

**Date:** July 28, 2014      **File:** 20132470.01.E.03.00

**To:** City of Nanaimo

**From:** Zian Sally

**Project:** Chase River Dams

**Subject:** Dam Breach Modelling

## MEMO

### 1 INTRODUCTION

This design memo provides an overview of the approach used to simulate several dam breach scenarios for the Middle and Lower Chase River Dams in the Chase River for the City of Nanaimo.

The reader can refer to earlier reports produced for the City of Nanaimo for background information: "Chase River Dam Breach Flood Inundation Study", produced by Associated Engineering in July 2012; and "Overview Environmental Assessment, Proposed Upgrades to Upper Chase River Dam Spillway", produced by Golder Associates in May 2011.

Broadly, the project proceeded in three stages: first, the hydraulic model was built and run; second, results were processed and extracted into GIS format; and third, the results were reviewed and the results were further processed and/or modified to reduce outliers and model errors.

Input parameters for the modelling of breach hydrographs and for hydraulic models, as well as the various scenarios that were modelled, were developed with Golder Associates.

### 2 SOFTWARE PACKAGES

For the first and second stages, AE used coupled one-dimensional and two-dimensional hydraulic models to simulate the project reach and floodplain, respectively. Dam breach hydrographs were developed in PCSWMM 2012. The models were built in MIKE Zero, using components from MIKE 11 (one-dimensional model simulating the river channel reach) and MIKE 21 (two-dimensional model simulating the floodplain), and were coupled using MIKE FLOOD, which is a dynamically linked one-dimensional and two-dimensional flood modelling package.

MIKE 11 modelled the river response to various input hydrographs depending on the scenario, and the coupled model with the MIKE 21 modelled floodplain modelled the flooding spatial extents, depths, and velocities. MIKE Zero tools were used to extract maximum depths and maximum velocities into ESRI Grid Files.

Post-processing of the simulation results made use of the Manifold System 8.0 GIS package.

### 3 SCENARIOS MODELLED

Several scenarios were modelled in order to simulate inundation from different combinations of rainfall of different return periods, with different types of dam breaches. The scenarios are listed below with brief descriptions.

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### **3.1 SC1**

Scenario ID	Event Type	Return Period	Breach Description
SC1	Seismic	-	Middle Dam – 10 min

Scenario SC1 simulates a seismic event, with a very fast breach of the middle dam. The scenario describes what would happen on a sunny day (no rainfall) when the middle dam breaches very rapidly, thereby creating a hydrograph with high peak flows during dry weather. Thus, this portrays the flooding that would be expected under any circumstances of sudden dam failure. Flooding depth, extents, and damages for SC1 are illustrated in Figure 1.

### **3.2 SC3**

Scenario ID	Event Type	Return Period	Breach Description
SC3	PMF	-	Middle Dam – 10 min

Scenario SC3 simulates the Probable Maximum Flood (PMF) event, combined with a fast breach of only the Middle Dam. Flooding depth, extents, and damages for SC3 are illustrated in Figure 2.

### **3.3 SC4**

Scenario ID	Event Type	Return Period	Breach Description
SC4	PMF	-	Middle Dam – 150 min

Scenario SC4 simulates the Probable Maximum Flood (PMF) event, combined with a slow breach of only the Middle Dam. This scenario aids in determining the effect on the Middle Dam breach duration on expected flooding. Flooding depth, extents, and damages for SC4 are illustrated in Figure 3.

### **3.4 SC5**

Scenario ID	Event Type	Return Period	Breach Description
SC5	1000-year Flood	1,000 year	Middle Dam – 10 min

Scenario SC5 simulates the 1000-year flood event, combined with a fast breach of only the Middle Dam. Flooding depth, extents, and damages for SC5 are illustrated in Figure 4.

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### **3.5 SC7**

Scenario ID	Event Type	Return Period	Breach Description
SC7	1000-year Flood	1,000 year	No Breach

Scenario SC7 simulates the 1000-year flood event, with no breach. This scenario models the inundation that would be expected under 1000-year peak flows that are not exacerbated by a breach in the Middle and Lower Dams. Flooding depth, extents, and damages for SC7 are illustrated in Figure 5.

### **3.6 SC8**

Scenario ID	Event Type	Return Period	Breach Description
SC8	PMF	-	No Breach

Scenario SC8 simulates the Probable Maximum Flood (PMF) event, combined with no breach in either the Middle or Lower Dams. Peak flows from the PMF rainfall event are not exacerbated by dam breaches. Flooding depth, extents, and damages for SC8 are illustrated in Figure 6.

### **3.7 SC11**

Scenario ID	Event Type	Return Period	Breach Description
SC11	1000-year Flood	1,000 year	Middle Dam – 60 min

Scenario SC11 simulates the 1000-year flood event, combined with a moderate breach of only the Middle Dam. This scenario aids in checking the effect of the Middle Dam breach duration on expected flooding. Flooding depth, extents, and damages for SC11 are illustrated in Figure 7.

### **3.8 SC12**

Scenario ID	Event Type	Return Period	Breach Description
SC12	1000-year Flood	1,000 year	Middle Dam – 60 min; Lower Dam – 120 min

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Scenario SC12 simulates the 1000-year flood event, combined with a moderate breach of the Middle Dam and a slow breach of the Lower Dam. Flooding depth, extents, and damages for SC12 are illustrated in Figure 8.

### **3.9 SC13**

Scenario ID	Event Type	Return Period	Breach Description
SC13	PMF	-	Middle Dam – 60 min; Lower Dam – 120 min

Scenario SC13 simulates the Probable Maximum Flood (PMF) event, combined with a moderate breach of the Middle Dam and a slow breach of the Lower Dam. Flooding depth, extents, and damages for SC13 are illustrated in Figure 9.

### **3.10 SC14**

Scenario ID	Event Type	Return Period	Breach Description
SC14	PMF	-	Middle Dam – 10 min; Lower Dam – 10 min

Scenario SC14 simulates the Probable Maximum Flood (PMF) event, combined with fast breaches of both the Middle and Lower Dams. This scenario presents an upper bound on expected flooding, as it uses a hydrograph with a high peak flow due to the combined worst-case rainfall and fast dam breach duration. Flooding depth, extents, and damages for SC14 are illustrated in Figure 10.

## **4 DISCUSSION OF OUTPUTS AND METHOD**

This section outlines the method used to build the coupled flood model, process the results, and post-process the data into a GIS database.

### **4.1 Scenarios**

AE built ten models in total, for each of the ten scenarios representing different Chase River dam breach situations, combining different rainfall events with different breach durations of the Middle and Lower Dams. A summary of the different model runs and outputs, including peak flows, volumes, and damages, is presented in Table 1. As expected, all other factors being equal, as rainfall events increase and breach times become faster, greater damage is caused.

It should be noted that all the bridges and culverts were modelled assuming no debris. If debris were simulated it would give a different picture of flooding extents.

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## **4.2 Model Building**

### **4.2.1 External Data**

Topographic data within the project limits was collected using LIDAR technology and supplied by the City of Nanaimo. A model of the river network and cross-sections was created and used for the MIKE 11 model. The MIKE 21 model used a 10m x 10m grid surface representing the bathymetry of the floodplain in the project limits.

### **4.2.2 Development of Breach Hydrographs in PCSWMM**

PCSWMM 2012 was used to develop hydrographs for all the scenarios. A simple model was developed in PCSWMM that simulated a dam breach as a standard weir that linearly allowed more flow through it over time. Different breach times were provided and simulated using control rules that linearly increased the percentage of flow through the weir with time in order to model the increase in flow through the dam as the breach developed. For example, a 60 min breach time was programmed into the model by setting flow through the weir at zero percent at zero minutes (time at start of breach), and subsequently increased the flow by ten percent every six minutes. Thus, after 60 minutes, the weir would be allowing 100 percent of flow through, simulating a failed, fully breached dam. Breach durations were provided by Golder Associates based on information including historic rock fill dam failure times.

The Middle and Lower Dams were each modelled by four components in the PCSWMM model. Each dam respectively comprised of (1) a reservoir, from which flow is routed into (2) a notch weir with a height and width corresponding to the dimensions of the dam, simulating the flow over the top of the dam should the reservoir height exceed the weir height, (3) a second weir with a notch with a 1:1 side slope, which is controlled by control rules as described above, simulating the flow through the dam when it is breached, and (4) a spillway in the PCSWMM model. Hydrographs were then extracted from the model at respective nodes downstream of the Middle and Lower Dams, which were then used in the MIKE 11 and MIKE 21 hydraulic models for the flood modelling described below.

### **4.2.3 Input Hydrographs and Boundary Conditions**

The MIKE 11 model used input hydrographs (modelled externally in PCSWMM) as time series assigned to different boundary points of the river network model. There are five boundary points, one open boundary at the start of the reach with an inflow hydrograph, three point sources between the start of the reach and the outflow to the sea, with respective inflow hydrographs, and finally an open boundary at the end of the reach with a constant water level representing mean sea level.

Inflow hydrographs were customised for each modelled scenario and referenced to the appropriate MIKE 11 model; ten different sets of inflow hydrographs were used.

The MIKE 21 model used a velocity-based Eddy Viscosity calculation. One scenario was also modelled using a flux-based Eddy Viscosity, and results were not significantly different.

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#### **4.3 Processing and Extraction of Model Results**

The MIKE FLOOD couple provided outputs of inundation statistics (maximum depths, and maximum velocities) in each grid cell for each of the modelled scenarios. ESRI Grid Files of the depth and velocity surfaces were extracted from MIKE Zero and imported into GIS. The maximum velocity surfaces imported from MIKE Zero were resolved into directional components, so we manipulated the surface data in GIS, taking the square root of the sum of the squared directional surfaces to obtain a new surface showing the maximum velocity of the sum of the components.

#### **4.4 Post-Processing of Model Results**

We overlaid existing GIS data showing buildings, their footprints, and contents and property values with the surfaces showing the maximum depths and maximum velocities. Using the “Transfer Heights” tool with the maximum depth surface, an average maximum flood depth was transferred from the surface data to each of the buildings in the database. The same process was repeated with the maximum velocity surface to transfer an average maximum velocity to each building. Thus, each building was assigned a maximum flood depth and maximum velocity.

Using queries in the GIS software, we assigned percentage damage values for both the building and its contents, according to flood depth. Another query was used to assess whether the building would collapse, according to FEMA building damage curves, using a building’s modelled flood depth and velocity to determine whether it will collapse. Finally, the total value of building and contents damage were calculated according to the property values and percent damages that were assigned earlier.

##### **4.4.1 Aggregation by Spatial Zones**

Building and contents damages were grouped together in pre-determined spatial zones containing buildings in geographical proximity to each other and with similar characteristics. The damages to each building within a spatial zone were aggregated to yield a total building and contents damage for each spatial zone. A summary of depths and velocities as well as building and contents damages by spatial zone is presented in Table 2. The spatial zones are shown in Figure 11.

##### **4.4.2 Unrealistic Depths at Boundaries**

The coupling of a one-dimensional with a two-dimensional model, although saving computation time and resources compared to running a single two-dimensional model for the entire reach and floodplain, has the potential to introduce erroneous depth values at the boundaries between the two models. Because of the way the coupled model works, MIKE FLOOD computes unrealistically high flood depths for some single grid cells located at the boundary between the MIKE 11 and MIKE 21 models, which tends to overestimate average flood depths, and consequently building and contents damages, for each of the buildings and spatial zones in the vicinity of those boundaries if left uncorrected. Thus, to reduce errors, the model depths had to be manually reviewed and interpreted to assign corrected, realistic flood depths to those affected buildings and spatial zones, before the building damage and contents damage values could be assessed.



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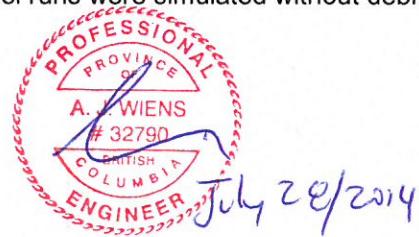
## 5 CLOSURE

This memo is intended to provide a brief description of the procedure and summary of the hydraulic outputs provided by Associated Engineering to Golder Associates in the modelling of the Colliery Dams on the Chase River in the City of Nanaimo. The memo documents the various analyses carried out to date, describing the various breach hydrographs and inundation model runs that were developed by Associated Engineering. The outputs from the various inundation model runs are presented both graphically, showing flooding depths, extents, and damage, and in tabular form.

It should be noted that the bridges and culverts in the inundation model runs were simulated without debris. If debris were simulated, a different picture of flooding extents would be obtained.

A handwritten signature in blue ink, appearing to read "Zian Sally".

Zian Sally, M.Eng., EIT  
Water Resources Engineer



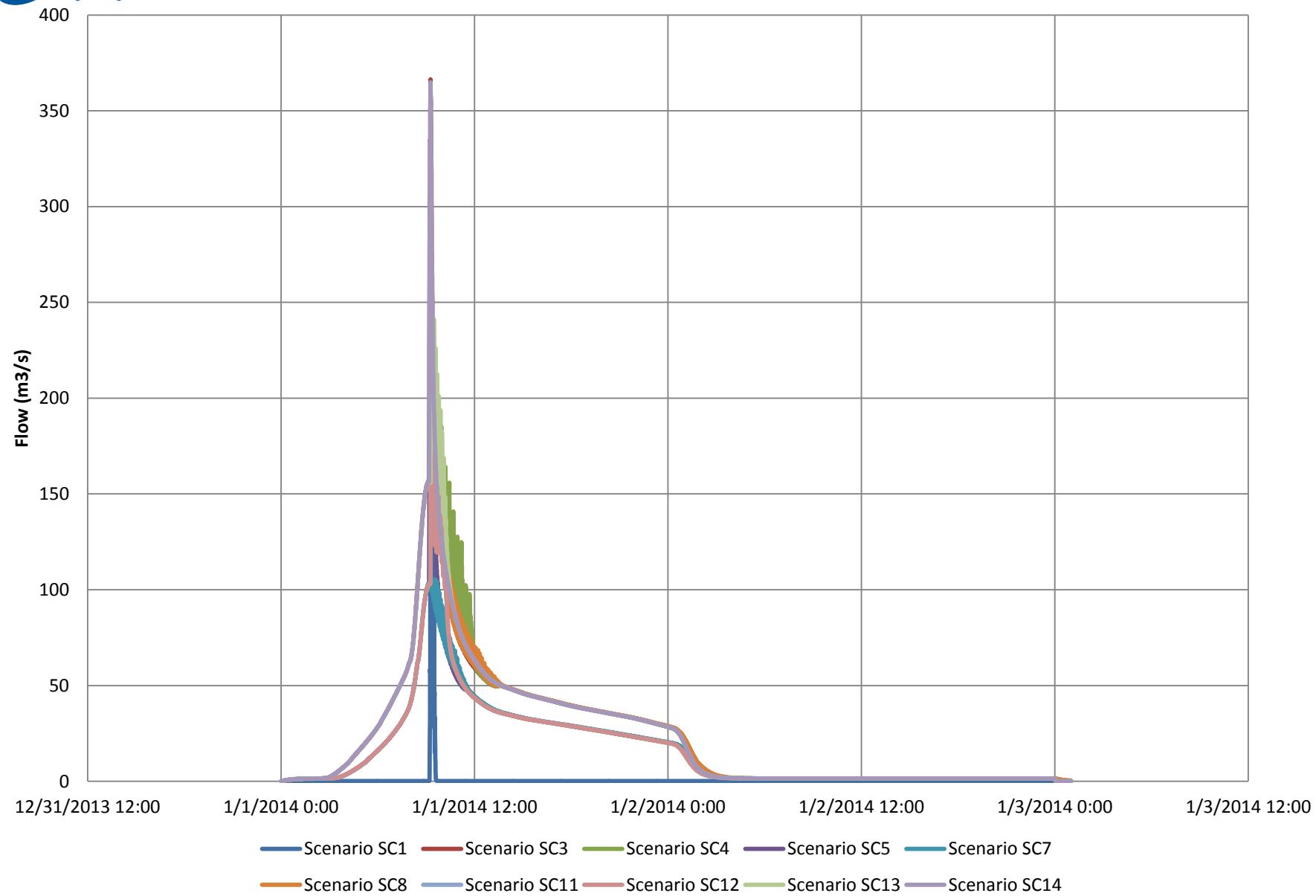
Andrew Wiens, P.Eng.  
Senior Water Resources Engineer

ZS/AW/lp



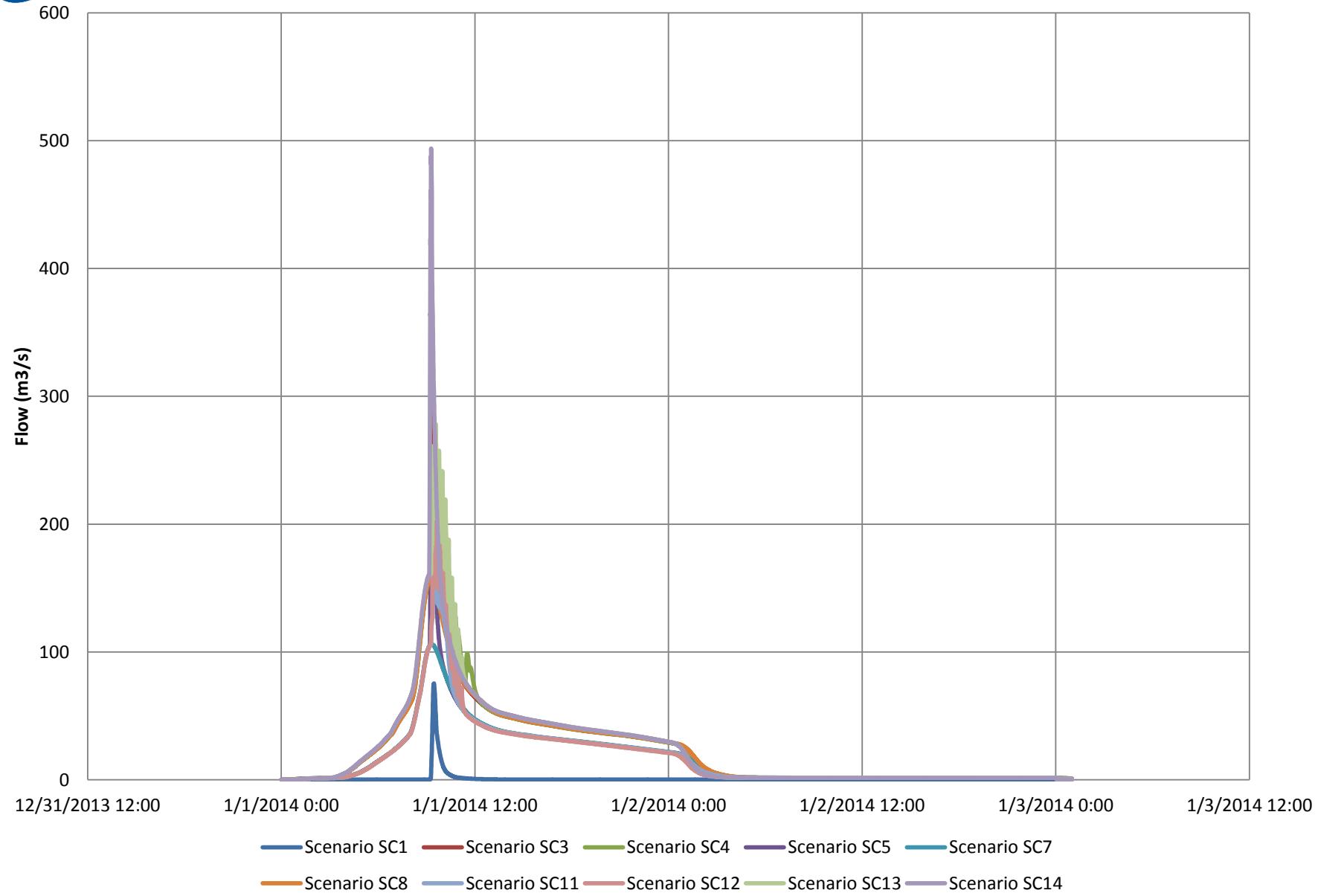
## Middle Dam Hydrographs

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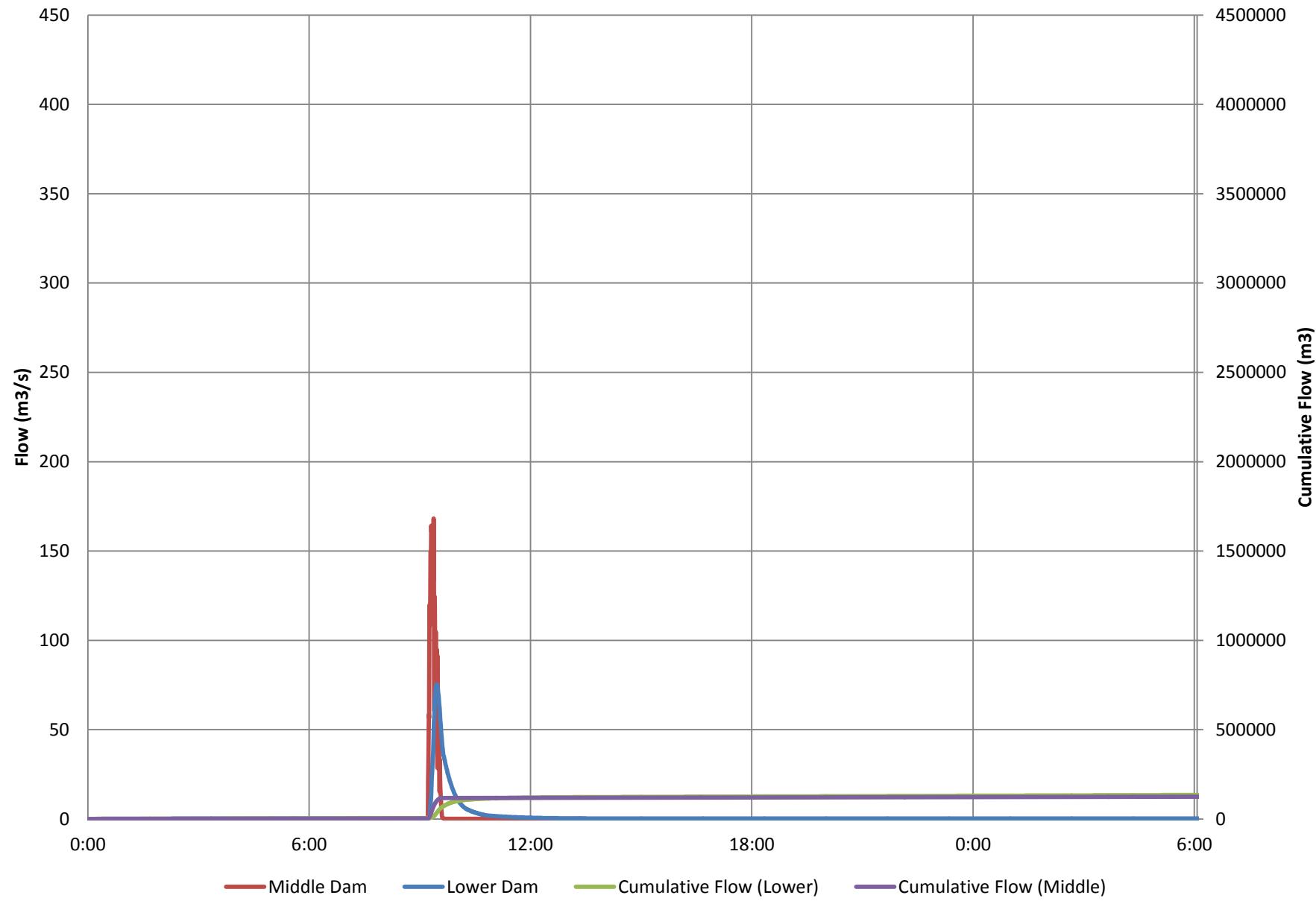
## Lower Dam Hydrographs

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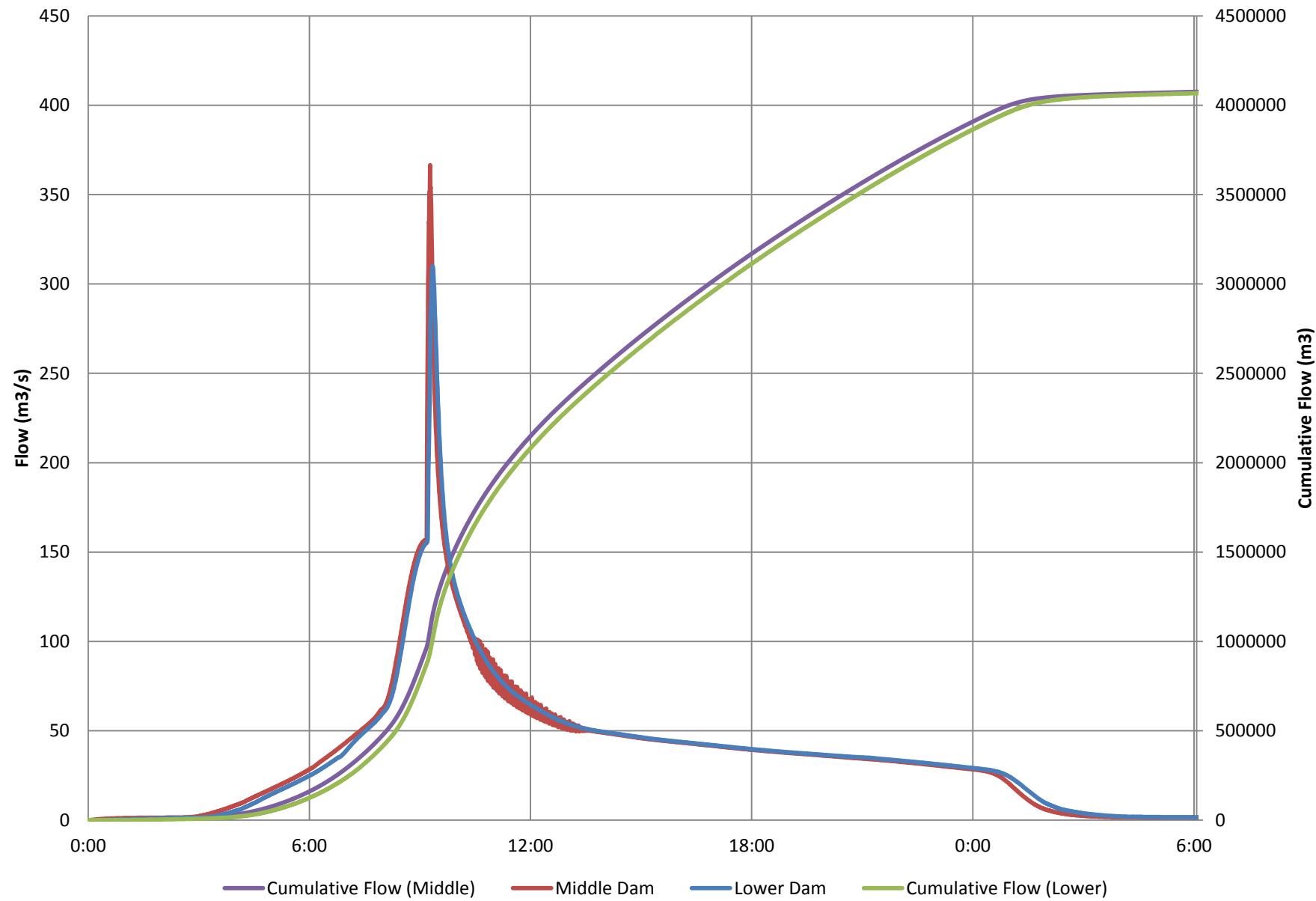
## Middle and Lower Dam Hydrographs - Scenario SC1

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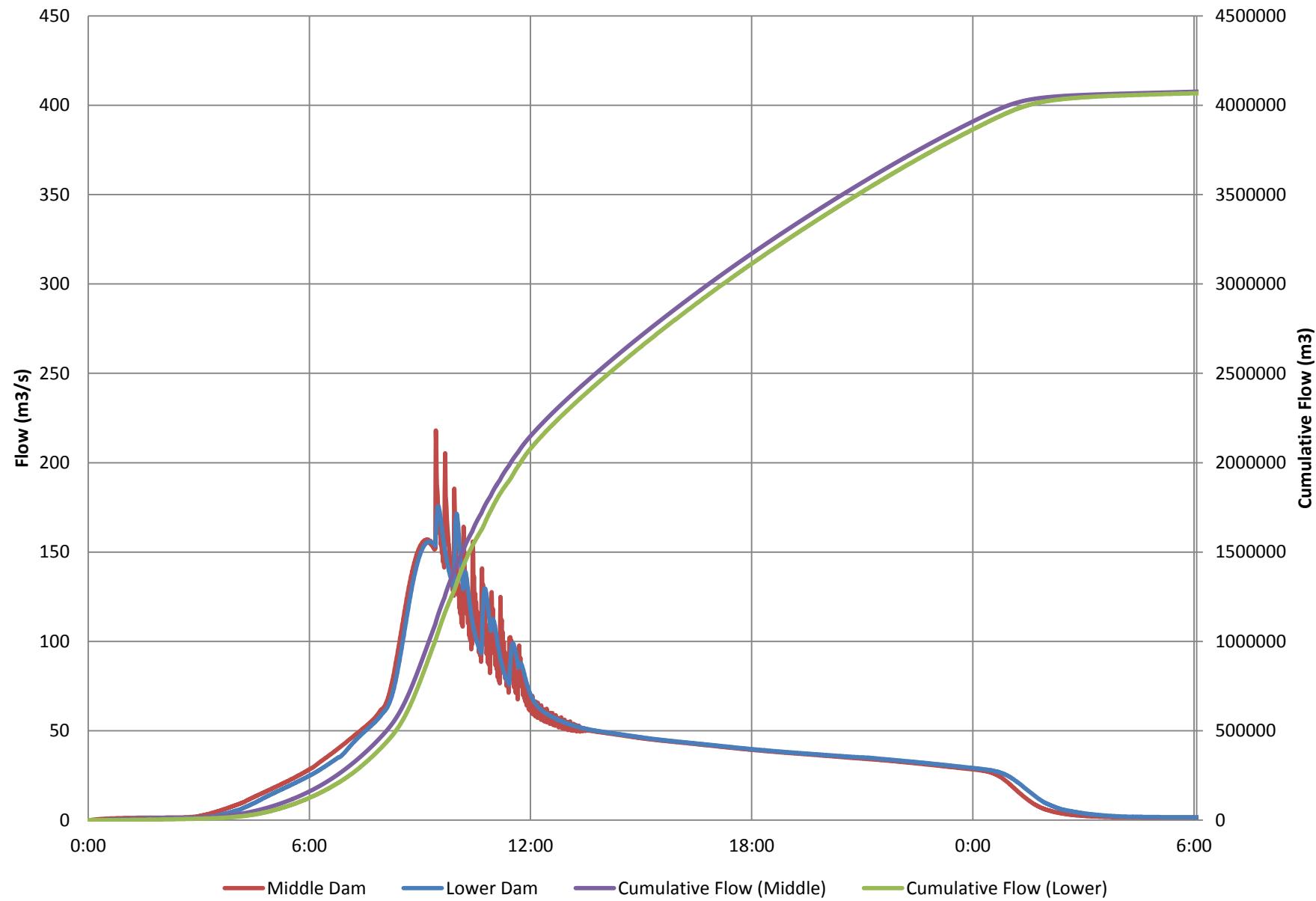
## Middle and Lower Dam Hydrographs - Scenario SC3

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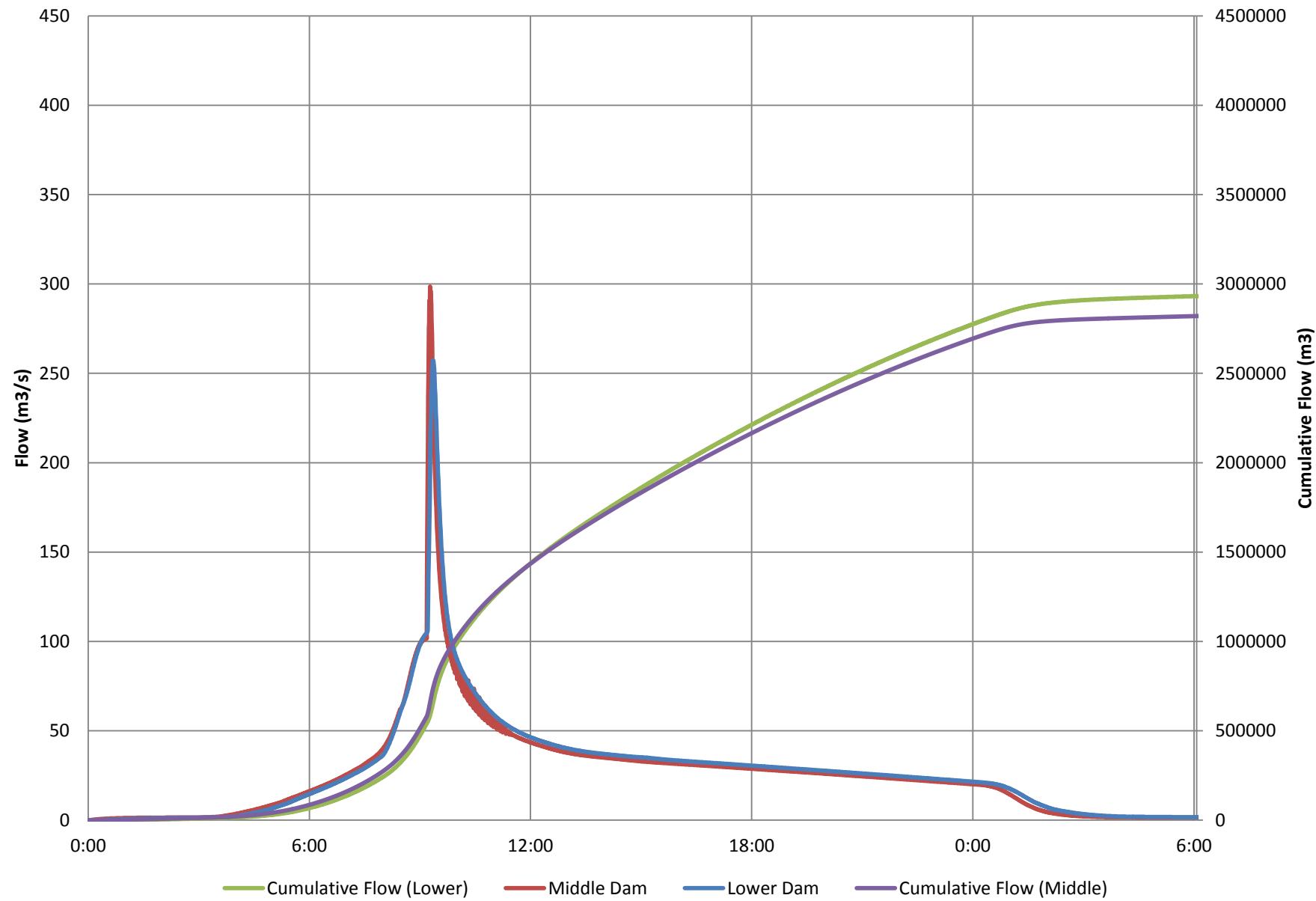
## Middle and Lower Dam Hydrographs - Scenario SC4

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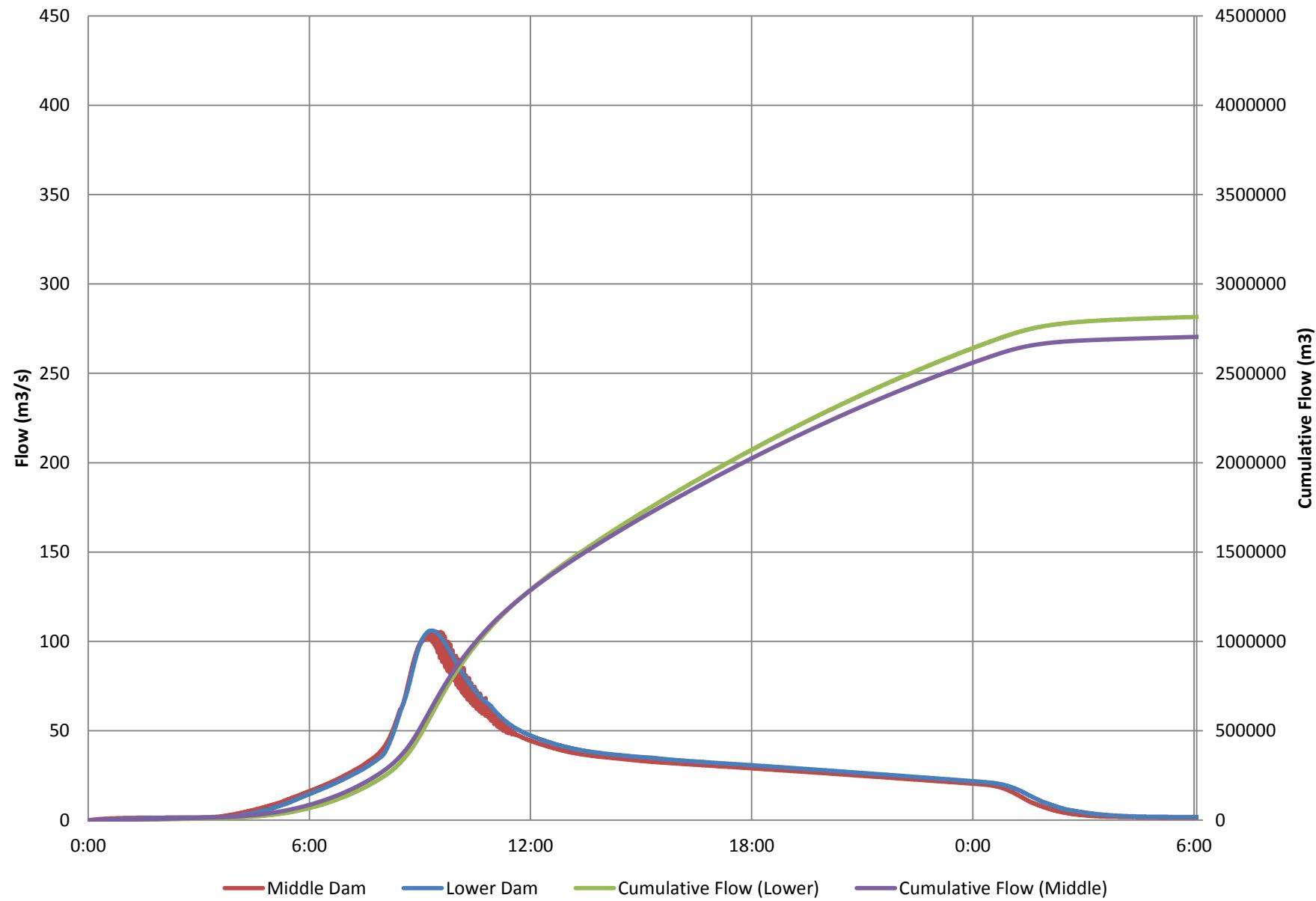
## Middle and Lower Dam Hydrographs - Scenario SC5

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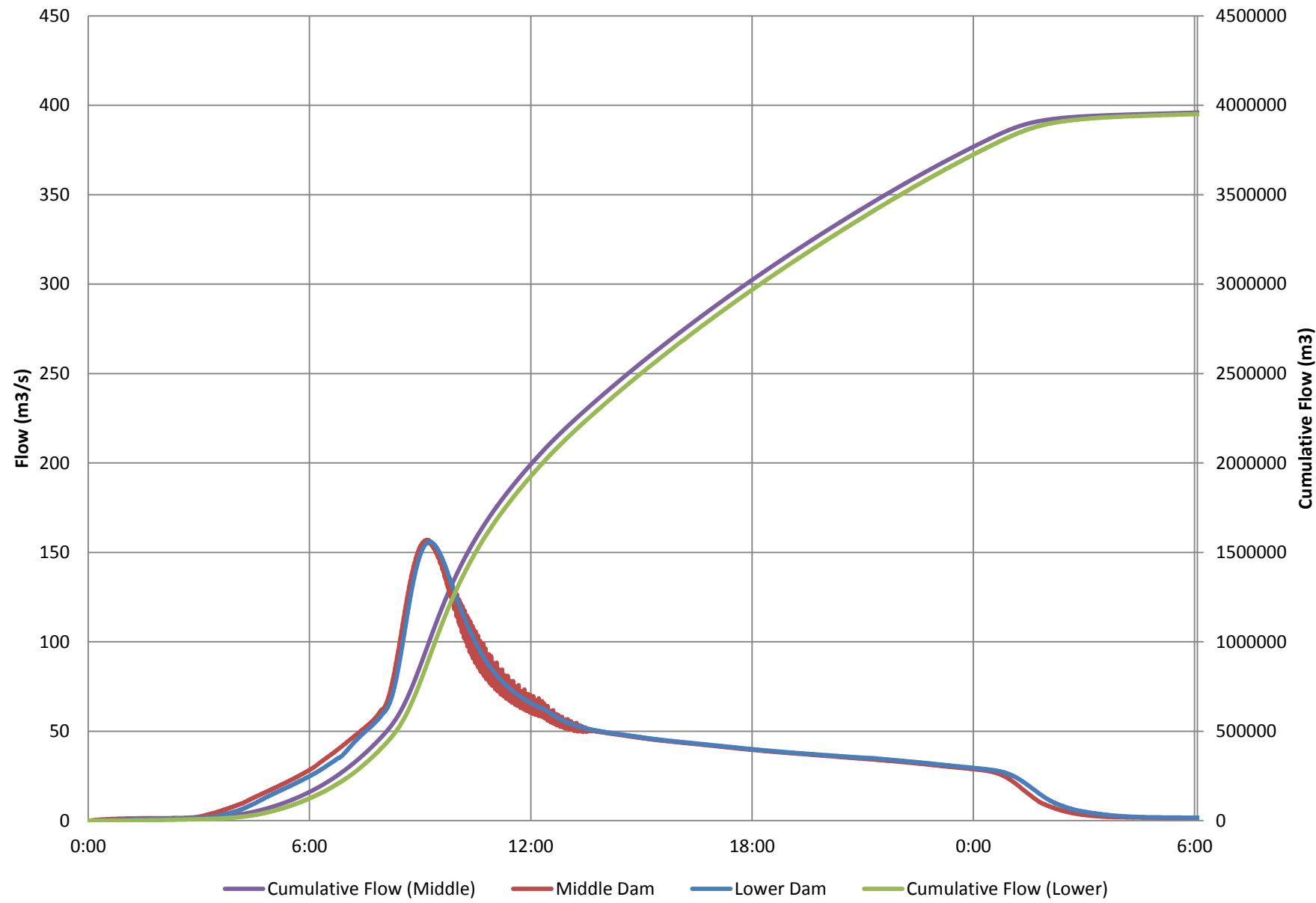
## Middle and Lower Dam Hydrographs - Scenario SC7

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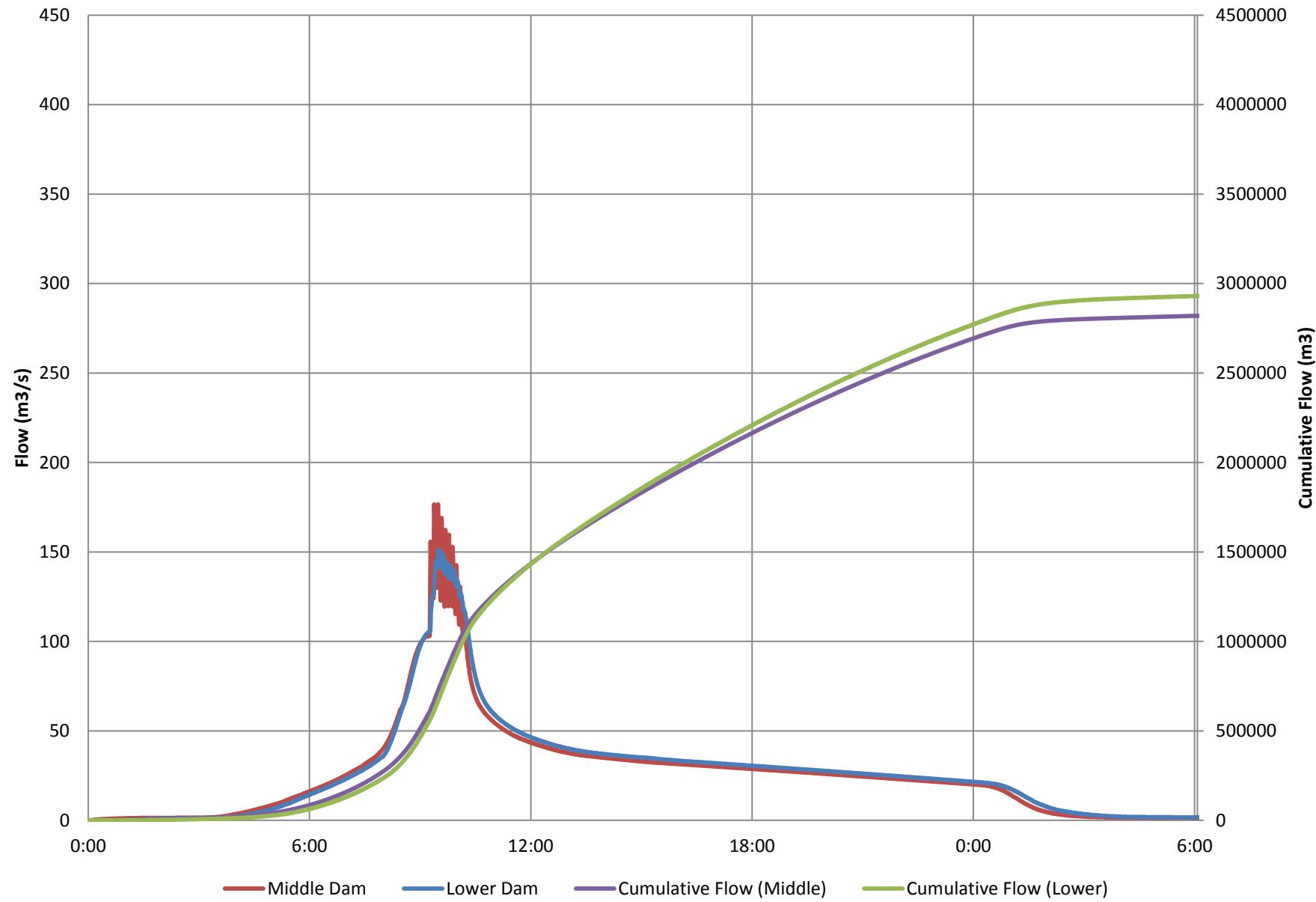
## Middle and Lower Dam Hydrographs - Scenario SC8

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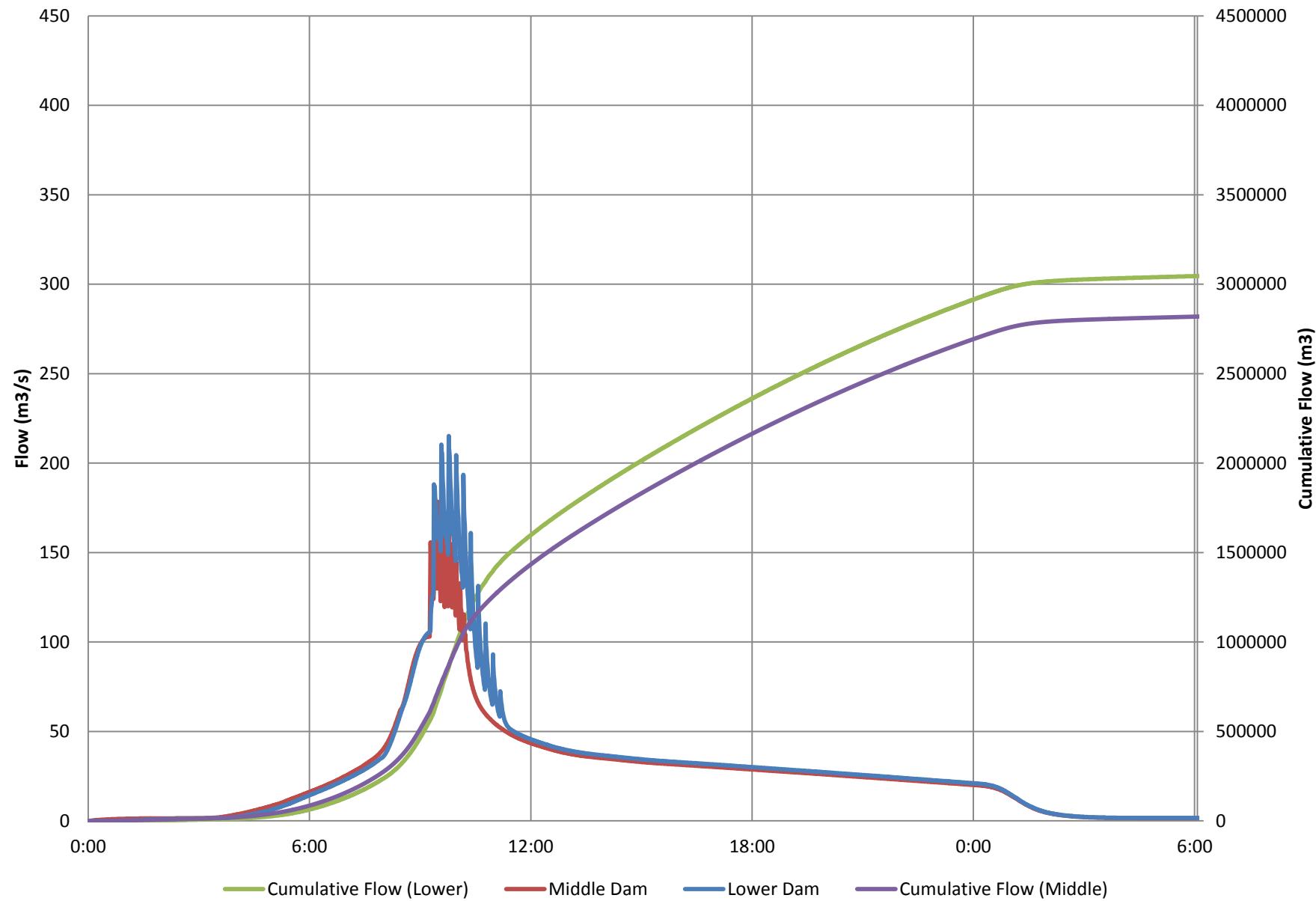
## Middle and Lower Dam Hydrographs - Scenario SC11

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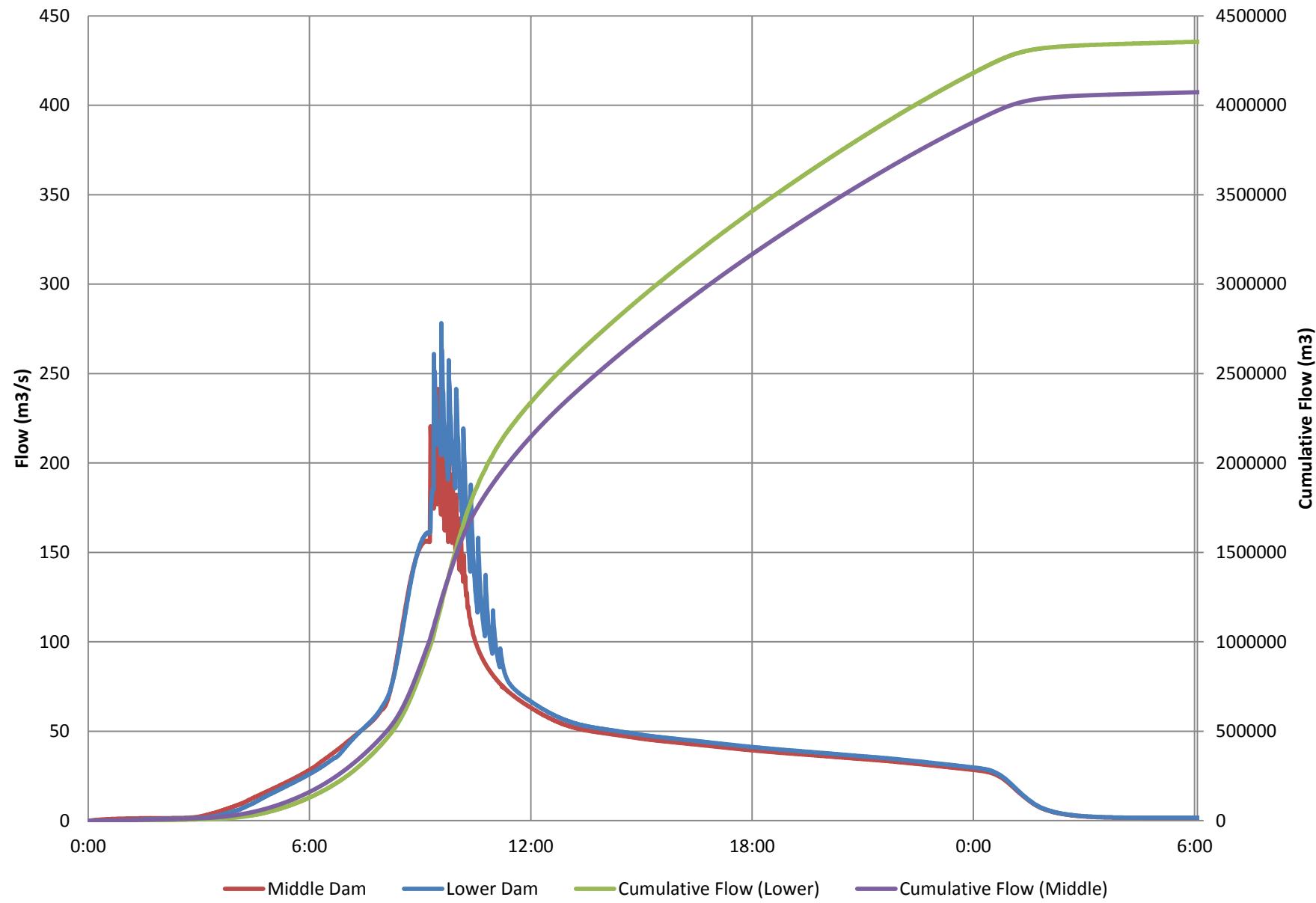
## Middle and Lower Dam Hydrographs - Scenario SC12

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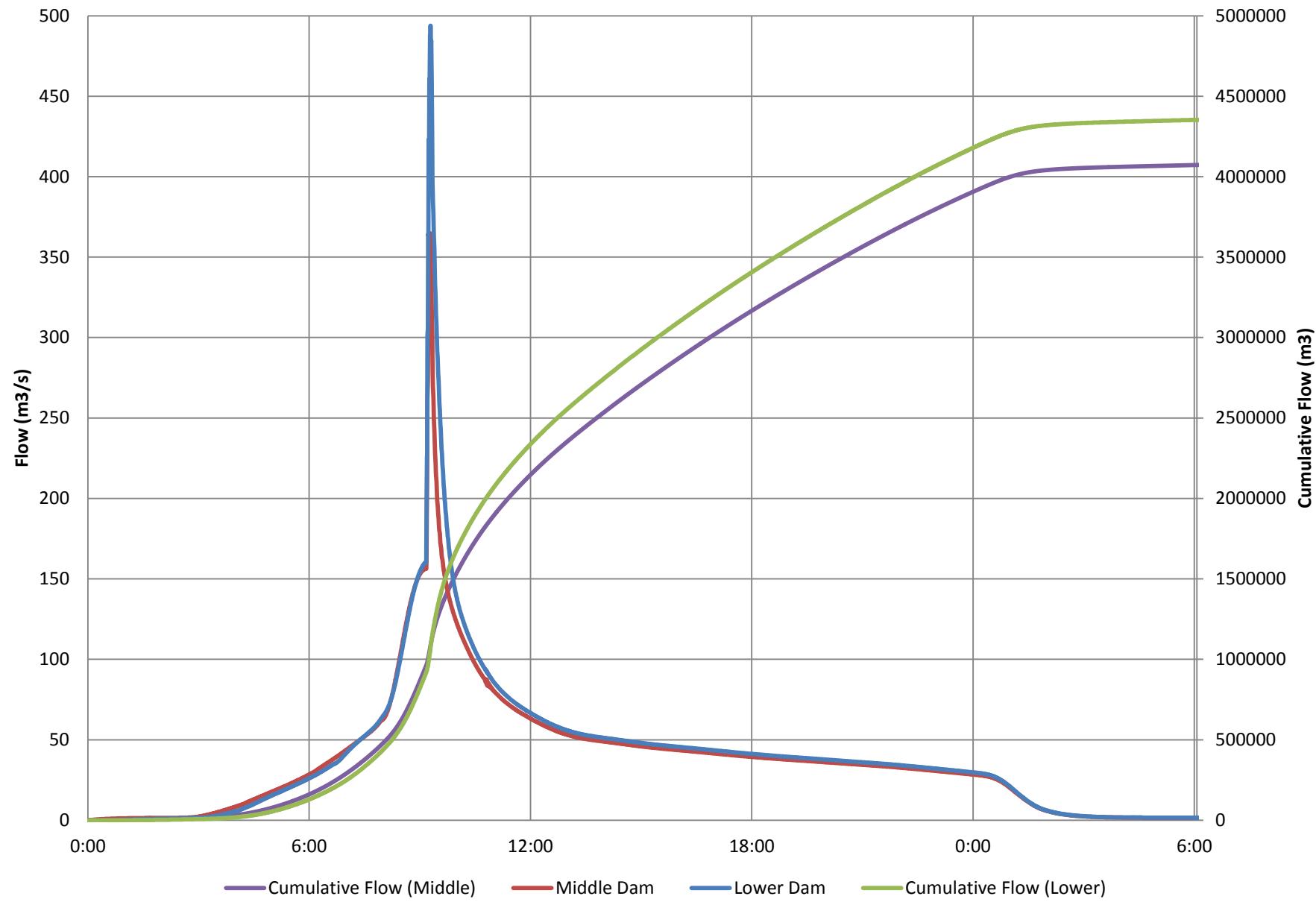
## Middle and Lower Dam Hydrographs - Scenario SC13

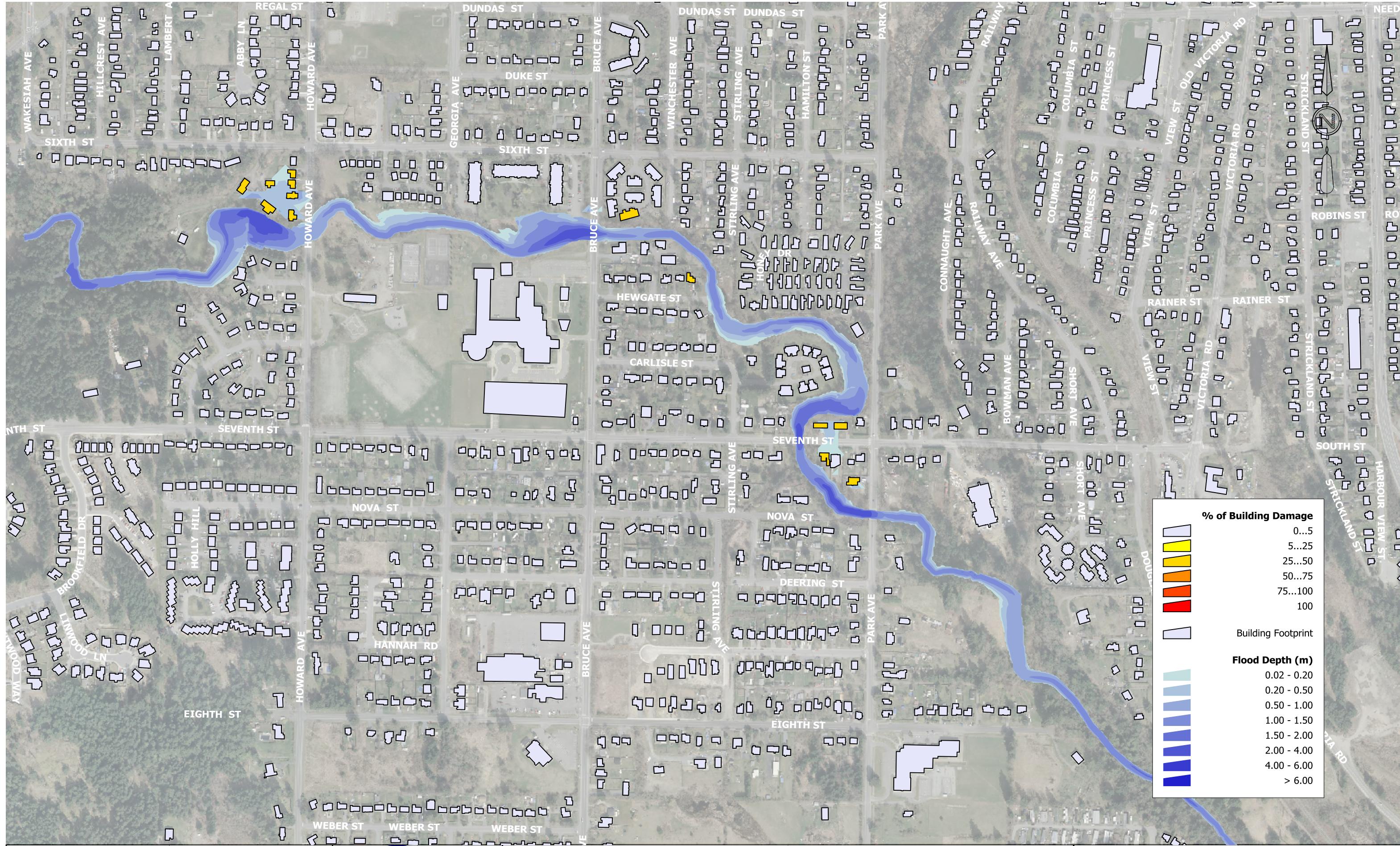
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## Middle and Lower Dam Hydrographs - Scenario SC14

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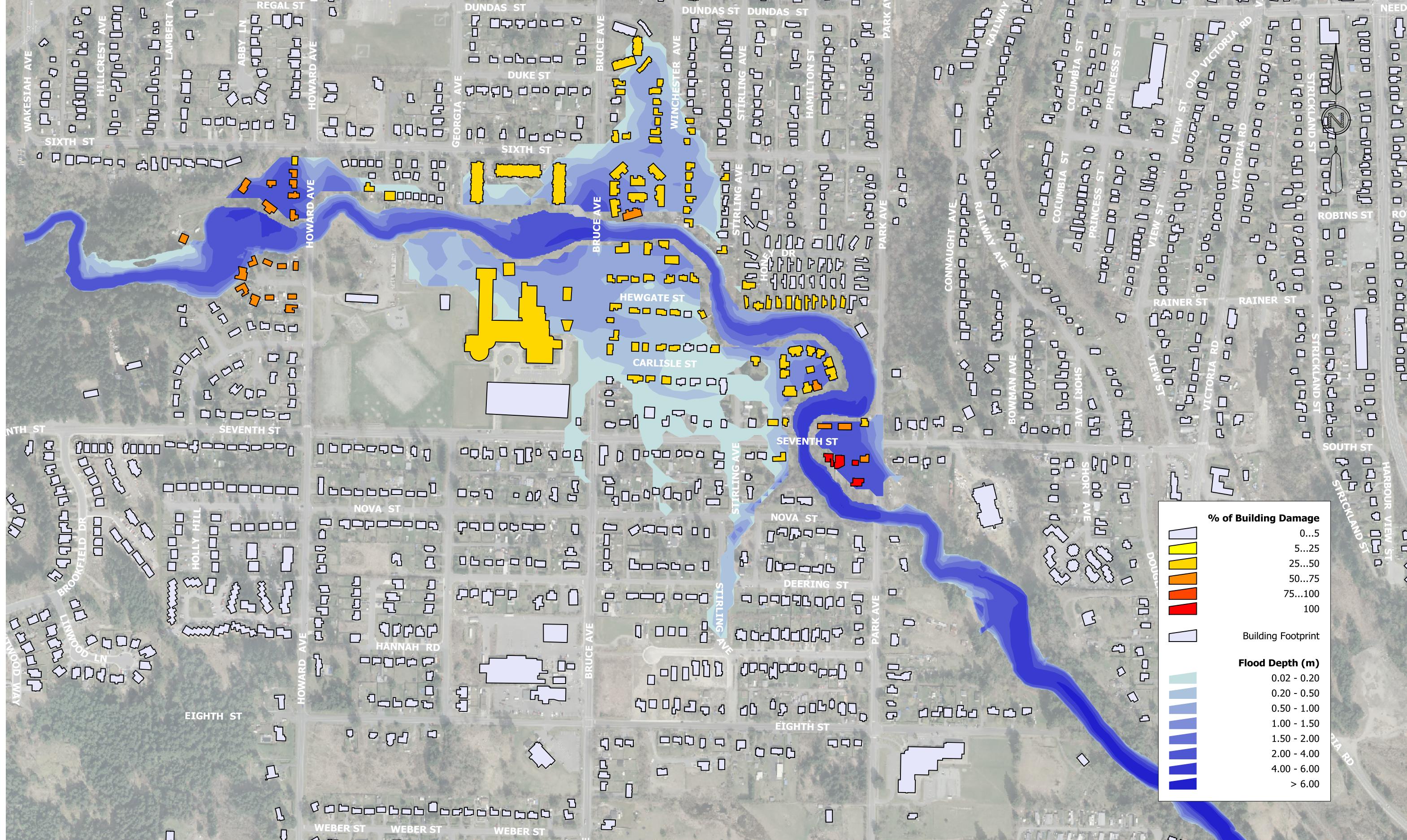
### Chase River Dam Breach Flood Inundation Study

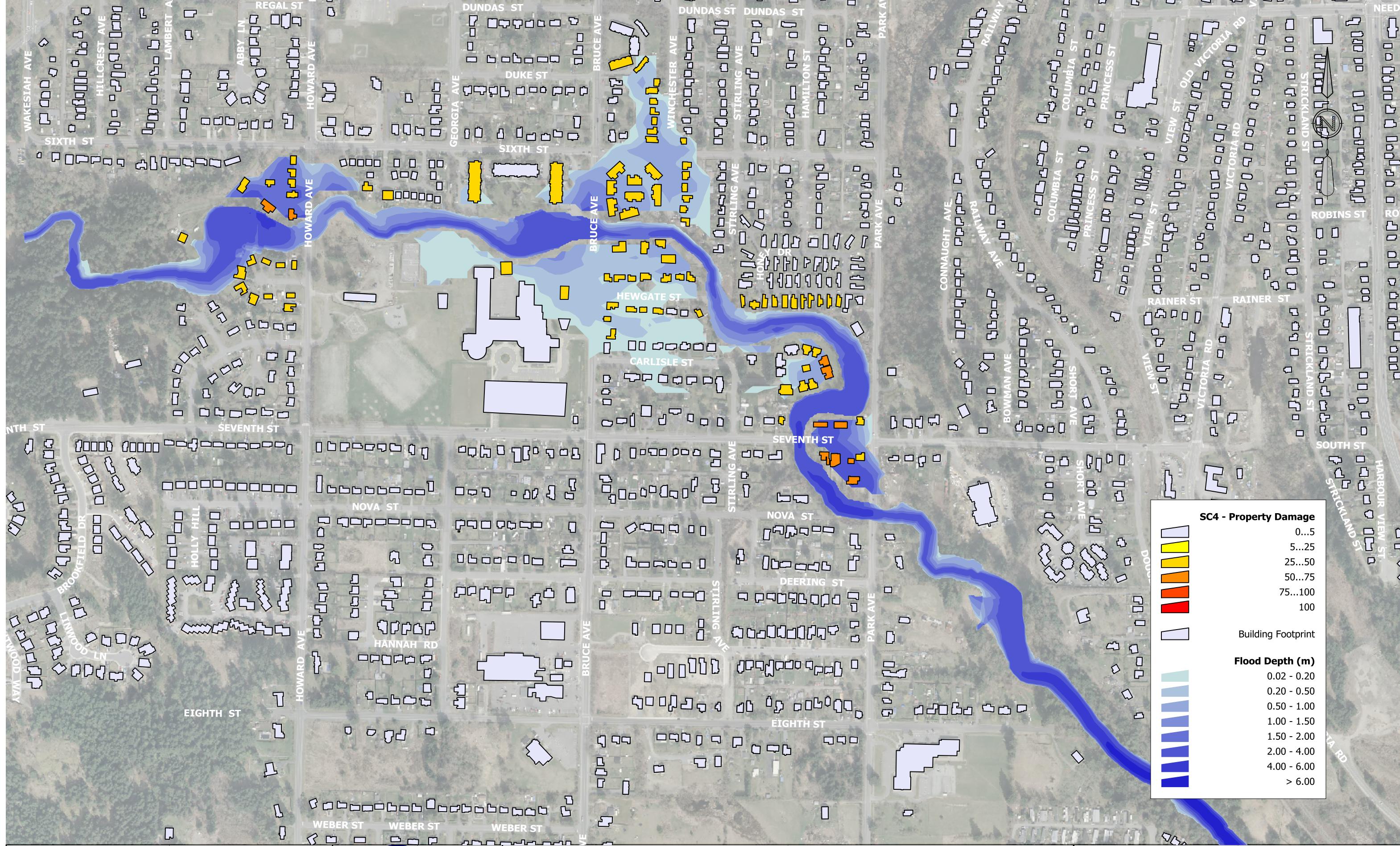
SC1 - Maximum Flooding Depth, Extents and Damages  
Seismic Event, Middle Dam Breach (10 min), No Lower Dam Breach

**Figure 1**

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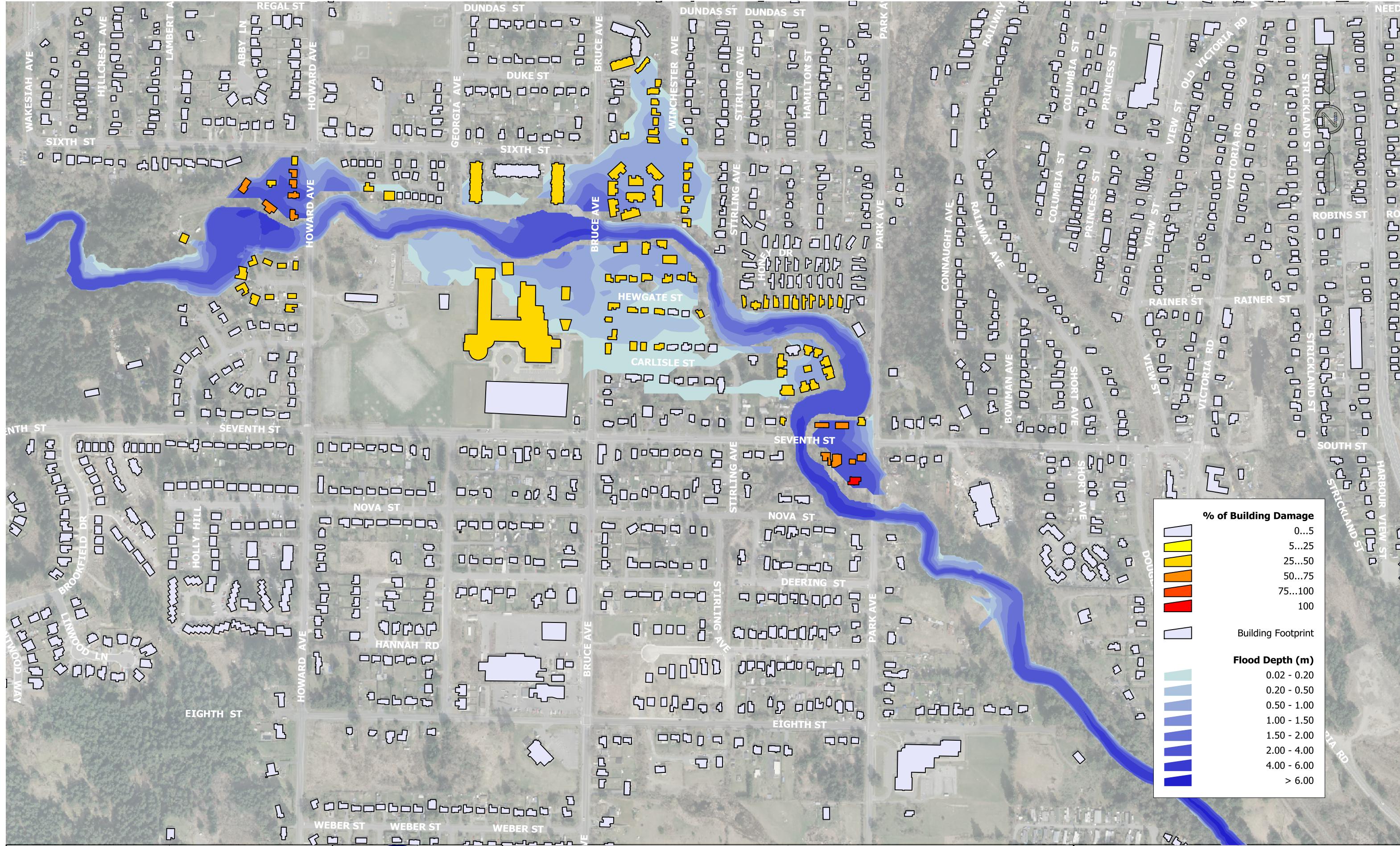
### Chase River Dam Breach Flood Inundation Study

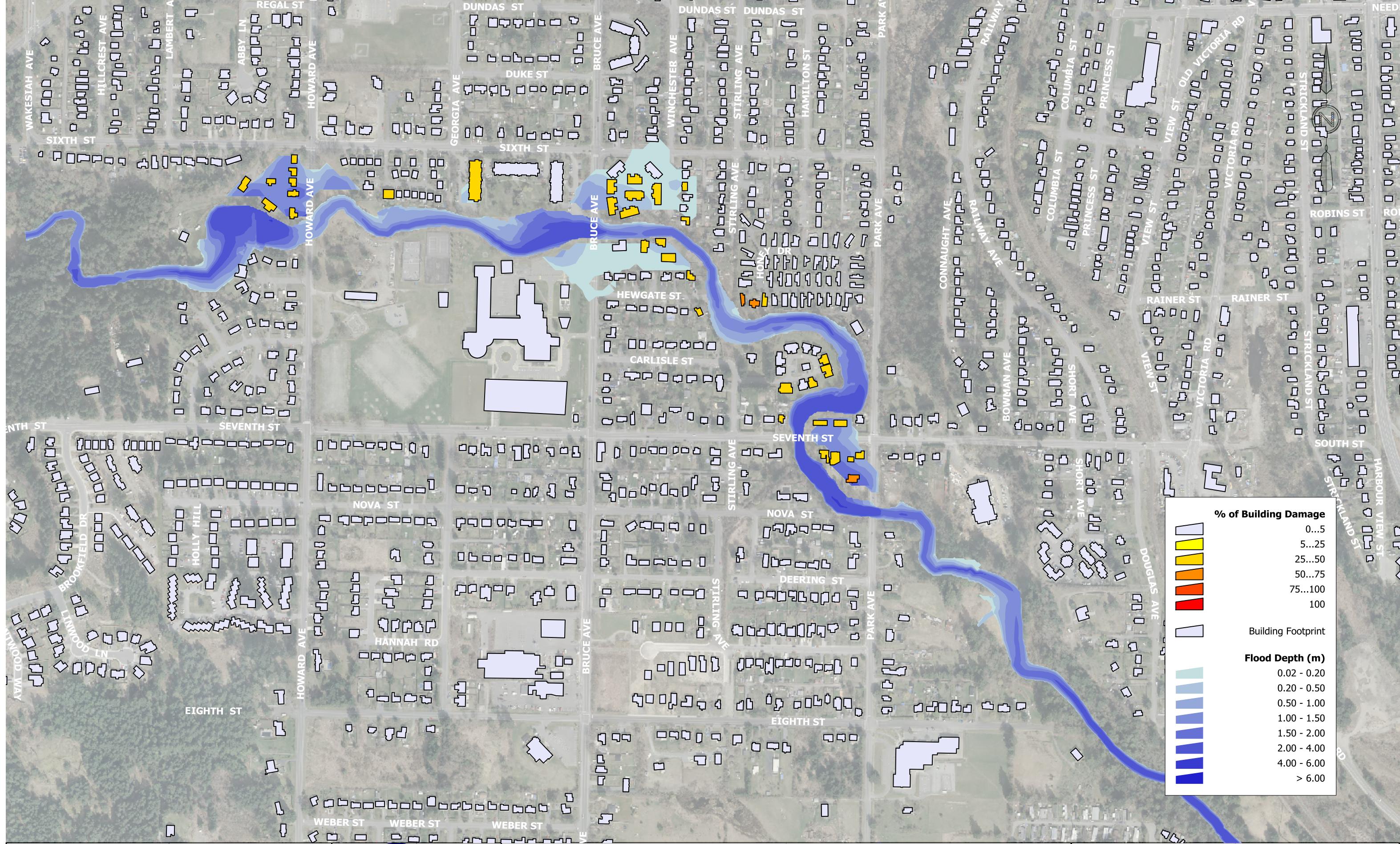
SC4 - Maximum Flooding Depth, Extents and Damages  
Probable Maximum Flood, Middle Dam Breach (150 min), No Lower Dam Breach

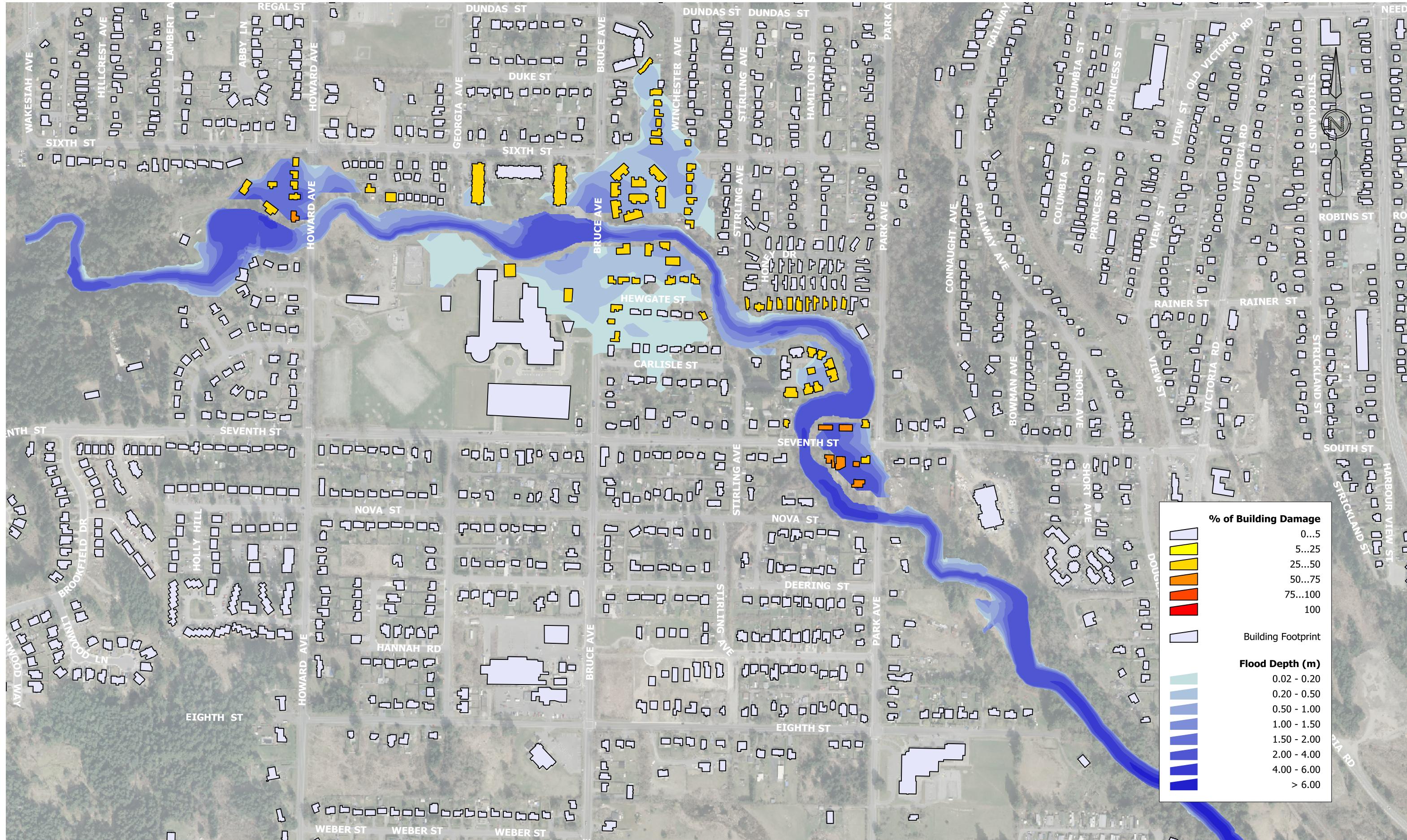
**Figure 3**

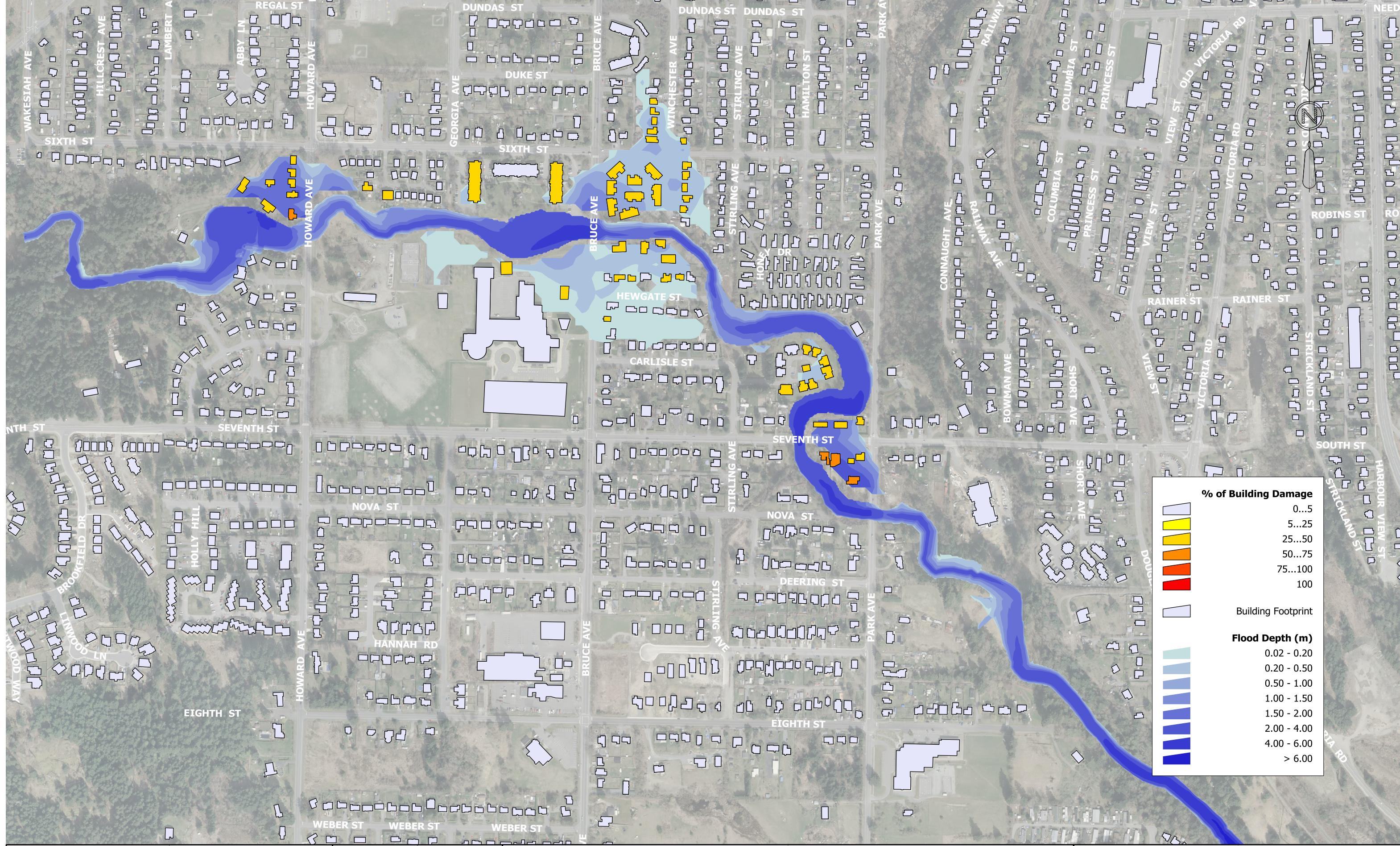
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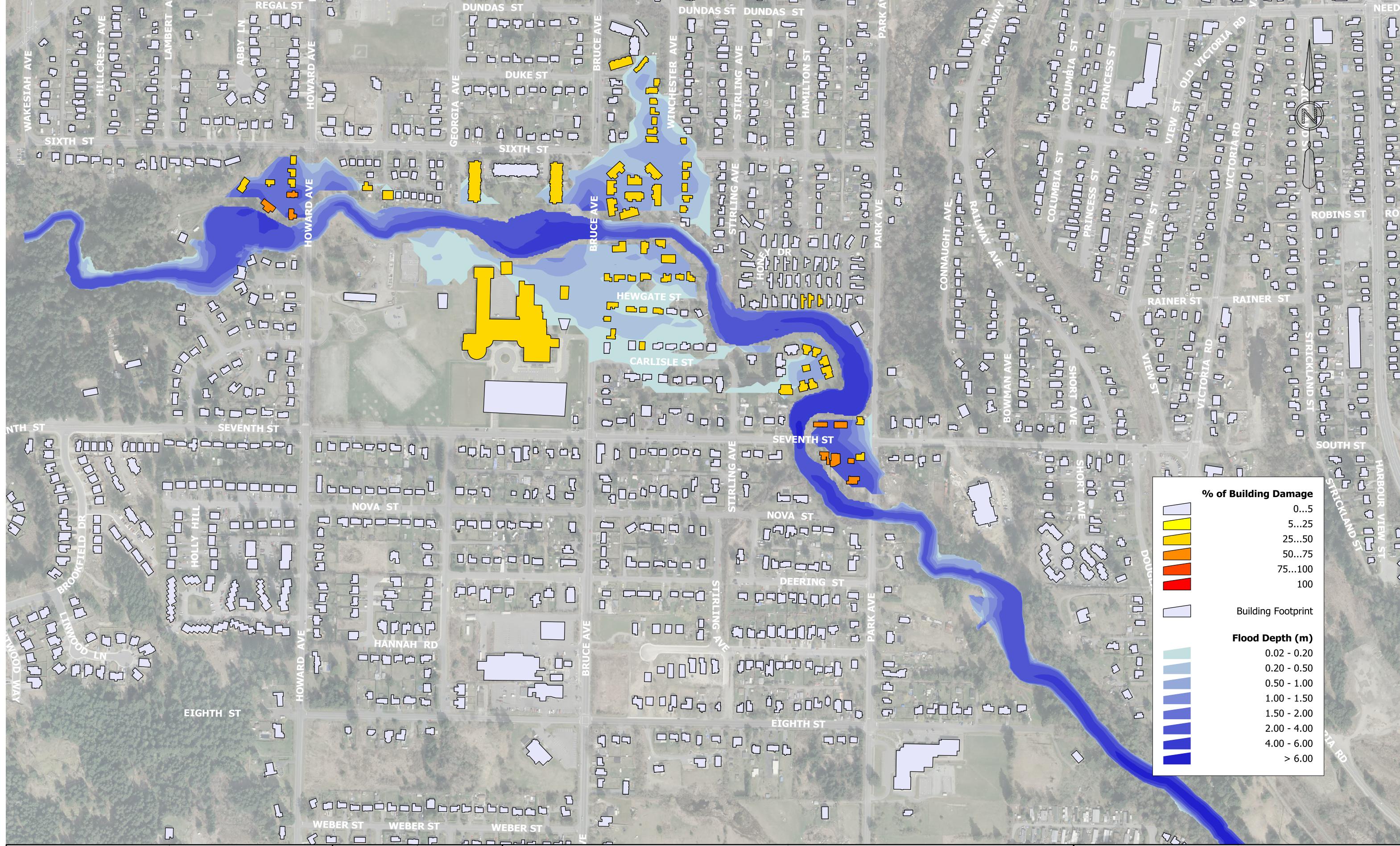
**Chase River Dam Breach Flood Inundation Study**

SC11 - Maximum Flooding Depth, Extents and Damages  
1000 Year Flood, Middle Dam Breach (60 min)

**Figure 7**

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Associated  
Engineering

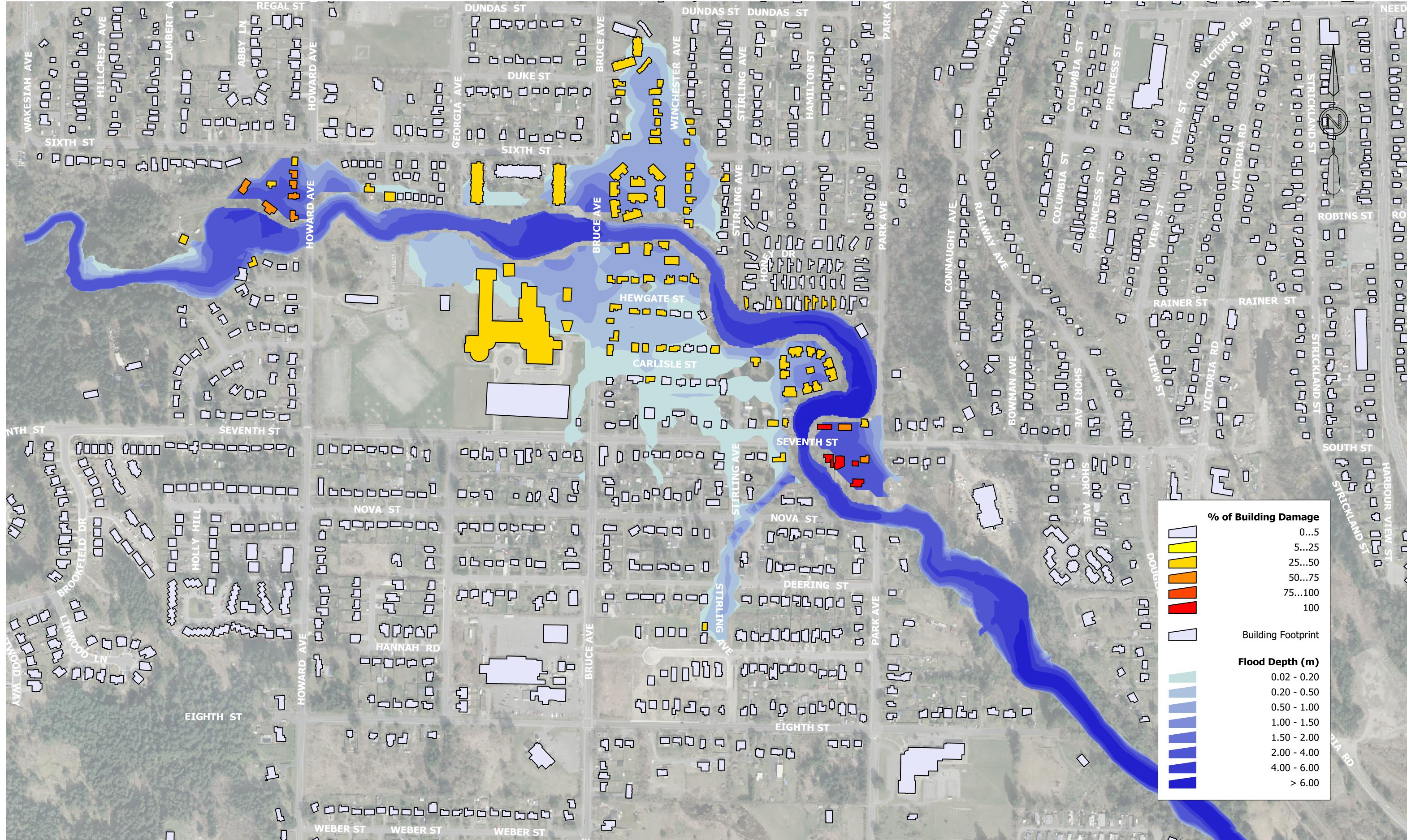
### Chase River Dam Breach Flood Inundation Study

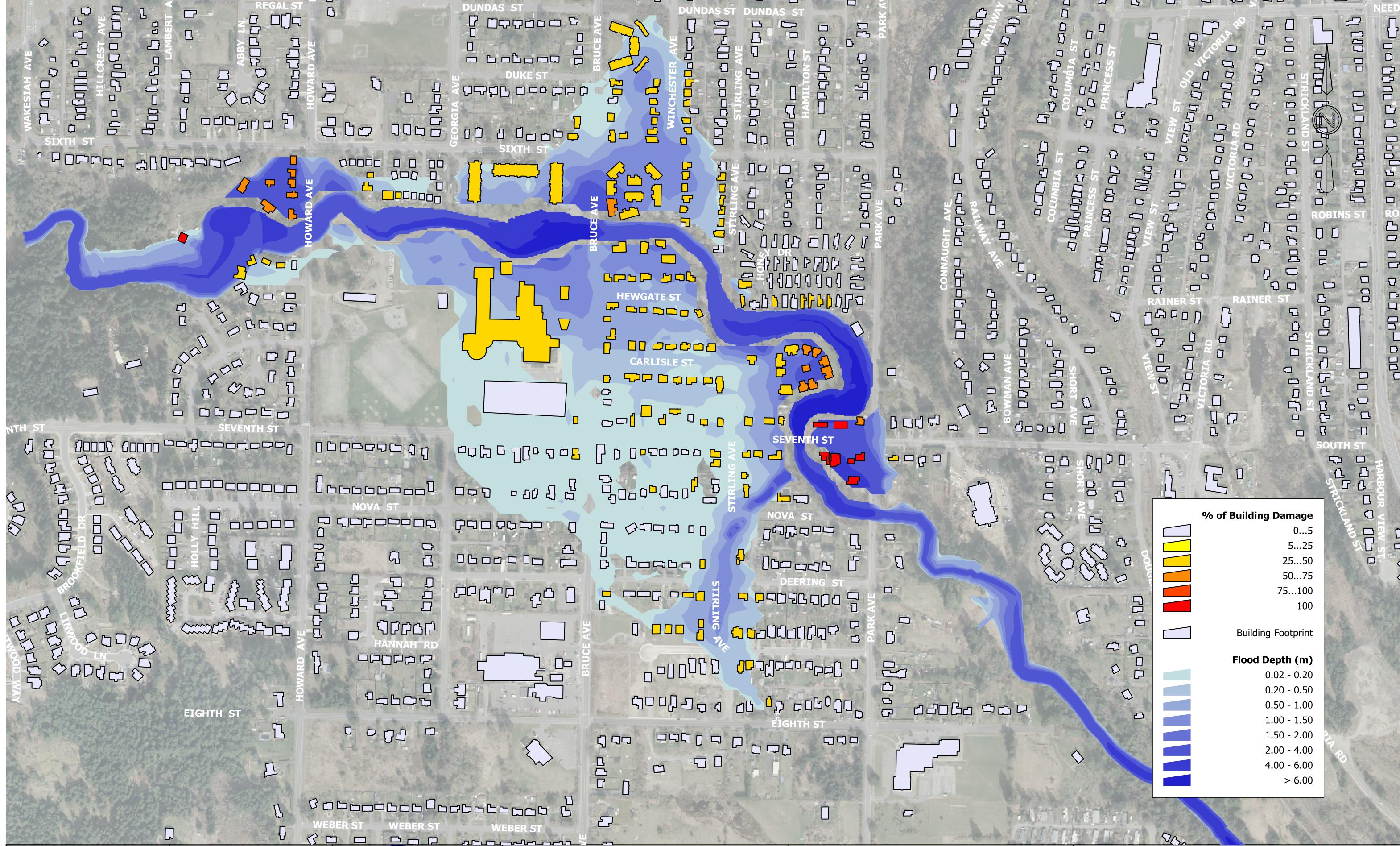
SC12 - Maximum Flooding Depth, Extents and Damages  
1000 Year Flood, Middle Dam Breach (60 min), Lower Dam Breach (120 min)

**Figure 8**

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Client: **City of Nanaimo**  
Project: **Chase River Dam Breach Modelling**  
Date: **July 2014**  
Made By: **Z. Sally**

**Table 1: Summary of Damages by Scenario**

Scenario ID	Event Type	Return Period	Breach Description	Road Bridges	Railway Culverts	Peak Flow (m³/s)	Total Volume (m³)	Total Value (\$)	Total Damage (\$)	Building Damage (\$)	Contents Damage (\$)
SC1	SEISMIC	-	MIDDLE DAM - 10 min	Open	Open	76.95	150,000	\$ 95,626,000.00	\$ 1,303,080.00	\$ 836,030.00	\$ 467,050.00
SC3	PMF	10,000 YEAR	MIDDLE DAM - 10 min	Open	Open	311.5	4,300,000	\$ 95,626,000.00	\$ 12,065,360.00	\$ 7,630,220.00	\$ 4,435,140.00
SC4	PMF	10,000 YEAR	MIDDLE DAM - 150 min	Open	Open	183.5	4,300,000	\$ 95,626,000.00	\$ 8,319,955.00	\$ 5,216,190.00	\$ 3,103,765.00
SC5	1000-YEAR FLOOD	1,000 YEAR	MIDDLE DAM - 10 min	Open	Open	251	3,000,000	\$ 95,626,000.00	\$ 9,303,635.00	\$ 5,834,000.00	\$ 3,469,635.00
SC7	1000-YEAR FLOOD	1,000 YEAR	NO BREACH	Open	Open	110.6	2,900,000	\$ 95,626,000.00	\$ 3,763,980.00	\$ 2,369,300.00	\$ 1,394,680.00
SC8	PMF	10,000 YEAR	NO BREACH	Open	Open	162.4	4,200,000	\$ 95,626,000.00	\$ 6,746,590.00	\$ 4,229,840.00	\$ 2,516,750.00
SC11	1000-YEAR FLOOD	1,000 YEAR	MIDDLE - 60 min	Open	Open	151.4	3,000,000	\$ 95,626,000.00	\$ 4,673,960.00	\$ 2,925,970.00	\$ 1,747,990.00
SC12	1000-YEAR FLOOD	1,000 YEAR	MIDDLE - 60 min; LOWER - 120 min	Open	Open	215.1	3,100,000	\$ 95,626,000.00	\$ 6,438,345.00	\$ 4,029,840.00	\$ 2,408,505.00
SC13	PMF	10,000 YEAR	MIDDLE - 60 min; LOWER - 120 min	Open	Open	278.2	4,500,000	\$ 95,626,000.00	\$ 9,228,310.00	\$ 5,796,220.00	\$ 3,432,090.00
SC14	PMF	10,000 YEAR	MIDDLE - 10 min; LOWER - 10 min	Open	Open	493.8	4,500,000	\$ 95,626,000.00	\$ 15,301,590.00	\$ 9,649,160.00	\$ 5,652,430.00

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	Predominant Land Use	Land Use Comment	Population Day	Population Night	Adjusted Gross Improvements	Contents Value
0			3	9	\$ 417,000.00	\$ 208,500.00
1	RESIDENTIAL		4	12	\$ 530,000.00	\$ 265,000.00
2	RESIDENTIAL		0	0	\$ -	\$ -
3	RESIDENTIAL		5	15	\$ 632,000.00	\$ 316,000.00
4	RESIDENTIAL		4	12	\$ 524,000.00	\$ 262,000.00
5	School	School and Daycare	533	12	\$ 1,440,000.00	\$ 720,000.00
6	RESIDENTIAL		0	0	\$ -	\$ -
7	RESIDENTIAL		8	24	\$ 960,000.00	\$ 480,000.00
8	School soccer field	School soccer field	31	3	\$ 12,396,000.00	\$ 350,000.00
9	School soccer field		0	0	\$ -	\$ -
10	RESIDENTIAL		1	3	\$ 100,000.00	\$ 50,000.00
11	RESIDENTIAL		3	9	\$ 415,000.00	\$ 207,500.00
12	RESIDENTIAL		5	15	\$ 575,000.00	\$ 287,500.00
13	RESIDENTIAL		4	12	\$ 530,000.00	\$ 265,000.00
14	RESIDENTIAL		2	6	\$ 243,000.00	\$ 121,500.00
15	RESIDENTIAL		0	0	\$ -	\$ -
16	RESIDENTIAL		0	0	\$ -	\$ -
17	RESIDENTIAL		10	50	\$ 270,000.00	\$ 135,000.00
18	RESIDENTIAL		10	50	\$ 270,000.00	\$ 135,000.00
19	RESIDENTIAL		10	50	\$ 270,000.00	\$ 135,000.00
20	RESIDENTIAL		15	45	\$ 1,800,000.00	\$ 900,000.00
21	RESIDENTIAL		6	18	\$ 676,000.00	\$ 338,000.00
22	RESIDENTIAL		5	15	\$ 500,000.00	\$ 250,000.00
23	RESIDENTIAL		2	6	\$ 292,000.00	\$ 146,000.00
24	RESIDENTIAL		3	9	\$ 421,000.00	\$ 210,500.00
25	RESIDENTIAL		3	9	\$ 401,000.00	\$ 200,500.00
26	RESIDENTIAL		2	6	\$ 227,000.00	\$ 113,500.00
27	RESIDENTIAL		2	6	\$ 200,000.00	\$ 100,000.00
28	RESIDENTIAL		1	3	\$ 136,000.00	\$ 68,000.00
29	RESIDENTIAL		1	3	\$ 119,000.00	\$ 59,500.00
30	RESIDENTIAL		0	0	\$ -	\$ -
31	RESIDENTIAL		0	0	\$ -	\$ -
32	RESIDENTIAL	Multifamily	5	20	\$ 200,000.00	\$ 100,000.00
33	RESIDENTIAL	Multifamily	15	60	\$ 600,000.00	\$ 300,000.00
34	RESIDENTIAL		4	12	\$ 602,000.00	\$ 290,500.00
35	RESIDENTIAL		2	6	\$ 200,000.00	\$ 100,000.00
36	RESIDENTIAL	Shared With Commercial Bldg	2	6	\$ 200,000.00	\$ 100,000.00
37	RESIDENTIAL		4	12	\$ 450,000.00	\$ 225,000.00
38	RESIDENTIAL		3	9	\$ 314,000.00	\$ 157,000.00
39	RESIDENTIAL		2	6	\$ 274,000.00	\$ 137,000.00
40	RESIDENTIAL		3	9	\$ 433,000.00	\$ 216,500.00
41	RESIDENTIAL		2	6	\$ 318,000.00	\$ 159,000.00
42	RESIDENTIAL		3	9	\$ 375,000.00	\$ 187,500.00
43	RESIDENTIAL	Mobile Home	3	9	\$ 300,000.00	\$ 150,000.00
44	RESIDENTIAL	Mobile Home	2	6	\$ 220,000.00	\$ 110,000.00

Table 2

Zone ID	Predominant Land Use	Land Use Comment	Population Day	Population Night	Adjusted Gross Improvements	Contents Value
45	RESIDENTIAL		0	0	\$ -	\$ -
46	RESIDENTIAL		8	24	\$ 973,000.00	\$ 486,500.00
47	RESIDENTIAL		0	0	\$ -	\$ -
48	RESIDENTIAL		2	6	\$ 279,000.00	\$ 139,500.00
49	RESIDENTIAL	Multifamily	10	40	\$ 400,000.00	\$ 200,000.00
50	RESIDENTIAL	Multifamily	10	40	\$ 400,000.00	\$ 200,000.00
51	RESIDENTIAL		7	21	\$ 886,000.00	\$ 443,000.00
52	RESIDENTIAL		6	18	\$ 757,000.00	\$ 378,500.00
53	RESIDENTIAL		5	15	\$ 572,000.00	\$ 286,000.00
54	RESIDENTIAL		2	6	\$ 250,000.00	\$ 125,000.00
55	RESIDENTIAL		2	6	\$ 200,000.00	\$ 100,000.00
56	RESIDENTIAL		3	9	\$ 316,000.00	\$ 158,000.00
57	RESIDENTIAL		1	3	\$ 100,000.00	\$ 50,000.00
58	RESIDENTIAL	Multifamily	20	80	\$ 660,000.00	\$ 330,000.00
59	RESIDENTIAL	Multifamily	20	80	\$ 660,000.00	\$ 330,000.00
60	RESIDENTIAL	Multifamily	15	60	\$ 495,000.00	\$ 247,500.00
61	RESIDENTIAL		3	9	\$ 339,000.00	\$ 169,500.00
62	RESIDENTIAL		0	0	\$ -	\$ -
63	RESIDENTIAL		2	6	\$ 215,000.00	\$ 107,500.00
64	RESIDENTIAL		1	3	\$ 128,000.00	\$ 64,000.00
65	RESIDENTIAL		1	3	\$ 238,000.00	\$ 100,000.00
66	RESIDENTIAL		1	3	\$ 100,000.00	\$ 50,000.00
67	RESIDENTIAL		0	0	\$ -	\$ -
68	RESIDENTIAL		0	0	\$ -	\$ -
69	RESIDENTIAL		1	3	\$ 151,000.00	\$ 75,500.00
70	RESIDENTIAL		0	0	\$ -	\$ -
71	RESIDENTIAL	Mobile Home	8	24	\$ 800,000.00	\$ 400,000.00
72	RESIDENTIAL	Mobile Home	4	12	\$ 400,000.00	\$ 200,000.00
73	RESIDENTIAL		10	30	\$ 1,248,000.00	\$ 623,500.00
74	RESIDENTIAL		4	12	\$ 480,000.00	\$ 240,000.00
75	RESIDENTIAL	Multifamily	25	100	\$ 1,050,000.00	\$ 525,000.00
76	RESIDENTIAL		4	12	\$ 507,000.00	\$ 253,500.00
77	RESIDENTIAL		4	12	\$ 557,000.00	\$ 278,500.00
78	RESIDENTIAL		3	9	\$ 381,000.00	\$ 190,500.00
79	RESIDENTIAL		2	6	\$ 200,000.00	\$ 100,000.00
80	RESIDENTIAL		0	0	\$ -	\$ -
81	RESIDENTIAL		1	3	\$ 160,000.00	\$ 80,000.00
82	RESIDENTIAL		1	3	\$ 162,000.00	\$ 81,000.00
83	RESIDENTIAL		2	6	\$ 200,000.00	\$ 100,000.00
84	RESIDENTIAL		0	0	\$ -	\$ -
85	RESIDENTIAL		1	3	\$ 100,000.00	\$ 50,000.00
86	RESIDENTIAL		5	15	\$ 771,000.00	\$ 355,000.00
87	RESIDENTIAL		2	6	\$ 233,000.00	\$ 116,500.00
88	RESIDENTIAL		0	0	\$ -	\$ -
89	RESIDENTIAL		1	3	\$ 133,000.00	\$ 66,500.00

Table 2

Zone ID	Predominant Land Use	Land Use Comment	Population Day	Population Night	Adjusted Gross Improvements	Contents Value
90	RESIDENTIAL		1	3	\$ 126,000.00	\$ 63,000.00
91	RESIDENTIAL		1	3	\$ 199,000.00	\$ 99,500.00
92	RESIDENTIAL		2	6	\$ 276,000.00	\$ 138,000.00
93	RESIDENTIAL		1	3	\$ 152,000.00	\$ 76,000.00
94	RESIDENTIAL		1	3	\$ 275,000.00	\$ 100,000.00
1001	RESIDENTIAL		4	12	\$ 427,000.00	\$ 213,500.00
1002	RESIDENTIAL		2	6	\$ 225,000.00	\$ 112,500.00
1003	Maintenance shed	Maintenance shed	1	3	\$ 100,000.00	\$ 50,000.00
1004	RESIDENTIAL		0	0	\$ -	\$ -
1005	RESIDENTIAL		0	0	\$ -	\$ -
1006	RESIDENTIAL		0	0	\$ -	\$ -
1007	RESIDENTIAL		2	6	\$ 263,000.00	\$ 131,500.00
1008	RESIDENTIAL		7	21	\$ 890,000.00	\$ 445,000.00
1009	RESIDENTIAL		4	12	\$ 471,000.00	\$ 235,500.00
1010	RESIDENTIAL		3	9	\$ 400,000.00	\$ 200,000.00
1011	RESIDENTIAL		4	12	\$ 438,000.00	\$ 219,000.00
1012	RESIDENTIAL		2	6	\$ 291,000.00	\$ 145,500.00
1013	RESIDENTIAL		3	9	\$ 315,000.00	\$ 157,500.00
1014	RESIDENTIAL		3	9	\$ 300,000.00	\$ 150,000.00
1015	RESIDENTIAL		4	12	\$ 562,000.00	\$ 281,000.00
1016	RESIDENTIAL		1	3	\$ 102,000.00	\$ 51,000.00
1017	RESIDENTIAL		5	15	\$ 682,000.00	\$ 341,000.00
1018	RESIDENTIAL		3	9	\$ 389,000.00	\$ 194,500.00
1019	RESIDENTIAL		2	6	\$ 311,000.00	\$ 155,500.00
1020	RESIDENTIAL		4	12	\$ 500,000.00	\$ 250,000.00
1021	RESIDENTIAL		0	0	\$ -	\$ -
1022	RESIDENTIAL		0	0	\$ -	\$ -
1023	RESIDENTIAL		1	3	\$ 100,000.00	\$ 50,000.00
1024	RESIDENTIAL		1	3	\$ 125,000.00	\$ 62,500.00
1025	RESIDENTIAL	Multifamily	1	3	\$ 320,000.00	\$ 160,000.00
1026	OFFICE	OFFICE	1	3	\$ 454,000.00	\$ 227,000.00
1027	RESIDENTIAL		2	6	\$ 301,000.00	\$ 150,500.00
1028	RESIDENTIAL		3	9	\$ 435,000.00	\$ 217,500.00
1029	RESIDENTIAL		1	3	\$ 164,000.00	\$ 82,000.00
1030	RESIDENTIAL		1	3	\$ 131,000.00	\$ 65,500.00
1031	RESIDENTIAL		0	0	\$ -	\$ -
1032	RESIDENTIAL		0	0	\$ -	\$ -
1033	RESIDENTIAL		4	12	\$ 584,000.00	\$ 292,000.00
1034	Parking Lot	Parking Lot	1	3	\$ 2,058,000.00	\$ 200,000.00
1035	RESIDENTIAL		0	0	\$ -	\$ -
1036	RESIDENTIAL		3	9	\$ 456,000.00	\$ 223,500.00
1037	RESIDENTIAL		2	6	\$ 288,000.00	\$ 144,000.00
1038	RESIDENTIAL		2	6	\$ 260,000.00	\$ 130,000.00
1039	RESIDENTIAL		3	9	\$ 381,000.00	\$ 190,500.00
1040	RESIDENTIAL		2	6	\$ 284,000.00	\$ 142,000.00

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	Predominant Land Use	Land Use Comment	Population Day	Population Night	Adjusted Gross Improvements	Contents Value
1041	RESIDENTIAL		1	3	\$ 137,000.00	\$ 68,500.00
1042	COMMERCIAL	COMMERCIAL	1	3	\$ 280,000.00	\$ 140,000.00
1043	RESIDENTIAL		0	0	\$ -	\$ -
1044	RESIDENTIAL		2	6	\$ 318,000.00	\$ 153,000.00
1045	RESIDENTIAL		2	6	\$ 463,000.00	\$ 200,000.00
1046	RESIDENTIAL		3	9	\$ 487,000.00	\$ 243,500.00
1047	RESIDENTIAL		2	6	\$ 303,000.00	\$ 151,500.00
1048	RESIDENTIAL		0	0	\$ -	\$ -
1049	RESIDENTIAL		0	0	\$ -	\$ -
1050	RESIDENTIAL		0	0	\$ -	\$ -
1051	RESIDENTIAL		4	12	\$ 878,000.00	\$ 361,500.00
1052	RESIDENTIAL		4	12	\$ 884,000.00	\$ 361,000.00
1053	RESIDENTIAL		3	9	\$ 483,000.00	\$ 241,500.00
1054	RESIDENTIAL		3	9	\$ 522,000.00	\$ 254,500.00
1055	RESIDENTIAL		2	6	\$ 300,000.00	\$ 150,000.00
1056	RESIDENTIAL		1	3	\$ 100,000.00	\$ 50,000.00
1057	RESIDENTIAL		1	3	\$ 169,000.00	\$ 84,500.00
1058	RESIDENTIAL		2	6	\$ 286,000.00	\$ 143,000.00
1059	RESIDENTIAL		0	0	\$ -	\$ -
1060	RESIDENTIAL		3	9	\$ 332,000.00	\$ 166,000.00
1061	RESIDENTIAL		2	6	\$ 271,000.00	\$ 135,500.00
1062	RESIDENTIAL		3	9	\$ 537,000.00	\$ 254,500.00
1063	RESIDENTIAL		4	12	\$ 688,000.00	\$ 333,000.00
1064	RESIDENTIAL		1	3	\$ 164,000.00	\$ 82,000.00
1065	RESIDENTIAL		0	0	\$ -	\$ -
1066	RESIDENTIAL		1	3	\$ 173,000.00	\$ 86,500.00
1067	RESIDENTIAL		0	0	\$ -	\$ -
1068	RESIDENTIAL		0	0	\$ -	\$ -
1069	RESIDENTIAL		1	3	\$ 175,000.00	\$ 87,500.00
1070	RESIDENTIAL		2	6	\$ 307,000.00	\$ 153,500.00
1071	RESIDENTIAL		2	6	\$ 333,000.00	\$ 166,500.00
1072	RESIDENTIAL		2	6	\$ 275,000.00	\$ 137,500.00
1073	RESIDENTIAL		1	3	\$ 100,000.00	\$ 50,000.00
1074	RESIDENTIAL		1	3	\$ 150,000.00	\$ 75,000.00
1075	RESIDENTIAL		0	0	\$ -	\$ -
1076	RESIDENTIAL		3	9	\$ 442,000.00	\$ 221,000.00
1077	RESIDENTIAL		2	6	\$ 237,000.00	\$ 118,500.00
1078	RESIDENTIAL		1	3	\$ 110,000.00	\$ 55,000.00
1079	RESIDENTIAL		0	0	\$ -	\$ -
1080	RESIDENTIAL		1	3	\$ 152,000.00	\$ 76,000.00

Table 2

Zone ID	SC1					SC3					SC4				
	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage
0	2.00	1.50	\$ 279,390.00	\$ 139,695.00	3.00	2.00	\$ 417,000.00	\$ 208,500.00	2.70	1.70	\$ 333,600.00	\$ 166,800.00			
1	1.00	0.15	\$ 116,240.00	\$ 70,125.00	3.00	0.46	\$ 228,150.00	\$ 125,975.00	2.70	0.34	\$ 200,890.00	\$ 120,025.00			
2	1.00	0.12	\$ -	\$ -	3.00	0.48	\$ -	\$ -	2.70	0.44	\$ -	\$ -			
3	1.00	0.10	\$ 143,640.00	\$ 84,645.00	3.00	0.43	\$ 342,000.00	\$ 202,600.00	2.70	0.33	\$ 292,740.00	\$ 179,905.00			
4	0.00	0.00	\$ -	\$ -	1.50	0.10	\$ 340,600.00	\$ 170,300.00	0.90	0.10	\$ 256,760.00	\$ 157,200.00			
5	0.03	0.10	\$ -	\$ -	1.80	0.12	\$ 395,400.00	\$ 236,800.00	1.20	0.10	\$ 61,600.00	\$ 36,300.00			
6	0.00	0.10	\$ -	\$ -	4.00	0.24	\$ -	\$ -	3.40	0.20	\$ -	\$ -			
7	0.00	0.00	\$ -	\$ -	1.80	0.19	\$ 87,600.00	\$ 52,800.00	1.60	0.17	\$ 85,200.00	\$ 52,800.00			
8	0.00	0.00	\$ -	\$ -	0.10	0.10	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
9	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
10	0.00	0.00	\$ -	\$ -	0.20	0.10	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
11	0.00	0.00	\$ -	\$ -	0.30	0.10	\$ 126,000.00	\$ 75,825.00	0.10	0.10	\$ -	\$ -			
12	0.00	0.00	\$ -	\$ -	0.80	0.22	\$ 184,000.00	\$ 112,125.00	0.40	0.10	\$ 161,000.00	\$ 94,875.00			
13	0.00	0.00	\$ -	\$ -	1.00	0.31	\$ 173,200.00	\$ 106,350.00	0.60	0.19	\$ 153,200.00	\$ 91,050.00			
14	0.00	0.00	\$ -	\$ -	1.30	0.28	\$ 89,050.00	\$ 55,960.00	0.90	0.17	\$ 80,760.00	\$ 49,885.00			
15	0.00	0.10	\$ -	\$ -	0.90	0.10	\$ -	\$ -	0.50	0.10	\$ -	\$ -			
16	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
17	0.61	0.10	\$ -	\$ -	2.80	0.17	\$ 86,400.00	\$ 52,650.00	2.20	0.12	\$ 75,600.00	\$ 44,550.00			
18	0.00	0.10	\$ -	\$ -	1.00	0.10	\$ 75,600.00	\$ 44,550.00	0.40	0.10	\$ -	\$ -			
19	0.00	0.00	\$ -	\$ -	0.80	0.10	\$ 86,400.00	\$ 52,650.00	0.50	0.10	\$ 75,600.00	\$ 44,550.00			
20	0.00	0.00	\$ -	\$ -	0.20	0.10	\$ -	\$ -	0.10	0.10	\$ -	\$ -			
21	0.00	0.00	\$ -	\$ -	0.10	0.10	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
22	0.00	0.00	\$ -	\$ -	0.10	0.10	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
23	0.00	0.00	\$ -	\$ -	0.30	0.10	\$ 81,760.00	\$ 48,180.00	0.10	0.10	\$ -	\$ -			
24	0.00	0.00	\$ -	\$ -	0.30	0.12	\$ 82,880.00	\$ 48,840.00	0.10	0.10	\$ -	\$ -			
25	0.00	0.00	\$ -	\$ -	0.70	0.20	\$ 84,240.00	\$ 50,490.00	0.30	0.11	\$ 36,960.00	\$ 21,780.00			
26	0.00	0.00	\$ -	\$ -	1.10	0.26	\$ 79,450.00	\$ 49,940.00	0.60	0.14	\$ 72,640.00	\$ 44,265.00			
27	0.03	0.10	\$ -	\$ -	1.40	0.27	\$ 84,000.00	\$ 52,000.00	1.00	0.18	\$ 71,000.00	\$ 44,000.00			
28	0.00	0.10	\$ 47,600.00	\$ 29,920.00	1.10	0.18	\$ 47,600.00	\$ 29,920.00	0.70	0.11	\$ 43,520.00	\$ 26,520.00			
29	0.00	0.00	\$ -	\$ -	0.90	0.16	\$ 38,080.00	\$ 23,205.00	0.50	0.10	\$ 33,320.00	\$ 19,635.00			
30	0.00	0.00	\$ -	\$ -	0.00	0.10	\$ -	\$ -	0.00	0.10	\$ -	\$ -			
31	0.00	0.00	\$ -	\$ -	0.00	0.10	\$ -	\$ -	0.00	0.10	\$ -	\$ -			
32	0.00	0.25	\$ 64,000.00	\$ 39,000.00	1.60	0.65	\$ 110,000.00	\$ 65,000.00	1.20	0.47	\$ 78,000.00	\$ 49,000.00			
33	0.61	0.10	\$ -	\$ -	2.80	0.37	\$ 266,000.00	\$ 164,000.00	2.20	0.23	\$ 212,000.00	\$ 132,000.00			
34	0.00	0.00	\$ -	\$ -	0.30	0.10	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
35	0.00	0.00	\$ -	\$ -	0.10	0.10	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
36	0.00	0.00	\$ -	\$ -	0.00	0.10	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
37	0.00	0.00	\$ -	\$ -	0.10	0.10	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
38	0.00	0.00	\$ -	\$ -	0.20	0.10	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
39	0.00	0.00	\$ -	\$ -	0.30	0.10	\$ 37,520.00	\$ 22,110.00	0.00	0.10	\$ -	\$ -			
40	0.00	0.00	\$ -	\$ -	0.30	0.10	\$ -	\$ -	0.00	0.10	\$ -	\$ -			
41	0.00	0.00	\$ -	\$ -	0.90	0.11	\$ 45,920.00	\$ 27,060.00	0.10	0.10	\$ -	\$ -			
42	0.00	0.00	\$ -	\$ -	1.90	0.10	\$ 75,120.00	\$ 44,910.00	1.00	0.10	\$ 39,000.00	\$ 24,500.00			
43	0.00	0.00	\$ -	\$ -	0.30	0.10	\$ 117,000.00	\$ 73,500.00	0.00	0.10	\$ 117,000.00	\$ 73,500.00			
44	0.00	0.00	\$ -	\$ -	0.40	0.10	\$ 33,600.00	\$ 19,800.00	0.00	0.10	\$ -	\$ -			

Table 2

Zone ID	SC1					SC3					SC4						
	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage			
45	0.00	0.00	\$	-	\$	0.00	0.10	\$	-	\$	0.00	0.10	\$	-	\$		
46	0.00	0.00	\$	-	\$	0.50	0.10	\$	74,760.00	\$	44,055.00	0.20	0.10	\$	-	\$	
47	0.00	0.00	\$	-	\$	0.80	0.10	\$	-	\$	-	0.50	0.10	\$	-	\$	
48	0.00	0.00	\$	-	\$	0.70	0.10	\$	112,550.00	\$	68,725.00	0.40	0.10	\$	112,550.00	\$	
49	0.00	0.00	\$	-	\$	1.00	0.24	\$	140,000.00	\$	88,000.00	0.70	0.15	\$	128,000.00	\$	
50	0.00	0.00	\$	-	\$	1.60	0.35	\$	148,000.00	\$	93,000.00	1.10	0.22	\$	134,000.00	\$	
51	0.00	0.00	\$	-	\$	1.20	0.12	\$	311,190.00	\$	194,045.00	0.90	0.10	\$	271,170.00	\$	
52	0.00	0.00	\$	-	\$	0.90	0.10	\$	145,480.00	\$	86,610.00	0.50	0.10	\$	-	\$	
53	0.00	0.00	\$	-	\$	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
54	0.00	0.00	\$	-	\$	0.10	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
55	0.00	0.00	\$	-	\$	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
56	0.00	0.00	\$	-	\$	0.20	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
57	0.00	0.00	\$	-	\$	1.70	0.10	\$	28,000.00	\$	16,500.00	0.90	0.10	\$	-	\$	
58	0.00	0.10	\$	-	\$	1.70	0.10	\$	247,500.00	\$	154,275.00	0.80	0.10	\$	52,800.00	\$	
59	0.00	0.10	\$	-	\$	1.90	0.10	\$	297,000.00	\$	181,500.00	1.00	0.10	\$	336,600.00	\$	
60	0.00	0.00	\$	-	\$	2.30	0.10	\$	229,350.00	\$	139,425.00	1.40	0.10	\$	163,350.00	\$	
61	0.00	0.00	\$	-	\$	0.70	0.10	\$	40,960.00	\$	24,960.00	0.00	0.00	\$	-	\$	
62	0.00	0.00	\$	-	\$	3.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
63	0.32	0.10	\$	32,200.00	\$	18,975.00	4.00	0.17	\$	215,000.00	\$	107,500.00	3.20	0.11	\$	139,750.00	\$
64	0.46	0.10	\$	40,960.00	\$	24,960.00	3.50	0.13	\$	89,600.00	\$	54,400.00	2.50	0.10	\$	83,200.00	\$
65	0.45	0.10	\$	66,640.00	\$	33,000.00	3.40	0.10	\$	166,600.00	\$	85,000.00	2.50	0.10	\$	130,900.00	\$
66	0.00	0.00	\$	-	\$	2.60	0.10	\$	45,000.00	\$	27,500.00	1.60	0.10	\$	32,000.00	\$	
67	0.31	0.10	\$	-	\$	3.20	0.12	\$	-	\$	-	2.30	0.10	\$	-	\$	
68	0.10	0.10	\$	-	\$	3.70	0.10	\$	-	\$	-	2.90	0.10	\$	-	\$	
69	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	
70	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	
71	0.00	0.00	\$	-	\$	1.10	0.10	\$	312,000.00	\$	196,000.00	0.30	0.10	\$	312,000.00	\$	
72	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	
73	0.00	0.00	\$	-	\$	1.00	0.10	\$	101,360.00	\$	61,105.00	0.70	0.10	\$	32,000.00	\$	
74	0.00	0.00	\$	-	\$	1.00	0.10	\$	168,000.00	\$	105,600.00	0.70	0.10	\$	153,600.00	\$	
75	0.00	0.00	\$	-	\$	0.80	0.10	\$	192,500.00	\$	115,500.00	0.50	0.10	\$	112,000.00	\$	
76	0.00	0.00	\$	-	\$	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
77	0.00	0.00	\$	-	\$	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
78	0.00	0.00	\$	-	\$	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
79	0.00	0.00	\$	-	\$	0.70	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
80	0.00	0.00	\$	-	\$	3.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
81	0.00	0.00	\$	-	\$	2.10	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
82	0.34	0.10	\$	45,360.00	\$	26,730.00	4.00	0.10	\$	162,000.00	\$	81,000.00	3.20	0.10	\$	113,400.00	\$
83	0.02	0.10	\$	-	\$	3.50	0.19	\$	165,000.00	\$	82,500.00	2.70	0.14	\$	109,000.00	\$	
84	0.00	0.00	\$	-	\$	2.60	0.12	\$	-	\$	-	0.70	0.10	\$	-	\$	
85	0.00	0.00	\$	-	\$	0.20	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
86	0.00	0.00	\$	-	\$	0.10	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
87	0.00	0.00	\$	-	\$	0.40	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
88	0.00	0.00	\$	-	\$	1.50	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	
89	0.00	0.00	\$	-	\$	0.40	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	SC1					SC3					SC4					
	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		
90	0.00	0.00	\$	-	\$	0.50	0.10	\$	-	\$	0.00	0.00	\$	-	\$	
91	0.00	0.00	\$	-	\$	0.50	0.10	\$	-	\$	0.00	0.00	\$	-	\$	
92	0.00	0.00	\$	-	\$	0.40	0.10	\$	-	\$	0.00	0.00	\$	-	\$	
93	0.00	0.00	\$	-	\$	0.40	0.10	\$	-	\$	0.00	0.00	\$	-	\$	
94	0.00	0.00	\$	-	\$	0.20	0.10	\$	-	\$	0.00	0.00	\$	-	\$	
1001	0.00	0.00	\$	-	\$	0.00	0.00	\$	277,550.00	\$	138,775.00	0.00	0.00	\$	209,230.00	\$
1002	0.00	0.00	\$	-	\$	0.00	0.00	\$	146,250.00	\$	73,125.00	0.00	0.00	\$	110,250.00	\$
1003	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1004	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1005	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1006	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1007	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1008	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1009	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1010	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1011	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1012	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1013	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1014	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1015	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1016	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1017	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1018	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1019	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1020	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1021	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1022	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1023	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1024	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1025	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1026	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1027	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1028	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1029	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1030	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1031	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1032	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1033	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1034	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1035	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1036	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1037	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1038	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1039	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	
1040	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	Depth (m)	Velocity (m/s)	SC1		SC3		SC4					
			Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage
1041	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1042	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1043	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1044	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1045	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1046	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1047	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1048	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1049	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1050	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1051	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1052	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1053	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1054	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1055	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1056	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1057	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1058	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1059	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1060	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1061	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1062	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1063	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1064	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1065	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1066	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1067	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1068	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1069	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1070	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1071	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1072	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1073	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1074	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1075	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1076	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1077	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1078	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1079	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-
1080	0.00	0.00	\$	-	0.00	0.00	\$	-	0.00	0.00	\$	-

Table 2

Zone	ID	SC5					SC7					SC8						
		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Building Damage	Contents Damage			
0	2.70	1.70	\$	333,600.00	\$	166,800.00	2.70	1.70	\$	333,600.00	\$	166,800.00	2.70	1.70	\$	333,600.00	\$	166,800.00
1	2.90	0.42	\$	221,100.00	\$	129,500.00	2.40	0.26	\$	167,470.00	\$	103,245.00	2.70	0.32	\$	187,390.00	\$	113,350.00
2	2.90	0.45	\$	-	\$	-	2.40	0.36	\$	-	\$	-	2.70	0.42	\$	-	\$	-
3	2.90	0.39	\$	328,140.00	\$	196,300.00	2.40	0.24	\$	257,500.00	\$	159,755.00	2.70	0.31	\$	292,740.00	\$	179,905.00
4	1.30	0.10	\$	204,360.00	\$	128,380.00	0.00	0.00	\$	-	\$	-	0.10	0.10	\$	-	\$	-
5	1.50	0.12	\$	387,000.00	\$	230,200.00	0.50	0.10	\$	-	\$	-	1.10	0.10	\$	61,600.00	\$	36,300.00
6	3.70	0.22	\$	-	\$	-	2.90	0.18	\$	-	\$	-	3.30	0.19	\$	-	\$	-
7	1.70	0.20	\$	87,600.00	\$	52,800.00	1.30	0.18	\$	46,800.00	\$	29,400.00	1.50	0.20	\$	80,400.00	\$	49,200.00
8	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
9	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
10	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
11	0.20	0.10	\$	116,200.00	\$	68,475.00	0.00	0.00	\$	-	\$	-	0.10	0.10	\$	-	\$	-
12	0.60	0.16	\$	165,000.00	\$	97,875.00	0.00	0.10	\$	-	\$	-	0.30	0.10	\$	90,720.00	\$	53,460.00
13	0.70	0.26	\$	158,560.00	\$	95,070.00	0.20	0.10	\$	-	\$	-	0.50	0.17	\$	105,000.00	\$	61,875.00
14	1.10	0.24	\$	80,760.00	\$	49,885.00	0.40	0.10	\$	28,000.00	\$	16,500.00	0.80	0.16	\$	77,760.00	\$	47,385.00
15	0.60	0.10	\$	-	\$	-	0.20	0.10	\$	-	\$	-	0.40	0.10	\$	-	\$	-
16	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
17	2.50	0.14	\$	75,600.00	\$	44,550.00	1.50	0.10	\$	-	\$	-	2.10	0.11	\$	75,600.00	\$	44,550.00
18	0.70	0.10	\$	-	\$	-	0.00	0.10	\$	-	\$	-	0.30	0.10	\$	-	\$	-
19	0.60	0.10	\$	75,600.00	\$	44,550.00	0.40	0.10	\$	75,600.00	\$	44,550.00	0.50	0.10	\$	75,600.00	\$	44,550.00
20	0.10	0.10	\$	-	\$	-	0.10	0.10	\$	-	\$	-	0.10	0.10	\$	-	\$	-
21	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
22	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
23	0.10	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.10	\$	-	\$	-
24	0.20	0.10	\$	35,000.00	\$	20,625.00	0.00	0.00	\$	-	\$	-	0.10	0.10	\$	-	\$	-
25	0.50	0.14	\$	36,960.00	\$	21,780.00	0.00	0.00	\$	-	\$	-	0.30	0.10	\$	-	\$	-
26	0.80	0.19	\$	72,640.00	\$	44,265.00	0.20	0.10	\$	-	\$	-	0.60	0.12	\$	68,640.00	\$	41,265.00
27	1.20	0.22	\$	74,000.00	\$	46,500.00	0.60	0.10	\$	60,000.00	\$	36,000.00	0.90	0.16	\$	71,000.00	\$	44,000.00
28	0.90	0.13	\$	43,520.00	\$	26,520.00	0.30	0.10	\$	38,080.00	\$	22,440.00	0.60	0.10	\$	38,080.00	\$	22,440.00
29	0.60	0.11	\$	33,320.00	\$	19,635.00	0.20	0.10	\$	46,410.00	\$	29,155.00	0.40	0.10	\$	33,320.00	\$	19,635.00
30	0.00	0.10	\$	-	\$	-	0.00	0.10	\$	-	\$	-	0.00	0.10	\$	-	\$	-
31	0.00	0.10	\$	-	\$	-	0.00	0.10	\$	-	\$	-	0.00	0.10	\$	-	\$	-
32	1.40	0.57	\$	78,000.00	\$	49,000.00	0.60	0.26	\$	64,000.00	\$	39,000.00	1.10	0.44	\$	78,000.00	\$	49,000.00
33	2.50	0.32	\$	238,000.00	\$	148,000.00	1.50	0.11	\$	126,000.00	\$	77,000.00	2.10	0.21	\$	212,000.00	\$	132,000.00
34	0.10	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
35	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
36	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
37	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
38	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
39	0.10	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.10	\$	-	\$	-
40	0.10	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.10	\$	-	\$	-
41	0.20	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.10	\$	-	\$	-
42	1.20	0.10	\$	39,000.00	\$	24,500.00	0.10	0.10	\$	39,000.00	\$	24,500.00	0.90	0.10	\$	39,000.00	\$	24,500.00
43	0.10	0.10	\$	117,000.00	\$	73,500.00	0.00	0.10	\$	180,000.00	\$	102,500.00	0.00	0.10	\$	117,000.00	\$	73,500.00
44	0.10	0.10	\$	-	\$	-	0.00	0.10	\$	-	\$	-	0.00	0.10	\$	-	\$	-

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone	ID	SC5					SC7					SC8						
		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage			
45	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.10	\$	-	\$	-
46	0.30	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.20	0.10	\$	-	\$	-
47	0.60	0.10	\$	-	\$	-	0.10	0.10	\$	-	\$	-	0.50	0.10	\$	-	\$	-
48	0.40	0.10	\$	112,550.00	\$	68,725.00	0.10	0.10	\$	50,120.00	\$	29,535.00	0.30	0.10	\$	97,810.00	\$	60,355.00
49	0.80	0.23	\$	128,000.00	\$	78,000.00	0.30	0.10	\$	56,000.00	\$	33,000.00	0.60	0.15	\$	128,000.00	\$	78,000.00
50	1.30	0.31	\$	148,000.00	\$	93,000.00	0.50	0.10	\$	112,000.00	\$	66,000.00	1.00	0.21	\$	134,000.00	\$	83,000.00
51	0.90	0.11	\$	280,220.00	\$	170,830.00	0.10	0.10	\$	-	\$	-	0.80	0.10	\$	242,330.00	\$	146,780.00
52	0.70	0.10	\$	38,360.00	\$	22,605.00	0.00	0.10	\$	-	\$	-	0.50	0.10	\$	-	\$	-
53	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
54	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
55	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
56	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
57	1.00	0.10	\$	-	\$	-	0.20	0.10	\$	-	\$	-	0.80	0.10	\$	-	\$	-
58	0.90	0.10	\$	150,150.00	\$	90,750.00	0.00	0.10	\$	-	\$	-	0.60	0.10	\$	52,800.00	\$	32,175.00
59	1.20	0.10	\$	226,050.00	\$	141,075.00	0.20	0.10	\$	128,700.00	\$	80,850.00	0.90	0.10	\$	221,100.00	\$	136,950.00
60	1.60	0.10	\$	184,800.00	\$	113,850.00	0.50	0.10	\$	117,150.00	\$	72,600.00	1.30	0.10	\$	174,900.00	\$	108,900.00
61	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
62	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
63	3.30	0.12	\$	150,500.00	\$	91,375.00	2.10	0.10	\$	101,350.00	\$	62,000.00	3.00	0.10	\$	139,750.00	\$	69,875.00
64	2.60	0.10	\$	83,200.00	\$	41,600.00	1.50	0.10	\$	57,600.00	\$	35,200.00	2.30	0.10	\$	76,800.00	\$	44,800.00
65	2.60	0.10	\$	142,800.00	\$	70,000.00	1.50	0.10	\$	92,820.00	\$	49,000.00	2.30	0.10	\$	130,900.00	\$	65,000.00
66	1.80	0.10	\$	35,000.00	\$	22,000.00	0.70	0.10	\$	-	\$	-	1.50	0.10	\$	32,000.00	\$	19,500.00
67	2.40	0.10	\$	-	\$	-	1.30	0.10	\$	-	\$	-	2.10	0.10	\$	-	\$	-
68	3.10	0.10	\$	-	\$	-	1.90	0.10	\$	-	\$	-	2.80	0.10	\$	-	\$	-
69	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
70	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
71	0.40	0.10	\$	312,000.00	\$	196,000.00	0.00	0.00	\$	-	\$	-	0.20	0.10	\$	312,000.00	\$	196,000.00
72	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
73	0.80	0.10	\$	32,000.00	\$	19,500.00	0.00	0.00	\$	-	\$	-	0.60	0.10	\$	32,000.00	\$	19,500.00
74	0.80	0.11	\$	161,130.00	\$	99,875.00	0.30	0.10	\$	28,000.00	\$	16,500.00	0.70	0.10	\$	153,600.00	\$	93,600.00
75	0.50	0.10	\$	112,000.00	\$	66,000.00	0.00	0.00	\$	-	\$	-	0.40	0.10	\$	42,000.00	\$	24,750.00
76	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
77	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
78	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
79	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
80	0.00	0.10	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
81	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
82	3.30	0.10	\$	162,000.00	\$	81,000.00	2.10	0.10	\$	89,100.00	\$	52,650.00	3.10	0.10	\$	113,400.00	\$	68,850.00
83	2.80	0.15	\$	120,000.00	\$	65,000.00	1.60	0.10	\$	74,000.00	\$	46,500.00	2.50	0.13	\$	109,000.00	\$	65,000.00
84	0.80	0.10	\$	-	\$	-	0.00	0.10	\$	-	\$	-	0.50	0.10	\$	-	\$	-
85	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
86	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
87	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
88	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
89	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone	ID	SC5					SC7					SC8				
		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	
90	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
91	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
92	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
93	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
94	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1001	0.00	0.00	\$	166,530.00	\$	104,615.00	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1002	0.00	0.00	\$	87,750.00	\$	55,125.00	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1003	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1004	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1005	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1006	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1007	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1008	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1009	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1010	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1011	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1012	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1013	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1014	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1015	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1016	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1017	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1018	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1019	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1020	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1021	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1022	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1023	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1024	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1025	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1026	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1027	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1028	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1029	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1030	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1031	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1032	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1033	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1034	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1035	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1036	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1037	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1038	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1039	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-
1040	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	SC5					SC7					SC8				
	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	
1041	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1042	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1043	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1044	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1045	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1046	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1047	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1048	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1049	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1050	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1051	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1052	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1053	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1054	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1055	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1056	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1057	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1058	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1059	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1060	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1061	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1062	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1063	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1064	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1065	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1066	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1067	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1068	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1069	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1070	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1071	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1072	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1073	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1074	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1075	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1076	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1077	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1078	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1079	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$
1080	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	SC11					SC12					SC13				
	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Building Damage	Contents Damage	Building Damage
0	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.10	4.60	\$ 38,360.00	\$ 22,605.00			
1	1.56	0.33	\$ 187,390.00	\$ 113,350.00	1.77	0.38	\$ 200,890.00	\$ 120,025.00	1.98	0.42	\$ 221,100.00	\$ 129,500.00			
2	1.09	0.42	\$ -	\$ -	1.23	0.47	\$ -	\$ -	1.27	0.45	\$ -	\$ -			
3	1.39	0.30	\$ 287,780.00	\$ 176,805.00	1.56	0.35	\$ 305,340.00	\$ 186,205.00	1.73	0.39	\$ 328,140.00	\$ 196,300.00			
4	0.00	0.00	\$ -	\$ -	0.26	0.04	\$ -	\$ -	0.46	0.04	\$ 32,760.00	\$ 19,305.00			
5	0.20	0.08	\$ 61,600.00	\$ 36,300.00	0.29	0.10	\$ 345,600.00	\$ 204,300.00	0.44	0.12	\$ 391,800.00	\$ 233,800.00			
6	0.00	0.19	\$ -	\$ -	2.69	0.20	\$ -	\$ -	2.80	0.21	\$ -	\$ -			
7	0.63	0.19	\$ 67,200.00	\$ 39,600.00	0.57	0.17	\$ 67,200.00	\$ 39,600.00	0.63	0.20	\$ 67,200.00	\$ 39,600.00			
8	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.03	0.00	\$ -	\$ -			
9	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
10	0.00	0.00	\$ -	\$ -	0.01	0.00	\$ -	\$ -	0.07	0.03	\$ -	\$ -			
11	0.02	0.00	\$ -	\$ -	0.06	0.03	\$ 35,000.00	\$ 20,625.00	0.17	0.07	\$ 116,200.00	\$ 68,475.00			
12	0.12	0.07	\$ 28,000.00	\$ 16,500.00	0.23	0.12	\$ 161,000.00	\$ 94,875.00	0.39	0.18	\$ 173,960.00	\$ 104,595.00			
13	0.23	0.15	\$ 71,120.00	\$ 41,910.00	0.37	0.21	\$ 153,200.00	\$ 91,050.00	0.55	0.27	\$ 163,400.00	\$ 98,700.00			
14	0.30	0.13	\$ 72,040.00	\$ 43,095.00	0.48	0.19	\$ 80,760.00	\$ 49,885.00	0.69	0.24	\$ 89,050.00	\$ 55,960.00			
15	0.36	0.03	\$ -	\$ -	0.54	0.04	\$ -	\$ -	0.78	0.06	\$ -	\$ -			
16	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -			
17	0.68	0.11	\$ 75,600.00	\$ 44,550.00	0.80	0.13	\$ 75,600.00	\$ 44,550.00	0.83	0.14	\$ 86,400.00	\$ 52,650.00			
18	0.11	0.02	\$ -	\$ -	0.10	0.02	\$ -	\$ -	0.17	0.04	\$ -	\$ -			
19	0.17	0.03	\$ 75,600.00	\$ 44,550.00	0.19	0.03	\$ 75,600.00	\$ 44,550.00	0.25	0.04	\$ 75,600.00	\$ 44,550.00			
20	0.03	0.01	\$ -	\$ -	0.03	0.01	\$ -	\$ -	0.03	0.01	\$ -	\$ -			
21	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.02	0.00	\$ -	\$ -			
22	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.02	0.00	\$ -	\$ -			
23	0.00	0.00	\$ -	\$ -	0.04	0.01	\$ -	\$ -	0.14	0.04	\$ 35,560.00	\$ 20,955.00			
24	0.03	0.01	\$ -	\$ -	0.06	0.05	\$ -	\$ -	0.14	0.10	\$ 82,880.00	\$ 48,840.00			
25	0.07	0.07	\$ -	\$ -	0.15	0.10	\$ 36,960.00	\$ 21,780.00	0.25	0.17	\$ 36,960.00	\$ 21,780.00			
26	0.21	0.10	\$ 63,560.00	\$ 37,455.00	0.40	0.16	\$ 72,640.00	\$ 44,265.00	0.64	0.23	\$ 76,450.00	\$ 47,440.00			
27	0.48	0.14	\$ 67,000.00	\$ 41,500.00	0.70	0.19	\$ 74,000.00	\$ 46,500.00	0.94	0.24	\$ 80,000.00	\$ 49,500.00			
28	0.30	0.08	\$ -	\$ -	0.49	0.12	\$ 38,080.00	\$ 22,440.00	0.72	0.16	\$ 43,520.00	\$ 26,520.00			
29	0.09	0.07	\$ -	\$ -	0.18	0.09	\$ -	\$ -	0.27	0.14	\$ -	\$ -			
30	0.00	0.05	\$ -	\$ -	0.00	0.05	\$ -	\$ -	0.00	0.05	\$ -	\$ -			
31	0.00	0.02	\$ -	\$ -	0.00	0.03	\$ -	\$ -	0.00	0.04	\$ -	\$ -			
32	0.73	0.41	\$ 70,000.00	\$ 44,000.00	0.89	0.49	\$ 78,000.00	\$ 49,000.00	1.07	0.58	\$ 78,000.00	\$ 49,000.00			
33	0.73	0.20	\$ 212,000.00	\$ 132,000.00	0.90	0.25	\$ 224,000.00	\$ 138,000.00	1.16	0.32	\$ 246,000.00	\$ 153,000.00			
34	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.10	0.04	\$ -	\$ -			
35	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.03	0.00	\$ -	\$ -			
36	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.01	0.00	\$ -	\$ -			
37	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.03	0.00	\$ -	\$ -			
38	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.03	0.01	\$ -	\$ -			
39	0.00	0.00	\$ -	\$ -	0.04	0.02	\$ -	\$ -	0.11	0.07	\$ -	\$ -			
40	0.00	0.00	\$ -	\$ -	0.04	0.02	\$ -	\$ -	0.09	0.06	\$ -	\$ -			
41	0.02	0.00	\$ -	\$ -	0.03	0.04	\$ -	\$ -	0.14	0.09	\$ 45,920.00	\$ 27,060.00			
42	0.36	0.01	\$ -	\$ -	0.15	0.02	\$ -	\$ -	0.27	0.03	\$ 71,120.00	\$ 41,910.00			
43	0.00	0.01	\$ -	\$ -	0.00	0.01	\$ -	\$ -	0.18	0.03	\$ 28,000.00	\$ 16,500.00			
44	0.00	0.00	\$ -	\$ -	0.04	0.00	\$ -	\$ -	0.24	0.00	\$ -	\$ -			

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	SC11					SC12					SC13				
	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Building Damage	Contents Damage	Building Damage
45	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	-	\$ -	-
46	0.06	0.01	\$ -	\$ -	0.11	0.01	\$ -	\$ -	0.14	0.01	\$ -	\$ -	40,600.00	\$ -	23,925.00
47	0.14	0.01	\$ -	\$ -	0.21	0.02	\$ -	\$ -	0.33	0.02	\$ -	\$ -	-	\$ -	-
48	0.18	0.01	\$ 28,000.00	\$ 16,500.00	0.29	0.01	\$ 32,000.00	\$ 19,500.00	0.44	0.02	\$ 82,120.00	\$ 49,035.00	-	\$ -	-
49	0.37	0.14	\$ 128,000.00	\$ 78,000.00	0.54	0.18	\$ 128,000.00	\$ 78,000.00	0.73	0.19	\$ 140,000.00	\$ 88,000.00	-	\$ -	-
50	0.47	0.19	\$ 134,000.00	\$ 83,000.00	0.64	0.24	\$ 134,000.00	\$ 83,000.00	0.85	0.30	\$ 148,000.00	\$ 93,000.00	-	\$ -	-
51	0.27	0.06	\$ 198,250.00	\$ 120,020.00	0.39	0.08	\$ 285,820.00	\$ 175,030.00	0.57	0.08	\$ 306,910.00	\$ 191,370.00	-	\$ -	-
52	0.22	0.08	\$ -	\$ -	0.19	0.05	\$ -	\$ -	0.28	0.07	\$ 112,000.00	\$ 66,000.00	-	\$ -	-
53	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.02	0.00	\$ -	\$ -	-	\$ -	-
54	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.02	0.00	\$ -	\$ -	-	\$ -	-
55	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	-	\$ -	-
56	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.05	0.02	\$ -	\$ -	-	\$ -	-
57	0.24	0.01	\$ -	\$ -	0.33	0.02	\$ -	\$ -	0.67	0.07	\$ 28,000.00	\$ 16,500.00	-	\$ -	-
58	0.22	0.01	\$ 46,200.00	\$ 27,225.00	0.29	0.02	\$ 52,800.00	\$ 32,175.00	0.81	0.04	\$ 242,550.00	\$ 150,150.00	-	\$ -	-
59	0.27	0.04	\$ 184,800.00	\$ 108,900.00	0.61	0.04	\$ 216,150.00	\$ 132,825.00	1.30	0.05	\$ 287,100.00	\$ 176,550.00	-	\$ -	-
60	0.43	0.02	\$ 156,750.00	\$ 95,700.00	0.52	0.03	\$ 156,750.00	\$ 95,700.00	1.20	0.06	\$ 219,450.00	\$ 135,300.00	-	\$ -	-
61	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.11	0.01	\$ 35,840.00	\$ 21,120.00	-	\$ -	-
62	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	1.28	0.09	\$ -	\$ -	-	\$ -	-
63	1.94	0.09	\$ 124,000.00	\$ 72,750.00	2.43	0.11	\$ 139,750.00	\$ 69,875.00	3.20	0.16	\$ 215,000.00	\$ 107,500.00	-	\$ -	-
64	1.86	0.01	\$ 62,720.00	\$ 38,400.00	2.36	0.03	\$ 76,800.00	\$ 44,800.00	3.15	0.11	\$ 128,000.00	\$ 64,000.00	-	\$ -	-
65	1.54	0.01	\$ 116,620.00	\$ 60,000.00	2.03	0.02	\$ 130,900.00	\$ 65,000.00	2.80	0.06	\$ 166,600.00	\$ 85,000.00	-	\$ -	-
66	0.71	0.00	\$ 32,000.00	\$ 19,500.00	0.89	0.01	\$ 32,000.00	\$ 19,500.00	1.65	0.01	\$ 45,000.00	\$ 27,500.00	-	\$ -	-
67	1.22	0.05	\$ -	\$ -	1.71	0.07	\$ -	\$ -	2.49	0.11	\$ -	\$ -	-	\$ -	-
68	1.15	0.04	\$ -	\$ -	1.44	0.06	\$ -	\$ -	1.94	0.09	\$ -	\$ -	-	\$ -	-
69	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	-	\$ -	-
70	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	-	\$ -	-
71	0.00	0.00	\$ -	\$ -	0.28	0.01	\$ 92,000.00	\$ 55,500.00	0.61	0.01	\$ 169,000.00	\$ 104,500.00	-	\$ -	-
72	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	-	\$ -	-
73	0.29	0.05	\$ 32,000.00	\$ 19,500.00	0.31	0.04	\$ 32,000.00	\$ 19,500.00	0.36	0.03	\$ 101,360.00	\$ 61,105.00	-	\$ -	-
74	0.36	0.05	\$ 144,440.00	\$ 86,730.00	0.51	0.07	\$ 156,600.00	\$ 96,100.00	0.70	0.07	\$ 164,130.00	\$ 102,375.00	-	\$ -	-
75	0.09	0.01	\$ -	\$ -	0.25	0.02	\$ 118,000.00	\$ 70,500.00	0.31	0.03	\$ 192,500.00	\$ 115,500.00	-	\$ -	-
76	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	-	\$ -	-
77	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.02	0.00	\$ -	\$ -	-	\$ -	-
78	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.03	0.00	\$ -	\$ -	-	\$ -	-
79	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.10	0.00	\$ -	\$ -	-	\$ -	-
80	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	1.15	0.03	\$ -	\$ -	-	\$ -	-
81	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	-	\$ -	-
82	2.42	0.07	\$ 105,300.00	\$ 52,650.00	2.89	0.09	\$ 113,400.00	\$ 68,850.00	3.60	0.10	\$ 162,000.00	\$ 81,000.00	-	\$ -	-
83	1.59	0.11	\$ 94,000.00	\$ 57,500.00	2.08	0.14	\$ 109,000.00	\$ 65,000.00	2.83	0.18	\$ 165,000.00	\$ 82,500.00	-	\$ -	-
84	0.24	0.03	\$ -	\$ -	0.56	0.05	\$ -	\$ -	0.99	0.11	\$ -	\$ -	-	\$ -	-
85	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.04	0.00	\$ -	\$ -	-	\$ -	-
86	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.08	0.01	\$ -	\$ -	-	\$ -	-
87	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.29	0.00	\$ -	\$ -	-	\$ -	-
88	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.50	0.00	\$ -	\$ -	-	\$ -	-
89	0.00	0.00	\$ -	\$ -	0.00	0.00	\$ -	\$ -	0.32	0.00	\$ -	\$ -	-	\$ -	-

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	SC11					SC12					SC13						
	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage		Depth (m)	Velocity (m/s)	Building Damage	Contents Damage			
90	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.36	0.00	\$	-	\$	-
91	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.42	0.00	\$	-	\$	-
92	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.24	0.00	\$	36,680.00	\$	21,615.00
93	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.36	0.00	\$	-	\$	-
94	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.30	0.01	\$	-	\$	-
1001	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1002	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1003	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1004	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1005	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1006	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1007	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1008	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1009	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1010	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1011	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1012	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1013	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1014	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1015	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1016	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1017	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1018	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1019	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1020	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1021	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1022	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1023	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1024	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1025	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1026	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1027	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1028	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1029	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1030	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1031	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1032	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1033	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1034	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1035	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1036	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1037	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.06	0.00	\$	-	\$	-
1038	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1039	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1040	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	SC11					SC12					SC13						
	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	Building Damage	Contents Damage	Building Damage		
1041	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1042	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1043	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1044	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1045	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.07	0.00	\$	-	\$	-
1046	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1047	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1048	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1049	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1050	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1051	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1052	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1053	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1054	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1055	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1056	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1057	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1058	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1059	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1060	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1061	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1062	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1063	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1064	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1065	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1066	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1067	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1068	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1069	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1070	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1071	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1072	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1073	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1074	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1075	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1076	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1077	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1078	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1079	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-
1080	0.00	0.00	\$	-	\$	0.00	0.00	\$	-	\$	-	0.00	0.00	\$	-	\$	-

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone	SC14				
	ID	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage
0	1.00	5.00	\$	137,000.00	\$ 68,500.00
1	2.52	0.55	\$	253,400.00	\$ 137,275.00
2	1.06	0.40	\$	-	\$ -
3	2.08	0.50	\$	386,400.00	\$ 211,650.00
4	0.46	0.14	\$	111,790.00	\$ 67,485.00
5	0.72	0.16	\$	453,800.00	\$ 278,300.00
6	3.52	0.33	\$	-	\$ -
7	0.77	0.27	\$	110,400.00	\$ 66,600.00
8	0.09	0.02	\$	28,000.00	\$ 16,500.00
9	0.06	0.04	\$	-	\$ -
10	0.28	0.09	\$	28,000.00	\$ 16,500.00
11	0.48	0.15	\$	132,800.00	\$ 80,925.00
12	0.75	0.30	\$	193,720.00	\$ 120,225.00
13	0.98	0.40	\$	190,300.00	\$ 119,600.00
14	1.16	0.35	\$	100,770.00	\$ 62,535.00
15	1.27	0.09	\$	-	\$ -
16	0.00	0.00	\$	-	\$ -
17	1.30	0.25	\$	105,300.00	\$ 66,150.00
18	0.48	0.11	\$	75,600.00	\$ 44,550.00
19	0.53	0.11	\$	86,400.00	\$ 52,650.00
20	0.06	0.03	\$	33,600.00	\$ 19,800.00
21	0.07	0.02	\$	28,000.00	\$ 16,500.00
22	0.07	0.02	\$	28,000.00	\$ 16,500.00
23	0.34	0.11	\$	93,440.00	\$ 56,940.00
24	0.33	0.19	\$	129,720.00	\$ 78,345.00
25	0.53	0.27	\$	117,560.00	\$ 70,125.00
26	1.13	0.35	\$	88,530.00	\$ 55,615.00
27	1.44	0.33	\$	94,000.00	\$ 57,500.00
28	1.21	0.23	\$	53,040.00	\$ 33,320.00
29	0.64	0.20	\$	33,320.00	\$ 19,635.00
30	0.00	0.07	\$	-	\$ -
31	0.00	0.06	\$	-	\$ -
32	1.46	0.78	\$	98,000.00	\$ 60,000.00
33	1.69	0.48	\$	298,000.00	\$ 180,000.00
34	0.19	0.09	\$	78,680.00	\$ 46,365.00
35	0.05	0.02	\$	-	\$ -
36	0.05	0.02	\$	-	\$ -
37	0.09	0.02	\$	28,000.00	\$ 16,500.00
38	0.15	0.05	\$	87,920.00	\$ 51,810.00
39	0.27	0.14	\$	76,720.00	\$ 45,210.00
40	0.20	0.12	\$	121,240.00	\$ 71,445.00
41	0.44	0.16	\$	100,520.00	\$ 61,490.00
42	0.67	0.07	\$	137,780.00	\$ 85,825.00
43	0.41	0.10	\$	35,000.00	\$ 22,000.00
44	0.35	0.02	\$	33,600.00	\$ 19,800.00

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	SC14			
	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage
45	0.06	0.00	\$ -	\$ -
46	0.25	0.02	\$ 213,560.00	\$ 126,780.00
47	0.56	0.05	\$ -	\$ -
48	0.70	0.03	\$ 92,280.00	\$ 56,905.00
49	1.08	0.31	\$ 156,000.00	\$ 98,000.00
50	1.28	0.45	\$ 168,000.00	\$ 104,000.00
51	0.88	0.18	\$ 336,400.00	\$ 210,555.00
52	0.40	0.14	\$ 200,600.00	\$ 121,425.00
53	0.07	0.02	\$ 37,800.00	\$ 22,275.00
54	0.09	0.04	\$ -	\$ -
55	0.06	0.02	\$ -	\$ -
56	0.14	0.07	\$ 60,480.00	\$ 35,640.00
57	1.28	0.12	\$ 39,000.00	\$ 24,500.00
58	1.61	0.09	\$ 334,950.00	\$ 202,125.00
59	2.10	0.07	\$ 379,500.00	\$ 222,750.00
60	2.01	0.13	\$ 278,850.00	\$ 165,000.00
61	0.47	0.06	\$ 112,320.00	\$ 69,305.00
62	1.68	0.10	\$ -	\$ -
63	4.01	0.22	\$ 215,000.00	\$ 107,500.00
64	3.97	0.21	\$ 128,000.00	\$ 64,000.00
65	3.62	0.09	\$ 238,000.00	\$ 100,000.00
66	2.45	0.03	\$ 55,000.00	\$ 32,500.00
67	3.29	0.15	\$ -	\$ -
68	2.35	0.15	\$ -	\$ -
69	0.42	0.01	\$ -	\$ -
70	0.34	0.02	\$ -	\$ -
71	1.04	0.10	\$ 213,000.00	\$ 131,500.00
72	0.06	0.00	\$ -	\$ -
73	0.50	0.07	\$ 214,560.00	\$ 128,765.00
74	1.00	0.14	\$ 182,040.00	\$ 114,375.00
75	0.44	0.07	\$ 324,500.00	\$ 196,500.00
76	0.07	0.04	\$ -	\$ -
77	0.09	0.03	\$ 28,000.00	\$ 16,500.00
78	0.06	0.02	\$ 78,680.00	\$ 46,365.00
79	0.29	0.02	\$ 60,000.00	\$ 36,000.00
80	1.53	0.05	\$ -	\$ -
81	0.67	0.00	\$ 44,800.00	\$ 26,400.00
82	4.39	0.15	\$ 162,000.00	\$ 81,000.00
83	3.63	0.21	\$ 200,000.00	\$ 100,000.00
84	1.27	0.20	\$ -	\$ -
85	0.35	0.02	\$ 28,000.00	\$ 16,500.00
86	0.20	0.04	\$ 28,000.00	\$ 16,500.00
87	0.21	0.03	\$ -	\$ -
88	0.79	0.01	\$ -	\$ -
89	0.93	0.00	\$ 42,560.00	\$ 25,935.00

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone ID	Depth (m)	Velocity (m/s)	SC14		
			Building Damage	Contents Damage	
90	0.63	0.01	\$ 35,280.00	\$ 20,790.00	
91	0.69	0.02	\$ 63,680.00	\$ 38,805.00	
92	0.68	0.01	\$ 92,250.00	\$ 57,095.00	
93	0.59	0.02	\$ 48,640.00	\$ 29,640.00	
94	0.42	0.04	\$ 77,000.00	\$ 33,000.00	
1001	0.11	0.10	\$ 28,000.00	\$ 16,500.00	
1002	0.03	0.01	\$ -	\$ -	-
1003	0.05	0.03	\$ -	\$ -	-
1004	0.04	0.02	\$ -	\$ -	-
1005	0.00	0.00	\$ -	\$ -	-
1006	0.04	0.01	\$ -	\$ -	-
1007	0.00	0.00	\$ -	\$ -	-
1008	0.00	0.00	\$ -	\$ -	-
1009	0.05	0.02	\$ -	\$ -	-
1010	0.06	0.03	\$ -	\$ -	-
1011	0.00	0.00	\$ -	\$ -	-
1012	0.01	0.00	\$ -	\$ -	-
1013	0.03	0.00	\$ -	\$ -	-
1014	0.04	0.02	\$ -	\$ -	-
1015	0.05	0.01	\$ -	\$ -	-
1016	0.13	0.03	\$ -	\$ -	-
1017	0.04	0.03	\$ -	\$ -	-
1018	0.00	0.00	\$ -	\$ -	-
1019	0.02	0.00	\$ -	\$ -	-
1020	0.05	0.02	\$ -	\$ -	-
1021	0.00	0.00	\$ -	\$ -	-
1022	0.00	0.00	\$ -	\$ -	-
1023	0.00	0.00	\$ -	\$ -	-
1024	0.00	0.00	\$ -	\$ -	-
1025	0.00	0.00	\$ -	\$ -	-
1026	0.00	0.00	\$ -	\$ -	-
1027	0.06	0.00	\$ -	\$ -	-
1028	0.04	0.02	\$ -	\$ -	-
1029	0.00	0.00	\$ -	\$ -	-
1030	0.00	0.00	\$ -	\$ -	-
1031	0.00	0.00	\$ -	\$ -	-
1032	0.00	0.00	\$ -	\$ -	-
1033	0.00	0.00	\$ -	\$ -	-
1034	0.00	0.00	\$ -	\$ -	-
1035	0.01	0.00	\$ -	\$ -	-
1036	0.05	0.00	\$ -	\$ -	-
1037	0.38	0.00	\$ -	\$ -	-
1038	0.06	0.02	\$ -	\$ -	-
1039	0.00	0.00	\$ -	\$ -	-
1040	0.00	0.00	\$ -	\$ -	-

## Spatial Zones - Descriptions and Damage Summary by Scenario

Table 2

Zone	SC14				
ID	Depth (m)	Velocity (m/s)	Building Damage	Contents Damage	
1041	0.00	0.00	\$	-	\$
1042	0.00	0.00	\$	-	\$
1043	0.00	0.00	\$	-	\$
1044	0.11	0.00	\$	-	\$
1045	0.36	0.00	\$	-	\$
1046	0.00	0.00	\$	-	\$
1047	0.00	0.00	\$	-	\$
1048	0.00	0.00	\$	-	\$
1049	0.00	0.00	\$	-	\$
1050	0.00	0.00	\$	-	\$
1051	0.00	0.00	\$	-	\$
1052	0.00	0.00	\$	-	\$
1053	0.19	0.01	\$	-	\$
1054	0.20	0.02	\$	-	\$
1055	0.00	0.00	\$	-	\$
1056	0.00	0.00	\$	-	\$
1057	0.00	0.00	\$	-	\$
1058	0.00	0.00	\$	-	\$
1059	0.00	0.00	\$	-	\$
1060	0.17	0.00	\$	-	\$
1061	0.27	0.02	\$	-	\$
1062	0.20	0.01	\$	-	\$
1063	0.00	0.00	\$	-	\$
1064	0.00	0.00	\$	-	\$
1065	0.00	0.00	\$	-	\$
1066	0.00	0.00	\$	-	\$
1067	0.00	0.00	\$	-	\$
1068	0.00	0.00	\$	-	\$
1069	0.00	0.00	\$	-	\$
1070	0.19	0.02	\$	-	\$
1071	0.06	0.01	\$	-	\$
1072	0.00	0.00	\$	-	\$
1073	0.00	0.00	\$	-	\$
1074	0.00	0.00	\$	-	\$
1075	0.00	0.00	\$	-	\$
1076	0.00	0.00	\$	-	\$
1077	0.18	0.02	\$	-	\$
1078	0.00	0.00	\$	-	\$
1079	0.00	0.00	\$	-	\$
1080	0.00	0.00	\$	-	\$