public Works Commissioner
John Freeman, Lapeer County Drain Commissioner
Robert Wiley, St. Clair County Drain Commissioner
Michael Gregg, Chairman, Michigan Department of Agriculture

Re: Final Report of 2011 Apportionment Schedule for Clinton River Spillway Drain
Drainage District

J&A File No. 16361

Dear Members of the Board,

As directed we have made clarifications to the Final Apportionment Schedule for Clinton River Spillway Drain Drainage District presented in the July 8, 2011 Inter-County Drainage Board Meeting. We present this report as the final report for the Board to consider adoption of the schedule. Please see attached final schedule and footnotes.

Prior adjustments were referenced in our February 9, 2011, March 22, 2011 reports and May 3, 2011 are summarized as follows:

The draft apportionment was adjusted to conform to the "1990 policy" incorporated. The "1990 policy" has been defined from the information provided in the following:

- 1990 engineering report developed during the 1990 dispute resolution,
- Minutes from the meetings related to the discussions of the 1990 dispute resolution.

The major issues of the "1990 policy" included:

- The "1990 policy" utilized a "Macomb Flood Benefit" factor of 10% to represent the benefit of flood prevention in the downstream communities of Macomb County. This arbitrary 10% was applied to Macomb County communities which

shared the Flood Benefit proportionately by apportionment. This factor is independent of the State Highway MDOT Apportionment which is set at 3%.

- There was an adjustment downward for the St. Clair County and Lapeer County communities in the 1990 apportionment schedule. We refer to this adjustment as the St. Clair County and Lapeer County Adjustment.
- Land Use Runoff Coefficients are the same or similar to those used by Johnson & Anderson, Inc. in our draft updates.
- The Road Right of Way Runoff Coefficient was 0.55 regardless of road class.
- The Single Family Residential Runoff (SFR) Coefficient in 1990 was 0.400.
- Although the 1990 engineering report suggests that runoff from water surfaces was to be calculated as a “common area” on a per-community runoff equivalent basis, the minutes of the subsequent meetings suggest that water surface was calculated effectively as a common area for the entire the draining district. The surface area was included in the full area calculations but excluded in the equivalent area. The net effect was that the 1990 water runoff coefficient was approximately 0.4.

Based on these observations, we have applied the “1990 policy” to the 2011 proposed apportionments as noted in the final version of the footnotes. Given these adjustments to the “1990 policy” the results are summarized in the following chart. Details are shown in the attached prints:

Apportionment Update Factors and Effect on County/State Share	PER 1990 POLICY	PER 1990 POLICY WITH ADJUSTMENTS	Compared to 1990
Oakland County	49.2842%	44.2231%	0.3694%
Macomb County	45.1182%	50.9914%	-1.4218%
Lapeer County	1.6843%	1.1868%	0.7707%
St. Clair County	0.9133%	0.5988%	0.2818%
MDOT	3.0000%	3.0000%	0.0000%
CLINTON R SPILLWAY DRAINAGE DISTRICT	100.0000%	100.0000%	

The May 3, 2011 adjustments are described as:

- Displaying villages and townships calculated apportionment as a whole to be assessed at the discretion of the townships with the calculated apportionment of each provided for informational purposes.
- Demonstrating the effect of the removal of the calculated Eastpointe equivalent area.
- Calculating apportionments to 0.000001% accuracy and rounding to nearest 0.0001%.
- Clarification of footnotes

The result of these final adjustments accounts for is included in the attached Schedule.

We present the attached schedule as our final recommendation of apportionment for the Clinton River Spillway Drain.

Sincerely,

JOHNSON & ANDERSON, INC.

A handwritten signature in black ink, appearing to read 'William J. Popp', is written over the printed name below.

William J. Popp, P.E.

SCHEDULE of APPORTIONMENT	
Owner	Equivalent Area
<i>State Of Michigan</i>	3.0000%
St. Claire County	0.0313%
Berlin Twp	0.5675%
<i>St. Clair County Total</i>	0.5988%
Oakland County	5.3452%
Charter Township Of Bloomfield	0.0434%
Charter Township Of Brandon	0.9345%
Charter Township Of Oakland	2.4668%
Charter Township Of Royal Oak	0.0663%
Charter Township Of Springfield	0.8195%
Charter Township Of Waterford	3.4614%
Charter Township Of West Bloomfield	0.6033%
Charter Township Of White Lake	0.0940%
City Of Auburn Hills	1.8616%
City Of Berkley	0.4144%
City Of Birmingham	0.3282%
City Of Clawson	0.3765%
City Of Ferndale	0.6485%
City Of Hazel Park	0.4329%
City Of Huntington Woods	0.2054%
City Of Keego Harbor	0.0811%
City Of Lake Angelus	0.1527%
	0.0000%
City Of Madison Heights	1.1508%
City Of Oak Park	0.7548%
City Of Orchard Lake Village	0.3053%
City Of Pleasant Ridge	0.0854%
City Of Pontiac	2.8157%
City Of Rochester	0.5504%
City Of Rochester Hills	3.6202%
City Of Royal Oak	1.8392%
City Of Southfield	0.4018%
City Of Sylvan Lake	0.1205%
City Of Troy	4.1594%
Township Of Groveland	0.0013%

VT's of Addison	2.2516%
Village Of Leonard	0.0672%
Township Of Addison	2.1844%
City Of Village of Clarkston	0.0699%
Charter Township Of Independence	2.8273%
VT's of Orion	3.0084%
Village Of Lake Orion	0.1687%
Charter Township Of Orion	2.8397%
VT's of Southfield	0.0582%
Village Of Beverly Hills	0.0582%
Township of Southfield	
VT's of Oxford	1.8675%
Village Of Oxford	0.2107%
Charter Township Of Oxford	1.6568%
Oakland County Total	44.2234%
Owner	Equivalent Area
Macomb County	5.8946%
CENTERLINE	0.3685%
CHESTERFIELD TWP	0.2417%
CLINTON TWP	2.6437%
FRASER	0.7869%
HARRISON TWP	1.1244%
LENOX TWP	1.3012%
MACOMB TWP	3.0116%
MOUNT CLEMENS	3.6954%
RAY TWP	2.6856%
RICHMOND TWP	1.1093%
ROSEVILLE	0.5960%
SHELBY TWP	4.1936%
STERLING HGTS	6.4380%
UTICA	0.2976%
WARREN	6.6003%
WASHINGTON TWP	3.1578%
VT's of Bruce	4.1420%
ROMEO	0.3501%
BRUCE TWP	3.7919%
VT's of Armada	2.7028%

ARMADA	0.1038%
ARMADA TWP	2.5990%
Macomb County Total	50.9910%
Lapeer County	0.0505%
Township of Dryden	0.1022%
VT's of Almont	1.0341%
Township of Almont	0.8815%
Village of Almont	0.1526%
Lapeer County Total	1.1868%
Watershed Total	100.0000%

Footnotes – 2011 CLINTON RIVER SPILLWAY DRAIN APPORTIONMENT SCHEDULE

- 1 Equivalent Acreage was initially calculated by Land Use designations and the following factors established in 1990:
 - Active Agriculture 0.200
 - Commercial and Office 0.800
 - Cultural, Outdoor Recreation, and Cemetery 0.200
 - Grassland and Shrub 0.200
 - Institutional 0.800
 - Under Development 0.200
 - Woodland and Wetland 0.200
 - Industrial 0.800
 - Multiple Family Residential 0.600
 - Transportation, Communication and Utility 0.200
 - Extractive and Barren 0.200
- 2 State of Michigan Apportionment is traditionally designated (Since 1959) at 3% for State Lands primarily including highways.
- 3 A 10% Macomb Flood Benefit Factor (established in 1990) was applied by adding 10% to Macomb County and dividing Macomb County corporations proportionately by equivalent acreage in Macomb County and dividing the remaining 87% (10% Macomb County Flood Benefit and 3% State of Michigan) proportionately by equivalent acreage in all communities.
- 4 By agreement established in 1990 the following equivalent acreage adjustments are made:
 - Oakland County 8.2
 - Macomb County 1093.1
 - Lapeer County -655.5
 - St. Clair County -445.8
- 5 Water runoff coefficient is used as the approximated raw average runoff for the district at $C_{water} = 0.412$
- 6 Road Right of Way is designated as the design runoff factor by road RCMC road classifications where:
 - Road Class A 0.375
 - Road Class B 0.765
 - Road Class C 0.626
 - Road Class D 0.397
- 7 Residential Coefficients are estimated as:
 - Single Family Residential - Rural 0.361
 - Single Family Residential - Dense 0.532
- 8 Village Equivalent Acreage is shown for informational purposes only