Appendix C: Sensitivity Analysis for the Floyds Fork Watershed

Table of Contents

TABLE OF CONTENTS **0**
LIST OF FIGURES **1**
LIST OF TABLES **2**

List of Figures

Figure C-1 Sensitivity Analysis of in-stream TN loads of the final calibrated model at the 7 USGS Flow Stations 3
Figure C-2 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses doubled 4
Figure C-3 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses halved 5
Figure C-4 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses doubled 6
Figure C-5 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses halved 7
Table C-5 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses halved 7
Figure C-6 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses doubled 8
Figure C-7 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses halved 9
Figure C-8 Sensitivity Analysis of in-stream TP loads of the final calibrated model at the 7 USGS Flow Stations 10
Figure C-9 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses doubled 11
Figure C-10 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses halved 12
Figure C-11 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses doubled 13
Figure C-12 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses halved 14
Table C-12 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses halved 14
Figure C-13 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses doubled 15
Figure C-14 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses halved 16

List of Tables

Table C-1 Sensitivity Analysis of in-stream TN loads of the final calibrated model at the 7 USGS Flow Stations 3
Table C-2 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses doubled 4
Table C-3 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses halved 5
Table C-4 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses doubled 6
Table C-6 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses doubled 8
Table C-7 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses halved 9
Table C-8 Sensitivity Analysis of in-stream TP loads of the final calibrated model at the 7 USGS Flow Stations 10
Table C-9 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses doubled 11
Table C-10 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses halved 12
Table C-11 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses doubled 13
Table C-13 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses doubled 15
Table C-14 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses halved 16

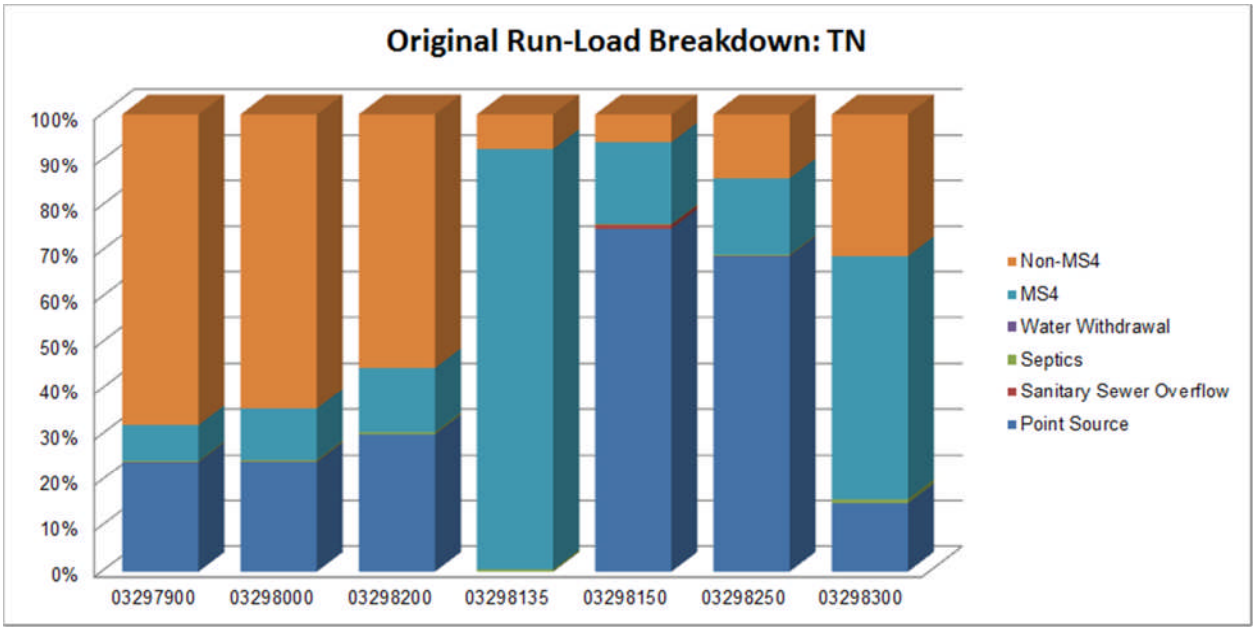

Figure C-1 Sensitivity Analysis of in-stream TN loads of the final calibrated model at the 7 USGS Flow Stations

Table C-1 Sensitivity Analysis of in-stream TN loads of the final calibrated model at the 7 USGS Flow Stations

Original Run

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	24%	24%	30%	0%	75%	69%	15%
Sanitary Sewer Overflow	0%	0%	0%	0%	1%	0%	0%
Septics	0%	0%	0%	1%	0%	0%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-2%
MS4	8%	11%	14%	92%	18%	17%	53%
Non-MS4	68%	65%	56%	7%	6%	14%	33%
Total	100%	100%	100%	100%	100%	100%	100%

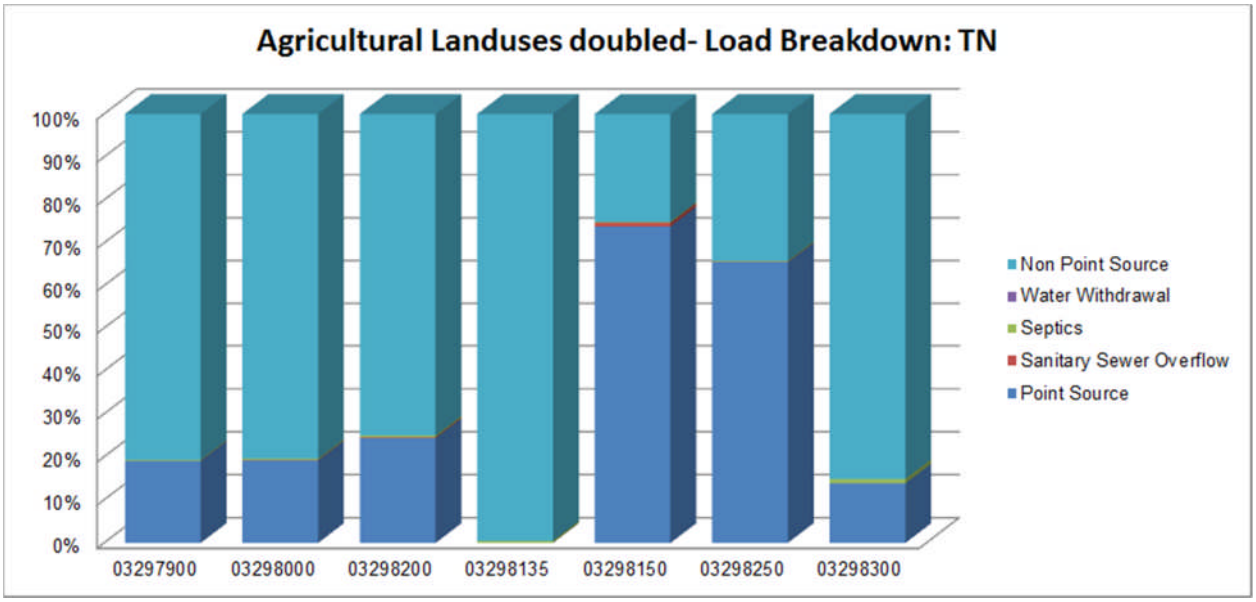

Figure C-2 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses doubled

Table C-2 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses doubled

Agricultural Landuses doubled

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	19%	19%	24%	0%	74%	65%	14%
Sanitary Sewer Overflow	0%	0%	0%	0%	1%	0%	0%
Septics	0%	0%	0%	0%	0%	0%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-2%
Non Point Source	81%	81%	76%	100%	25%	35%	87%
Total	100%	100%	100%	100%	100%	100%	100%

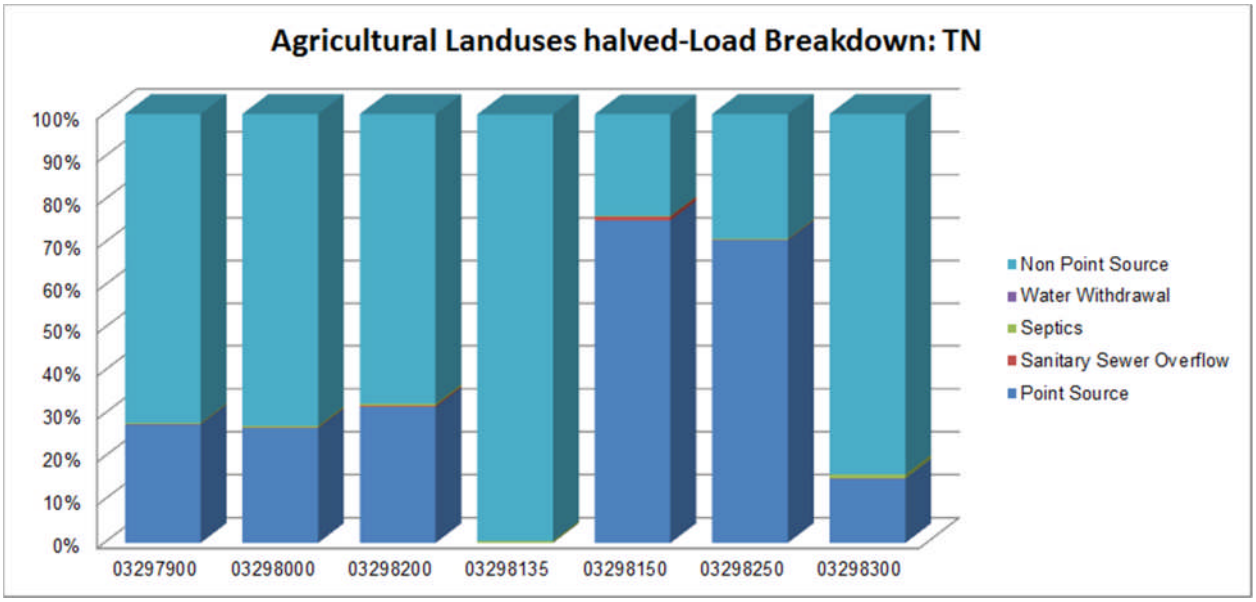

Figure C-3 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses halved

Table C-3 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses halved

Agricultural Landuses halved

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	28%	27%	32%	0%	75%	71%	15%
Sanitary Sewer Overflow	0%	0%	0%	0%	1%	0%	0%
Septics	0%	0%	0%	1%	0%	0%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-2%
Non Point Source	72%	73%	68%	99%	24%	29%	86%
Total	100%	100%	100%	100%	100%	100%	100%

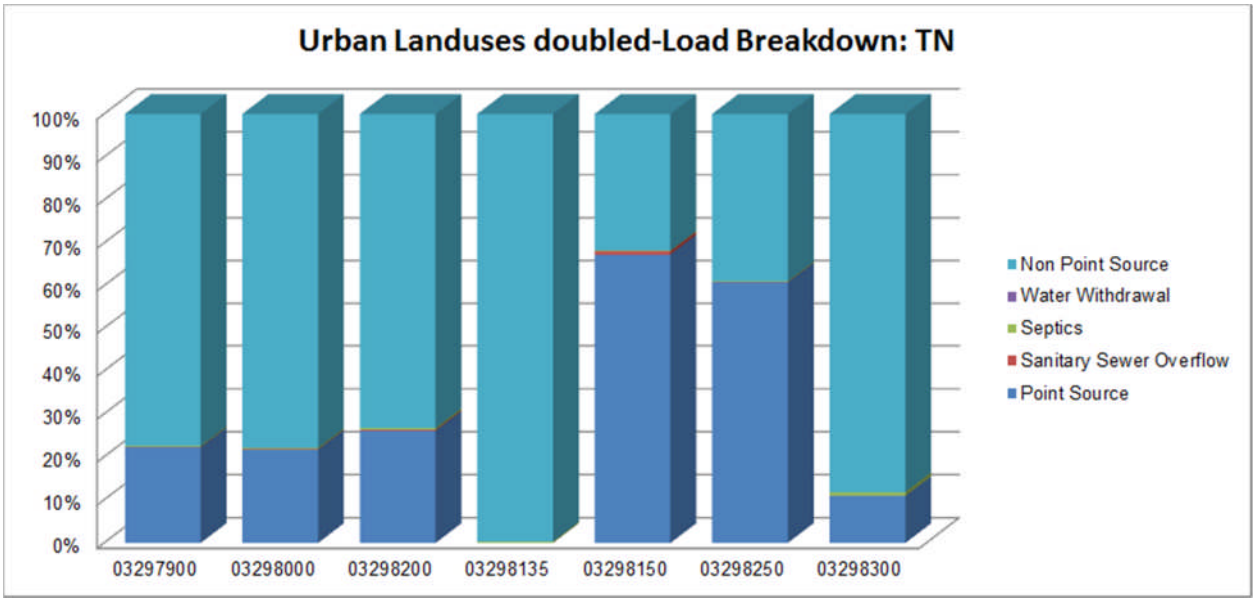

Figure C-4 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses doubled

Table C-4 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses doubled

Urban Landuses doubled

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	22%	22%	26%	0%	67%	61%	11%
Sanitary Sewer Overflow	0%	0%	0%	0%	1%	0%	0%
Septics	0%	0%	0%	0%	0%	0%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-2%
Non Point Source	78%	78%	74%	100%	32%	39%	90%
Total	100%	100%	100%	100%	100%	100%	100%

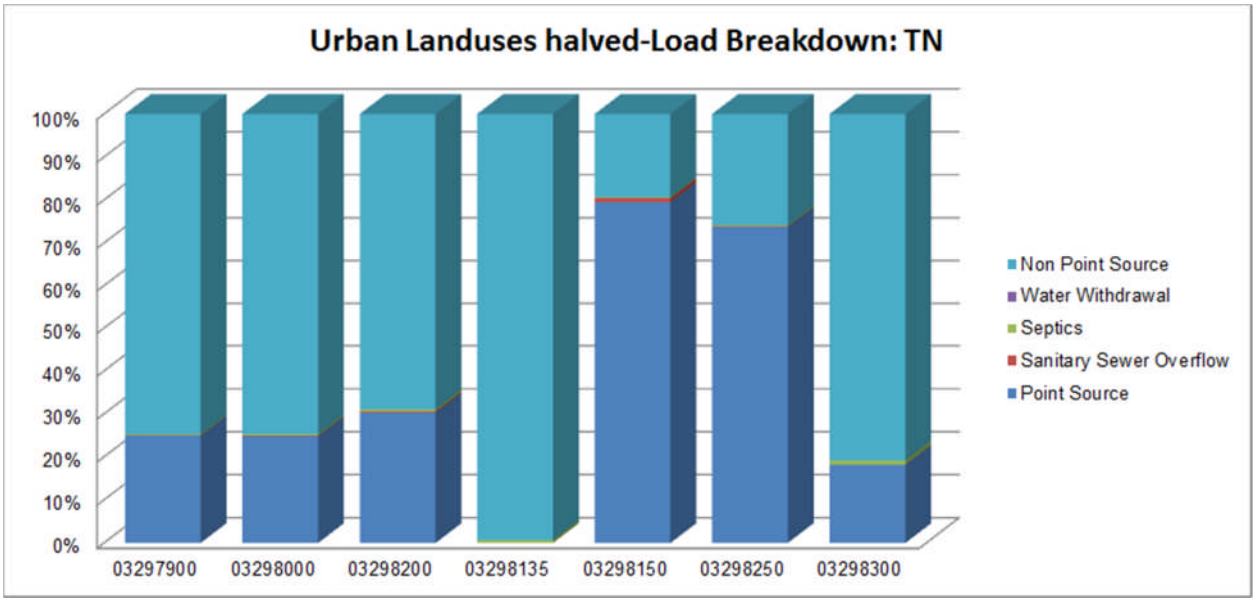

Figure C-5 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses halved

Table C-5 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses halved

Urban Landuses havled

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	25%	25%	30%	0%	79%	74%	18%
Sanitary Sewer Overflow	0%	0%	0%	0%	1%	0%	0%
Septics	0%	0%	0%	1%	0%	0%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-2%
Non Point Source	75%	75%	70%	99%	20%	26%	83%
Total	100%	100%	100%	100%	100%	100%	100%

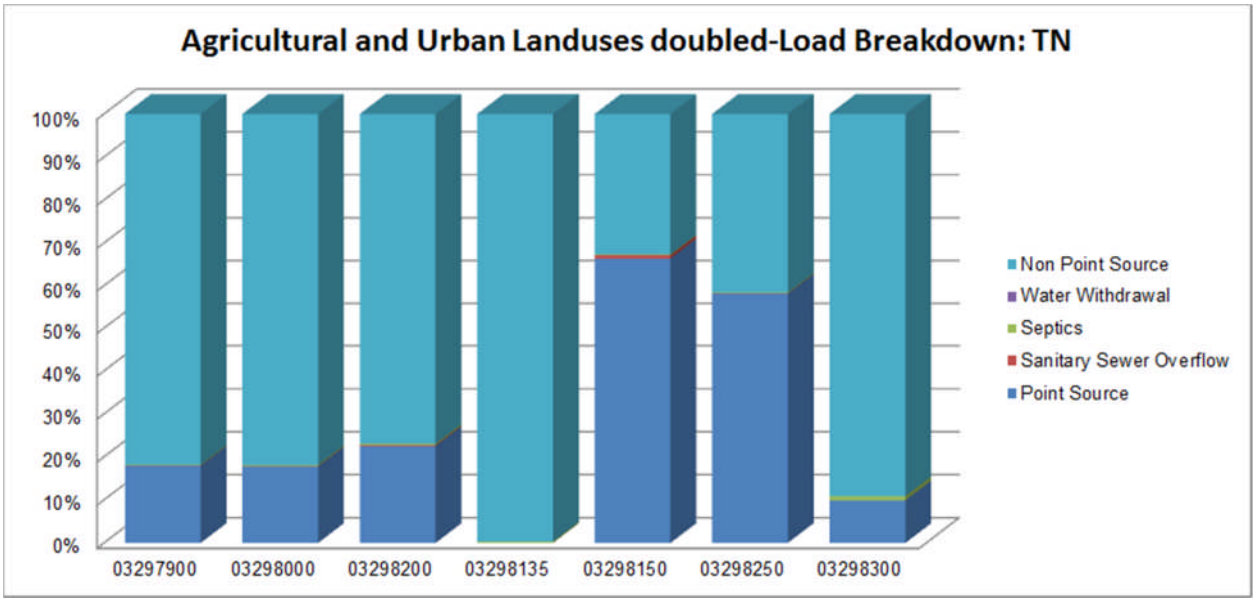

Figure C-6 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses doubled

Table C-6 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses doubled

Agricultural and Urban Landuses doubled

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	18%	18%	23%	0%	66%	58%	10%
Sanitary Sewer Overflow	0%	0%	0%	0%	1%	0%	0%
Septics	0%	0%	0%	0%	0%	0%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-1%
Non Point Source	82%	82%	77%	100%	33%	42%	90%
Total	100%	100%	100%	100%	100%	100%	100%

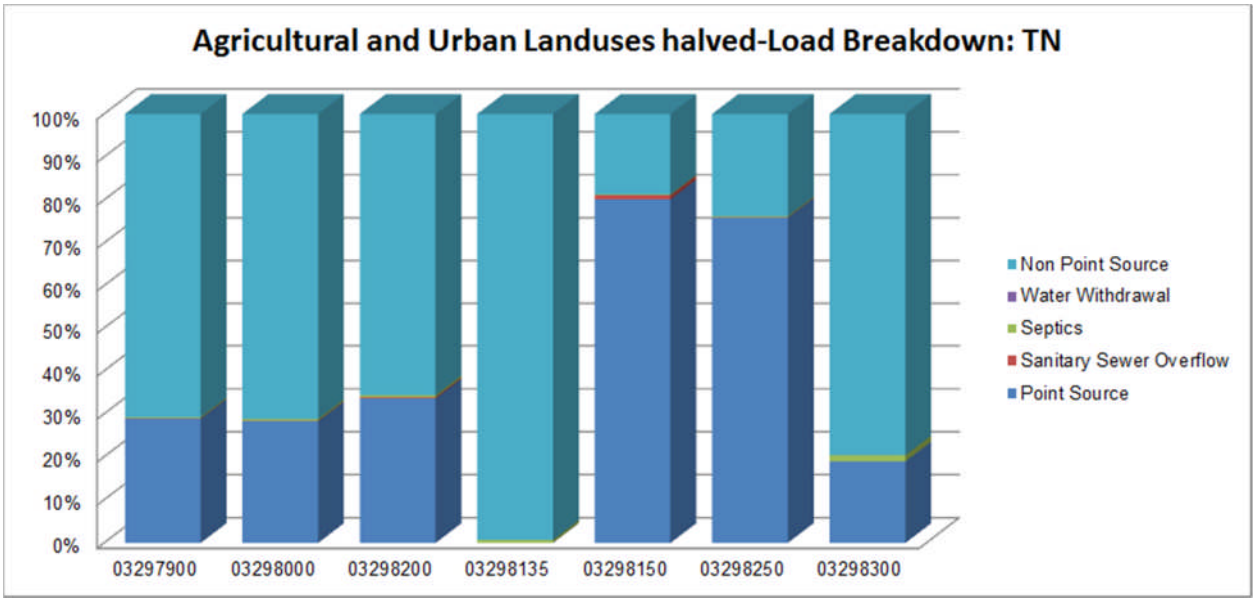

Figure C-7 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses halved

Table C-7 Sensitivity Analysis of in-stream TN loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses halved

Agricultural and Urban Landuses halved

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	29%	28%	34%	0%	80%	76%	19%
Sanitary Sewer Overflow	0%	0%	0%	0%	1%	0%	0%
Septics	0%	0%	0%	1%	0%	0%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-2%
Non Point Source	71%	72%	66%	99%	19%	24%	82%
Total	100%	100%	100%	100%	100%	100%	100%

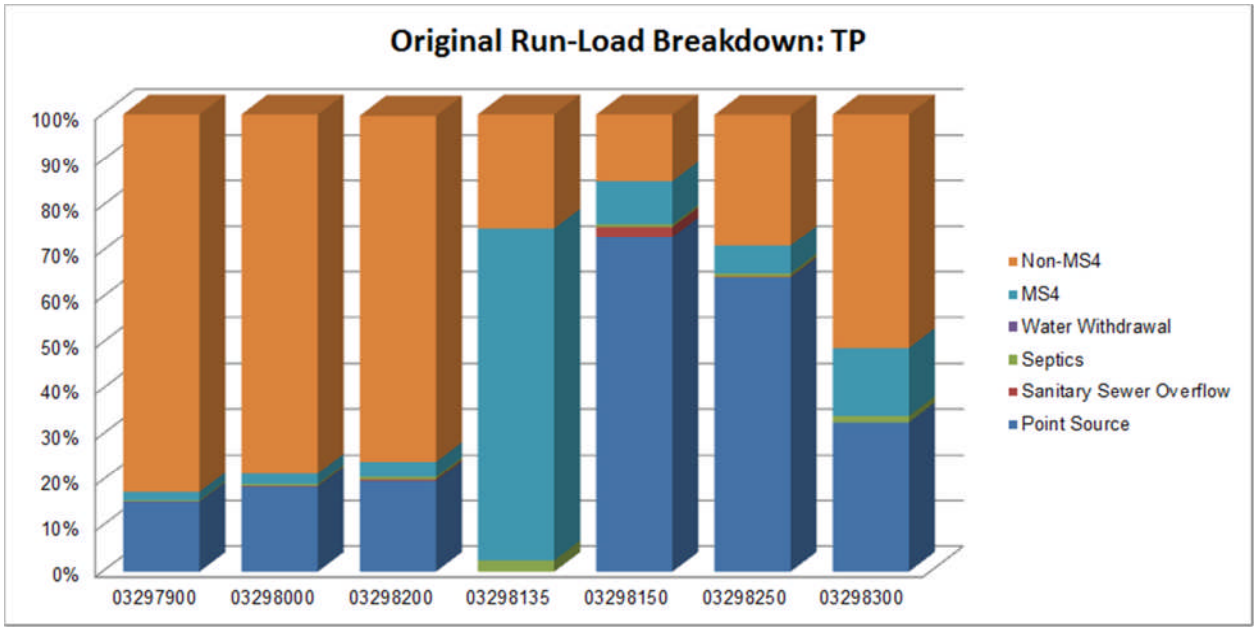

Figure C-8 Sensitivity Analysis of in-stream TP loads of the final calibrated model at the 7 USGS Flow Stations

Table C-8 Sensitivity Analysis of in-stream TP loads of the final calibrated model at the 7 USGS Flow Stations

Original Run

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	15%	19%	20%	0%	73%	64%	33%
Sanitary Sewer Overflow	0%	0%	0%	0%	2%	0%	0%
Septics	0%	0%	1%	2%	1%	1%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-1%
MS4	2%	2%	3%	73%	9%	6%	15%
Non-MS4	83%	79%	76%	25%	15%	29%	52%
Total	100%	100%	100%	100%	100%	100%	100%

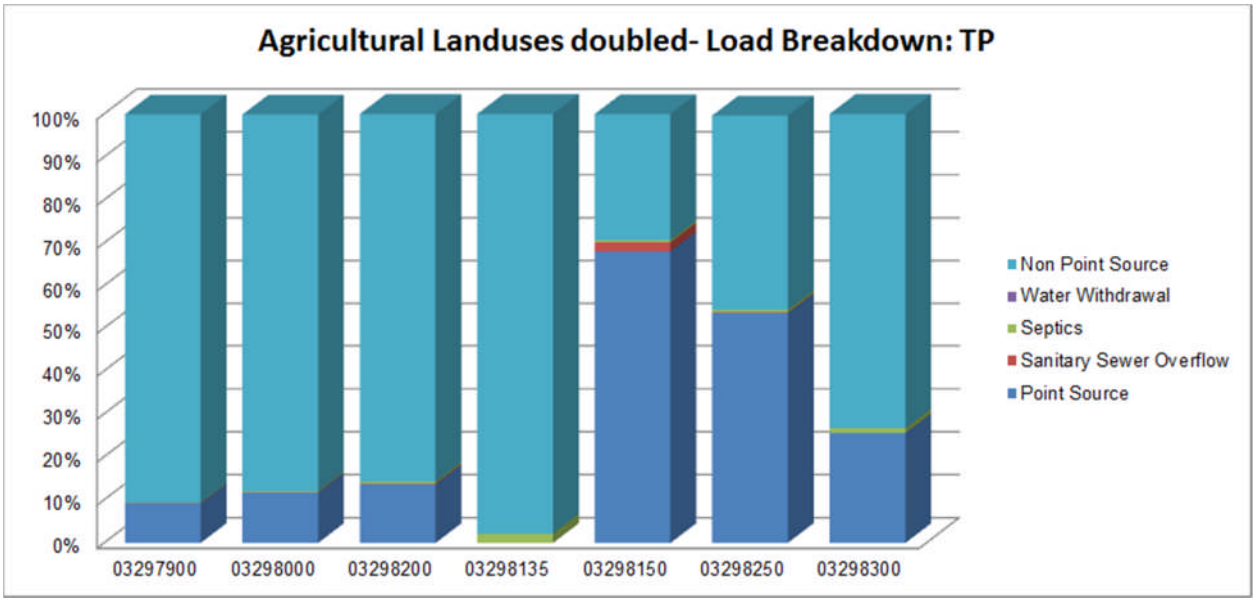

Figure C-9 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses doubled

Table C-9 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses doubled

Agricultural Landuses doubled

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	9%	12%	14%	0%	68%	54%	26%
Sanitary Sewer Overflow	0%	0%	0%	0%	2%	0%	0%
Septics	0%	0%	0%	2%	1%	1%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-1%
Non Point Source	91%	88%	86%	98%	29%	45%	74%
Total	100%	100%	100%	100%	100%	100%	100%

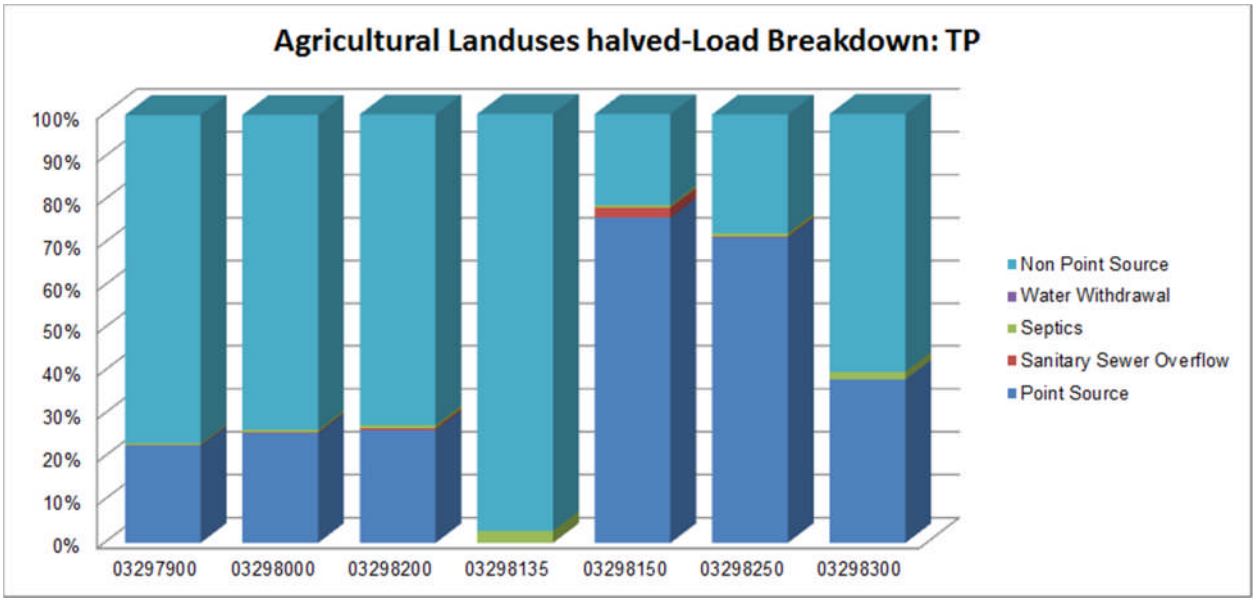

Figure C-10 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses halved

Table C-10 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural landuses halved

Agricultural Landuses halved

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	23%	26%	26%	0%	76%	71%	38%
Sanitary Sewer Overflow	0%	0%	0%	0%	2%	0%	0%
Septics	0%	1%	1%	3%	1%	1%	2%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-1%
Non Point Source	77%	73%	73%	97%	21%	28%	61%
Total	100%	100%	100%	100%	100%	100%	100%

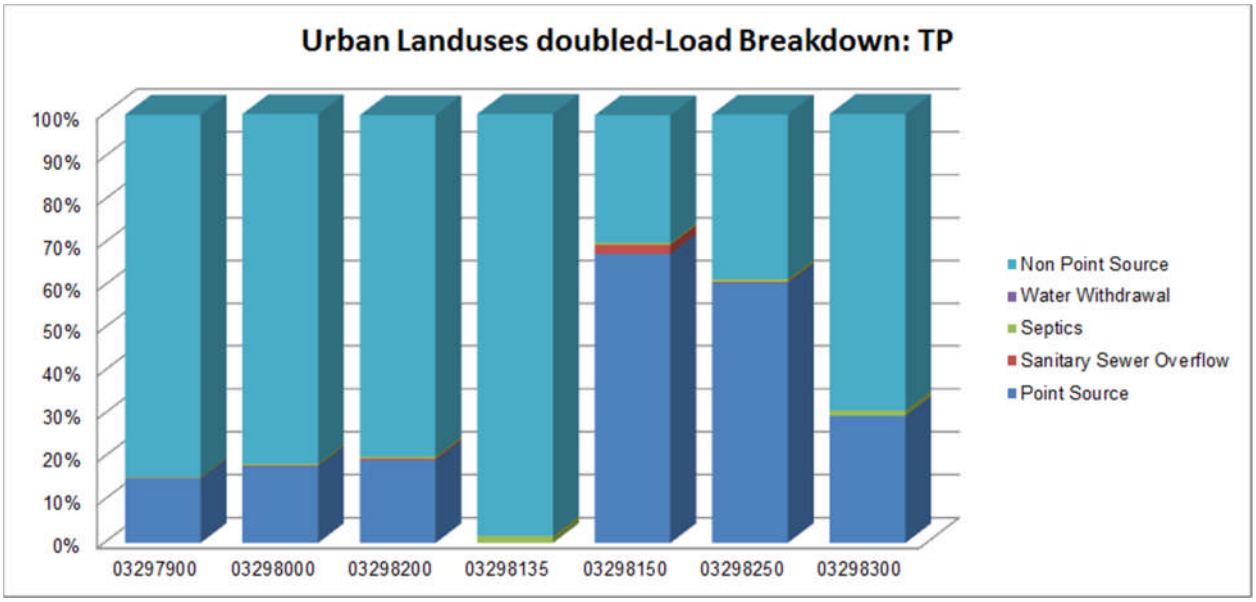

Figure C-11 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses doubled

Table C-11 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses doubled

Urban Landuses doubled

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	15%	18%	19%	0%	67%	61%	30%
Sanitary Sewer Overflow	0%	0%	0%	0%	2%	0%	0%
Septics	0%	0%	1%	2%	1%	1%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-1%
Non Point Source	85%	82%	80%	98%	30%	38%	70%
Total	100%	100%	100%	100%	100%	100%	100%

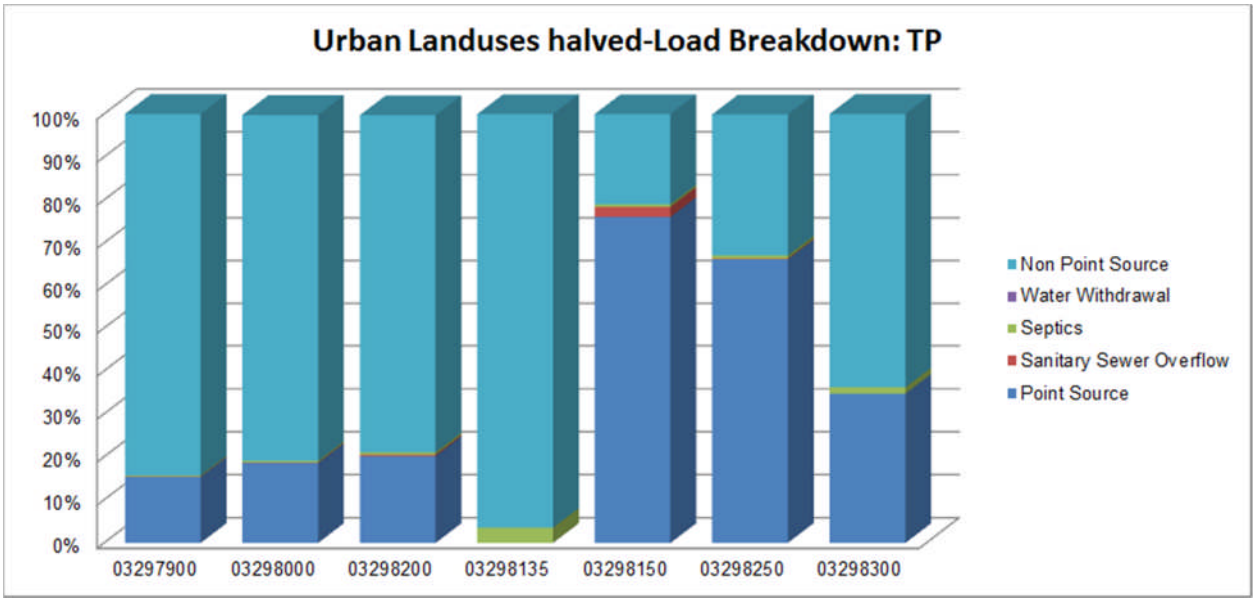

Figure C-12 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses halved

Table C-12 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Urban landuses halved

Urban Landuses havled

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	15%	19%	20%	0%	76%	66%	35%
Sanitary Sewer Overflow	0%	0%	0%	0%	2%	0%	0%
Septics	0%	0%	1%	4%	1%	1%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-1%
Non Point Source	85%	81%	79%	96%	21%	33%	65%
Total	100%	100%	100%	100%	100%	100%	100%

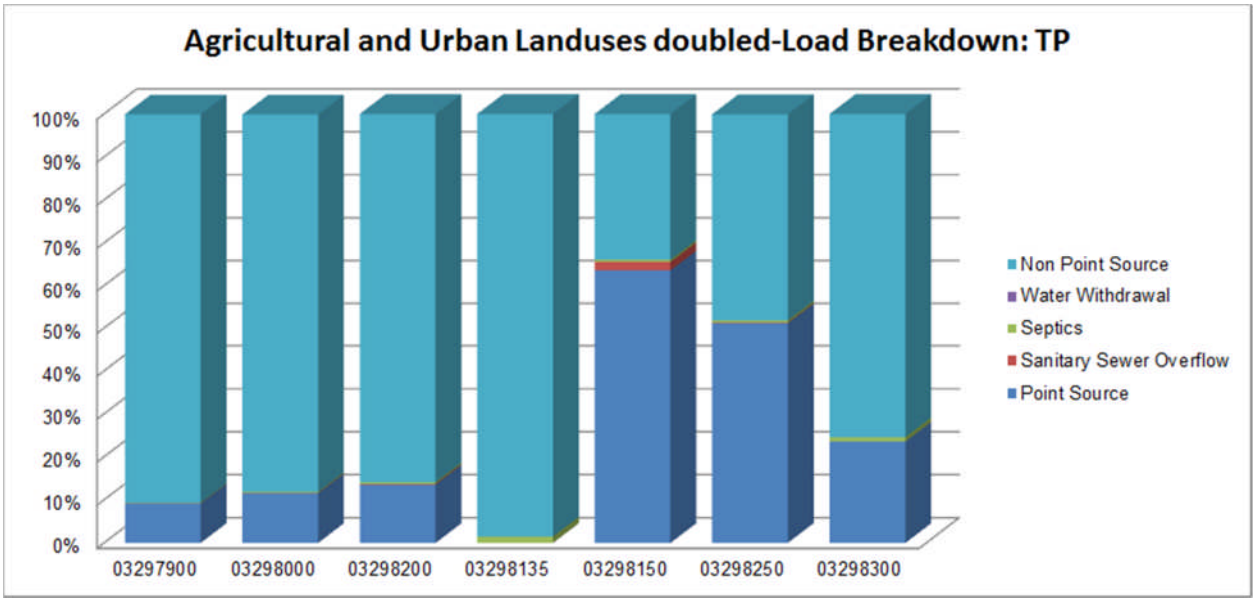

Figure C-13 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses doubled

Table C-13 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses doubled

Agricultural and Urban Landuses doubled

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	9%	12%	14%	0%	64%	51%	24%
Sanitary Sewer Overflow	0%	0%	0%	0%	2%	0%	0%
Septics	0%	0%	0%	1%	0%	1%	1%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-1%
Non Point Source	91%	88%	86%	99%	34%	48%	76%
Total	100%	100%	100%	100%	100%	100%	100%

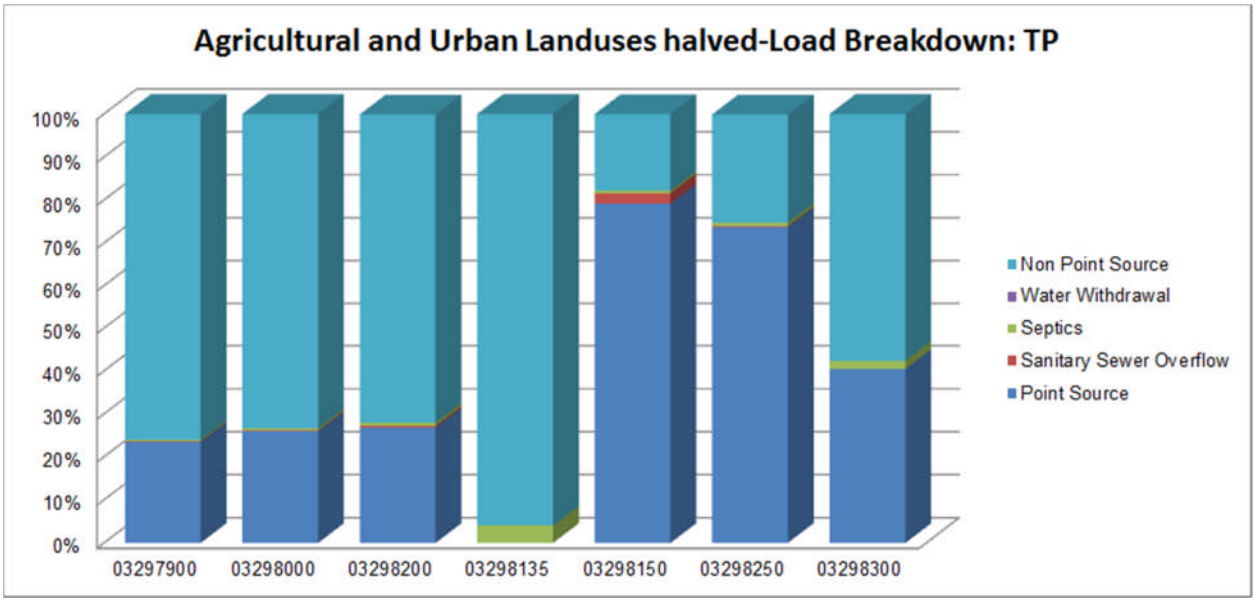

Figure C-14 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses halved

Table C-14 Sensitivity Analysis of in-stream TP loads at the 7 USGS Flow Stations with the Build-up rates for Agricultural and Urban landuses halved

Agricultural and Urban Landuses halved

Source \ Station	03297900	03298000	03298200	03298135	03298150	03298250	03298300
Point Source	24%	26%	27%	0%	79%	74%	40%
Sanitary Sewer Overflow	0%	0%	0%	0%	2%	0%	0%
Septics	0%	1%	1%	4%	1%	1%	2%
Water Withdrawal	0%	0%	0%	0%	0%	0%	-1%
Non Point Source	76%	73%	72%	96%	18%	25%	59%
Total	100%	100%	100%	100%	100%	100%	100%