Scientific Name: ***Acipenser medirostris*** EO NUM: 1
Common Name: **Green sturgeon** EO ID: 19198

Federal Status: SOC GRANK: G3 NHP List: 4 Category: Vertebrate Animal
State Status: SRANK: S3 HP Track: N ELCODE: AFCAA01030

Confirmed: First Obs: Last Obs: EO Rank:

Directions: COLUMBIA RIVER AND ESTUARY, UPSTREAM TO BONNEVILLE DAM. WILLAMETTE RIVER BELOW WILLAMETTE FALLS.

County Name	Ecoregion	Owner Name/Type
Clatsop	CR	STATE
Columbia	WC	
Multnomah	WV	

Watershed
- 1708000105 - COLUMBIA GORGE TRIBUTARIES W.
- 1708000106 - GORDON CREEK/LOWER SANDY RIVER
- 1708000302 - BEAVER CREEK
- 1708000303 - PLYMPTON CREEK
- 1708000601 - YOUNGS BAY TRIBUTARIES
- 1708000602 - BIG CREEK / GNAT CREEK
- 1709000704 - ABERNATHEY CREEK
- 1709001201 - JOHNSON CREEK
- 1709001202 - SCAPPOOSE CREEK/MULTNOMAH CHANNEL

Town-Range	Sec	Note	QuadCode	QuadName
008N010W			45121-E8	Tanner Butte
008N009W			45121-F8	Bonneville Dam
008N008W			45122-C5	Oregon City
009N008W			45122-D5	Gladstone
009N007W			45122-D6	Lake Oswego
008N006W			45122-E1	Multnomah Falls
009N006W			45122-E2	Bridal Veil
			45122-E3	Washougal
			45122-E4	Camas
			45122-E5	Mount Tabor
			45122-E6	Portland
			45122-E7	Linnton
			45122-F6	Vancouver
			45122-F7	Sauvie Island
			45122-G7	Saint Helens
			45122-H7	Deer Island
			46122-A7	Kalama
			46122-A8	Rainier
			46122-B8	Kelso
			46123-B1	Coal Creek
			46123-B2	Oak Point
			46123-B3	Nassa Point
			46123-B4	Cathlamet
			46123-B6	Cathlamet Bay
			46123-B7	Astoria
			46123-B8	Warrenton
			46123-C4	Skamokawa
			46123-C5	Grays River
			46123-C6	Rosburg
			46124-B1	Clatsop Spit

Managed Area Name

Source Feature [Uncertainty Type (Distance)] Use Class

19198 Line [Linear (8 m)]
38085 Line [Linear (8 m)]

Annual Observations

Feature ID Date Source Observation data

Occurence Data

EO Type: YEAR-ROUND - fish Minimum Elev.(m):

EO Data: NO COLLECTION INFORMATION AVAILABLE. GREEN STURGEON ADULTS ARE ABUNDANT AND THE NUMBERS ARE STABLE IN THE LOWER COLUMBIA RIVER. THEY ARE RARELY FOUND IN THE COLUMBIA RIVER FROM PUGET ISLAND (RM40) UPSTREAM TO BONNEVILLE DAM AND TO WILLAMETTE FALLS IN THE WILLAMETTE RIVER. (1995 ODFW BIENNIAL REPORT ON THE STATUS OF WILD FISH IN OREGON)

EO Comments:
Protection:
Management:
General: GREEN STURGEON NOT ABUNDANT IN ANY PACIFIC COAST ESTUARY. LITTLE IS KNOWN ABOUT ITS LIFE HISTORY. THIS SPECIES MORE MARINE ORIENTED THAN WHITE STURGEON AND SPENDS LIMITED AMOUNT OF TIME IN FRESHWATER (EXCEPT PERHAPS EARLY JUVENILES AND SPAWNING ADULTS). B91NOA01ORUS.

Scientific Name: ***Anodonta oregonensis*** EO NUM: 14
Common Name: **Oregon floater (mussel)** EO ID: 30363
Federal Status: GRANK: G5Q NHP List: 4 Category: Invertebrate Animal
State Status: SRANK: S3 HP Track: N ELCODE: IMBIV04110
Confirmed: First Obs: 1997-07-01 Last Obs: 1997-07-01 EO Rank: E - Verified extant (viability not assessed)
Directions: Mary S. Young State Park

County Name	Ecoregion	Owner Name/Type
Clackamas	WV	OPRD

Watershed: 1709001201 - JOHNSON CREEK

Town-Range	Sec	Note	QuadCode	QuadName
002S001E	24		45122-D5	Gladstone

Managed Area Name: MARY S. YOUNG STATE RECREATION AREA

Source Feature [Uncertainty Type (Distance)] Use Class: 51188 Point [Areal - Estimated (50 m)]
Annual Observations

Feature ID Date Source Observation data

Occurence Data
EO Type:
EO Data:
EO Comments:
Protection:
Management:
General: 2008 freshwater mollusk shapefile from ODFW, collector: Smith, Al
Minimum Elev.(m):

Scientific Name: ***Delphinium leucophaeum*** EO NUM: 15
Common Name: **White rock larkspur** EO ID: 21995
Federal Status: SOC GRANK: G2 NHP List: 1 Category: Vascular Plant
State Status: LE SRANK: S2 HP Track: Y ELCODE: PDRAN0B182
Confirmed: Y First Obs: 1977 Last Obs: 1977- EO Rank: Not ranked
Directions: OREGON CITY, BETWEEN ROAD AND WILLAMETTE RIVER AT POINT OVERLOOKING JOHN MCGLOUGHLIN'S BUST

County Name	Ecoregion	Owner Name/Type
Clackamas	WV	

Watershed:
1709000704 - ABERNATHEY CREEK
1709001005 - LOWER TUALATIN RIVER
1709001106 - ROARING RIVER
1709001201 - JOHNSON CREEK

Town-Range	Sec	Note	QuadCode	QuadName
002S002E	29		45122-C5	Oregon City
002S001E	35		45122-C6	Canby
002S002E	34		45122-D5	Gladstone
003S001E	01		45122-D6	Lake Oswego
003S002E	05			
003S001E	11			
003S002E	07			
003S002E	08			
002S001E	25			
003S001E	13			
003S002E	17			
002S001E	23			
002S002E	19			
002S002E	31			
002S002E	20			
002S001E	24			

Managed Area Name: WILLAMETTE RIVER GREENWAY

003S002E	18
003S002E	09
003S001E	12
003S002E	04
003S002E	06
003S001E	02
002S002E	33
002S002E	32
002S001E	36
002S002E	28
002S002E	30
002S001E	26
002S002E	21

Source Feature [Uncertainty Type (Distance)] Use Class

21995 Point [Areal - Estimated (4000 m)]

Annual Observations

* 1977 - PRESENT

Feature ID Date Source Observation data

Occurence Data

EO Type:

EO Data: SIGHTED BY LEO SIMM 1977

EO Comments: CLIFF

Protection:

Management:

General: FROM 1980 USFWS ENDANGERED SPECIES STATUS REPORT BY DARR, DEBBIE

Minimum Elev.(m): 91

Scientific Name: ***Oncorhynchus kisutch pop. 1***

Common Name: **Coho salmon (Lower Columbia River ESU)**

EO NUM: 37

EO ID: 3164

Federal Status: LT GRANK: G4T2Q NHP List: 1 Category: Vertebrate Animal

State Status: LE SRANK: S2 HP Track: Y ELCODE: AFCHA02031

Confirmed: First Obs: 2001-pre Last Obs: 2009 EO Rank: E - Verified extant (viability not assessed)

Directions: SCAPPOOSE BAY, MULTNOMAH CHANNEL, WILLAMETTE RIVER

County Name	Ecoregion	Owner Name/Type
Clackamas	WV	
Columbia		
Multnomah		

Watershed

1708000302 - BEAVER CREEK

1709001201 - JOHNSON CREEK

1709001202 - SCAPPOOSE CREEK/MULTNOMAH CHANNEL

Town-Range	Sec	Note	QuadCode	QuadName
002S001E	14		45122-C5	Oregon City
002S001E	10		45122-D5	Gladstone
002S001E	03		45122-D6	Lake Oswego
001S001E	35		45122-E6	Portland
001S001E	27		45122-E7	Linnton
004N001W	10		45122-F6	Vancouver
001S001E	10		45122-F7	Sauvie Island
001N001E	34		45122-F8	Dixie Mountain
001N001E	28		45122-G7	Saint Helens
001N001E	20		45122-G8	Chapman
001N001E	17		45122-H7	Deer Island
001N001E	18			
001N001W	12			
001N001E	06			
001N001W	02			
002N001E	31			
004N001W	08			
002N001W	34			
002N001W	25			
002N001W	28			
002N001W	23			
002N001W	21			
002N001W	20			

Managed Area Name

002N001W	14
002N001W	18
002N002W	12
002N001W	04
005N001W	34
003N001W	35
003N001W	33
003N002W	36
003N001W	28
003N001W	30
003N002W	25
003N001W	22
003N001W	20
003N001W	15
003N001W	17
003N001W	10
003N002W	12
003N001W	04
003N002W	02
004N001W	33
004N001W	31
004N001W	27
004N001W	29
004N001W	21
004N001W	16
002S002E	19
002S001E	13
004N001W	17
002S001E	24
002S002E	30
004N001W	20
004N001W	30
004N001W	28
004N002W	36
004N001W	34
003N002W	01
003N001W	03
003N001W	09
003N002W	14
003N002W	13
003N001W	16
003N001W	19
003N001W	21
003N001W	23
003N001W	29
003N001W	27
003N001W	31
003N001W	34
002N002W	01
002N001W	06
002N001W	03
002N001W	07
002N001W	17
002N001W	13
004N001W	03
002N001W	22
002N001W	24
002N001W	27
002N001E	30
002N001W	35
002N001W	36
002N001E	32
001N001E	05
001N001W	11

001N001W	13
004N001W	09
001N001E	19
001N001E	21
001N001E	27
001S001E	03
001S001E	15
001S001E	22
001S001E	26
001S001E	36
002S001E	02
002S001E	11

Source Feature [Uncertainty Type (Distance)] Use Class — Annual Observations

Data currently not available.

Feature ID Date Source Observation data

Occurence Data

EO Type: REARING & MIGRATION - fish Minimum Elev.(m):

EO Data: 2009: Classified as rearing by ODFW. Undocumented fish observations. 2001: ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE.

EO Comments: Rearing & migration use.

Protection:

Management:

General: Distribution information used in this EOR was derived from ODFW geographic resources data produced and distributed in 1999. Unless specific data exists in the data field, the information presented in this EOR represents the "best professional judgement" by ODFW's district fisheries biologist; the presence of coho in described areas should be considered undocumented but as having a potential of being present. EOR was updated using ODFW geographic resources data produced and distributed in 2004. Updated with 2009 ODFW data.

Scientific Name: ***Oncorhynchus mykiss pop. 27*** EO NUM: 1

Common Name: **Steelhead (Lower Columbia River ESU, winter run)** EO ID: 851

Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal

State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCHA02132

Confirmed: First Obs: 1999-PRE Last Obs: 1999-PRE EO Rank:

Directions: SCAPPOOSE BAY, MULTNOMAH CHANNEL, WILLAMETTE RIVER

County Name	Ecoregion	Owner Name/Type	Watershed
Clackamas			17090012 - Lower Willamette
Columbia			
Multnomah			

Town-Range	Sec	Note	QuadCode	QuadName	Managed Area Name
			45122-C5	Oregon City	
			45122-D5	Gladstone	
			45122-D6	Lake Oswego	
			45122-E6	Portland	
			45122-E7	Linnton	
			45122-F7	Sauvie Island	
			45122-G7	Saint Helens	

Source Feature [Uncertainty Type (Distance)] Use Class — Annual Observations

Data currently not available.

Feature ID Date Source Observation data

Occurence Data

EO Type: REARING & MIGRATION - fish Minimum Elev.(m):

EO Data: WINTER RUN: ODFW DISTRIBUTIION MAPS USED TO CREATE THE 1:24,000 COVERAGE

EO Comments:

Protection:

Management:

General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 1999. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF STEELHEAD IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oncorhynchus tshawytscha pop. 21*** EO NUM: 6
Common Name: **Chinook salmon (Lower Columbia River ESU, spring run)** EO ID: 3132

Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCHA0205W
Confirmed: First Obs: 1999-PRE Last Obs: 2009 EO Rank: E - Verified extant (viability not assessed)
Directions: SCAPPOOSE BAY, MULTNOMAH CHANNEL, WILLAMETTE RIVER

County Name	Ecoregion	Owner Name/Type	Watershed
Clackamas			17090012 - Lower Willamette
Columbia			
Multnomah			

Town-Range	Sec	Note	QuadCode	QuadName	Managed Area Name
			45122-C5	Oregon City	
			45122-D5	Gladstone	
			45122-D6	Lake Oswego	
			45122-E6	Portland	
			45122-E7	Linnton	
			45122-F7	Sauvie Island	
			45122-G7	Saint Helens	

Source Feature [Uncertainty Type (Distance)] Use Class — Annual Observations

Data currently not available.

Feature ID Date Source Observation data

Occurence Data

EO Type: REARING & MIGRATION - fish Minimum Elev.(m):
EO Data: SPRING RUN; ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE
EO Comments:
Protection:
Management:
General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 1999. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF CHINOOK IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT.

Scientific Name: ***Oncorhynchus tshawytscha pop. 22*** EO NUM: 6
Common Name: **Chinook salmon (Lower Columbia River ESU, fall run)** EO ID: 778

Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal
State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCHA0205Y
Confirmed: First Obs: 1999-PRE Last Obs: 2009 EO Rank: E - Verified extant (viability not assessed)
Directions: SCAPPOOSE BAY & TRIBUTARIES, WILLAMETTE RIVER & TRIBUTARIES

County Name	Ecoregion	Owner Name/Type	Watershed
Clackamas	WV		1709000704 - ABERNATHEY CREEK
Columbia			1709001201 - JOHNSON CREEK
Multnomah			1709001202 - SCAPPOOSE CREEK/MULTNOMAH CHANNEL

Town-Range	Sec	Note	QuadCode	QuadName	Managed Area Name
001S001E	10		45122-C5	Oregon City	
004N001W	16		45122-D5	Gladstone	
001S001E	27		45122-D6	Lake Oswego	
001S001E	35		45122-E6	Portland	
002S001E	02		45122-E7	Linnton	
002S001E	14		45122-F7	Sauvie Island	
002S001E	24		45122-G7	Saint Helens	

002S002E	19
002S002E	31
004N001W	15
002S001E	13
002S002E	30
002S001E	11
001S001E	36
001S001E	26
001S001E	22
001S001E	15
001S001E	03
001N001E	27
001N001E	21
001N001E	19
004N001W	17
001N001W	12
001N001E	06
001N001W	02
002N001W	36
002N001W	34
002N001W	25
002N001W	28
002N001W	23
002N001W	21
002N001W	14
004N001W	09
002N001W	07
002N001W	03
002N001W	06
003N001W	35
003N001W	33
003N001W	31
003N001W	27
003N001W	29
003N002W	25
003N001W	22
003N001W	19
003N001W	16
003N001W	10
003N001W	03
003N002W	01
004N001W	34
004N001W	31
004N001W	27
004N001W	29
004N001W	21
004N001W	20
004N001W	30
004N001W	28
004N002W	36
004N001W	33
003N001W	04
003N001W	09
003N001W	17
003N001W	15
003N001W	20
003N001W	21
003N001W	23
003N001W	30
003N001W	28
003N002W	36
003N001W	34
002N002W	01
002N001W	04

002N002W	12
002N001W	18
002N001W	17
002N001W	20
002N001W	22
002N001W	24
002N001W	27
004N001W	10
002N001W	35
002N001E	31
001N001E	05
001N001W	11
001N001W	13
001N001E	18
001N001E	20
001N001E	28
001N001E	34

Source Feature [Uncertainty Type (Distance)] Use Class Annual Observations

Data currently not available.

Feature ID Date Source Observation data

Occurence Data

EO Type: REARING & MIGRATION - fish Minimum Elev.(m):

EO Data: 2009: Classified as rearing by ODFW. Undocumented fish observation. FALL RUN; ODFW DISTRIBUTION MAPS USED TO CREATE THE 1:24,000 COVERAGE

EO Comments:

Protection:

Management:

General: DISTRIBUTION INFORMATION USED IN THIS EOR WAS DERIVED FROM ODFW GEOGRAPHIC RESOURCES DATA PRODUCED AND DISTRIBUTED IN 1999. UNLESS SPECIFIC DATA EXISTS IN THE DATA FIELD, THE INFORMATION PRESENTED IN THIS EOR REPRESENTS THE "BEST PROFESSIONAL JUDGMENT" BY ODFW'S DISTRICT FISHERIES BIOLOGIST; THE PRESENCE OF CHINOOK IN DESCRIBED AREAS SHOULD BE CONSIDERED UNDOCUMENTED BUT AS HAVING A POTENTIAL OF BEING PRESENT. Updated with 2009 ODFW 1:24,000 coverage.

Scientific Name: ***Oncorhynchus tshawytscha pop. 23*** EO NUM: 91

Common Name: **Chinook salmon (Upper Willamette River ESU, spring run)** EO ID: 31243

Federal Status: LT GRANK: G5T2Q NHP List: 1 Category: Vertebrate Animal

State Status: SC SRANK: S2 HP Track: Y ELCODE: AFCHA02052

Confirmed: First Obs: 2009-pre Last Obs: 2009 EO Rank: E - Verified extant (viability not assessed)

Directions: From the mouth of the Willamette River to confluence with the Clackamas River.

County Name	Ecoregion	Owner Name/Type	Watershed
Clackamas	WV		1709001201 - JOHNSON CREEK
Multnomah			1709001202 - SCAPPOOSE CREEK/MULTNOMAH CHANNEL

Town-Range	Sec	Note	QuadCode	QuadName	Managed Area Name
002N001W	22		45122-C5	Oregon City	
001N001E	28		45122-D5	Gladstone	
002N001W	13		45122-D6	Lake Oswego	
002N001W	14		45122-E6	Portland	
001N001E	19		45122-E7	Linnton	
001N001E	18		45122-F7	Sauvie Island	
001N001W	13				
002S002E	30				
001N001W	12				
001N001E	20				
001N001E	21				
001N001W	11				
001N001E	27				
001N001E	34				
001S001E	03				
002S001E	13				

002S001E	14
001N001W	02
002S001E	02
002N001W	35
001S001E	35
001S001E	26
002S001E	11
002N001W	34
001S001E	27
002S001E	24
002S002E	19
001S001E	22
002N001W	27
001S001E	15
001S001E	10
002N001W	23

Source Feature [Uncertainty Type (Distance)] Use Class Annual Observations

Data currently not available.

Feature ID Date Source Observation data

Occurence Data

EO Type: Minimum Elev.(m):

EO Data: 2009: Classified as rearing by ODFW.

EO Comments:

Protection:

Management:

General: Distribution information used in this EOR was derived from ODFW 1:24,000 scale geographic resources data produced and distributed in 2009. Use type was determined by ODFW and other natural resources agency field staff based on survey data, supporting documentation, and the best professional judgement of the field biologists. Unless otherwise noted, the presence of chinook in described areas should be considered undocumented but as having a potential of being present.

8 records total

Key to Oregon Natural Heritage Information Center Data

Field Name	Description
Scientific Name	The scientific name of the species.
Common Name	The common name of the species.
Category	Value that indicates the broad biological category for each species.
ELCODE	Unique NatureServe code for identifying this element. 1st and 2nd byte (PD=Plant dict, PM=Plant monocot, PG=Plant gymnosperm, PP=Plant pteridophyte, AA=amphibian, AB=bird, AF=fish, AM=mammal, AR=reptile, I=invertebrate. 3rd-5th byte (family abbreviation). 6th-7th (genus code). 8th-9th (species). 10th (tie breaker).
Federal Status	US Fish and Wildlife Service or NOAA Fisheries status. **LE**=listed endangered, **LT**=listed threatened, **PE** or **PT**=proposed endangered or threatened, **C**=candidate for listing with enough information available for listing, **SOC** or **SC**=species of concern, **PS:***xx*=partial status for species.
State Status	For animals, Oregon Department of Fish and Wildlife status; **LE**=listed endangered, **PE**=proposed endangered, **PT**=proposed threatened, **SC** or **C**=sensitive-critical, **SV** or **V**=sensitive-vulnerable, **SP** or **P**=sensitive-peripheral, **SU** or **U**=sensitive-undetermined status. For plants, Oregon Department of Agriculture status; **LE**=listed endangered, **LT**=listed threatened, **C**=candidate.
GRANK/SRANK	ORNHIC participates in an international system for ranking rare, threatened and endangered species throughout the world. The system was developed by The Nature Conservancy and is now maintained by NatureServe in cooperation with Heritage Programs or Conservation Data Centers (CDCs) in all 50 states, in 4 Canadian provinces, and in 13 Latin American countries. The ranking is a 1-5 scale, primarily based on the number of known occurrences, but also including threats, sensitivity, area occupied, and other biological factors. In this book, the ranks occupy two lines. The top line is the Global Rank and begins with a "G". If the taxon has a trinomial (a subspecies, variety or recognized race), this is followed by a "T" rank indicator. A "Q" at the end of this line indicates the taxon has taxonomic questions. The second line is the State Rank and begins with the letter "S". The ranks are summarized as follows: **1** = Critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation, typically with 5 or fewer occurrences; **2** = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (extirpation), typically with 6-20 occurrences; **3** = Rare, uncommon or threatened, but not immediately imperiled, typically with 21-100 occurrences; **4** = Not rare and apparently secure, but with cause for long-term concern, usually with more than 100 occurrences; **5** = Demonstrably widespread, abundant, and secure; **H** = Historical Occurrence, formerly part of the native biota with the implied expectation that it may be rediscovered; **X** = Presumed extirpated or extinct; **U** = Unknown rank; **?** = Not yet ranked, or assigned rank is uncertain.
NHP list	All rare species in Oregon are assigned a list number of 1, 2, 3 or 4, where **1**=threatened or endangered throughout range, **2**=threatened or endangered in Oregon but more common elsewhere, **3**=Review List (more information is needed), **4**=Watch List (currently stable). A null value indicates the species is not currently on our rare species list.
HP Track	We currently obtain and computerize locational information for only those elements marked with **Y**(es). Those species marked with **N**(o) or **W**(atch) have incomplete data as we do not actively track them at this time.
EO NUM	The number of the Element Occurrence (EO) for this species. An element occurrence is an area of land or water where the species is or was known to occur and has conservation value. EOs are the main tracking unit for Heritage Programs.
EO ID	Unique identifier for the Element Occurrence (EO). Unique for each occurrence in the database.
First_obs	First reported sighting date for this occurrence in the form YYYY-MM-DD.
Last_obs	Last reported sighting date, usually in the form YYYY-MM-DD.

Key to Oregon Natural Heritage Information Center Data

Field Name	Description
Confirmed	Indication of whether taxonomic identification of the Element represented by this occurrence has been confirmed by a reliable individual. Blank=unknown, assumed to be correctly identified. Y=Yes, confident identification. ?=identification questions.
EO Rank	ORNHIC's determination of the viability of the occurrence.
Directions	Site name and/or directions to site.
County	County name(s) in which EO is mapped.
Ecoregion	Physiographic Province in which EO is mapped: **CR**=Coast Range, **WV**=Willamette Valley, **KM**=Klamath Mountains, **WC**=West slope and crest of the Cascades, **EC**=East slope of the Cascades, **BM**=Ochoco, Blue and Wallowa Mts., **BR**=Basin and Range, **CB**=Columbia Basin, **SP**=Snake River Plains.
Town-Range, Sec, and Note	United States rectangular land survey (also known as the Public Land Survey System) legal township, range, and section descriptions in which the EO is mapped. Township first (4 bytes), range second (4 bytes). For example: 004S029E = Township 4S, Range 29E. All locations are with reference to the Willamette Meridian. Fractional ranges or townships are indicated in the Note field.
Quadcode	USGS code for the USGS topographic quadrangle map(s) where the record is mapped.
Quadname	Name of the USGS topographic quadrangle map(s) where the record is mapped.
Watershed	Watershed(s), identified according to the U.S. Geological Survey (USGS) Hydrologic Unit Map 10-digit code, within which the Element Occurrence is located.
Owner Name/Type	Federal, State, Private, etc.
Managed Area Name	BLM District, USFS Forest, Private Preserve
Annual Observation	Summary of yearly observation.
Source Feature	A Source Feature is the initial translation of a discrete unit of observation data as a spatial feature. Creation of a Source Feature requires an interpretive process. The likely location and extent of an observation is determined through consideration of the amount and direction of any variability between the recorded and actual locations of the observation data. In most cases, the Source Feature is delineated to encompass locational uncertainty. A Source Feature can be a point, line, or polygon. The type of Source Feature developed depends on both the preceding conceptual feature type and the locational uncertainty associated with the feature.
Feature ID	Unique identifier for source feature.
Obs Date	Date of source feature observation.
Source Observation Data	Observations specific to the source feature.

Key to Oregon Natural Heritage Information Center Data

Field Name	Description
Uncertainty Type (Distance)	The recorded location of an observation of an Element may vary from its true location due to many factors, including the level of expertise of the data collector, differences in survey techniques and equipment used, and the amount and type of information obtained. This inaccuracy is characterized as locational uncertainty, and is assessed for Source Feature(s) based on the uncertainty associated with the underlying information on the location of the observation. Four categories of locational uncertainty have been identified, as follows: Negligible uncertainty is less than or equal to 6.25 meters in any dimension. Source Features with negligible uncertainty are based on a comprehensive field survey with high quality mapping and a high degree of certainty. Linear uncertainty is greater than 6.25 meters, and varies along an axis (e.g., a path, stream, ridgeline). The true location of an observation with linear uncertainty may be visualized as effectively sliding along a line that delineates the uncertainty. Areal delimited uncertainty is greater than 6.25 meters, and varies in more than one dimension. The true location of an observation can be visualized as floating within an area with a boundary that can be specifically delimited. Boundaries can be defined using roads, bodies of water, etc. Areal estimated uncertainty is greater than 6.25 meters, and varies in more than one dimension. A boundary cannot be specifically delimited based on the observation information, i.e., the actual extent is unknown. The true location of the observation can be visualized as floating within an area for which boundaries cannot be specifically delimited. Source Features with areal estimated uncertainty require that the user specify an estimated uncertainty distance to be used for buffering the feature to incorporate the locational uncertainty.
Use Class	How the source feature is used by migratory species (e.g. breeding, maternity colony, hibernaculum).
EO Type	For animals, type of occurrence, e.g. roost, nest, spawning.
EO Data	Summary of species and population biology for the EO – may include number observed, number of sites, reproduction data, assessment of viability, etc.
EO Comments	Habitat information, e.g. aspect, slope, soils, associated species, community type.
Minimum Elevation	Minimum elevation of the area covered by the range of the taxon, in meters. Negative numbers or blank=not determined.
Protection	Comments on protectibility and threats.
Management	Comments on how the site is managed.
General	Miscellaneous comments.

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Appendix G. Report Checklist

Oregon Department of State Lands
Wetland Determination/Delineation Report Requirements Checklist
(This form summarizes requirements and is not meant to replace the rules, OAR 141-090-0005 to 0055).

Report Name: WLWSD Erickson School Site City/County: West Linn / Clackamas
Consultant firm/Contact: Winzler & Kelly / NANCY OMSTED Firm's Project No.: 11456-09001
Department WD #: _____ Department Reviewer: _____
Other Department File #: _____ Phone: (503) 986-5____ Date: _____
Date ☐ Mailed ☐ Faxed ☐ E-mailed to: Consultant _____ Applicant/Agent _____

☐ Report does not conform to many requirements (OAR 141-090-0005 to 0055) and cannot be approved. . Please note the WD file number above if/when the report is revised and resubmitted. A complete new report and $100 fee is required for resubmittal of a rejected report.

*Items marked with an ☒ indicate that information provided within the report **does not** meet requirements, is not clear, or appears to be incorrect.*

Technical Requirements:
☐ Work conducted according to 1987 *Corps of Engineers Wetland Delineation Manual* including regional supplements and applicable guidance, and any supporting technical or guidance documents issued by the Department.
Comments:

Cover Form ☑ **Correct form and fully completed**
Report Format ☑ **Report conforms to the report format provided by the Department**
Comments:

Text Order and Required Sections:

A) Landscape Setting and Land Use
☑ Detailed description of the study area, its landscape setting, and previous and current land uses
Comments:

B) Site Alterations
☑ Description, approx. year, and analysis of any site alterations that likely affected the presence, location or boundaries of any waters of the state in the study area
Comments:

C) Precipitation Data and Analysis
☑ Precipitation on the day of AND approximately 1- 2 weeks before the date(s) of the field investigation(s)
☑ Percent of normal precipitation for the water year to date AND monthly percent of normal precipitation using appropriate NRCS WETS table for each of the 3 months preceding the field investigation
Comments:

D) Methods
☑ Date(s) of the field investigation
☑ Site-specific methods for conducting the field investigation, selection of sample plot locations, determination of boundaries
☑ Data include a sample plot that best represents each wetland and best represents adjacent non-wetland(s)
☑ Paired sample plots located close enough to either side of the wetland boundary to substantiate boundary location
☑ Data are provided for all mapped hydric soil units
☐ If the study area does not contain wetlands, at least one sample plot was placed in each of the lowest topographic areas or other locations most likely to contain wetlands to document site conditions.
☐ Field investigation of farmed site conducted in early growing season. If field work done at other time, appropriate method and requirements applied.
☐ If other waters are present, methodology described for determination of OHWL or HMT.
Comments:

E) Description of All Wetlands and Other Non-Wetland Waters

☐ Wetland and other water characteristics and boundaries including whether they extend offsite

Comments:

F) Deviation from LWI or NWI

☑ If any deviation, wetland determination data and explanation provided

Comments:

G) Mapping Method

☑ Methodology described including mapping precision estimate

Comments:

H) Additional Information

☑ Documentation of fish presence or absence in a stream or ditch, using published maps or reports or information from an authoritative source (e.g., ODFW)

☑ Data sufficient to determine whether or not an identified water area is artificially created entirely from upland and/or the purpose for which it was created

☐ Hydrology monitoring data, including spring hydrology data for farmed sites

☐ Additional aerial photographs (e.g. historical aerials used as basis of jurisdictional determination)

☐ Data or other information on pre-disturbance conditions

Comments:

I) ☑ Results and Conclusions

Comments:

J) ☐ Required Disclaimer

Appendices Requirements:

A) Figures:

☑ Location map showing the precise study area location

☑ Tax lot map showing the entire parcel(s)

☑ LWI map, if available, or NWI map(s), including map name(s) showing the study area

☑ County soil survey map showing the study area location/boundaries and a legend with all soil series mapped in the study area and hydric status

☑ Aerial photograph(s)-at least 1 recent photo labeled with month/year or at least 3 early growing season aerials for farmed sites

☐ Wetland map(s) comprising the wetland determination and/or delineation including:

- ☑ The boundaries of the entire parcel(s) subject to investigation; or if only a portion of the parcel(s) investigated, the study area boundary in relation to the parcel boundaries
- ☑ Existing structures, areas of fill, water diversions, or other major alterations
- ☑ All water features and their boundaries
- ☑ Numbered sample plots corresponding to data forms
- ☑ North arrow, scale bar,& legend
- ☑ Ground level photograph location and direction of view
- ☑ Wetland map(s) scale suitable for the study area size and for legibility
- ☐ Mapping method and precision statement

Comments:

B) Data Forms:

☑ Data forms from the appropriate regional Manual supplement, or provided by the Department

☑ Data form fully and correctly completed for each sample plot

☑ Data collected supports indicator selected and determination made

☑ Name(s) of field investigator(s)

☑ Standard NRCS soils terminology

☑ Soil profile description matches hydric soil indicator(s) selected, if any

☑ Latin botanical name for all plant species listed

☑ Wetland indicator status for all plant species listed and correct

☑ Correct method applied to determine dominant plant species

Comments:

C) ☑ Ground Level Color Photographs submitted and with captions

Comments:

CU-10-03
DR-10-06
VA-10-05
WA-10-01

DEVELOPMENT REVIEW APPLICATION

RECEIVED
MAY 14
PLANNING & BUILDING
CITY OF WEST LINN
INT. _____ TIME _____

TYPE OF REVIEW (Please check all boxes that apply):

[ ]	Annexation	[ ]	Non-Conforming Lots, Uses & Structures
[ ]	Appeal and Review *	[ ]	One-Year Extension *
[X]	Conditional Use 3650	[ ]	Planned Unit Development
[X]	Design Review 20000	[ ]	Pre-Application Meeting *
[ ]	Easement Vacation	[ ]	Quasi-Judicial Plan or Zone Change
[ ]	Extraterritorial Ext. of Utilities	[ ]	Street Vacation
[ ]	Final Plat or Plan	[ ]	Subdivision
[ ]	Flood Plain Construction	[ ]	Temporary Uses *
[ ]	Hillside Protection and Erosion Control	[ ]	Tualatin River Greenway
[ ]	Historic District Review 2700	[X]	Variance (4)
[ ]	Legislative Plan or Change 1800	[X]	Water Resource Area Protection/Wetland
[ ]	Lot Line Adjustment * /**	[ ]	Willamette River Greenway
[ ]	Minor Partition (Preliminary Plat or Plan)	[ ]	Other/Misc

Home Occupation, Pre-Application, Sidewalk Use Application *, Permanent Sign Review *, Temporary Sign Application require different application forms available in the forms and application section of the City Website or at City Hall.

TOTAL FEES/DEPOSIT _____

OWNER (PRINT)	ADDRESS	CITY	ZIP	PHONE & /OR E-MAIL
WEST LINN-WILS. SCHOOL DIST.	PO BOX 35	WEST LINN	OR 97062	503-673-7976

APPLICANT(PRINT)	ADDRESS	CITY	ZIP	PHONE &/OR E-MAIL
TIM WOODLEY	SAME AS ABOVE			

CONSULTANT(PRINT)	ADDRESS	CITY	ZIP	PHONE &/OR E-MAIL
KEITH LIDGE	PARSONS BRINKERHOFF 400 SW 6TH #802	PORTLAND	97204	503-478-2348

SITE LOCATION/ADDRESS ROSEMONT ROAD

Assessor's Map No.: 2S1E 23CD/S2 **Tax Lot(s):** 12500, 12700+ 12800 **Total Land Area:** 15.98 AC

1. **All application fees are non-refundable (excluding deposit).**
2. **The owner/applicant or their representative should be present at all public hearings.**
3. **A denial or approval may be reversed on appeal. No permit will be in effect until the appeal period has expired.**
4. **Four (4) complete hard-copy sets (single sided) of application materials must be submitted with this application. One (1) complete set of digital application materials must also be submitted on CD in PDF format.**
   *** No CD required / ** Only one copy needed**

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application.

SIGNATURE OF PROPERTY OWNER(S)
X _____ Date 5.13.10

SIGNATURE OF APPLICANT(S)
X _____ Date 5.7.10

ACCEPTANCE OF THIS APPLICATION DOES NOT INFER A COMPLETE SUBMITTAL. THE APPLICANT WAIVES THE RIGHT TO THE PROVISIONS OF ORS 94.020. ALL AMENDMENTS TO THE COMMUNITY DEVELOPMENT CODE AND TO OTHER REGULATIONS ADOPTED AFTER THE APPLICATION IS APPROVED SHALL BE ENFORCED WHERE APPLICABLE. APPROVED APPLICATIONS AND SUBSEQUENT DEVELOPMENT IS NOT VESTED UNDER THE PROVISIONS IN PLACE AT THE TIME OF INTIAL APPLICATION.

CONTACT: PLANNING AND BUILDING; 22500 SALAMO RD #1000; WEST LINN, OR 97068; PHONE: 656-4211 FAX: 656-4106
PLANNING@WESTLINNOREGON.GOV

p:\development review\forms\Development review app 2010 April 2010

ROSEMONT RIDGE MIDDLE SCHOOL
Class II Design Review
October 8, 2009

APPLICATION SUMMARY

For Class II Design Review approval to make the following improvements at Rosemont Ridge Middle School:

- Create a new bus exit driveway, and
- Install lights for the football field, track, and softball field.

GENERAL INFORMATION

Location

20001 Salamo Road (Assessor's Maps and Tax Lots - 2S 1E Section 26, TL 201 and 300; 2S 1E Section 26A, TL 701, 800, 900). Its location is shown in Figure 1.

Comprehensive Plan and Zoning Designations

Comprehensive Plan - Residential.

Zoning – R10 Single Family Residential, Detached.

Applicant and Owner

Tim Woodley, Director of Operations
West Linn-Wilsonville School District
P. O. Box 35
West Linn, OR 97068
Phone: 503-673-7976
E-mail: woodleyt@wlwv.K12.or.us

Applicant's Representatives

Keith Liden, AICP
Parsons Brinckerhoff
400 S. W. 6th Avenue, Suite 802
Portland, OR 97204
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Fax: 503-274-1412
E-mail: liden@pbworld.com

Steve Winkle, AIA
DOWA
907 S. W. Stark
Portland, OR 97205
Phone: 226-6950
Fax: 273-9192
E-mail: SteveW@dowa.com

Plan Sheets and Exhibits

RR-C1.0	Existing Conditions
RR-C2.0	General Arrangement
RR-C3.0	Demolition Plan
RR-C4.0	Site Plan
RR-C5.0	Grading and Erosion Control
RR-C6.0	Utility Plan
RR-C7.0	Wall Profile
RR-C8.0	Civil Details
L1.1	Overall Landscape Materials Plan
L1.2	Overall Landscape Planting Plan

Exhibit A	Geotechnical Investigation Rosemont Middle School Bus Lane
Exhibit B	Stormwater Management Report for Rosemont Ridge Middle School
Exhibit C	Rosemont Ridge Middle School Access/Circulation Study
Exhibit D	Rosemont Ridge Middle School Bus Noise Study
Exhibit E	Tualatin Valley Fire and Rescue Comments
Exhibit F	Exterior Lighting Plans – Athletic Fields and Driveway

Figure 1 – Vicinity Photo

Source: Google

BACKGROUND INFORMATION

Site Description

The driveway and athletic field improvements are proposed on a 21.56-acre site located along the west side of Salamo Road. The site is developed with Rosemont Ridge Middle School. The school is located in the northeast corner of the site, with parking located directly south of the building. The southern portion of the site includes the running track and softball field. A second baseball field is located in the northwest corner of the site. The property is relatively flat (Sheet RR-C1.0).

Surrounding Area Description

The zoning designations and current land use of the surrounding area are summarized in Table 1.

Table 1
Land Use Summary

Properties in the Vicinity	*Zone Designation*	*Land Use*
Subject Property	R-10	Middle School
Surrounding Properties North	FU10/R7/R10	Senior Center /Single family residences
West	RRFF5	Agricultural
East	R3	Single family residences/open space
South	R3/RRFF5	Single family residences/Agricultural

APPLICATION SUMMARY

On-Site Circulation

The school experiences on-site congestion and circulation problems in the morning and afternoon that are primarily due to conflicts between school buses and parents dropping off and picking up students. Currently, all vehicles must enter and leave via the driveway on Salamo Road. The intermingling of buses and cars continues to be a source of frustration for everyone trying to enter and leave the school.

The district proposes to resolve this circulation problem by creating a separate driveway exit for buses. The new driveway segment would connect the existing parking lot driveway with the existing emergency access driveway on Rosemont Road. Buses would continue to enter on the Salamo Road driveway but then be directed to the new one-way exit-only driveway, which will begin at the western end of the existing parking lot. The drop-off and pick-up area will be adjacent to the north side of the parking lot and the eastern side of the new driveway. Spaces for 13 buses will be available. Following drop-off in the morning and pick-up in the afternoon, the buses would then exit to Rosemont Road (Sheet RR-C4.0).

The driveway will have sufficient width to allow buses to pass buses parked along the curb. Once past the loading area, the driveway will be 14.5 feet wide. A sidewalk, with a width of 7 to 10.5 feet, will abut the edge of the new driveway. Construction of the driveway and sidewalk extension will require a modest amount of grading (Sheet RR-C5.0) and the construction of a retaining wall along the northern property boundary (Sheet RR-C7.0). The sidewalk will be constructed to meet all applicable ADA standards. The retaining wall will have a setback of over 6 feet from the property line. A 15-foot wide easement will be provided to allow placement of retaining wall anchors below grade on the adjoining property. Stormwater facilities will be provided as part of the new driveway (Sheet RR-C6.0).

Five new traffic signs are proposed including:

- Two "Bus Only Do Not Enter" signs at the bus driveway entrance from the parking lot.
- Two "Do Not Enter" signs located at the Rosemont Road bus driveway exit.
- One "Stop" sign at the driveway exit.

The signs are required to have a 7-foot clearance. With sign dimensions of 30 to 36 inches, the total sign heights will be approximately 10 feet. The sign locations are shown on Sheet RR-C4.0, and the sign drawings are provided on Sheet RR-C8.0.

The new driveway will require removal of 23 trees, most of which were planted as part of the landscaping improvements for the middle school (Sheet RR-C3.0). The trees include 20 pines and three deciduous trees, which are generally 4 to 6 inches in diameter. The City Arborist, Mike Perkins, visited with site with the district's landscape architect on October 6th, and the arborist found there were no significant trees on the site. The trees will be replaced adjacent to the new driveway as shown in Sheets L1.1 and L1.2.

A slope analysis (Sheet RR-C1.0) shows the location of Type I and II lands due to slope. The proposed bus driveway will traverse and an area of Type I and II slopes along the rear of the school. A geotechnical analysis concludes that the proposed driveway and retaining wall improvements can be appropriately designed (Exhibit A) to deal with the grade and provide stability. Stormwater issues associated with the improvements were also analyzed, and it was found that the existing east detention pond will be adequate to accommodate the increased runoff (Exhibit B).

The potential traffic and noise impacts of this change in circulation were evaluated. Fourteen buses enter and leave the site in the morning and afternoon. DKS Associates, found that the on-site circulation would be improved with the bus-only exit driveway, and the driveway exit location would perform well (Exhibit C). The level-of-service (LOS) during the morning and afternoon peak hours (LOS B and C respectively) will not be affected by the new bus egress onto Rosemont Road. The new circulation pattern will enhance pedestrian, bus, and vehicle safety on-site, and it will not have an adverse impact on traffic operations or safety in the vicinity of the school.

The potential noise impact of having buses driving around the north side of the school was analyzed by Altermatt Associates, Inc. (Exhibit D). Noise measurements were taken of the existing bus and vehicle operations at the school. Based upon the noise measurements taken, the new bus route through the site is not anticipated to exceed the city's noise standards.

Tualatin Valley Fire and Rescue has reviewed the proposal and submitted comments (Exhibit E).

Athletic Field Improvements

It is well known throughout the district that providing sufficient athletic field space to support a variety of district and community sports is always a challenge. To help address this issue, the district proposes to replace the football field grass with artificial turf as well as providing a new surface on the running track. While these improvements do not require Design Review, the proposed field lighting for the football field and eastern softball field do.

Exterior Lighting

The lighting is proposed for the football and softball fields to expand the time they are available throughout the year. The lights will only be on when the fields are in use. The fields typically will not be used past 9 p.m., and the lights will never be on after 10 p.m. The lighting fixtures are specially designed to prevent illumination beyond the fields. A lighting analysis of the proposed lighting system shows that lighting will not extend past the property line. The lighting plan sheet photos show how the light levels for the fields drop off almost completely once beyond the edge of the playing field (Exhibit F).

Additional exterior lighting will be provided for the new bus driveway. The lights adjacent to the bus driveway will be the same as the lights currently used in the parking area. Directly behind the building, wall park lights will be mounted to the building face. Both the pole top and wall pack lights will have full cutoff and meet the city's exterior lighting criteria. The light levels for the driveway are also presented in Exhibit F.

Affect on Nearby Residences

The one residence located to the northwest of the driveway (1156 Rosemont Road) is currently well-buffered from school activities and the proposed driveway because:

- The elevation at the property line is approximately 15 feet higher than the driveway elevation,
- The home improvements include a retaining wall with a solid fence along the school boundary,
- A solid evergreen screen of approximately 12-15 feet is on the north side of the fence, and
- The district plans to compensate for the tree removal by planting new trees in locations that will offer additional screening.

Other residences in the vicinity are over 100 feet to the south or east from the edge of the field areas to be illuminated. The fields are at a lower elevation than nearby homes. The one residence to the south is also partially buffered by existing fir trees. The homes to the east are separated by Salamo Road, which has street lights. Neighboring properties will not be adversely affected.

CITY OF WEST LINN APPROVAL CRITERIA

55.100 Class II Design Review

A. The provisions of the following chapters shall be met:

1. Chapter 33 - Storm Water Quality and Detention

The approval criteria in Section 33.040 identify a number of things that must be accomplished according to city requirements during construction. These requirements will be met in coordination with the district, Planning Director, and City Engineer.

2. Chapter 34, Accessory Structures

Not applicable - none proposed.

3. *Chapter 38, Additional Yard Area Required*

This chapter applies to buildings on streets with inadequate right-of-way widths. These standards are not applicable because all of the necessary street right-of-way and related improvements are provided.

4. *Chapter 40, Building Height Limitations and Exceptions*

Not applicable – no new buildings or building additions are proposed.

5. *Chapter 42, Clear Vision Areas*

The standards for clear vision areas adjacent to driveways will continue to be satisfied or exceeded. Although the internal driveway system will be modified, the location and design at the street access points will remain essentially unchanged.

6. *Chapter 44, Fences and Screening Outdoor Storage*

The new bus loading area will continue to be located internally to the site, and it will not be visible from most vantage points on the perimeter of the site.

7. *Chapter 46, Off-Street Parking and Loading*

Section 46.070 requires parking spaces to be no farther than 200 feet from building entrances. The existing parking layout was previously approved by the city. Parking will not be changed by this application.

Section 46.090 B. 6. contains parking requirements for a middle school. The parking was approved previously by the city and no changes to the size of the school or the design of the parking lot. Therefore, city standards will continue to be met.

Section 46.120 requires a 15-foot wide drive for loading and unloading passengers. This will continue to be provided as shown on the site plan.

Section 46.130 requires two loading spaces for the school (100,000+ sq. ft.). Sufficient loading space will continue to be provided in the service area as shown on the site plan.

Section 46.140 contains the design standards for parking areas. As noted above, the parking lot was previously approved by the city and will not be changed. The site plan complies with all of the relevant standards as shown on the site plan.

Section 46.150 A. contains a variety of standards pertaining to parking lot design, pavement, pedestrian access, handicapped parking, and grades. These standards will be satisfied as illustrated in the attached exhibits and as summarized below:

1. Existing parking space dimensions will remain.

2. Previously approved disabled spaces will remain unchanged.

3. Parking spaces will not require public right-of-way for maneuvering.

4. The proposed driveway system with a separate bus exit provides improved traffic circulation for automobiles, buses, and emergency vehicles.

5. Clear access continues to be provided for every parking space.

6. All existing standard and new handicapped spaces will continue to be marked.

7. All existing and new parking and driveways will be paved.

8. Existing parking and driveways are paved, and the new driveway will be as well.

9. No new access points are proposed, however, the emergency access on Rosemont Road will also become the exit drive for school buses only.

10. Vision clearance standards will continue to be met because no driveway or landscaping changes are proposed near street intersections.

11. Wheel stops meeting city standards are provided for the new handicapped spaces.

12. Drainage will be accommodated as shown in the plans with the approval of the City Engineer.

13. The location and type of lighting fixtures selected in the electrical plan information will direct light downward. In particular, the new field and new driveway lighting will be specially designed to not cast light or glare onto nearby properties.

14. Directional arrows will continue to be provided.

15. Not applicable - residential standard.

16. Not applicable - residential standard.

17. The maximum grade of the parking lot is less than 5%.

18. The parking lot locations and configurations will not change.

19. The site design will continue to comply with the parking, space grouping, landscaped island, and pedestrian walkway requirements in this section.

20. Walkways will continue to be provided to connect major entrances and activity areas as required.

21. All walkways and driveways will continue to be easily defined.

22. The parking spaces are as close as possible to the school.

Section 46.150 B. contains standards for handicapped parking. The proposal meets these requirements as noted in the site plan and below:

1. Existing spaces will be retained.

2. These spaces will continue to be provided close to the main school entrances.

3. ADA standards will continue to be satisfied.

4. Not applicable because no differences are identified between the code and federal standards.

5. The necessary 6 and 8-foot wide isles will continue to be provided.

Section 46.150 B. contains bicycle standards, which are satisfied.

1. Bike lanes are currently available along the Salamo and Rosemont road frontages.

2. Bicycle rack spaces are currently provided as previously required by the city.

3. Bicycle rack spaces are currently provided as previously required by the city.

8. Chapter 48, Access

Section 48.040 requires that service drives have a minimum width of 24 feet. The driveways will continue to have a minimum width of 24 feet.

Access drives in the parking area (Section 48.020 F.) will continue to meet code requirements.

Section 48.060 requires that the minimum/maximum curb cut should be 16-36 feet. The new driveway will be less than 36 feet, and all other driveways will remain the same.

9. Chapter 52, Signs

Five traffic direction signs are proposed as part of the new driveway to safely direct bus and automobile traffic in and around the new driveway. These signs meet city requirements and facilitate safe traffic circulation.

10. Chapter 54, Landscaping

The landscaping plan and the Irrigation Plan comply with the city's landscaping requirements. The approval criteria are satisfied as noted below:

Sections 54.020 A, B, and C encourage preservation of existing trees. The proposed site and landscaping plans will accomplish this. However, 23 trees must be removed around the northwest and north sides of the school. All landscaping and trees will be replaced as illustrated on Sheet L 1.2.

Section 54.020 D. does not apply because there are no heritage trees on the sight.

Section 54.020 E. is satisfied because well over 20% of the site will be landscaped; dimensional requirements for landscaped areas are met, because the new driveway loop will only involve a very small land area. Vegetation is located as specified as required by this section.

Section 55.100 B. contains the applicable approval standards for a Class II Design Review. These criteria are addressed below.

Section 55.100.B. Relationship to the Natural and Physical Environment

Subsections 1. and 2. require the protection of heritage and other significant trees. Subsection 3. and 4. call for the preservation of natural topography and drainage as well as avoidance of area subject to geologic hazards.

The site is substantially developed with the middle school and associated parking and athletic fields. The loop driveway for the buses will be built on a grassy area between the parking lot and existing emergency access driveway on Rosemont Road. The athletic field improvements and lighting will not expand upon the area currently used for this purpose. No natural features, including natural areas, or geologic hazard areas, will be impacted. As a result, Subsections 55.100 B. 1-4 do not apply. The City Arborist confirmed there are no significant trees on the site.

Subsection 5. requires provision of adequate distance between on-site buildings an those on adjoining properties.

No buildings or building additions are proposed, and therefore, this criterion does not apply.

Subsection 6. deals with the appropriate architectural styles to be used in a variety of circumstances.

No buildings or building additions are proposed, and therefore, this criterion does not apply.

Subsection 7. contains several criteria relating to site and building design and on-site circulation to encourage reduced dependence on automobile travel.

The original school design was reviewed, approved, and constructed according to these criteria. The only change to the site plan and circulation will be the addition of the new bus loading/unloading area.

Section 55.100 C. Compatibility Between Adjoining Uses, Buffering, and Screening

This section requires that the provisions of Section 56.100(D), "facility design and relationship to the human environment" apply. The provisions apply to architecture, material, human scale and transparency.

As demonstrated in the application materials, the proposed bus driveway will enhance circulation on the site, and the field and driveway lighting will be accomplished in a way that will not have a detrimental impact on surrounding homes.

Section 55.100 D. Privacy and Noise

This section requires that activities, which potential will generate noise, feature exterior lighting, or glare, shall be buffered from adjoining residential uses according to 55.100 C. above. This section also has noise standards that may not be exceeded within 25 feet of residential dwellings.

This section is satisfied because surrounding homes because the lights for the fields and driveway are designed to virtually eliminate any glare extending past the school property. The surrounding homes also have substantial setbacks and buffering to further minimize any potential adverse impacts. In addition, the noise study completed by Altermatt Associates demonstrates compliance with the city's noise standards.

Sections 55.100 E. and F.

These sections apply to residential development and are not relevant to this application.

Section 55.100 G. Demarcation of Public, Semi-public and Private Spaces

The school is completely open to the public, and the existing site arrangement was previously approved by the city. The only importance change is related to the new driveway loop connection. This will support the purpose of this section because the northern side of the school will now become a more public space subject to routine surveillance by people on the school site.

Section 55.100 H. Public Transit

This section does not apply because public transit is not available in this area of West Linn.

Section 55.100 I. Public Facilities

This section requires the provision of adequate public facilities. This requirement was satisfied as the school was first approved and constructed. The proposed change in bus access and lighting the fields will not place additional demands upon existing infrastructure. Therefore, this criterion continues to be satisfied.

Section 55.100 J. Crime Prevention and Safety/Defensible Space

This section requires the provision of safe areas that can be easily observed. The current situation allows for visual access on the north side of the school from near the Rosemont Road/Salamo Road intersection and from the northern athletic fields on the site. The introduction of the driveway will enhance the ability to view this portion of the school property. As noted herein, additional lighting will be provided, and the bus activity will make this a more active, public space. This code section is satisfied.

Section 55.100 K. Provisions for Persons with Disabilities

The site improvements currently meet ADA standards as approved by the city. The new sidewalk along the bus driveway will also be constructed to meet all applicable ADA standards. The criteria in this section will be satisfied.

Section 55.100 L. Signs

This section requires that signs are appropriate in consideration of the character of the site and surrounding properties. Only five, standard traffic control signs are proposed to safely direct buses and automobiles on the site. These signs are appropriate, and this section is satisfied.

Section 55.100 M. Utilities

This section requires the applicant to make necessary arrangements for service from utility providers. The site is currently serviced, and no additional utilities are necessary other than some new on-site storm drainage facilities to serve the new driveway. This section is satisfied.

Section 55.100 N. Wireless Communication Facilities

This section is not applicable because wireless facilities are not proposed.

Section 55.100 O. Refuse and Recycling Standards

This section requires the provision of adequate refuse and recycling facilities. These were provided and approved by the city when the school was constructed. They will not be affected in any way by the new driveway and exterior lighting. Therefore, these standards of this section will continue to be satisfied.

Section 55.110 B 3. Slope Analysis

A slope analysis is required as part of the site plan information. This information is provided on Sheet RR-C1.0, satisfying this requirement.

Section 55.110 B 13. Type I and II Lands

Type I and II lands need to be identified as part of the site plan information. This information is provided on Sheet RR-C1.0, satisfying this requirement.

Section 55.120 G. Setback Distances

This section requires that setback distances of structures on adjoining properties be shown. The residences near the property on the north, east, and south are shown on Sheet RR-C1.0, satisfying this requirement.

Section 55.120 H.2. Circulation

This section requires that different pick-up and drop-off locations be shown on the site plan. These areas for the buses and automobiles are shown on Sheet RR-C4.0, satisfying this requirement.

Section 55.120 J. Exterior Lighting

This section requires the location and type of exterior lighting. This is shown for the athletic fields as well as the driveway in Exhibit F, satisfying this requirement.

CONCLUSION

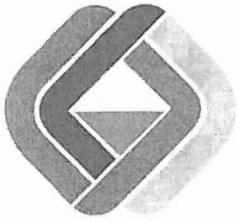
The proposed bus exist driveway and field lighting satisfies the relevant CDC requirements and the proposal should be approved.

EXHIBIT A
Geotechnical Investigation

GEOTECHNICAL INVESTIGATION

ROSEMONT RIDGE MIDDLE SCHOOL BUS LANE

WEST LINN, OREGON



GEOCON
NORTHWEST, INC.
GEOTECHNICAL &
ENVIRONMENTAL
CONSULTANTS

PREPARED FOR

WEST LINN-WILSONVILLE SCHOOL DISTRICT
TUALATIN, OREGON

MARCH 2009

GEOCON
NORTHWEST, INC.

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

Project No. P1666-05-01
March 20, 2009

Mr. Tim Woodley, Director of Operations
West Linn Wilsonville School District
2755 SW Borland Road
Tualatin, Oregon 97062

Subject: ROSEMONT RIDGE MIDDLE SCHOOL BUS LANE
WEST LINN, OREGON
GEOTECHNICAL INVESTIGATION

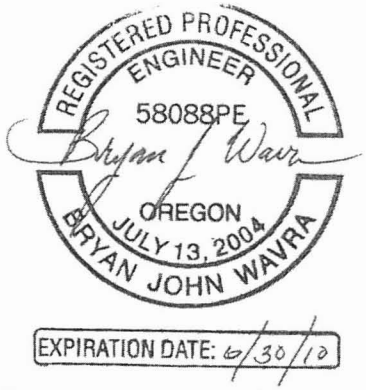
Dear Mr. Woodley:

In accordance with our proposal number P09-05-29, dated February 17, 2009 and your authorization, Geocon Northwest has performed a geotechnical investigation for the proposed bus lane at Rosemont Ridge Middle School in West Linn, Oregon. The evaluation included a site reconnaissance, literature review, geotechnical field investigation, geotechnical engineering analyses, and the preparation of this report. The accompanying report is based upon the results of our field investigation, literature review and analyses and provides our conclusions and recommendations regarding the geotechnical aspects of the proposed project. Based on the results of this evaluation, it is our opinion that the bus lane can be constructed as proposed, provided the recommendations of this report are followed. Important geotechnical issues discussed herein include temporary excavation recommendations, soil nail wall performance criteria, pavement design recommendations, and grading provisions.

If you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Sincerely,

Geocon Northwest, Inc.



Bryan Wavra, P.E.
Project Engineer

Wesley Spang, Ph.D., P.E.
Principal Engineer

BJW:AWS

cc: Ms. Karina Ruiz, Dull Olson Weekes Architects
Mr. Mark Wharry, Winzler and Kelly

8283 SW Cirrus Drive ■ Beaverton, Oregon 97008 ■ Telephone (503) 626-9889 ■ Fax (503) 626-8611

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GEOTECHNICAL INVESTIGATION

1 PURPOSE AND SCOPE

This report presents the results of the geotechnical investigation for the proposed bus lane at Rosemont Ridge Middle School in West Linn, Oregon. The school is located at 20001 Salamo Road as shown in Figure 1, Vicinity Map. The purpose of the geotechnical investigation was to evaluate subsurface soil and geologic conditions at the site and, based on the conditions encountered, provide conclusions and recommendations pertaining to the geotechnical aspects of the proposed bus lane.

The scope of the field investigation consisted of a site reconnaissance, review of published geologic literature, three exploratory borings and several shallow hand-dug excavations. A detailed discussion of the field investigation is presented in Section 4 of this report. Exploratory logs are presented in Appendix A and Appendix B presents the results of laboratory testing.

The recommendations presented herein are based on analyses of the data obtained from the field investigation, laboratory test results, geologic literature review, and on our experience with similar soil and geologic conditions. This report has been prepared for the exclusive use of West Linn-Wilsonville School District, and their agents for specific application to this project, in accordance with generally accepted geotechnical engineering practice. This report may not contain sufficient information for purposes of other parties or other uses.

2 SITE AND PROJECT DESCRIPTION

Rosemont Ridge Middle School is located at 20001 Salamo Road in West Linn, Oregon. The site was originally developed in 1999 with all bus and automobile traffic routed in the same area, south of the existing building. It is understood that a new bus lane has been proposed that will extend from the west end of the existing parking area, loop along the north wall of the gymnasium, and connect with the existing fire/access lane that intersects Rosemont Road.

The construction of the bus lane along the north perimeter of the gymnasium will require a retaining/shoring wall due to site spatial limitations and the presence of an approximate 15 to 20-foot slope at the north property line. It is understood that the proposed alignment of the bus lane and the surcharge imposed by the bus traffic on the north gymnasium wall has been evaluated and deemed acceptable to the project structural engineer, James G. Pierson, Inc.

3 REGIONAL GEOLOGY

Based on the geologic literature reviewed for the site, the near-surface geology of the project area consists of Miocene-age deposits of the Columbia River Basalt Group (CRB). The CRB is composed of gray to black, dense, fine-grained , low-olivine basalt; locally deeply weathered and laterized.

4 SUBSURFACE EXLORATION AND CONDITIONS

4.1 Site Exploration

The subsurface soil conditions in the vicinity of the proposed retaining/shoring wall were determined based on the literature review, the field exploration, and laboratory testing. The field exploration was completed on February 26, 2009, and consisted of 3 exploratory borings and several hand-dug excavations. The explorations were located in the approximate locations shown in Figure 2, Site Plan.

The borings were advanced to depths ranging from approximately 15 to 30 feet below ground surface (bgs) and were completed with a truck mounted drill rig equipped with mud rotary and rock coring drilling capabilities. The borings were excavated at the top of the north slope on the Community Center property adjacent to the north of the school. A member of Geocon Northwest's geotechnical engineering staff logged the subsurface conditions encountered within the borings. Standard penetration tests (SPT) were performed at selected depths in each boring by driving a 2-inch outside diameter split spoon sampler 18 inches into the bottom of the boring, in general accordance with ASTM D 1586. The number of blows required to drive the sampler the last 12 of the 18 inches (blow count) are reported on the boring logs located in Appendix A at the end of this report. The blow counts shown in the boring logs are the values recorded in the field. An automatic SPT hammer was used to drive the sampler into the soil. A correction of 1.3 was applied to the field SPT values to obtain the conventional N_{60} blow count. The correction factor of 1.3 is based on the automatic SPT hammer having an estimated energy of 80% versus the 60% energy of conventional hammers. Disturbed bag samples were obtained from SPT testing. Soil samples were returned to the laboratory for further evaluation. Service providers subcontracted by Geocon Northwest completed the borings.

4.2 Subsurface Conditions

The subsurface explorations were widely spaced across the site and it is possible that some local variations and possible unanticipated subsurface conditions exist. Based on the conditions observed during the reconnaissance and field exploration, the subsurface conditions, in general, consisted of the following:

ORGANIC TOPSOIL/ASPHALT PAVEMENT– The borings were completed within the adjacent property to the north. Borings B-1 and B-3 were excavated in the asphalt paved driveway and boring B-2 was located in a landscaped surface. The pavement section consists of approximately 4 inches of asphalt and is underlain by approximately 8 inches of crushed base rock. The hand-dug excavations were completed on the school property within the existing slope. The portion of the slope adjacent to the gymnasium has overgrown grass and several moderately-size trees. The remaining alignment of the proposed bus lane has a surface of mowed grass. Stripping depths of 6 to 12 inches should be anticipated within

grass covered areas, while locations with trees or significant vegetation may locally require excavation in excess of 2 feet to completely remove the root wad.

RESIDUAL SOIL/WEATHERED BASALT– In general, stiff to hard, moist to wet, reddish brown to gray clayey silt to silty clay was encountered below the surface layer to the maximum depth explored of 30 feet (bgs). The maximum depth extended approximately 15 feet below the bottom of the proposed elevation of the bus lane. Borings B-1 and B-2 were completed without the need to switch to a rock drilling operation. Practical refusal was encountered with a tri-cone bit at a depths of 30 feet and 28feet bgs, respectively. Boring B-3 contained weathered rock with harder consistency (less weathering) and rock coring was completed between depths of 6 feet and the terminal depth of 15 feet. The rock quality designation (RQD) between 6 and 10 feet was 30 while the remaining core runs had RQD values of 0. The differing consistency in subsurface condition could be the result of variable weathering or the presence of large diameter (up to 5 feet) boulders. Difficult excavation and drilling characteristics should be anticipated.

GROUNDWATER – Groundwater was not encountered at the time of the soil borings within the depths explored. While significant groundwater is not anticipated to be a significant issue during construction, perched water, seeps, or springs may occur during excavation, particularly during prolonged periods of wet weather.

Exploration logs documenting the subsurface conditions encountered are presented in Appendix A at the end of this report.

5 LABORATORY TESTING

Laboratory testing was performed on selected soil samples to evaluate moisture content and gradation. Visual soil classification was performed both in the field and laboratory, in general accordance with the Unified Soil Classification System. Moisture content determinations (ASTM D2216) were performed on soil samples to aid in classifying the soil. Grain size analyses were performed on selected samples using procedures ASTM D1140 and ASTM D422. The plasticity index was determined in general accordance with ASTM D4318. Moisture contents are indicated on the boring logs and are located in Appendix A of this report. Other laboratory test results for this project are summarized in Appendix B.

6 DISCUSSION

Drawings provided by project civil engineer, Winzler and Kelly, indicate that the proposed bus lane will extend from the west end of the existing parking area, loop along the north wall of the

gymnasium, and connect with the existing fire/access lane that intersects Rosemont Road. The construction of the bus lane along the north perimeter of the gymnasium will require excavation into the existing slope to accommodate the width of the bus lane and associated curbs and sidewalks. Due to spatial restrictions imposed by the nearby north property line, several retaining wall/shoring wall schemes were evaluated. It appears that wall heights may range from 0 to 12 feet along the alignment. The results of the subsurface exploration program indicate a very stiff soil profile which may be excavated at a slope of 1H:1V and 2H:1V for temporary and permanent applications, respectively.

Retaining wall schemes such as a cast-in-place concrete, Keystone block, ultra block, or lock +load wall all require a temporary excavation to the full depth of the proposed bus lane prior to the onset of construction (bottom-up construction). Excavation in excess of 4 feet will require the temporary excavation slope of 1H:1V behind the wall alignment. A schematic cross section of potential cast in place concrete wall and associated temporary excavation slope is illustrated in Figure 3. The temporary cut slope would have to extend well beyond the property line and into the parking lot of the adjacent Community Center. Underground utilities are also present along the south perimeter of the parking lot. These spatial conflicts render a cast in place wall impractical. The scenario is worse for the block-type walls as they would require geogrid reinforcement that would further extend the temporary excavation into the adjacent property.

The spatial limitations present in the location of the proposed bus lane will require a shoring scheme that utilizes "top down" construction where the excavation is shored thereby allowing a vertical cut. The two most common types of shoring are soldier pile with lagging or soil nail walls. It is our opinion that a soldier pile with lagging wall would be difficult and likely costly due to the requirement of having to drill relatively large diameter (24 inches or more) holes into potential boulders and weather rock. A local shoring contractor performed a site reconnaissance with representatives of Winzler and Kelly and Geocon Northwest and indicated a soil nail wall would likely be the most feasible, cost effective shoring scheme for the project.

Soil nail excavation support consists of installing steel bars into the retained soil to provide an in-place "retaining wall" that resists the lateral soil pressures. Figure 4 shows a schematic soil nail section. A soil nail structure is a passive excavation support system as no tensioning of the steel bars (soil nails) is typically performed before excavating to the next level. The soil nail system develops resistance due to excavation-induced soil movements which mobilize soil-structure interaction within the soil nail mass. Minor soil movements are typically sufficient to develop the required soil-structure interaction. The soil nail system is constructed incrementally as site excavation progresses downward, and allows for incremental vertical excavation. Soil within the excavation is removed to the design soil nail elevation. Soil nails are then installed at the design horizontal spacing. After soil nail installation, steel mesh, prefabricated drainage panels, and shotcrete are placed over the exposed excavation face. Finally, the soil nail is fixed to the shotcrete face with a steel plate and nut.

An important factor in the success of soil nail construction is the ability of the soil to stand unsupported on a vertical excavation. This is due to the time lag between soil excavation and shotcrete operations. Results of the field investigation and laboratory tests indicate that the site soils consist primarily of hard silty clay to clayey silt residual soil with the potential for intact rock and/or boulder-size material. It is our opinion the subsurface conditions encountered during the geotechnical field investigation are capable of the temporary vertical excavation required for soil nail installation. However, difficult excavation characteristics should be anticipated and may require the using of hydraulic "pecking" equipment to chip through the more intact rock and/or boulders. Excavation should proceed with caution so that large boulders extending into the slope are not removed thereby leaving a large void space. The contractor should provide a unit cost for grout and shotcrete quantities due to the likelihood of extra volume being used to fill voids that are occur during excavation.

The soil nail wall should be designed assuming permanent loading conditions and corresponding factors of safety. The soil nails will extend across the property line of the Community Center, but it appears that they will be at a depth of at least 10 feet below grade at that location. However, an easement will have to be obtained to permit installation beyond the property line of the Community Center. The proposed wall location appears to be of sufficient distance from the property line of the private residence adjacent to the west of the Community Center that the soil nails will not extend beyond the schools property. The contractor should complete a design that does not require an easement from the private residence.

It should be noted that the final design, installation, and performance of excavation support systems is the responsibility of the shoring contractor. Geocon Northwest should review the proposed design and construction means and methods.

The soil nail wall will be considered a permanent structure. There are several aesthetic facing elements that may be constructed to improve the appearance of the wall. It is recommended that the owner consult with the shoring contractor to evaluate the type and expense of adding such elements to the wall.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 General

7.1.1 It is our opinion that the proposed Rosemont Ridge Middle School Bus Lane project is geotechnically feasible, provided the recommendations of this report are followed.

7.1.2 The majority of the proposed length of the bus lane will require excavation into the slope along the north perimeter of the property. Spatial limitations prevent temporary excavation sloping for much of this length. Per the discussion in Section 6, soil nail excavation

support is recommended.

7.1.3 Soil nails for excavation support will extend beyond the perimeter of the property. All existing utilities and underground structures should be identified in both the horizontal and vertical distances from the excavation walls to assist in placement of the soil nail locations. An easement will have to be obtained from adjacent Community Center to permit soil nail installation beyond the property line. It is recommended that the soil nails be designed to not extend beyond the property of the private residence adjacent to the west of the Community Center.

7.1.4 Difficult excavation and drilling characteristics should be anticipated. The subsurface conditions consist of a mixture of hard clayey silt to silty clay residual soil, weathered rock (RQD = 30), and potential boulder-size material. Care should be taken during excavation to prevent removal of large diameter particles that extend back into the slope that could result in large void spaces.

7.1.5 A portion of the proposed bus lane will be immediately adjacent to the north wall of the existing gymnasium. It is understood that project structural engineer, James G. Pierson, has evaluated ability of the existing gymnasium wall to withstand the surcharge pressure imposed by bus traffic. However, it is recommended that construction equipment not traverse within a horizontal distance of the wall that is equal to the depth of the footing below the existing grade. The required horizontal distance may be reduced as the excavation proceeds downward.

7.1.6 The soil adjacent to the existing north gymnasium wall was not likely placed as structural fill and could be unsuitable for pavement support. Recommendations for overexcavation of unsuitable soil and geotextile fabric are provided in subsequent sections of this report. The material should be evaluated by Geocon Northwest personnel during construction.

7.1.7 The surface layer of organic topsoil is generally unsuitable for pavement support and will require stripping prior to construction. Moisture conditioning and compaction will be required on material disturbed during site demolition and clearing. Recommendations for both wet and dry weather construction are provided herein. **However, dry weather construction is highly recommended and extra costs should be expected if site grading is completed during wet weather.**

7.2 Site Preparation

7.2.1 Prior to beginning construction, the areas of the site to support pavement should be stripped of vegetation, topsoil, non-engineered fill, previous subsurface improvements, debris, and otherwise unsuitable material, down to firm native soil. Stripping depths of 6 to 12 inches may be anticipated in undeveloped areas across the site. Additional overexcavation should

be anticipated in areas where trees or large shrubs are encountered. Overexcavation should also be anticipated adjacent to the north wall of the gymnasium where wall backfill was likely placed as landscape fill. Excavations made to remove previous subsurface improvements should be backfilled with structural fill per Section 7.4 of this report.

7.2.2 Staging areas and haul roads specifically constructed to accommodate anticipated construction loading must be installed by the contractor to minimize future overexcavation of deteriorated subgrade soil. **The pavement design recommendations presented in the following sections of this report do not include an allowance for construction traffic.** Past experience suggests that 18 inches of rock underlain by a geotextile separator fabric typically provides adequate work pad/haul road thickness. The recommended design section may be "overbuilt" to obtain the necessary working thickness and subsequently reduced to the design section for possible cost savings in lieu of overexcavation of suitable subgrade soil. Alternatively, the working surface may be incorporated into the final design. Recommendations for wet weather haul roads and working pads should be implemented in areas of the site that will experience significant construction traffic.

7.2.3 Moisture contents of near-surface soils were wet of optimum at the time of the field investigation. Due to the moisture sensitive nature of the near surface soils, it is recommended that earthwork-related construction take place during dry weather. Recommendations for both dry weather and wet weather site preparation are provided in the following sections. Wet weather is defined as any time of year that adequate moisture control cannot be obtained. Increased costs, associated with subgrade stabilization, should be anticipated if construction occurs during wet weather.

7.2.4 Dry Weather Construction

Native soil subgrades in structural areas that have been disturbed during stripping, cutting, or demolition operations should be scarified to a depth of at least 8 inches. The scarified soil should be moisture conditioned as necessary to achieve the proper moisture content, then compacted to at least 92% of the maximum dry density as determined by ASTM D 1557. Minimum compaction for the 8 inches immediately underlying pavement sections should be 95%. Even during dry weather it is possible that some areas of the subgrade will become soft or may "pump," particularly in poorly drained areas. Saturated subsurface conditions may be encountered in irrigated or cut areas regardless of the time of year construction occurs. Soft or wet areas that cannot be effectively dried and compacted should be prepared in accordance with Section 7.2.5.

7.2.5 Wet Weather Construction

During wet weather, defined as whenever adequate soil moisture control is not possible, it may be necessary to install a granular working blanket to support construction equipment

and provide a firm base on which to place subsequent fills and pavements. Commonly, the working blanket consists of a bank run gravel or pit run quarry rock (six to eight inch maximum size with no more than 5% by weight passing a No. 200 sieve). A member of Geocon Northwest's engineering staff should be contacted to evaluate the suitability of the material before installation.

The working blanket should be installed on a stripped subgrade in a single lift with trucks end-dumping off an advancing pad of granular fill. It should be possible to strip most of the site with careful operation of track-mounted equipment. However, during prolonged wet weather, or in particularly wet locations, operation of this type of equipment may cause excessive subgrade disturbance. In some areas final stripping and/or cutting may need to be accomplished with a smooth-bucket trackhoe, or similar equipment, working from an advancing pad of granular fill. After installation, the working blanket should be compacted by a minimum of four complete passes with a moderately heavy static steel drum or grid roller. It is recommended that Geocon Northwest be retained to observe granular working blanket installation and compaction.

The working blanket must provide a firm base for subsequent fill installation and compaction. Past experience indicates that about 18 inches of working pad is normally required. This assumes that the material is placed on a relatively undisturbed subgrade prepared in accordance with the preceding recommendations. Areas used as haul routes for heavy construction equipment or construction staging areas may require a work pad thickness of two feet or more.

In particularly soft areas, a heavy-grade, non-degradable geotextile fabric installed on the subgrade may reduce the thickness of working blanket required. The fabric should have a minimum puncture resistance of 80 pounds and a minimum Mullen Burst strength of 300 psi.

Cement treatment may be a suitable alternative wet-weather construction technique for the subgrade conditions encountered at this site. Successful cement treatment is dependent upon the moisture content of the subgrade soils, weather conditions at the time of treatment, percentage of cement used, and adequate mixing of the soil and cement. Past experience indicates that approximately 5 to 8% cement by weight, tilled to a depth of 12 inches, is typically sufficient to produce an acceptable subgrade. Treatment procedures should be completed within an elapsed time of approximately four-hours, and should be protected from all traffic for a minimum of five days. A seven-day unconfined compressive strength of 250 psi for the soil/cement mixture is recommended. Cement treatment design is typically the responsibility of the contractor.

Construction practices can affect the amount of work pad necessary. By using tracked equipment and special haul roads, the work pad area can be minimized. The routing of dump trucks and rubber tired construction equipment across the site can require extensive areas and thicknesses of work pad. Normally, the design, installation and maintenance of a work pad are the responsibility of the contractor.

7.3 Proof Rolling

7.3.1 It is recommended that, prior to on-grade slab construction, the subgrade or granular working blanket be proof-rolled with a fully-loaded 10- to 12-yard dump truck. Areas of the subgrade that pump, weave, or appear soft, muddy, or loose should be scarified, dried and compacted, or overexcavated and backfilled with structural granular fill per Section 7.4. If a significant length of time passes between fill placement and commencement of construction operations, or if significant traffic has been routed over these areas, the subgrade should be similarly proof-rolled before slab construction. It is recommended that a member of our geotechnical engineering staff observe the proof-roll operation.

7.4 Fills

7.4.1 Structural fills should be constructed on a subgrade that has been prepared in accordance with the recommendations in Section 7.2 of this report. Structural fills should be installed in horizontal lifts not exceeding approximately eight inches in thickness and should be compacted to at least 92% of the maximum dry density for the native soils, and 95% for imported granular material. Compaction should be referenced to ASTM D 1557 (Modified Proctor). The compaction criteria may be reduced to 85% in landscape, planter, or other non-structural areas.

7.4.2 Structural fills may consist of native material, free of topsoil, debris, organic matter and oversized material, which can be compacted to the preceding specifications. Material in excess of six inches in diameter is considered oversized. If excess moisture causes the fill to pump or weave, those areas should be scarified and allowed to dry. The soil should then be recompacted, or removed and backfilled with compacted granular fill as discussed in Section 7.2 of this report.

7.5 Surface and Subsurface Drainage

7.5.1 During site contouring, positive surface drainage should be maintained away pavement areas and the top of the soil nail wall. Additional drainage or dewatering provisions may be necessary if soft spots, springs, or seeps are encountered in subgrades. Where possible, surface runoff should be routed independently to a storm water collection system. Surface water should not be allowed to enter subsurface drainage systems.

7.5.2 Drainage systems should be sloped to drain by gravity to a storm sewer or other positive outlet.

7.5.3 Drainage and dewatering systems are typically designed and constructed by the contractor. Failure to install necessary subsurface drainage provisions may result in premature foundation or pavement failure.

7.6 Cut and Fill Slopes

7.6.1 Permanent cut slopes should be sloped no steeper than 2H:1V. These values assume that the slopes will be protected from erosion and that significant drainage will not occur over the face of the slope. They further assume that no loads will be imposed within a horizontal distance of one-half of the slope height measured from the top of the slope face. Cut slopes should be constructed with a smooth bucket excavator to minimize subgrade disturbance. Slope drainage may be required if springs, seeps, or groundwater are encountered.

7.6.2 If permanent fills are placed in areas where ground slopes exceed 5H:1V, the fills should be keyed and benched into existing native, undisturbed non-organic soil. Fill slopes should be obtained by placing and compacting material beyond the design slope and then excavating back to the desired grade or by other means that will result in a dense, compacted sloped face. Filled slopes should not be graded steeper than 2H:1V. The face of the fill slope should be protected from erosion by applying vegetation or other approved erosion control material as soon as practicable after construction. Fill compaction should be as stated in Section 7.4.

7.6.3 Temporary excavation walls may be sloped no steeper than 1H:1V. Shallower slope inclinations or shoring may be required if sloughing occurs due to the presence of non-engineered fill soil or loose soil. Temporary excavation slopes should not be constructed in areas where adjacent improvements are located within a horizontal distance less than or equal to the depth of the excavation (measured from the top of the excavation). The preceding recommendations are only applicable if the slopes will be protected from erosion, and significant drainage will not occur over the face of the slope. Vertical excavation to a maximum depth of 5 feet is recommended during the time between soil nail installation and the application of the shotcrete face.

7.7 Soil Nail Excavation Support

7.7.1 A soil nail wall is recommended for the site excavation support. A preliminary design evaluation was performed to verify the stability of a soil nail excavation . The final design analysis of the soil nail system will be performed by the specialty excavation contractor using performance based/design build process. The soil nail wall should be designed using

the Allowable Stress Design (ASD) method, in general conformance with the recommendations outlined in the Federal Highway Administration Document FHWA0-IF-03-017 Geotechnical Engineering Circular No. 7 "Soil Nail Walls."

7.7.2 The soil nails will extend across the property line of the Community Center, but it appears that they will be at a depth of at least 10 feet below grade at that location. However, an easement will have to be obtained to permit installation beyond the property line of the Community Center. The proposed wall location appears to be of sufficient distance from the property line of the private residence adjacent to the west of the Community Center that the soil nails will not extend beyond the schools property. The contractor should complete a design that does not require an easement from the private residence.

7.7.3 It is understood that the soil nail wall will be permanent and, as such, should be designed using factors of safety recommended for permanent structures. It is recommended that the seismic stability of the wall be evaluated using a pseudostatic coefficient of horizontal acceleration, k_h, equal to 0.15g. The value is one-half of 0.3g, the peak ground acceleration expected at the site.

7.7.4 Geocon Northwest performed a preliminary analysis of a potential soil nail wall design. The method of analysis and software SNAILZWin developed by CalTrans (California Department of Transportation) and the slope stability program SLIDE 5.0 was used to evaluate the global stability of the proposed excavation using soil nail support. Stability analyses were conducted for both static and seismic conditions for cross sections A-A' and B-B' using the input parameters listed in Table 1. The results of the analyses indicate factors of safety of approximately 1.7 and 1.3 for static and seismic conditions, respectively.

TABLE 1: SOIL NAIL DESIGN INPUT PARAMETERS

Wall Height	11 feet (A-A'), 8.5 feet (B-B')
Soil Unit Weight	120 pcf
Soil Cohesion	100 psf
Soil Friction Angle	30 degrees
Reinforcement Length	15 feet
Diameter of Grouted Hole	6 inches
Diameter of Steel Rod	1 inch
Soil Nail Inclination	15 degrees from horizontal
Soil Nail Vertical Spacing	5 feet
Soil Nail Horizontal Spacing	5 feet
Ultimate Soil Nail Bond Strength	3,000 pounds per foot
Punching Shear Capacity	45 kips
Yield Strength of Nail Element	60 kips per square inch
Surcharge	250 psf

7.7.5 The private residence adjacent to the west of the community center has and existing block retaining wall. The soil nail wall design should include an allowance for surcharge pressures associated with the block wall. The location and height of the wall was not known at the time of the preparation of this report.

7.7.6 Difficult excavation and drilling characteristics should be anticipated. The subsurface conditions consist of a mixture of hard clayey silt to silty clay residual soil, weathered rock (RQD = 30), and potential boulder-size material. Care should be taken during excavation to prevent removal of large diameter particles that extend back into the slope that could result in large void spaces. The contractor should provide a unit cost for grout and shotcrete quantities due to the likelihood of extra volume being used to fill voids that occur during excavation.

7.7.7 The soil nail reinforcing bars should be double corrosion protected due to the permanent application of the wall. The bars may be provided with one level of protection by epoxy coating with the second level being the grout.

7.7.8 The soil nail wall should be designed with a drainage system to prevent the buildup of excess porewater pressure behind the wall. The drainage system commonly consists of a vertical geocomposite strip drains placed behind the shotcrete face.

7.7.9 A minimum of two verification tests should be performed on **sacrificial** soil nail elements to confirm the design capacity. The soil nails should be tested to 200 percent of their design load in accordance with the schedule presented in Table 2.

TABLE 2: SOIL NAIL VERIFICATION LOAD TEST SCHEDULE

Load	*Hold Time*
Seating Load	1 minute
0.25 Design Load (DL)	10 minutes
0.50 DL	10 minutes
0.75 DL	10 minutes
1.0 DL	10 minutes
1.25 DL	10 minutes
1.50 DL (Creep Test)	60 minutes
1.75 DL	10 minutes
2.0 DL	10 minutes

7.7.10 The total movement at the maximum load during the verification test shall exceed 80 percent of the theoretical elastic elongation of the test nail unbonded length.

7.7.11 A verification creep test should be completed at 1.50 DL. Nail movements should be recorded during the verification creep test in increments of 1 minute, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes. The verification creep test will be considered successful if the movement is less than 0.08 inches between the 6 and 60 minute readings and the creep rate is linear or decreasing during the test.

7.7.12 Approximately 5 percent of the production nails in each row should be proof tested. The recommended proof test loading schedule is presented below in Table 3.

TABLE 3: SOIL NAIL PROOF LOAD TEST SCHEDULE

Load	*Hold Time*
Seating Load	Until Stable
0.25 DL	Until Stable
0.50 DL	Until Stable
0.75 DL	Until Stable
1.00 DL	Until Stable
1.25 DL	Until Stable
1.50 DL	10 or 60 minutes, depending on movement

7.7.13 The total movement at the maximum load during the proof test shall exceed 80 percent of the theoretical elastic elongation of the test nail unbonded length.

7.7.14 A proof creep test should be completed at 1.50 DL. Nail movements should be recorded during the proof creep test in increments of 1 minute, 2, 3, 5, 6, 10 minutes. In the event the nail movements exceeds 0.04 inches between 1 and 10 minutes, the load should be held another 50 minutes with movements recorded at, 20, 30, 50, and 60 minutes. The proof creep test will be considered successful if the movement is less than 0.04 inches between 1 and 10 minutes or less than 0.08 inches between the 6 and 60 minute readings and the creep rate is linear or decreasing during the test.

7.8 Excavation Monitoring

8.6.1. It is recommended that the condition of existing buildings, pavements and other structures around the perimeter of the planned excavation be documented before the start of shoring and excavation work. Special attention should be given to documenting existing cracks or other indications of differential settlement within these adjacent structures, pavements and other improvements. Any underground utilities sensitive to settlement should be video taped prior to construction to verify integrity of pipes.

8.6.2. Lateral movement of shoring is associated with vertical ground settlement beyond the excavation. Therefore, it is recommended that horizontal movements of the soil nail wall be accurately monitored and recorded during excavation and soil nail construction.

7.9 Pavement Design

7.9.1 Near surface soil samples were evaluated to determine pavement design parameters. A CBR of 3 at 95% compaction and a resilient modulus of 4,500 psi were used for pavement design based on our experience with similar soils.

7.9.2 Asphalt pavement designs for asphalt concrete are presented in Table 4. Pavement designs have been prepared in accordance with accepted AASHTO design methods. A range of pavement designs for various traffic conditions is provided in the tables. The designs assume that the top 8 inches of pavement subgrade will be compacted to 95% of ASTM D 1557. Specifications for pavement and base course should conform to current Oregon Department of Transportation specifications. Additionally, the base rock should contain no more than 5% by weight passing a No. 200 Sieve, and the asphaltic concrete should be compacted to a minimum of 92% of ASTM D2041.

Pavement sections were designed using AASHTO design methods with an assumed reliability level (R) of 90%. A terminal serviceability of 2.0 was assumed. The 18 kip design axle loads are estimated from the number of trucks per day using Federal Highway Administration typical axle distributions for truck traffic and AASHTO load equivalency factors, and assuming a 20 year design life.

7.9.3 It is important to note that these pavement design recommendations do not include an allowance for construction traffic. If paving is planned prior to the completion of heavy construction, the construction traffic (i.e. concrete trucks) should be limited to unpaved and untreated roadways, or specially constructed haul roads. If this is not possible, the pavement design should include an allowance for construction traffic.

7.9.4 Non-engineered fill soils are should be expected adjacent to the north wall of the gymnasium. Geocon Northwest personnel should provide recommendations for remediation or overexcavation of the unsuitable soil during construction, if required. It is recommended that a geotextile filter fabric be placed on the subgrade prior to the placement of the crushed rock base course.

Table 4: Asphalt Concrete Pavement Design

Approximate Number of Trucks per Day (each way)	*Approximate Number of 18 Kip Design Axle Load (1000)*	*Asphalt Concrete Thickness (inches)*	*Crushed Rock Base Thickness (inches)*
Auto Parking	10	2.5	8
5	22	3.0	8
10	44	3.0	10
15	66	3.5	10
25	110	4.0	10
50	220	4.0	12
100	440	4.5	12
150	660	5.0	13

8 FUTURE GEOTECHNICAL SERVICES

The analyses, conclusions and recommendations contained in this report are based on site conditions as they presently exist, and on the assumption that the subsurface investigation locations are representative of the subsurface conditions throughout the site. It is the nature of geotechnical work for soil conditions to vary from the conditions encountered during a normally acceptable geotechnical investigation. While some variations may appear slight, their impact on the performance of the proposed improvements can be significant. Therefore, it is recommended that Geocon Northwest be retained to observe portions of this project relating to geotechnical engineering, including site preparation, grading, compaction, and soil nail wall construction. This will allow correlation of observations and findings to actual soil conditions encountered during construction and evaluation of construction conformance to the recommendations put forth in this report.

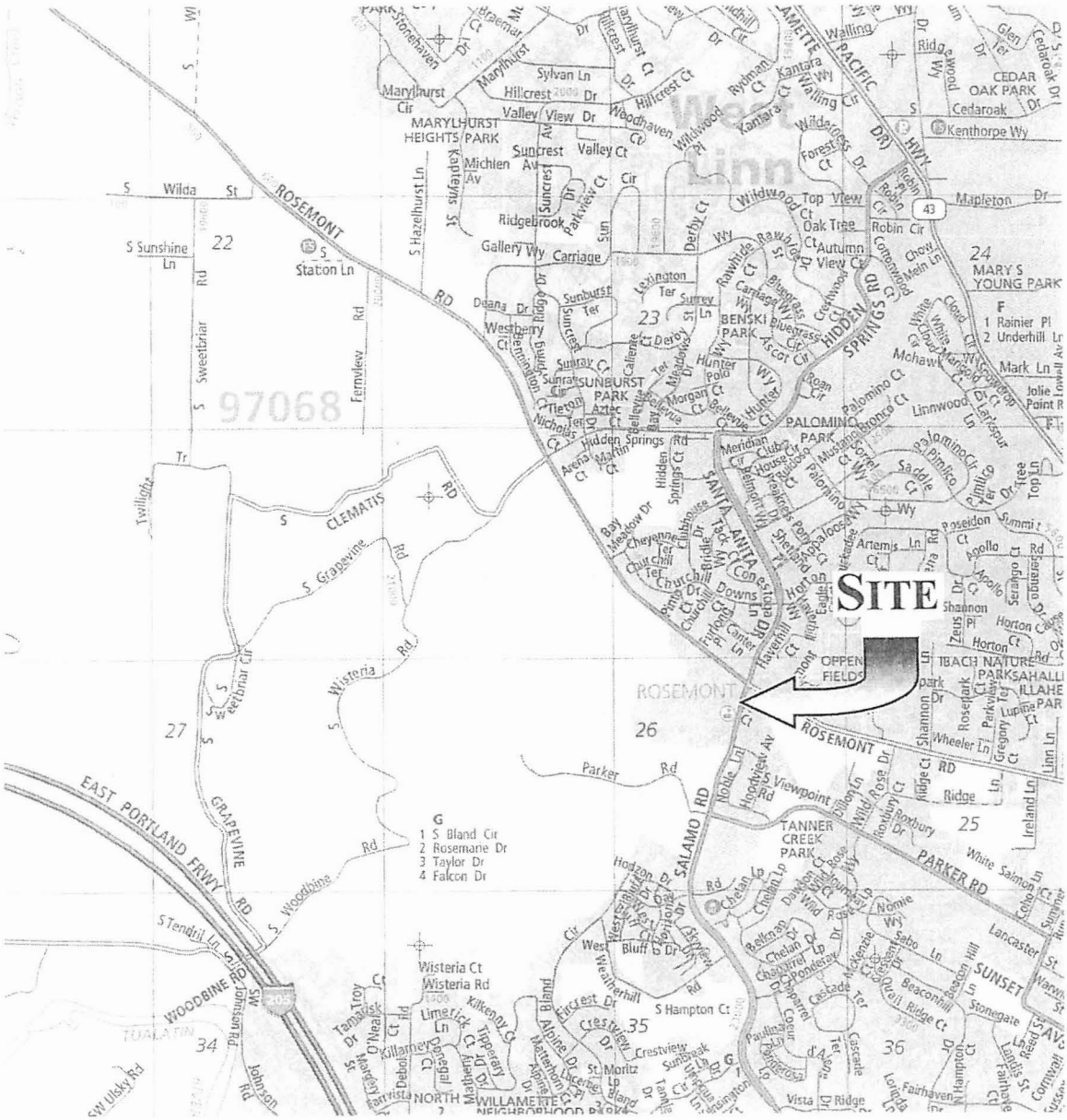
A copy of the plans and specifications should be forwarded to Geocon Northwest so that they may be evaluated for specific conceptual, design, or construction details that may affect the validity of the recommendations of this report. The review of the plans and specifications will also provide the opportunity for Geocon Northwest to evaluate whether the recommendations of this report have been appropriately interpreted.

9 LIMITATIONS

Unanticipated soil conditions are commonly encountered during construction and cannot always be determined by a normally acceptable subsurface exploration program. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Northwest, Inc. should be notified so that supplemental recommendations can be given.

This report is issued with the understanding that the owner, or his agents, will ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, the conclusions and recommendations provided in this letter are subject to review should such changes occur.



SOURCE: 2008 THOMAS BROTHERS MAP
PORTLAND METROPOLITAN AREA

N

NO SCALE

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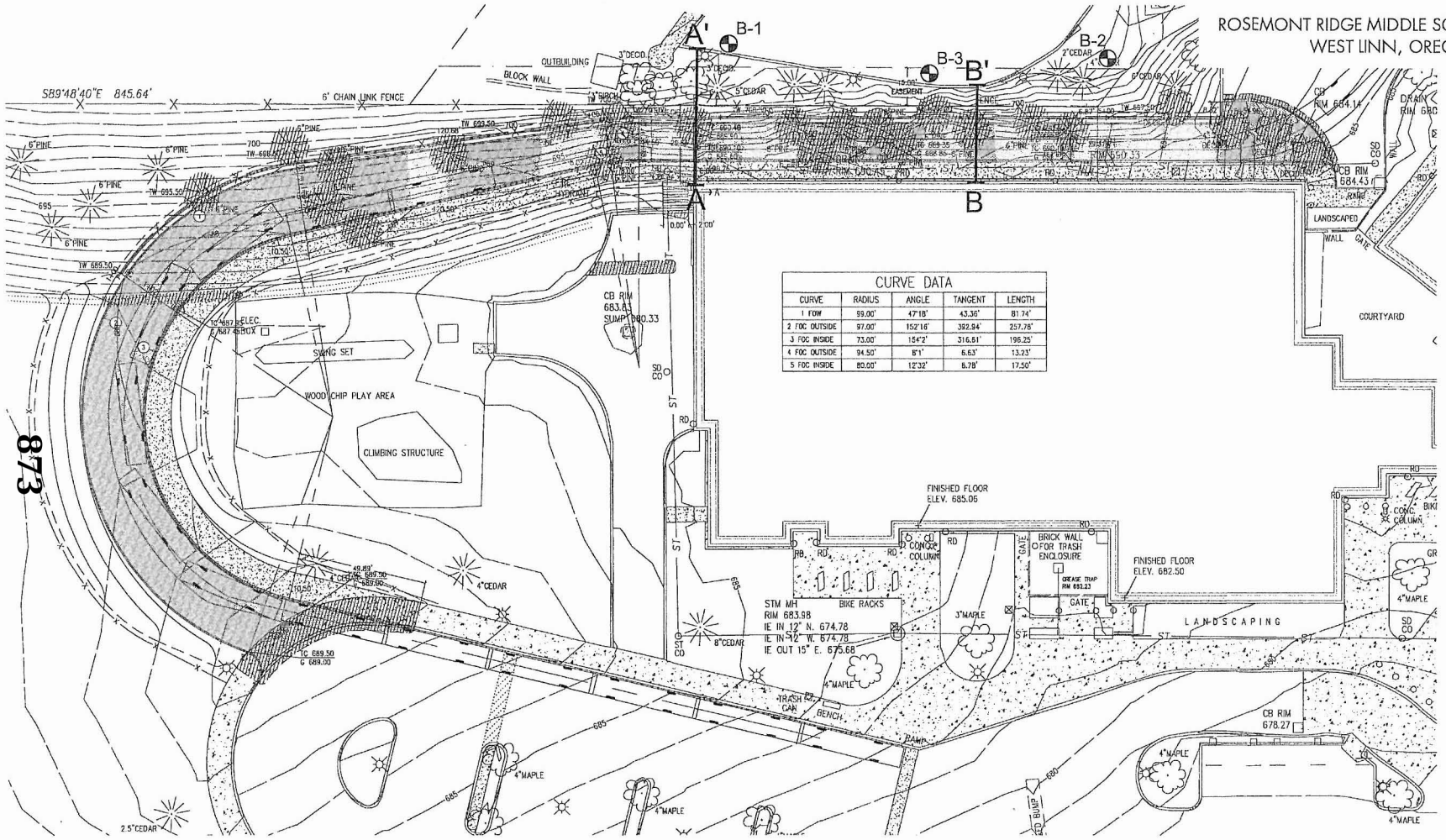
BJW / RSS		DSK / D000D

SITE VICINITY

Rosemont Ridge Middle School
West Linn, Oregon

March 2009	P1666-05-01	FIG. 1

ROSEMONT RIDGE MIDDLE SCHOOL BUS LINE
WEST LINN, OREGON



CURVE DATA				
CURVE	RADIUS	ANGLE	TANGENT	LENGTH
1 FOW	99.00'	47°18'	43.36'	81.74'
2 FOC OUTSIDE	97.00'	152°16'	382.94'	257.78'
3 FOC INSIDE	73.00'	154°2'	316.81'	196.25'
4 FOC OUTSIDE	94.50'	8°1'	6.63'	13.23'
5 FOC INSIDE	80.00'	12°32'	8.78'	17.50'

GEOCON LEGEND

B-3 .....APPROX. LOCATION OF BORING

A — A' .....APPROX. LOCATION OF CROSS-SECTION

SITE PLAN

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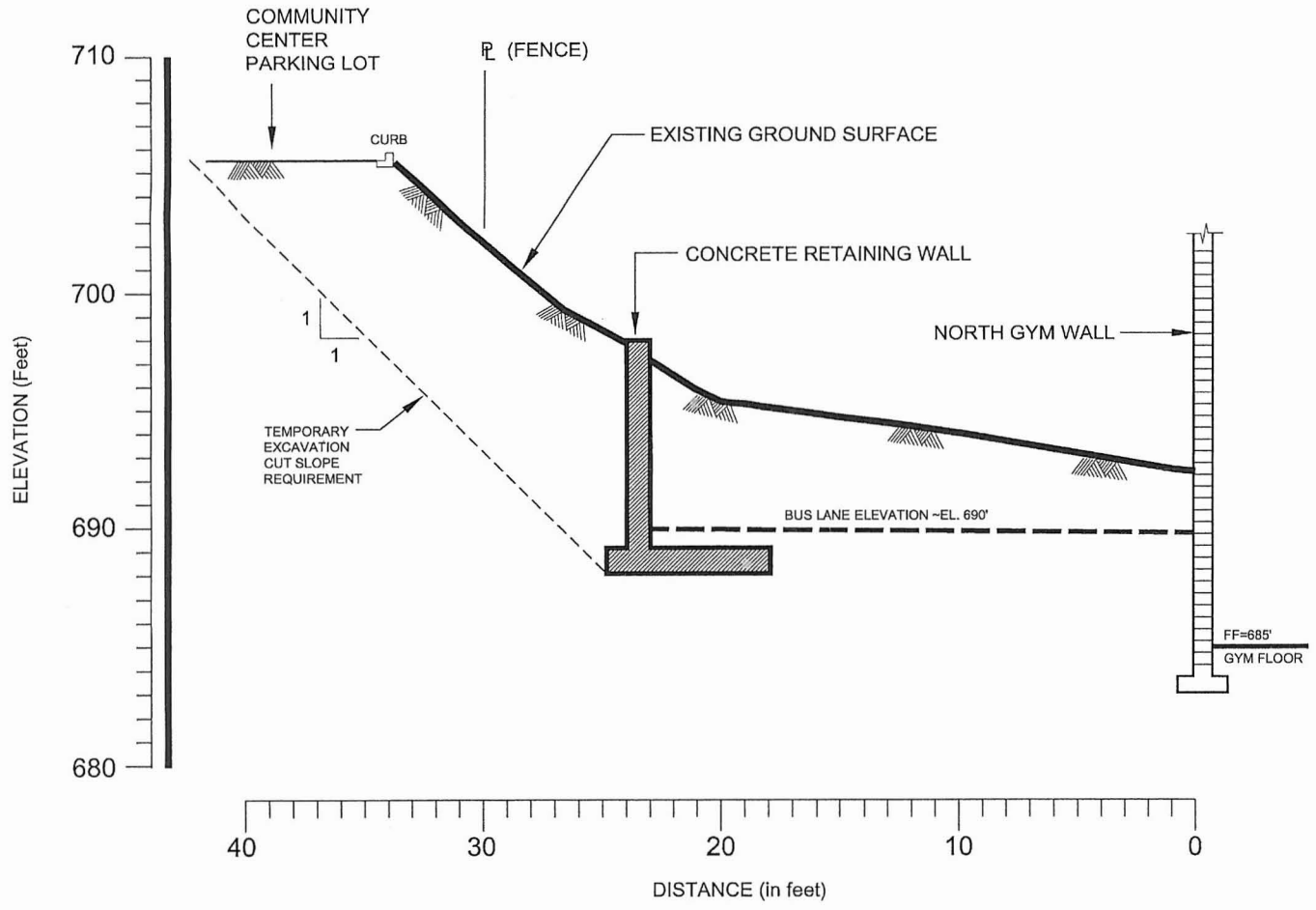
DATE MARCH, 2009 | PROJECT NO. P1666 - 05 - 01 | FIG. 2

P1666-05-01_SITEPLAN_FIG2_BW

ROSEMONT RIDGE MIDDLE SCHOOL BUS LANE
WEST LINN, OREGON



CONCRETE RETAINING WALL AT CROSS-SECTION B-B'

SCALE : 1" = 5' (HORIZONTAL = VERTICAL)

REF. DRAWING BASED ON ROSEMONT RIDGE MIDDLE SCHOOL, FIGURE SK1, WINZLER & KELLY

SCHEMATIC CROSS-SECTION

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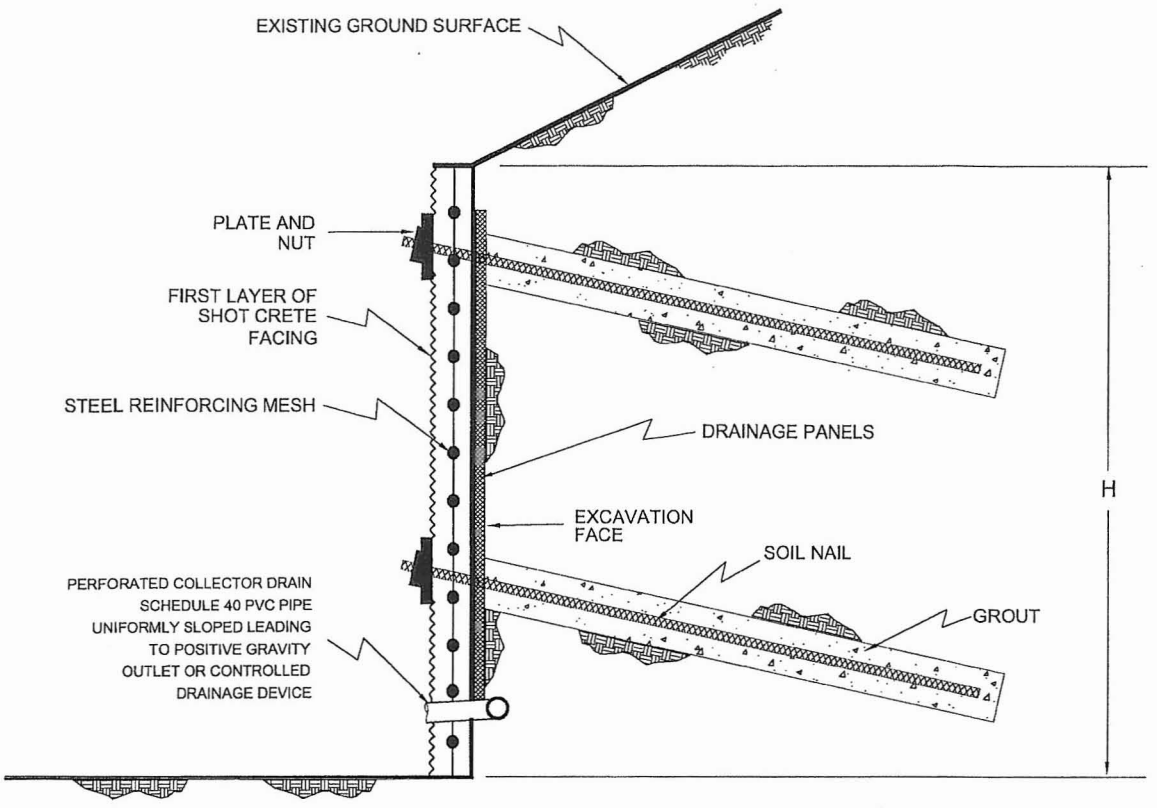
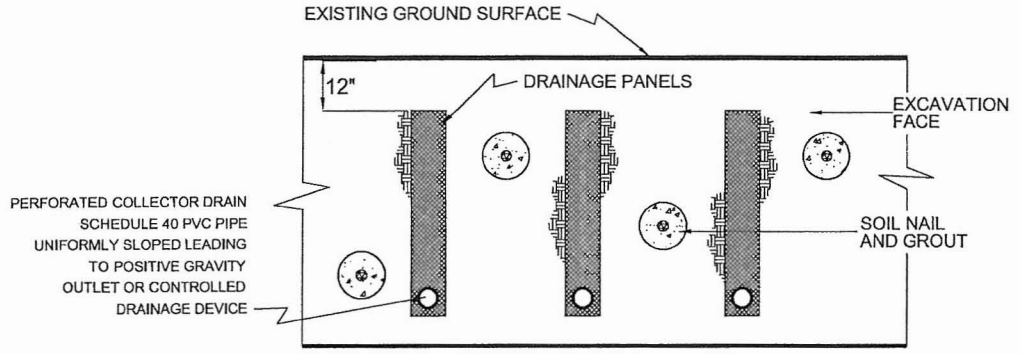
DATE MARCH, 2009	PROJECT NO. P1666 - 05 - 01	FIG. 3

P1666-05-01_FIG3_SD.DWG



SIDE VIEW



SOIL NAILS AND DRAINAGE PANELS TO BE DESIGNED BY WALL CONTRACTOR

FRONT VIEW

GENERAL SOIL NAIL WALL PLAN

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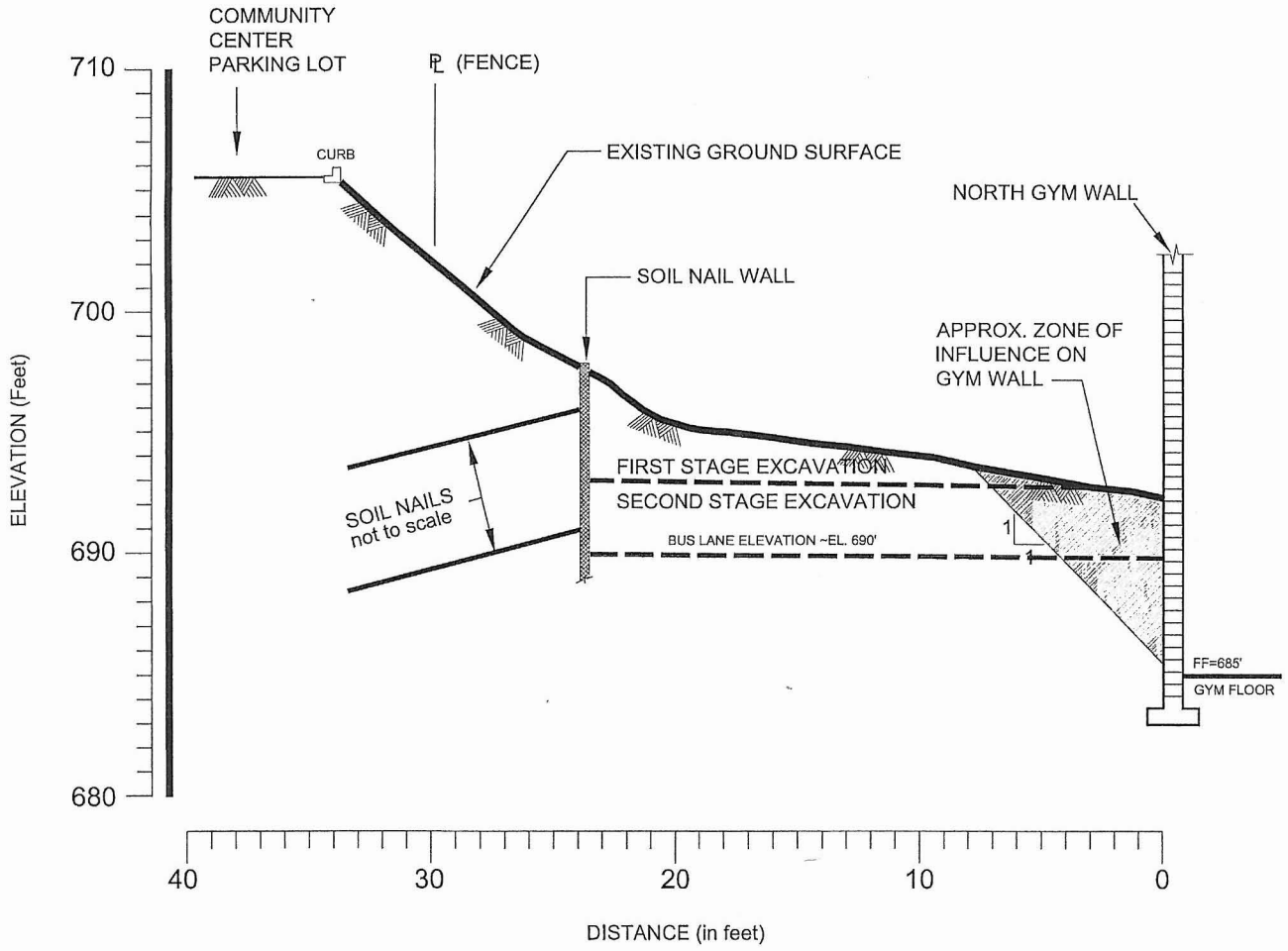
BW / RSS		DSK/GTYPD

ROSEMONT RIDGE MIDDLE SCHOOL BUS LANE
WEST LINN, OREGON

DATE MARCH, 2009	PROJECT NO. P1666 - 05 - 01	FIG. 4

P1666-05-01_GSNWP_FIG4_BW

ROSEMONT RIDGE MIDDLE SCHOOL BUS LANE
WEST LINN, OREGON



SOIL NAIL WALL AT CROSS-SECTION B-B'

SCALE : 1" = 5' (HORIZONTAL = VERTICAL)

REF. DRAWING BASED ON ROSEMONT RIDGE MIDDLE SCHOOL, FIGURE SK1, WINZLER & KELLY

SCHEMATIC CROSS-SECTION

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DATE MARCH, 2009	PROJECT NO. P1666 - 05 - 01	FIG. 5

P1666-05-01_FIG5_SD.DWG

APPENDIX A
FIELD INVESTIGATION

The subsurface soil conditions in the vicinity of the proposed retaining/shoring wall were determined based on the literature review, the field exploration, and laboratory testing. The field exploration was completed on February 26, 2009, and consisted of 3 exploratory borings and several hand-dug excavations. The explorations were located in the approximate locations shown in Figure 2, Site Plan.

The borings were advanced to depths ranging from approximately 15 to 30 feet below ground surface (bgs) and were completed with a truck mounted drill rig equipped with mud rotary and rock coring drilling capabilities. The borings were excavated at the top of the north slope on the property adjacent to the school. A member of Geocon Northwest's geotechnical engineering staff logged the subsurface conditions encountered within the borings. Standard penetration tests (SPT) were performed at selected depths in each boring by driving a 2-inch outside diameter split spoon sampler 18 inches into the bottom of the boring, in general accordance with ASTM D 1586. The number of blows required to drive the sampler the last 12 of the 18 inches (blow count) are reported on the boring logs located in Appendix A at the end of this report. The blow counts shown in the boring logs are the values recorded in the field. An automatic SPT hammer was used to drive the sampler into the soil. A correction of 1.3 was applied to the field SPT values to obtain the conventional N_{60} blow count. The correction factor of 1.3 is based on the automatic SPT hammer having an estimated energy of 80% versus the 60% energy of conventional hammers. Disturbed bag samples were obtained from SPT testing. Soil samples were returned to the laboratory for further evaluation. Service providers subcontracted by Geocon Northwest completed the borings.

PROJECT NO. P1666-05-01

BORING B 1

ELEV. (MSL.) _____ DATE COMPLETED 02-26-2009

EQUIPMENT D50-MUD ROTARY BY: S. DIXON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					4" Asphalt over 8" Base Rock			
2				CL	Medium stiff, moist to wet, brown, Silty CLAY			
	B1-1			CH/MH	**WEATHERED BASALT SOIL** Hard, moist, reddish brown to gray, CLAY and SILT	31		34.6
4								
6	B1-2					40		38.7
8	B1-3					56		42.1
10	B1-4					90		37.8
12								
14	B1-5				-Begins to drill as less weathered rock (possibly excavates as large boulder)	65/2"		N/A
16								
18								
20	B1-6				-Becomes less hard	48		39.2
22					-Hard, moist to wet, reddish brown to gray CLAY and SILT			
24								
26	B1-7				-Becomes harder and drills as less weathered rock	65/2"		21.0
28								
30					BORING TERMINATED AT 30 FEET Groundwater not encountered			

P1666-05-01.GPJ

Figure A-1,
Log of Boring B 1, Page 1 of 1

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ▮ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. P1666-05-01

BORING B 2

ELEV. (MSL.) _____ DATE COMPLETED 02-26-2009

EQUIPMENT D50-MUD ROTARY BY: S. DIXON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					Grass Surface			
				ML	**LANDSCAPE FILL**			
2					Soft, wet, brown, SILT			
	B2-1					3		30.9
4				CL	**WEATHERED BASALT SOIL**			
	B2-2				Stiff, wet, reddish brown, CLAY	10		35.5
6								
	B2-3			CH/MH	Hard, wet, reddish brown to gray, CLAY and SILT	39		42.7
8								
10	B2-4				-Becomes gray	98		33.4
12								
	B2-5				-With less weathered rock	78/4"		26.9
14								
	B2-6				-Becomes reddish brown to gray	46		38.5
16								
	B2-7					39		33.3
18								
20	B2-8				-Becomes very stiff	18		31.4
22					-Becomes hard			
24								
	B2-9				-With less weathered rock	65/4"		53.0
26								
28					BORING TERMINATED AT 28 FEET Refusal in rock Groundwater not encountered			

Figure A-2,
Log of Boring B 2, Page 1 of 1

P1666-05-01.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ▯ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ▩ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. P1666-05-01

BORING B 3

ELEV. (MSL.) _____ DATE COMPLETED 02-26-2009

EQUIPMENT D50-MUD ROTARY BY: S. DIXON

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0					4" Asphalt over 8" Base Rock			
2				CH/MH	**WEATHERED BASALT SOIL** Stiff, moist to wet, reddish brown to gray, CLAY and SILT			
4								
6	B3-1				-Becomes less weathered rock -Core 6 feet to 10 feet; approximately 2.5 foot recovery; RQD=30%			
8								
10	B3-2				-Core 10 feet to 15 feet			
12					-Approximate 1 foot recovery RQD=0%			
14								
					BORING TERMINATED AT 15 FEET Groundwater not encountered			

Figure A-3,
Log of Boring B 3, Page 1 of 1

P1666-05-01.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ▨ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

APPENDIX B

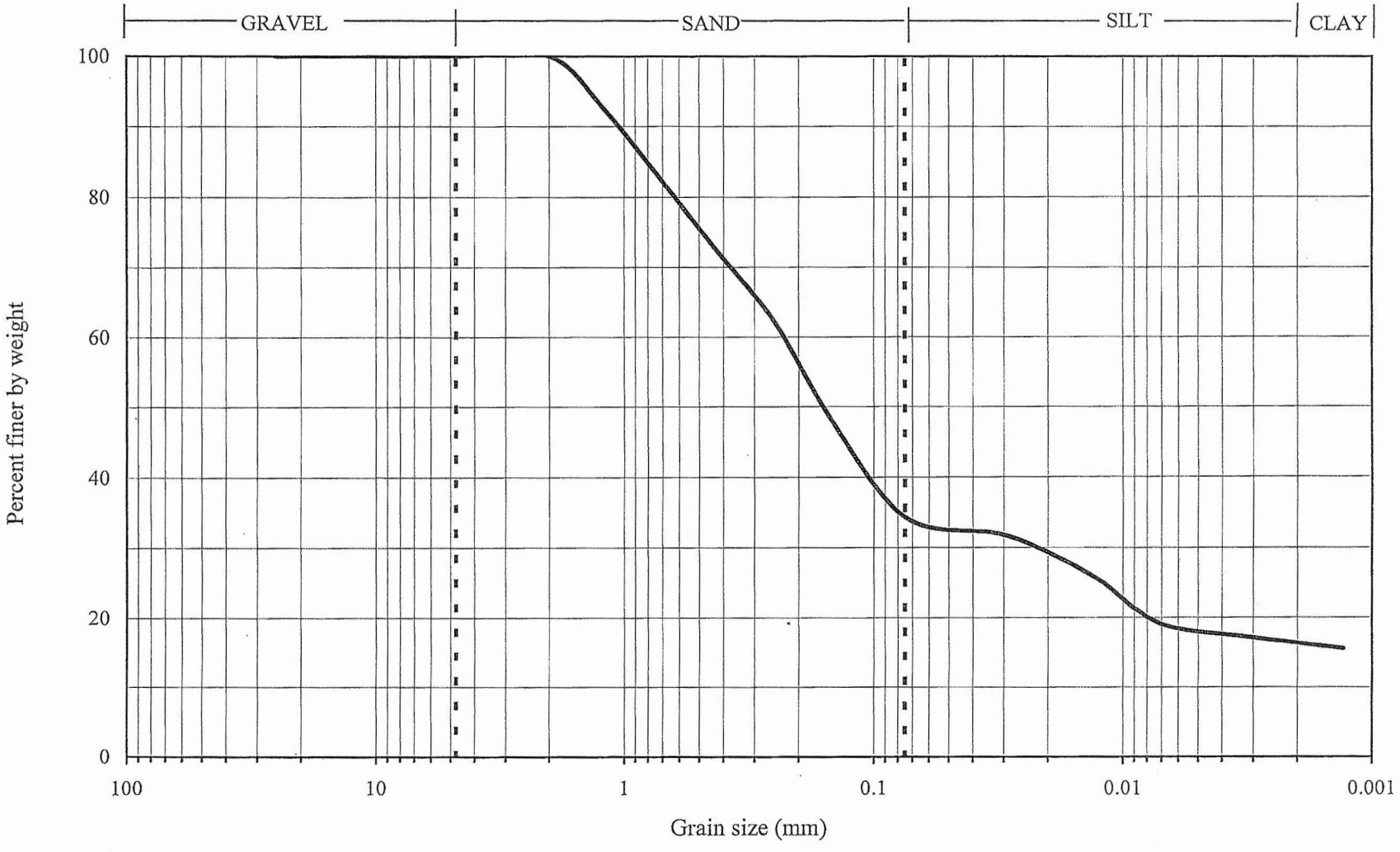
LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. Selected soil samples were tested for their moisture content, plasticity, and gradation. Moisture contents are indicated on the boring logs in Appendix A. The results of the gradation tests are illustrated on the following pages.

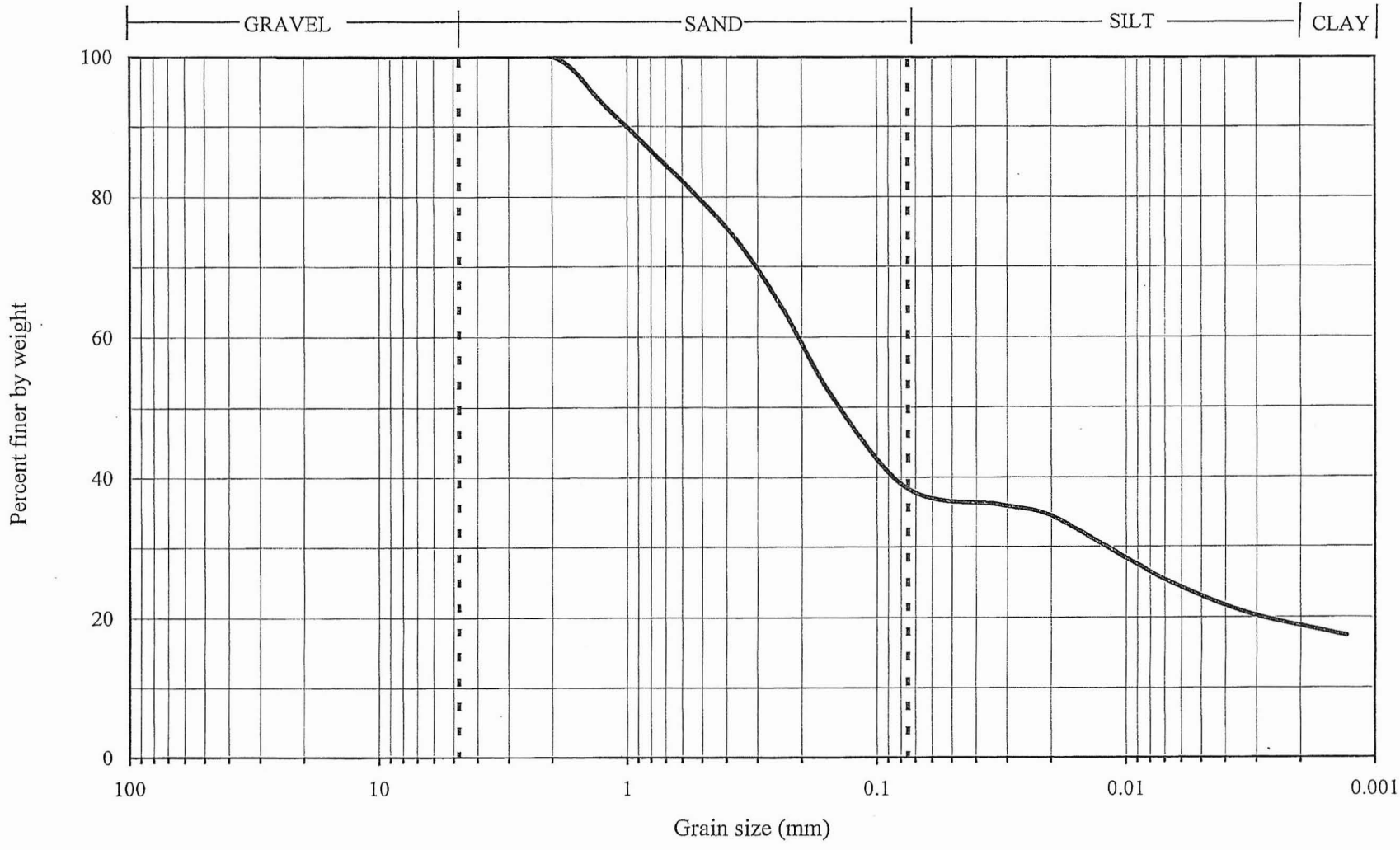
TABLE B-1
SUMMARY OF PLASTICITY INDEX TEST RESULTS
ASTM D4318

Sample Number	*Depth (ft)*	*Liquid Limit*	*Plastic Limit*	*Plasticity Index*	*USCS Classification*
B1-3	7.5-9	57	30	27	MH/CH
B2-8	20-21.5	45	34	11	ML

Grain Size Distribution (ASTM D1140 and D 422)
Rosemont Ridge Middle School Bus Lane
Sample B1-3 Depth = 7.5 feet



Grain Size Distribution (ASTM D1140 and D 422)
Rosemont Ridge Middle School Bus Lane
Sample B2-3 Depth = 7.5 feet



Grain Size Distribution (ASTM D1140 and D 422)
Rosemont Ridge Middle School Bus Lane
Sample B2-8 Depth = 20 feet

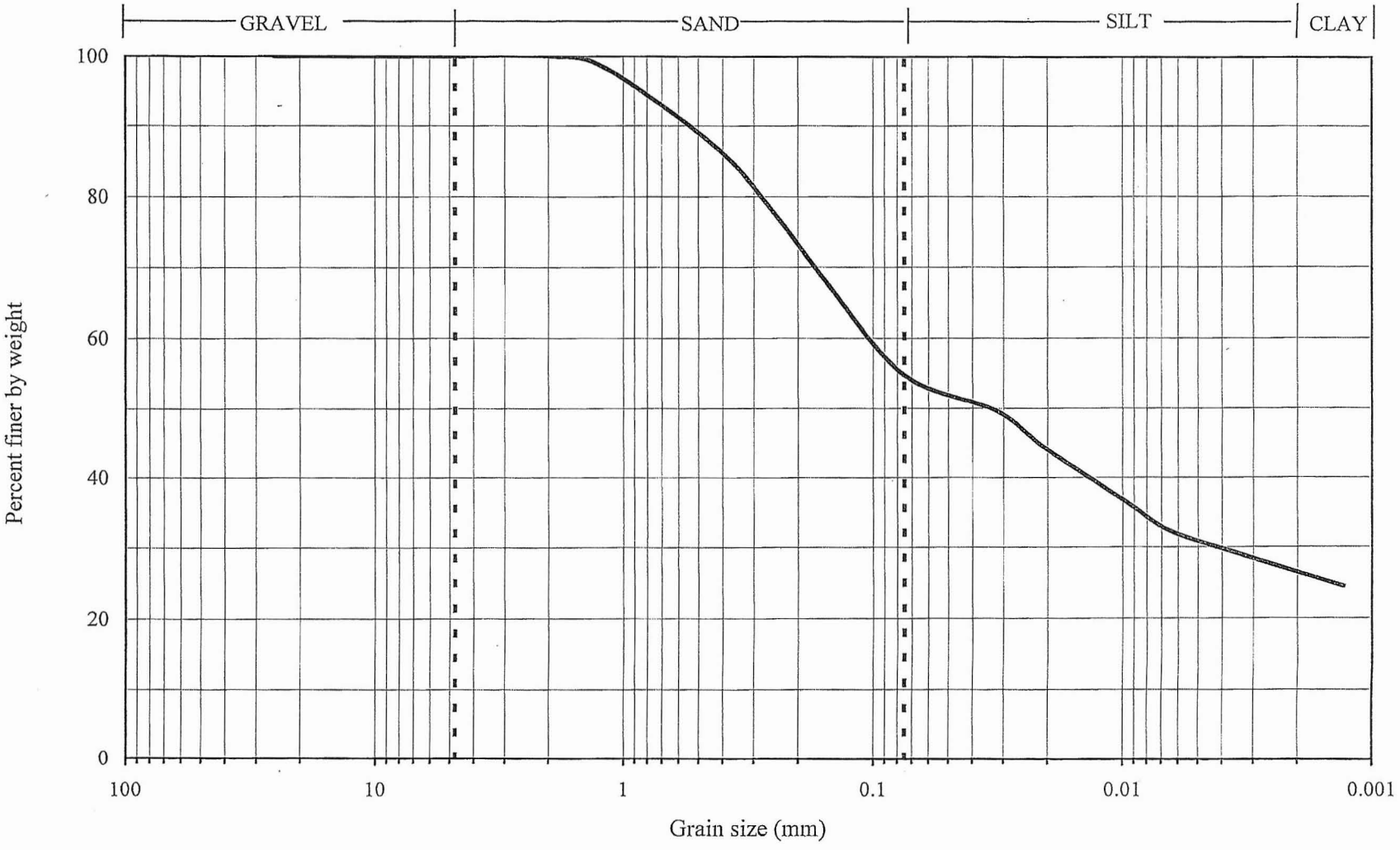
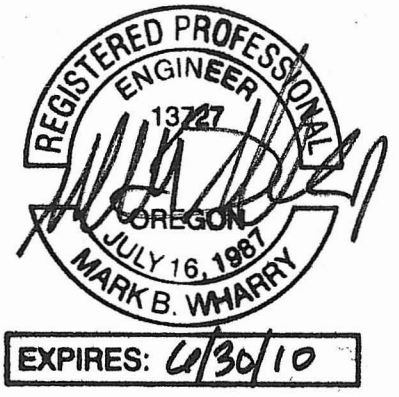


EXHIBIT B
Stormwater Management Report

STORMWATER MANAGEMENT REPORT FOR

ROSEMONT RIDGE MIDDLE SCHOOL

West Linn Wilsonville School District
22210 SW Stafford Road
West Linn, OR



WINZLER & KELLY

15575 SW Sequoia Parkway, Suite 140
Portland, Oregon 97224

July 2009

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose of Study

Upgrades to Rosemont Ridge Middle School are proposed to replace an existing grass softball field with a synthetic turf surface, and to construct a driveway around the north perimeter of the existing school building that will connect the existing driveway and parking lot to Rosemont Road. A study was performed to evaluate the impacts of the proposed construction on existing stormwater characteristics, and to analyze the measures proposed to mitigate those impacts. This report presents the information, methods, and results generated from that study.

1.2 Project Location

The proposed project is located in Clackamas County, Oregon in the City of West Linn. The site is located at 20001 S. Salamo Road.

1.3 Project Description

The West Linn Wilsonville School District proposes to construct a driveway around the north perimeter of the existing school building that will connect the existing driveway and parking lot to Rosemont Road. The proposed driveway is intended to provide improved traffic circulation and increased bus loading and queuing area.

The School District also proposes to replace an existing grass softball field with a synthetic surface to provide an all-weather playing surface.

1.4 Methodologies and Assumptions

The methodologies used in conducting the hydrologic and hydraulic analyses were generated from a variety of sources including existing maps, field data, nomographs, charts, computer programs, standards, and reference manuals.

The hydrologic analysis was performed using the Santa Barbara Urban Hydrograph method with an NRCS Type IA synthetic rainfall distribution. The calculations were executed with the computer program Bently PondPack 10.0. This method was used to generate site runoff hydrographs, determine peak flows, and perform pond routing analysis.

1.5 Agency Stormwater Criteria

This project lies within the jurisdiction of the City of West Linn, which has the following policy regarding stormwater management for new construction.

Quantity Control: The City of West Linn Design Standards (Section Two) defines the criteria for stormwater quantity management. Onsite detention is required to provide quantity control for surface runoff to account for the increase in runoff due to land use changes associated with development. It is required that detention facilities be designed to provide storage for up to the 25-year storm event with the safe overflow conveyance of the 100-year storm event. Allowable post-development peak discharge rates for the 2, 5, 10, and 25-year events are limited to that of the pre-development discharge rates.

Quality Control: The stormwater quality criteria used for this analysis is based on the criteria that was used for the original design of the water quality/detention pond that will be accepting the runoff from the improvements associated with this project. The original stormwater calculations, "Rosemont Ridge Middle School, West Linn, Oregon, Summary of Stormwater Calculations" (Revised December 8, 1998) were prepared by KPFF Consulting

Engineers. The water quality criteria used in the above referenced report is based on "Design and Construction Standards for Sanitary Sewer and Surface Water Management" published by the Unified Sewerage Agency, 1996 (Chapter 33, pp. 33-37). The design criteria is summarized as follows:

Design Rainfall Depth: 0.36 inches
Detention Time: 48 hours
Runoff Area: Impervious Surface

Conveyance Piping: The City of West Linn Design Standards (Section Two) defines the criteria for conveyance piping, which shall be designed to convey the runoff from the 100-year storm event.

2.0 EXISTING DRAINAGE CONDITIONS

2.1 Description of Existing Drainage Conditions

Rosemont Ridge Middle School is currently divided into two drainage basins: the eastern drainage basin consists of 7.4 acres that that discharges to the east detention pond which outlets to the City of West Linn public storm drain system; the western drainage basin consists of 13.2 acres that discharges to the west detention pond which outlets to the Clackamas County storm drain system (KPFF, 1998).

The FEMA Flood Insurance Rate Map Number 41005C 0257 D (Figure 1) shows that the project site is located within "Other Areas - Zone X", which is described as "areas determined to be outside the 0.2% annual chance floodplain".

2.2 Hydrologic Analysis of Existing Conditions

The existing east detention pond and outlet structure were designed per City of West Linn standards to have peak outflows that are less than or equal to the peak runoff from the site in its pre-developed condition. To determine those peak flows, a hydrologic analysis of the site in its pre-developed condition was performed as part of this study; the calculations are contained in Appendix B. The hydrologic analysis was performed using the Santa Barbara Urban Hydrograph method with an NRCS Type IA synthetic rainfall distribution. The 24-hour rainfall depths were obtained from the City of Portland Stormwater Management Manual and are summarized in Table 1 below.

Design Storm	24-Hour Rainfall
2-Year	2.40"
5-Year	2.90"
10-Year	3.40"
25-Year	3.90"
100-Year	4.40"

Table 1: 24-Hour Rainfall Depths (Source: City of Portland Stormwater Management Manual)

The physical characteristics of the site in its pre-developed condition were obtained from the stormwater calculations for the original construction of the site, prepared by KPFF Consulting Engineers (referenced above). The allowable peak outflows from the east detention pond are based on the following criteria:

Tributary Area: 7.40 acres
Time of Concentration: 22.3 minutes
Curve Number (CN): 87

The runoff hydrographs for the various design storms are shown in Appendix B, and the calculated peak runoff rates are summarized in Table 2.

Design Storm	Peak Runoff
2-Year	1.7 cfs
5-Year	2.3 cfs
10-Year	3.0 cfs
25-Year	3.7 cfs
100-Year	4.4 cfs

Table 2: Peak Runoff Rates for Pre-developed Conditions

3.0 PROPOSED DRAINAGE CONDITIONS

3.1 Description of Proposed Drainage Conditions

The proposed drainage design includes curbs, drains, and piping to collect and convey the runoff from the proposed driveway to the existing east detention pond, and subdrainge and surface drainage systems to collect and convey runoff at the proposed synthetic turf field to the existing east detention pond. A portion of the proposed driveway area is currently part of the west basin that drains to the west detention pond, and is proposed to be redirected to drain to the east detention pond. It is intended that the current allowable discharge rate of the pond be maintained, and that the pond volume be increased to account for the additional tributary area and change in runoff rates associated with the proposed improvements.

3.2 Hydrologic Analysis of Proposed Conditions

A hydrologic analysis of the site in the proposed condition was performed as part of this study; the calculations are contained in Appendix C – see Figure 2 for a drainage map of the proposed conditions. The hydrologic analysis was performed using the Santa Barbara Urban Hydrograph method with an NRCS Type IA synthetic rainfall distribution. The 24-hour rainfall depths were obtained from the City of Portland Stormwater Management Manual and are summarized in Table 1 in Section 2.2. To maintain consistency with the original stormwater calculations (KPFF, 1998), a time of concentration of 7 minutes was used for the impervious and landscaped areas. A time of concentration of 10 minutes was used for the synthetic turf softball field. The curve numbers used are summarized below:

Impervious Areas CN: 98
Landscape Areas CN: 80
Synthetic Turf Field CN: 90

The calculated peak runoff rates for each sub-basin for various design storms are summarized in Table 3, and the runoff hydrographs for all sub-basins combined are shown in Appendix C.

Design Storm	Peak Runoff
2-Year	1.7 cfs
5-Year	2.3 cfs
10-Year	3.0 cfs
25-Year	3.7 cfs
100-Year	4.4 cfs

Table 3: Peak Runoff Rates for Proposed Conditions

The existing east detention pond is proposed to be expanded to provide additional water quality and detention capacity. The performance of the proposed pond for the various

analysis showed that the proposed pond has the capacity to store the runoff from the 2, 5, 10, and 25-year storms while not releasing more than the peak runoff that the pond was allowed to release when it was originally designed. Table 4 below summarizes the performance of the pond for various design storms. The available storage in the pond is based on a pond bottom elevation of 664.00 and an outlet structure overflow elevation of 667.94 (see Figure 3). Although the pond has more than enough capacity to store the runoff from a 100-year storm event, the pond volume is controlled by the water quality volume required.

Storm Event	Pre-Developed Peak (cfs)	Proposed Peak (Undetained) (cfs)	Proposed Peak (Detained) (cfs)	Required Storage (cf)	Available Storage (cf)
2-Year	1.7	3.2	1.7	9,150	23,100
5-Year	2.3	4.1	1.9	11,180	23,100
10-Year	3.0	5.0	2.1	13,620	23,100
25-Year	3.7	6.0	2.2	16,530	23,100
100-Year	4.4	7.0	2.4	19,950	23,100

Table 4: Summary of Pond Performance

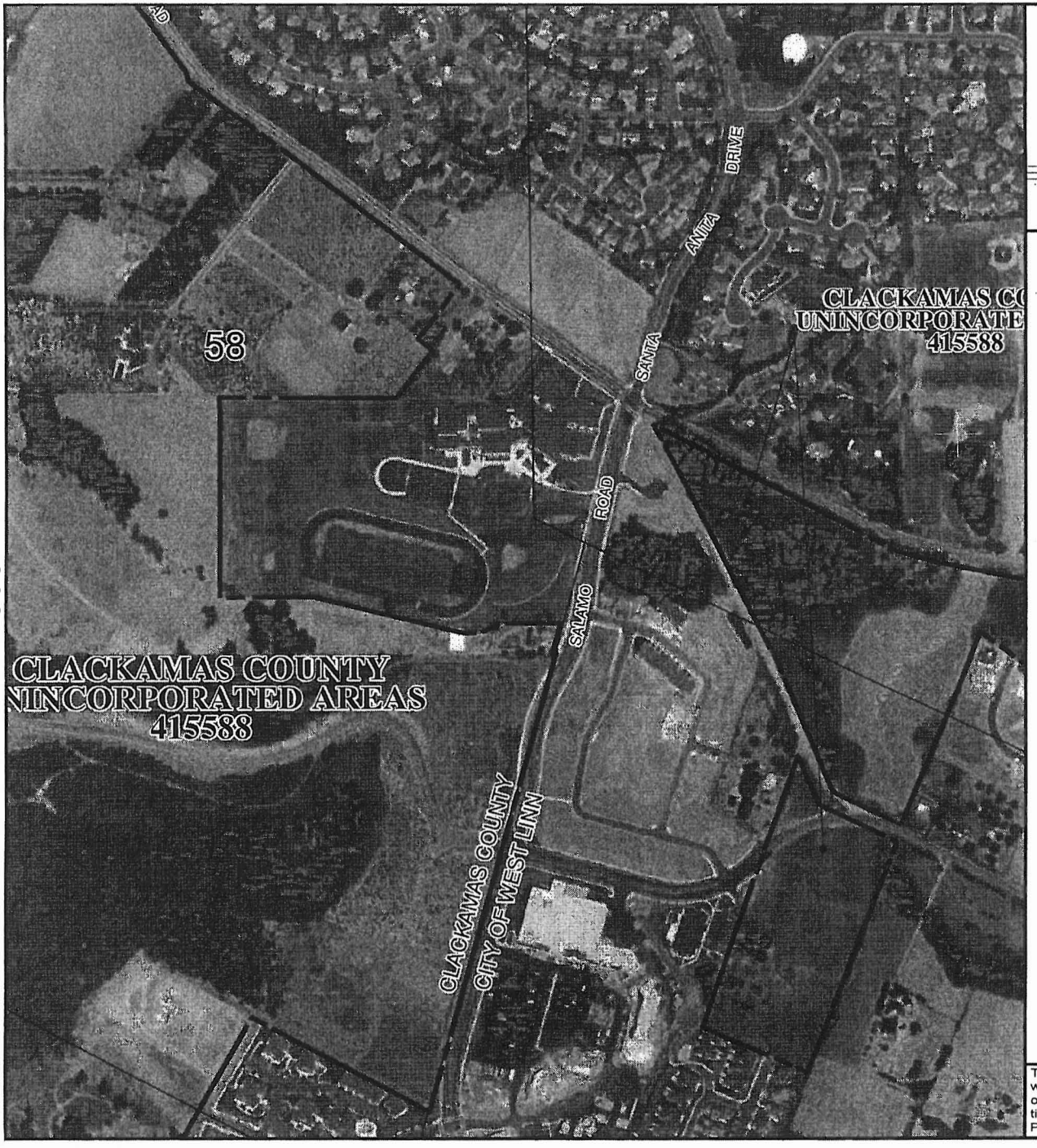
The existing outlet structure for the east pond will remain in place and not be altered as part of the proposed improvements. Based on the construction documents and stormwater calculations for the original construction of the pond, in addition to field survey information, the assumed existing pond outlet structure is shown in Figure 3. A rating curve was developed for the water surface elevation versus discharge for the assumed outlet structure and is included in Appendix C. This rating curve was used for the hydraulic analysis of the pond that was included as part of this study.

3.3 Stormwater Quality Management

Stormwater quality for the proposed improvements will be provided by the existing east pond. The east pond currently provides water quality for the east portion of the site and is proposed to be expanded to accommodate the increased stormwater quality treatment demands associated with the proposed increase in impervious area. The criteria used to size the pond for stormwater quality is described in Section 1.5 of this report. The stormwater quality sizing calculations are contained in Appendix D. The calculations show that a volume of 6270 ft^3 is required for stormwater quality. The existing pond will be expanded and 4" of dead storage will be added to provide a treatment volume of 7150 ft^3 with a ponding depth of 1.68' within the space between the bottom of the pond and the second riser of the outlet structure (see Figure 3).

4.0 SUMMARY

The increase in stormwater runoff associated with the proposed improvements will be managed by increasing the detention and water quality capacity of the existing east pond. The pond will detain the runoff from the proposed tributary area of 8.7 acres such that the peak release rates from the pond will not exceed those allowed when the pond was originally designed, which are equal to the peak runoff rates from the site in its pre-developed condition, considering the tributary area of 7.4 acres associated with the original design of the pond. In addition, a portion of the runoff that currently drains to the west pond will be redirected to the east pond, resulting in a decrease in runoff into and out of the existing west pond.



MAP SCALE 1" = 500'

250 0 500 1000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0257D

FIRM

FLOOD INSURANCE RATE MAP

CLACKAMAS COUNTY, OREGON

AND INCORPORATED AREAS

PANEL 257 OF 1175

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLACKAMAS COUNTY	415588	0257	D
OREGON CITY, CITY OF	410021	0257	D
WEST LINN, CITY OF	410024	0257	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

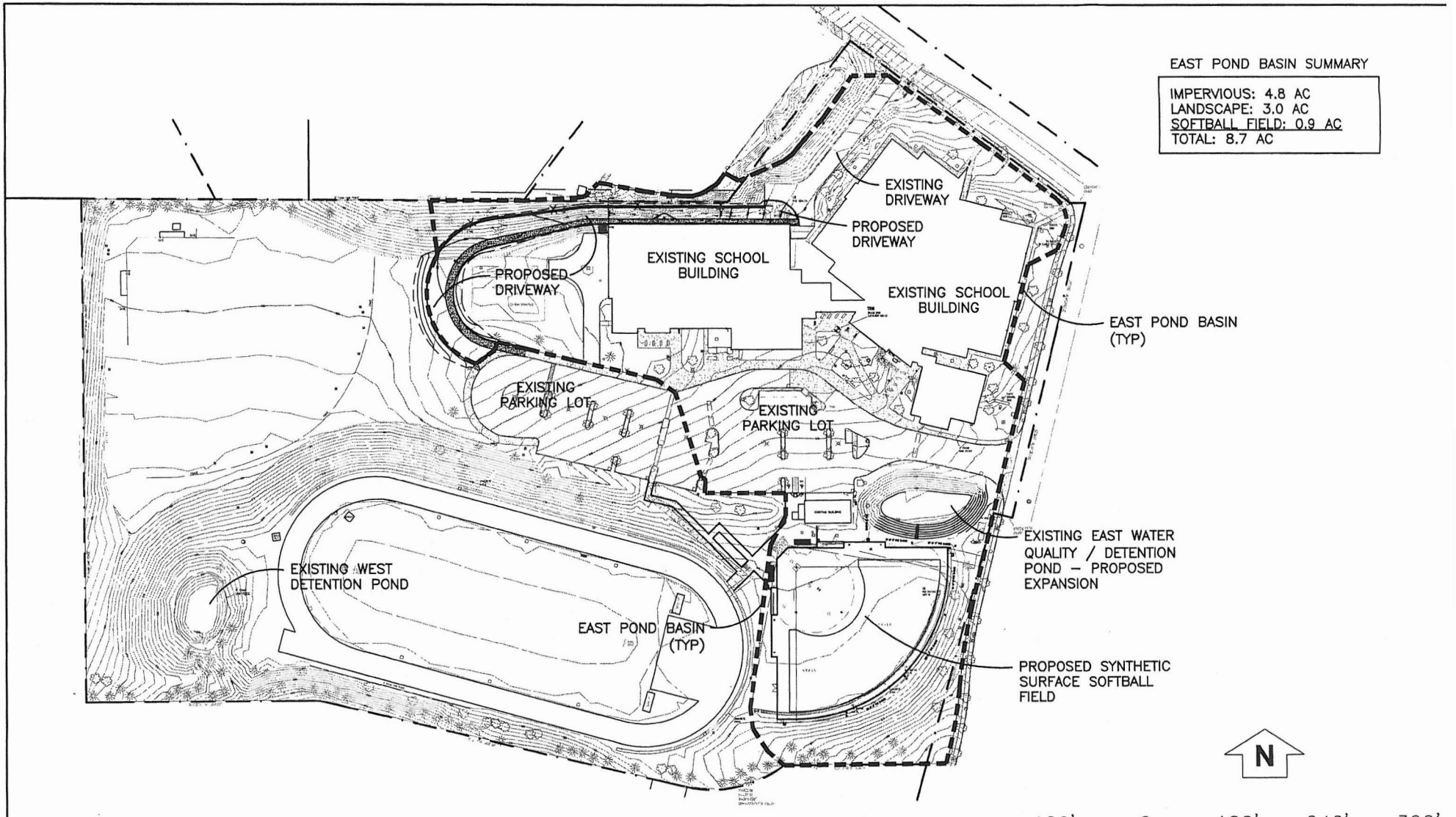
MAP NUMBER
41005C0257D

EFFECTIVE DATE
JUNE 17, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIGURE 1



WINZLER & KELLY
15575 SW SEQUOIA PKWY, SUITE 140
PORTLAND, OR 97224
PH: 503-226-3921 FAX: 503-226-3926

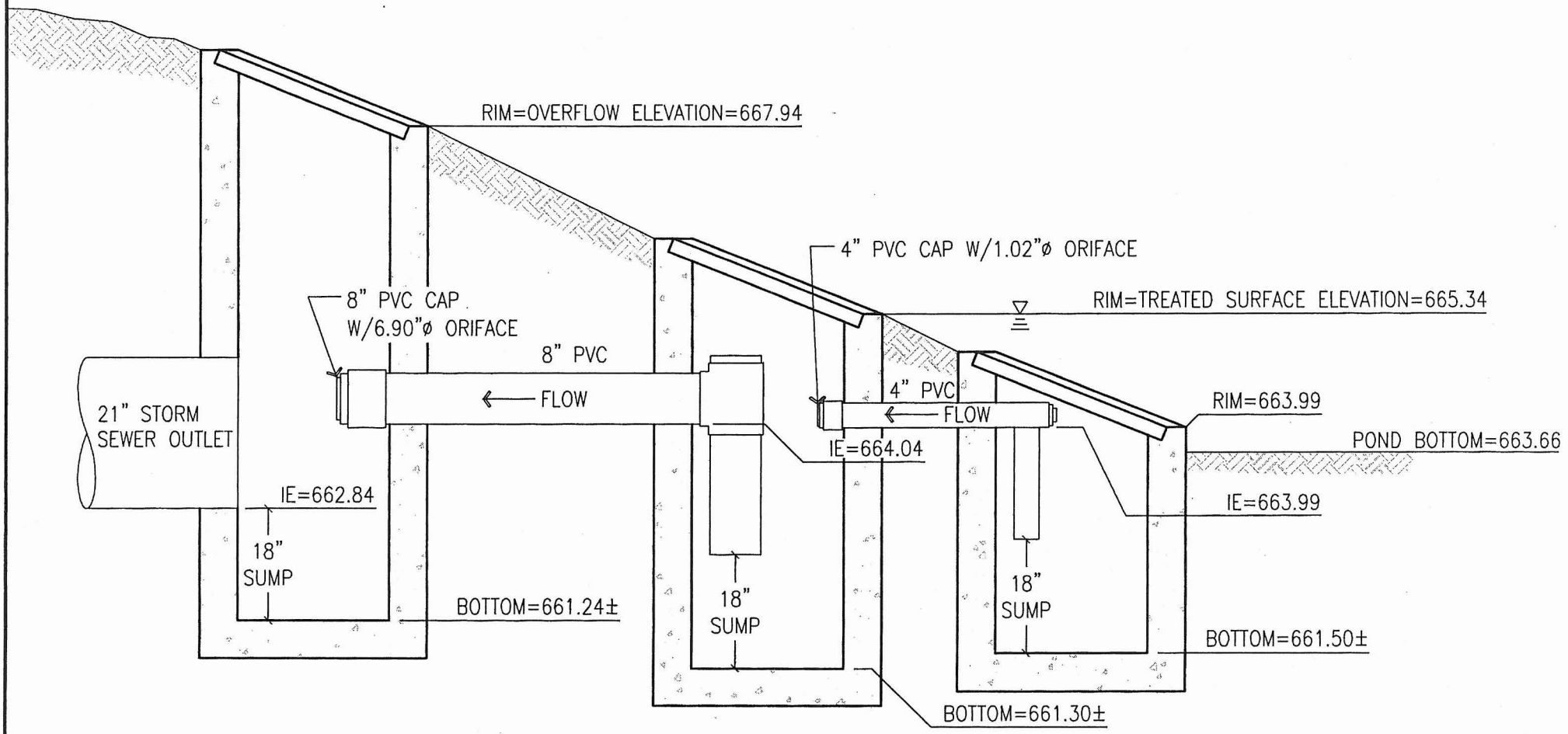
PROJECT: ROSEMONT RIDGE MIDDLE SCHOOL

TITLE: DRAINAGE MAP - PROPOSED CONDITIONS

DESIGNED	DRAWN	APPROVED	DATE	PROJECT NO.	DWG NO.
STS	STS		5/29/09	10884-09002	FIGURE 2

O:\10884 - DOWA (DULL OLSON WEEKES ARCHITECTS)\10884-09002 DOWA WLWSD ROSEMONT RIDGE MS\CAD\EXHIBITS\DRAINAGEMAP.DWG Seth Stevens 5/29/2009 1:38 P

894



WINZLER & KELLY
15575 SW SEQUOIA PKWY, SUITE 140
PORTLAND, OR 97224
PH: 503-226-3921 FAX: 503-226-3926

PROJECT
ROSEMONT RIDGE MIDDLE SCHOOL

TITLE
EXISTING EAST POND OUTLET STRUCTURE

DESIGNED	DRAWN	APPROVED	DATE	PROJECT NO.	DWG NO.
					FIGURE 3

Appendix A

NRCS Hydrologic Soil Group Information

Hydrologic Soil Group—Clackamas County Area, Oregon
(Rosemont Ridge)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:2,650 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 4, Dec 22, 2006

Date(s) aerial images were photographed: 8/3/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Clackamas County Area, Oregon				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
13C	Cascade silt loam, 8 to 15 percent slopes	C	8.7	27.2%
23B	Cornelius silt loam, 3 to 8 percent slopes	C	1.3	4.1%
23C	Cornelius silt loam, 8 to 15 percent slopes	C	16.1	50.4%
23D	Cornelius silt loam, 15 to 30 percent slopes	C	0.3	1.0%
30C	Delena silt loam, 3 to 12 percent slopes	D	5.5	17.3%
Totals for Area of Interest			**31.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

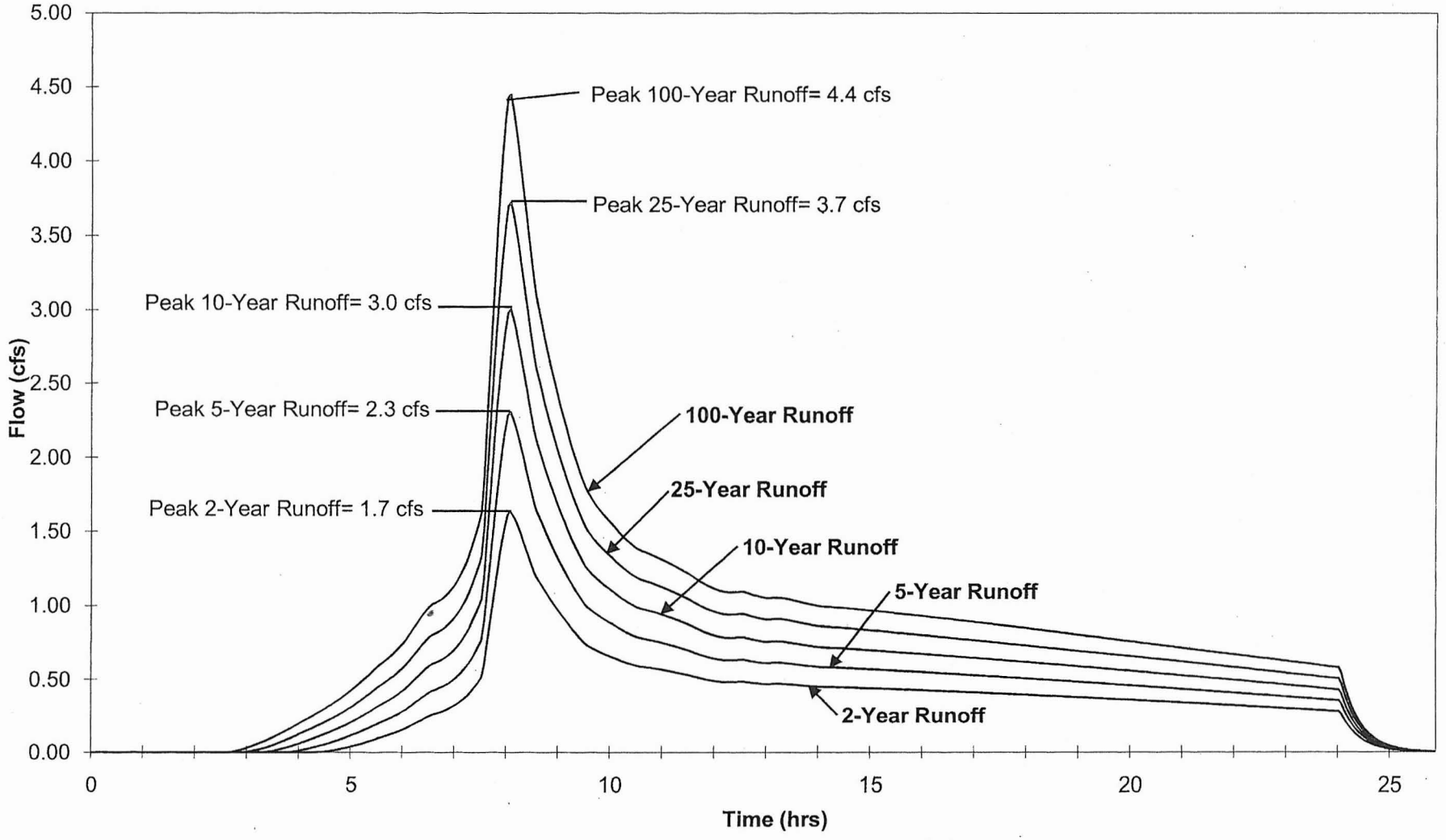
Tie-break Rule: Lower

Appendix B

Calculations for Hydrologic Analysis of Existing Conditions

ROSEMONT RIDGE MIDDLE SCHOOL

Runoff Hydrographs for Pre-developed Conditions



ROSEMONT RIDGE MIDDLE SCHOOL

Runoff Hydrographs for Pre-Developed Conditions

	Runoff (cfs)				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year
0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.00	0.00
0.10	0.00	0.00	0.00	0.00	0.00
0.15	0.00	0.00	0.00	0.00	0.00
0.20	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00
0.30	0.00	0.00	0.00	0.00	0.00
0.35	0.00	0.00	0.00	0.00	0.00
0.40	0.00	0.00	0.00	0.00	0.00
0.45	0.00	0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00	0.00	0.00
0.55	0.00	0.00	0.00	0.00	0.00
0.60	0.00	0.00	0.00	0.00	0.00
0.65	0.00	0.00	0.00	0.00	0.00
0.70	0.00	0.00	0.00	0.00	0.00
0.75	0.00	0.00	0.00	0.00	0.00
0.80	0.00	0.00	0.00	0.00	0.00
0.85	0.00	0.00	0.00	0.00	0.00
0.90	0.00	0.00	0.00	0.00	0.00
0.95	0.00	0.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	0.00	0.00
1.05	0.00	0.00	0.00	0.00	0.00
1.10	0.00	0.00	0.00	0.00	0.00
1.15	0.00	0.00	0.00	0.00	0.00
1.20	0.00	0.00	0.00	0.00	0.00
1.25	0.00	0.00	0.00	0.00	0.00
1.30	0.00	0.00	0.00	0.00	0.00
1.35	0.00	0.00	0.00	0.00	0.00
1.40	0.00	0.00	0.00	0.00	0.00
1.45	0.00	0.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	0.00	0.00
1.55	0.00	0.00	0.00	0.00	0.00
1.60	0.00	0.00	0.00	0.00	0.00
1.65	0.00	0.00	0.00	0.00	0.00
1.70	0.00	0.00	0.00	0.00	0.00
1.75	0.00	0.00	0.00	0.00	0.00
1.80	0.00	0.00	0.00	0.00	0.00
1.85	0.00	0.00	0.00	0.00	0.00
1.90	0.00	0.00	0.00	0.00	0.00
1.95	0.00	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00	0.00
2.05	0.00	0.00	0.00	0.00	0.00
2.10	0.00	0.00	0.00	0.00	0.00
2.15	0.00	0.00	0.00	0.00	0.00
2.20	0.00	0.00	0.00	0.00	0.00
2.25	0.00	0.00	0.00	0.00	0.00
2.30	0.00	0.00	0.00	0.00	0.00
2.35	0.00	0.00	0.00	0.00	0.00
2.40	0.00	0.00	0.00	0.00	0.00
2.45	0.00	0.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	0.00	0.00
2.55	0.00	0.00	0.00	0.00	0.00
2.60	0.00	0.00	0.00	0.00	0.00
2.65	0.00	0.00	0.00	0.00	0.00
2.70	0.00	0.00	0.00	0.00	0.00
2.75	0.00	0.00	0.00	0.00	0.01
2.80	0.00	0.00	0.00	0.00	0.01
2.85	0.00	0.00	0.00	0.00	0.01
2.90	0.00	0.00	0.00	0.00	0.02
2.95	0.00	0.00	0.00	0.00	0.03
3.00	0.00	0.00	0.00	0.00	0.03
3.05	0.00	0.00	0.00	0.01	0.04
3.10	0.00	0.00	0.00	0.01	0.04
3.15	0.00	0.00	0.00	0.01	0.05
3.20	0.00	0.00	0.00	0.02	0.06
3.25	0.00	0.00	0.00	0.02	0.06
3.30	0.00	0.00	0.00	0.03	0.07
3.35	0.00	0.00	0.00	0.03	0.08
3.40	0.00	0.00	0.00	0.04	0.09
3.45	0.00	0.00	0.01	0.04	0.10
3.50	0.00	0.00	0.01	0.05	0.10
3.55	0.00	0.00	0.01	0.06	0.11
3.60	0.00	0.00	0.02	0.06	0.12

Time (hrs)	2-Year	Runoff (cfs) 5-Year	10-Year	25-Year	100-Year
3.65	0.00	0.00	0.02	0.07	0.13
3.70	0.00	0.00	0.03	0.08	0.14
3.75	0.00	0.00	0.03	0.09	0.15
3.80	0.00	0.00	0.04	0.09	0.16
3.85	0.00	0.00	0.04	0.10	0.17
3.90	0.00	0.01	0.05	0.11	0.18
3.95	0.00	0.01	0.05	0.12	0.19
4.00	0.00	0.01	0.06	0.13	0.20
4.05	0.00	0.02	0.07	0.13	0.21
4.10	0.00	0.02	0.07	0.14	0.22
4.15	0.00	0.02	0.08	0.15	0.23
4.20	0.00	0.03	0.09	0.16	0.24
4.25	0.00	0.03	0.09	0.17	0.25
4.30	0.00	0.04	0.10	0.18	0.26
4.35	0.00	0.04	0.11	0.18	0.27
4.40	0.00	0.05	0.11	0.19	0.28
4.45	0.00	0.05	0.12	0.20	0.29
4.50	0.01	0.06	0.13	0.21	0.31
4.55	0.01	0.06	0.13	0.22	0.32
4.60	0.01	0.07	0.14	0.23	0.33
4.65	0.01	0.07	0.15	0.24	0.34
4.70	0.02	0.08	0.16	0.25	0.35
4.75	0.02	0.08	0.17	0.26	0.36
4.80	0.02	0.09	0.17	0.27	0.38
4.85	0.03	0.10	0.18	0.28	0.39
4.90	0.03	0.10	0.19	0.29	0.40
4.95	0.03	0.11	0.20	0.30	0.42
5.00	0.04	0.12	0.21	0.31	0.43
5.05	0.04	0.12	0.22	0.33	0.44
5.10	0.05	0.13	0.23	0.34	0.46
5.15	0.05	0.14	0.24	0.35	0.48
5.20	0.06	0.15	0.25	0.37	0.49
5.25	0.06	0.15	0.26	0.38	0.51
5.30	0.07	0.16	0.27	0.39	0.52
5.35	0.08	0.17	0.28	0.41	0.54
5.40	0.08	0.18	0.29	0.42	0.56
5.45	0.09	0.19	0.30	0.43	0.57
5.50	0.09	0.20	0.32	0.45	0.59
5.55	0.10	0.20	0.33	0.46	0.60
5.60	0.10	0.21	0.34	0.47	0.62
5.65	0.11	0.22	0.35	0.48	0.63
5.70	0.12	0.23	0.36	0.50	0.65
5.75	0.12	0.24	0.37	0.51	0.66
5.80	0.13	0.25	0.38	0.52	0.68
5.85	0.14	0.26	0.39	0.54	0.70
5.90	0.14	0.26	0.40	0.55	0.71
5.95	0.15	0.27	0.42	0.57	0.73
6.00	0.16	0.28	0.43	0.58	0.75
6.05	0.17	0.30	0.44	0.60	0.77
6.10	0.18	0.31	0.46	0.63	0.80
6.15	0.18	0.32	0.48	0.65	0.83
6.20	0.19	0.34	0.50	0.67	0.85
6.25	0.20	0.35	0.51	0.69	0.88
6.30	0.21	0.36	0.53	0.71	0.90
6.35	0.22	0.38	0.55	0.73	0.93
6.40	0.23	0.39	0.56	0.75	0.95
6.45	0.24	0.40	0.58	0.77	0.97
6.50	0.25	0.42	0.60	0.79	0.99
6.55	0.26	0.42	0.61	0.80	1.01
6.60	0.26	0.43	0.61	0.81	1.02
6.65	0.27	0.44	0.62	0.82	1.03
6.70	0.28	0.45	0.63	0.83	1.04
6.75	0.28	0.45	0.64	0.84	1.05
6.80	0.29	0.46	0.65	0.85	1.06
6.85	0.30	0.47	0.66	0.87	1.08
6.90	0.31	0.48	0.68	0.88	1.10
6.95	0.32	0.50	0.70	0.90	1.12
7.00	0.33	0.51	0.71	0.93	1.15
7.05	0.34	0.53	0.73	0.95	1.18
7.10	0.35	0.55	0.76	0.98	1.21
7.15	0.37	0.57	0.78	1.01	1.25
7.20	0.38	0.59	0.81	1.04	1.29
7.25	0.40	0.61	0.84	1.08	1.33
7.30	0.42	0.64	0.87	1.12	1.38
7.35	0.44	0.67	0.91	1.17	1.43
7.40	0.46	0.70	0.95	1.22	1.49
7.45	0.49	0.73	1.00	1.27	1.56
7.50	0.52	0.77	1.04	1.33	1.63

Time (hrs)	Runoff (cfs) 2-Year	5-Year	10-Year	25-Year	100-Year
7.55	0.59	0.88	1.19	1.52	1.85
7.60	0.72	1.07	1.43	1.82	2.21
7.65	0.85	1.25	1.67	2.11	2.56
7.70	0.98	1.43	1.91	2.40	2.91
7.75	1.11	1.61	2.13	2.68	3.23
7.80	1.23	1.77	2.34	2.94	3.54
7.85	1.34	1.92	2.54	3.17	3.81
7.90	1.45	2.06	2.71	3.38	4.06
7.95	1.54	2.18	2.86	3.55	4.26
8.00	1.61	2.28	2.98	3.69	4.42
8.05	1.64	2.30	3.00	3.72	4.45
8.10	1.61	2.26	2.94	3.63	4.34
8.15	1.57	2.20	2.86	3.54	4.22
8.20	1.53	2.14	2.78	3.43	4.08
8.25	1.49	2.07	2.68	3.31	3.94
8.30	1.44	2.00	2.58	3.18	3.79
8.35	1.39	1.93	2.49	3.06	3.64
8.40	1.34	1.85	2.38	2.93	3.48
8.45	1.28	1.78	2.29	2.81	3.33
8.50	1.23	1.70	2.19	2.69	3.19
8.55	1.20	1.65	2.11	2.59	3.07
8.60	1.17	1.60	2.06	2.52	2.98
8.65	1.14	1.56	2.00	2.45	2.90
8.70	1.11	1.52	1.95	2.38	2.81
8.75	1.08	1.48	1.89	2.31	2.73
8.80	1.06	1.44	1.84	2.25	2.65
8.85	1.03	1.41	1.79	2.18	2.58
8.90	1.01	1.37	1.74	2.12	2.50
8.95	0.98	1.33	1.70	2.06	2.43
9.00	0.96	1.30	1.65	2.01	2.36
9.05	0.93	1.26	1.60	1.95	2.30
9.10	0.91	1.23	1.56	1.90	2.23
9.15	0.89	1.20	1.52	1.84	2.17
9.20	0.86	1.17	1.48	1.79	2.11
9.25	0.84	1.14	1.44	1.74	2.05
9.30	0.82	1.11	1.40	1.70	2.00
9.35	0.80	1.08	1.37	1.65	1.94
9.40	0.78	1.05	1.33	1.61	1.89
9.45	0.77	1.03	1.30	1.57	1.84
9.50	0.75	1.01	1.27	1.53	1.80
9.55	0.74	0.99	1.24	1.50	1.76
9.60	0.73	0.97	1.22	1.48	1.73
9.65	0.72	0.96	1.21	1.46	1.71
9.70	0.71	0.95	1.19	1.44	1.68
9.75	0.70	0.93	1.17	1.42	1.66
9.80	0.69	0.92	1.16	1.40	1.64
9.85	0.68	0.91	1.14	1.38	1.61
9.90	0.68	0.90	1.13	1.36	1.59
9.95	0.67	0.89	1.12	1.35	1.57
10.00	0.66	0.88	1.10	1.33	1.55
10.05	0.65	0.87	1.09	1.31	1.54
10.10	0.65	0.86	1.08	1.30	1.51
10.15	0.64	0.85	1.06	1.28	1.50
10.20	0.63	0.84	1.05	1.26	1.48
10.25	0.63	0.83	1.04	1.25	1.46
10.30	0.62	0.82	1.03	1.23	1.44
10.35	0.61	0.81	1.02	1.22	1.43
10.40	0.61	0.81	1.01	1.21	1.41
10.45	0.60	0.80	1.00	1.20	1.40
10.50	0.60	0.79	0.99	1.19	1.39
10.55	0.59	0.79	0.98	1.18	1.38
10.60	0.59	0.78	0.98	1.17	1.37
10.65	0.59	0.78	0.97	1.17	1.36
10.70	0.59	0.78	0.97	1.16	1.36
10.75	0.59	0.77	0.97	1.16	1.35
10.80	0.58	0.77	0.96	1.15	1.34
10.85	0.58	0.77	0.95	1.14	1.33
10.90	0.58	0.76	0.95	1.14	1.32
10.95	0.57	0.76	0.94	1.13	1.32
11.00	0.57	0.75	0.94	1.12	1.31
11.05	0.57	0.75	0.93	1.12	1.30
11.10	0.56	0.74	0.93	1.11	1.29
11.15	0.56	0.74	0.92	1.10	1.28
11.20	0.56	0.73	0.91	1.09	1.27
11.25	0.55	0.73	0.91	1.08	1.26
11.30	0.55	0.72	0.90	1.08	1.25
11.35	0.55	0.72	0.89	1.07	1.24
11.40	0.54	0.71	0.89	1.06	1.23

Time (hrs)	Runoff (cfs) 2-Year	5-Year	10-Year	25-Year	100-Year
11.45	0.54	0.71	0.88	1.05	1.22
11.50	0.54	0.70	0.87	1.04	1.21
11.55	0.53	0.70	0.86	1.03	1.20
11.60	0.53	0.69	0.86	1.02	1.19
11.65	0.52	0.68	0.85	1.01	1.18
11.70	0.52	0.68	0.84	1.00	1.17
11.75	0.51	0.67	0.83	0.99	1.16
11.80	0.51	0.67	0.83	0.99	1.15
11.85	0.50	0.66	0.82	0.98	1.14
11.90	0.50	0.66	0.81	0.97	1.13
11.95	0.50	0.65	0.81	0.96	1.12
12.00	0.50	0.65	0.80	0.96	1.11
12.05	0.49	0.65	0.80	0.95	1.11
12.10	0.49	0.64	0.80	0.95	1.10
12.15	0.49	0.64	0.79	0.94	1.10
12.20	0.49	0.64	0.79	0.94	1.09
12.25	0.49	0.64	0.79	0.94	1.09
12.30	0.49	0.64	0.79	0.94	1.09
12.35	0.49	0.64	0.79	0.94	1.09
12.40	0.49	0.64	0.79	0.94	1.09
12.45	0.49	0.64	0.79	0.94	1.09
12.50	0.49	0.64	0.79	0.95	1.10
12.55	0.49	0.64	0.79	0.94	1.09
12.60	0.49	0.64	0.79	0.94	1.09
12.65	0.49	0.63	0.78	0.93	1.08
12.70	0.48	0.63	0.78	0.93	1.08
12.75	0.48	0.63	0.78	0.92	1.07
12.80	0.48	0.63	0.77	0.92	1.07
12.85	0.48	0.62	0.77	0.92	1.06
12.90	0.48	0.62	0.77	0.91	1.06
12.95	0.48	0.62	0.76	0.91	1.05
13.00	0.47	0.62	0.76	0.91	1.05
13.05	0.47	0.62	0.76	0.91	1.05
13.10	0.48	0.62	0.77	0.91	1.05
13.15	0.48	0.62	0.77	0.91	1.06
13.20	0.48	0.62	0.77	0.91	1.06
13.25	0.48	0.62	0.77	0.91	1.05
13.30	0.48	0.62	0.76	0.91	1.05
13.35	0.48	0.62	0.76	0.91	1.05
13.40	0.47	0.62	0.76	0.90	1.05
13.45	0.47	0.62	0.76	0.90	1.04
13.50	0.47	0.61	0.75	0.90	1.04
13.55	0.47	0.61	0.75	0.89	1.03
13.60	0.47	0.61	0.75	0.89	1.03
13.65	0.47	0.61	0.75	0.89	1.03
13.70	0.46	0.60	0.74	0.88	1.02
13.75	0.46	0.60	0.74	0.88	1.02
13.80	0.46	0.60	0.74	0.88	1.01
13.85	0.46	0.60	0.73	0.87	1.01
13.90	0.46	0.60	0.73	0.87	1.01
13.95	0.46	0.59	0.73	0.87	1.00
14.00	0.46	0.59	0.73	0.86	1.00
14.05	0.46	0.59	0.73	0.86	1.00
14.10	0.46	0.59	0.73	0.86	1.00
14.15	0.46	0.59	0.73	0.86	1.00
14.20	0.45	0.59	0.72	0.86	0.99
14.25	0.45	0.59	0.72	0.86	0.99
14.30	0.45	0.59	0.72	0.86	0.99
14.35	0.45	0.59	0.72	0.86	0.99
14.40	0.45	0.59	0.72	0.85	0.99
14.45	0.45	0.59	0.72	0.85	0.99
14.50	0.45	0.58	0.72	0.85	0.98
14.55	0.45	0.58	0.72	0.85	0.98
14.60	0.45	0.58	0.72	0.85	0.98
14.65	0.45	0.58	0.72	0.85	0.98
14.70	0.45	0.58	0.71	0.85	0.98
14.75	0.45	0.58	0.71	0.84	0.98
14.80	0.45	0.58	0.71	0.84	0.97
14.85	0.45	0.58	0.71	0.84	0.97
14.90	0.45	0.58	0.71	0.84	0.97
14.95	0.45	0.58	0.71	0.84	0.97
15.00	0.45	0.58	0.71	0.84	0.97
15.05	0.45	0.58	0.71	0.84	0.97
15.10	0.45	0.57	0.70	0.83	0.96
15.15	0.44	0.57	0.70	0.83	0.96
15.20	0.44	0.57	0.70	0.83	0.96
15.25	0.44	0.57	0.70	0.83	0.96
15.30	0.44	0.57	0.70	0.83	0.96

Time (hrs)	2-Year	Runoff (cfs) 5-Year	10-Year	25-Year	100-Year
15.35	0.44	0.57	0.70	0.83	0.95
15.40	0.44	0.57	0.70	0.82	0.95
15.45	0.44	0.57	0.70	0.82	0.95
15.50	0.44	0.57	0.69	0.82	0.95
15.55	0.44	0.57	0.69	0.82	0.95
15.60	0.44	0.56	0.69	0.82	0.94
15.65	0.44	0.56	0.69	0.82	0.94
15.70	0.44	0.56	0.69	0.82	0.94
15.75	0.44	0.56	0.69	0.81	0.94
15.80	0.44	0.56	0.69	0.81	0.94
15.85	0.44	0.56	0.69	0.81	0.94
15.90	0.43	0.56	0.68	0.81	0.93
15.95	0.43	0.56	0.68	0.81	0.93
16.00	0.43	0.56	0.68	0.81	0.93
16.05	0.43	0.56	0.68	0.80	0.93
16.10	0.43	0.56	0.68	0.80	0.93
16.15	0.43	0.55	0.68	0.80	0.92
16.20	0.43	0.55	0.68	0.80	0.92
16.25	0.43	0.55	0.68	0.80	0.92
16.30	0.43	0.55	0.67	0.80	0.92
16.35	0.43	0.55	0.67	0.79	0.92
16.40	0.43	0.55	0.67	0.79	0.91
16.45	0.43	0.55	0.67	0.79	0.91
16.50	0.43	0.55	0.67	0.79	0.91
16.55	0.42	0.55	0.67	0.79	0.91
16.60	0.42	0.54	0.67	0.79	0.91
16.65	0.42	0.54	0.66	0.78	0.90
16.70	0.42	0.54	0.66	0.78	0.90
16.75	0.42	0.54	0.66	0.78	0.90
16.80	0.42	0.54	0.66	0.78	0.90
16.85	0.42	0.54	0.66	0.78	0.90
16.90	0.42	0.54	0.66	0.78	0.89
16.95	0.42	0.54	0.66	0.77	0.89
17.00	0.42	0.54	0.65	0.77	0.89
17.05	0.42	0.54	0.65	0.77	0.89
17.10	0.42	0.53	0.65	0.77	0.89
17.15	0.42	0.53	0.65	0.77	0.89
17.20	0.41	0.53	0.65	0.77	0.88
17.25	0.41	0.53	0.65	0.76	0.88
17.30	0.41	0.53	0.65	0.76	0.88
17.35	0.41	0.53	0.64	0.76	0.88
17.40	0.41	0.53	0.64	0.76	0.87
17.45	0.41	0.53	0.64	0.76	0.87
17.50	0.41	0.53	0.64	0.76	0.87
17.55	0.41	0.52	0.64	0.75	0.87
17.60	0.41	0.52	0.64	0.75	0.87
17.65	0.41	0.52	0.64	0.75	0.86
17.70	0.41	0.52	0.64	0.75	0.86
17.75	0.41	0.52	0.63	0.75	0.86
17.80	0.41	0.52	0.63	0.75	0.86
17.85	0.40	0.52	0.63	0.74	0.86
17.90	0.40	0.52	0.63	0.74	0.85
17.95	0.40	0.52	0.63	0.74	0.85
18.00	0.40	0.51	0.63	0.74	0.85
18.05	0.40	0.51	0.63	0.74	0.85
18.10	0.40	0.51	0.62	0.73	0.85
18.15	0.40	0.51	0.62	0.73	0.84
18.20	0.40	0.51	0.62	0.73	0.84
18.25	0.40	0.51	0.62	0.73	0.84
18.30	0.40	0.51	0.62	0.73	0.84
18.35	0.40	0.51	0.62	0.73	0.84
18.40	0.39	0.51	0.62	0.72	0.83
18.45	0.39	0.50	0.61	0.72	0.83
18.50	0.39	0.50	0.61	0.72	0.83
18.55	0.39	0.50	0.61	0.72	0.83
18.60	0.39	0.50	0.61	0.72	0.83
18.65	0.39	0.50	0.61	0.72	0.82
18.70	0.39	0.50	0.61	0.71	0.82
18.75	0.39	0.50	0.60	0.71	0.82
18.80	0.39	0.50	0.60	0.71	0.82
18.85	0.39	0.49	0.60	0.71	0.82
18.90	0.39	0.49	0.60	0.71	0.81
18.95	0.39	0.49	0.60	0.71	0.81
19.00	0.38	0.49	0.60	0.70	0.81
19.05	0.38	0.49	0.60	0.70	0.81
19.10	0.38	0.49	0.59	0.70	0.80
19.15	0.38	0.49	0.59	0.70	0.80
19.20	0.38	0.49	0.59	0.70	0.80

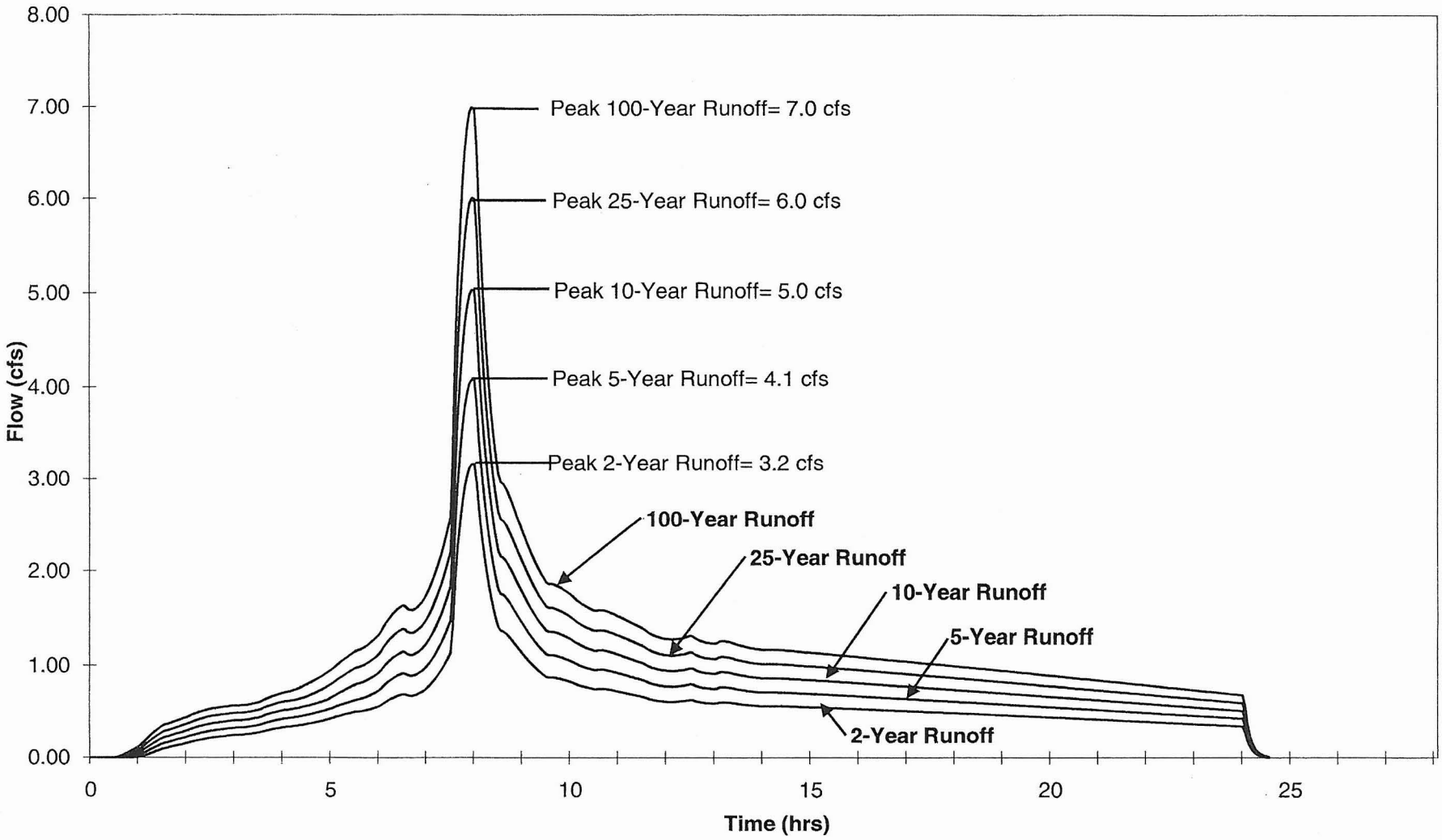
Time (hrs)	2-Year	Runoff (cfs) 5-Year	10-Year	25-Year	100-Year
19.25	0.38	0.48	0.59	0.69	0.80
19.30	0.38	0.48	0.59	0.69	0.80
19.35	0.38	0.48	0.59	0.69	0.79
19.40	0.38	0.48	0.59	0.69	0.79
19.45	0.38	0.48	0.58	0.69	0.79
19.50	0.38	0.48	0.58	0.69	0.79
19.55	0.37	0.48	0.58	0.68	0.79
19.60	0.37	0.48	0.58	0.68	0.78
19.65	0.37	0.48	0.58	0.68	0.78
19.70	0.37	0.47	0.58	0.68	0.78
19.75	0.37	0.47	0.57	0.68	0.78
19.80	0.37	0.47	0.57	0.67	0.77
19.85	0.37	0.47	0.57	0.67	0.77
19.90	0.37	0.47	0.57	0.67	0.77
19.95	0.37	0.47	0.57	0.67	0.77
20.00	0.37	0.47	0.57	0.67	0.77
20.05	0.37	0.47	0.57	0.67	0.76
20.10	0.36	0.46	0.56	0.66	0.76
20.15	0.36	0.46	0.56	0.66	0.76
20.20	0.36	0.46	0.56	0.66	0.76
20.25	0.36	0.46	0.56	0.66	0.76
20.30	0.36	0.46	0.56	0.66	0.75
20.35	0.36	0.46	0.56	0.65	0.75
20.40	0.36	0.46	0.55	0.65	0.75
20.45	0.36	0.46	0.55	0.65	0.75
20.50	0.36	0.45	0.55	0.65	0.75
20.55	0.36	0.45	0.55	0.65	0.74
20.60	0.35	0.45	0.55	0.64	0.74
20.65	0.35	0.45	0.55	0.64	0.74
20.70	0.35	0.45	0.55	0.64	0.74
20.75	0.35	0.45	0.54	0.64	0.73
20.80	0.35	0.45	0.54	0.64	0.73
20.85	0.35	0.45	0.54	0.64	0.73
20.90	0.35	0.44	0.54	0.63	0.73
20.95	0.35	0.44	0.54	0.63	0.73
21.00	0.35	0.44	0.54	0.63	0.72
21.05	0.35	0.44	0.53	0.63	0.72
21.10	0.35	0.44	0.53	0.63	0.72
21.15	0.34	0.44	0.53	0.62	0.72
21.20	0.34	0.44	0.53	0.62	0.71
21.25	0.34	0.44	0.53	0.62	0.71
21.30	0.34	0.43	0.53	0.62	0.71
21.35	0.34	0.43	0.53	0.62	0.71
21.40	0.34	0.43	0.52	0.62	0.71
21.45	0.34	0.43	0.52	0.61	0.70
21.50	0.34	0.43	0.52	0.61	0.70
21.55	0.34	0.43	0.52	0.61	0.70
21.60	0.34	0.43	0.52	0.61	0.70
21.65	0.33	0.43	0.52	0.61	0.70
21.70	0.33	0.42	0.51	0.60	0.69
21.75	0.33	0.42	0.51	0.60	0.69
21.80	0.33	0.42	0.51	0.60	0.69
21.85	0.33	0.42	0.51	0.60	0.69
21.90	0.33	0.42	0.51	0.60	0.68
21.95	0.33	0.42	0.51	0.59	0.68
22.00	0.33	0.42	0.50	0.59	0.68
22.05	0.33	0.41	0.50	0.59	0.68
22.10	0.33	0.41	0.50	0.59	0.68
22.15	0.32	0.41	0.50	0.59	0.67
22.20	0.32	0.41	0.50	0.58	0.67
22.25	0.32	0.41	0.50	0.58	0.67
22.30	0.32	0.41	0.49	0.58	0.67
22.35	0.32	0.41	0.49	0.58	0.66
22.40	0.32	0.41	0.49	0.58	0.66
22.45	0.32	0.40	0.49	0.58	0.66
22.50	0.32	0.40	0.49	0.57	0.66
22.55	0.32	0.40	0.49	0.57	0.66
22.60	0.32	0.40	0.49	0.57	0.65
22.65	0.31	0.40	0.48	0.57	0.65
22.70	0.31	0.40	0.48	0.57	0.65
22.75	0.31	0.40	0.48	0.56	0.65
22.80	0.31	0.40	0.48	0.56	0.64
22.85	0.31	0.39	0.48	0.56	0.64
22.90	0.31	0.39	0.48	0.56	0.64
22.95	0.31	0.39	0.47	0.56	0.64
23.00	0.31	0.39	0.47	0.55	0.64
23.05	0.31	0.39	0.47	0.55	0.63
23.10	0.31	0.39	0.47	0.55	0.63

Time (hrs)	2-Year	Runoff (cfs) 5-Year	10-Year	25-Year	100-Year
23.15	0.30	0.39	0.47	0.55	0.63
23.20	0.30	0.38	0.47	0.55	0.63
23.25	0.30	0.38	0.46	0.54	0.62
23.30	0.30	0.38	0.46	0.54	0.62
23.35	0.30	0.38	0.46	0.54	0.62
23.40	0.30	0.38	0.46	0.54	0.62
23.45	0.30	0.38	0.46	0.54	0.62
23.50	0.30	0.38	0.46	0.53	0.61
23.55	0.30	0.38	0.45	0.53	0.61
23.60	0.30	0.37	0.45	0.53	0.61
23.65	0.29	0.37	0.45	0.53	0.61
23.70	0.29	0.37	0.45	0.53	0.60
23.75	0.29	0.37	0.45	0.53	0.60
23.80	0.29	0.37	0.45	0.52	0.60
23.85	0.29	0.37	0.44	0.52	0.60
23.90	0.29	0.37	0.44	0.52	0.60
23.95	0.29	0.36	0.44	0.52	0.59
24.00	0.29	0.36	0.44	0.52	0.59
24.05	0.27	0.34	0.41	0.48	0.55
24.10	0.23	0.30	0.36	0.42	0.48
24.15	0.21	0.26	0.31	0.37	0.42
24.20	0.18	0.23	0.27	0.32	0.37
24.25	0.16	0.20	0.24	0.28	0.32
24.30	0.14	0.17	0.21	0.25	0.28
24.35	0.12	0.15	0.18	0.22	0.25
24.40	0.10	0.13	0.16	0.19	0.22
24.45	0.09	0.12	0.14	0.16	0.19
24.50	0.08	0.10	0.12	0.14	0.16
24.55	0.07	0.09	0.11	0.13	0.14
24.60	0.06	0.08	0.09	0.11	0.13
24.65	0.05	0.07	0.08	0.10	0.11
24.70	0.05	0.06	0.07	0.08	0.10
24.75	0.04	0.05	0.06	0.07	0.08
24.80	0.04	0.05	0.05	0.06	0.07
24.85	0.03	0.04	0.05	0.06	0.06
24.90	0.03	0.03	0.04	0.05	0.06
24.95	0.02	0.03	0.04	0.04	0.05
25.00	0.02	0.03	0.03	0.04	0.04
25.05	0.02	0.02	0.03	0.03	0.04
25.10	0.02	0.02	0.02	0.03	0.03
25.15	0.01	0.02	0.02	0.03	0.03
25.20	0.01	0.02	0.02	0.02	0.03
25.25	0.01	0.01	0.02	0.02	0.02
25.30	0.01	0.01	0.01	0.02	0.02
25.35	0.01	0.01	0.01	0.01	0.02
25.40	0.01	0.01	0.01	0.01	0.01
25.45	0.01	0.01	0.01	0.01	0.01
25.50	0.01	0.01	0.01	0.01	0.01
25.55	0.00	0.01	0.01	0.01	0.01
25.60	0.00	0.01	0.01	0.01	0.01
25.65		0.00	0.01	0.01	0.01
25.70		0.00	0.00	0.01	0.01
25.75			0.00	0.01	0.01
25.80				0.00	0.01
25.85					0.00

Appendix C

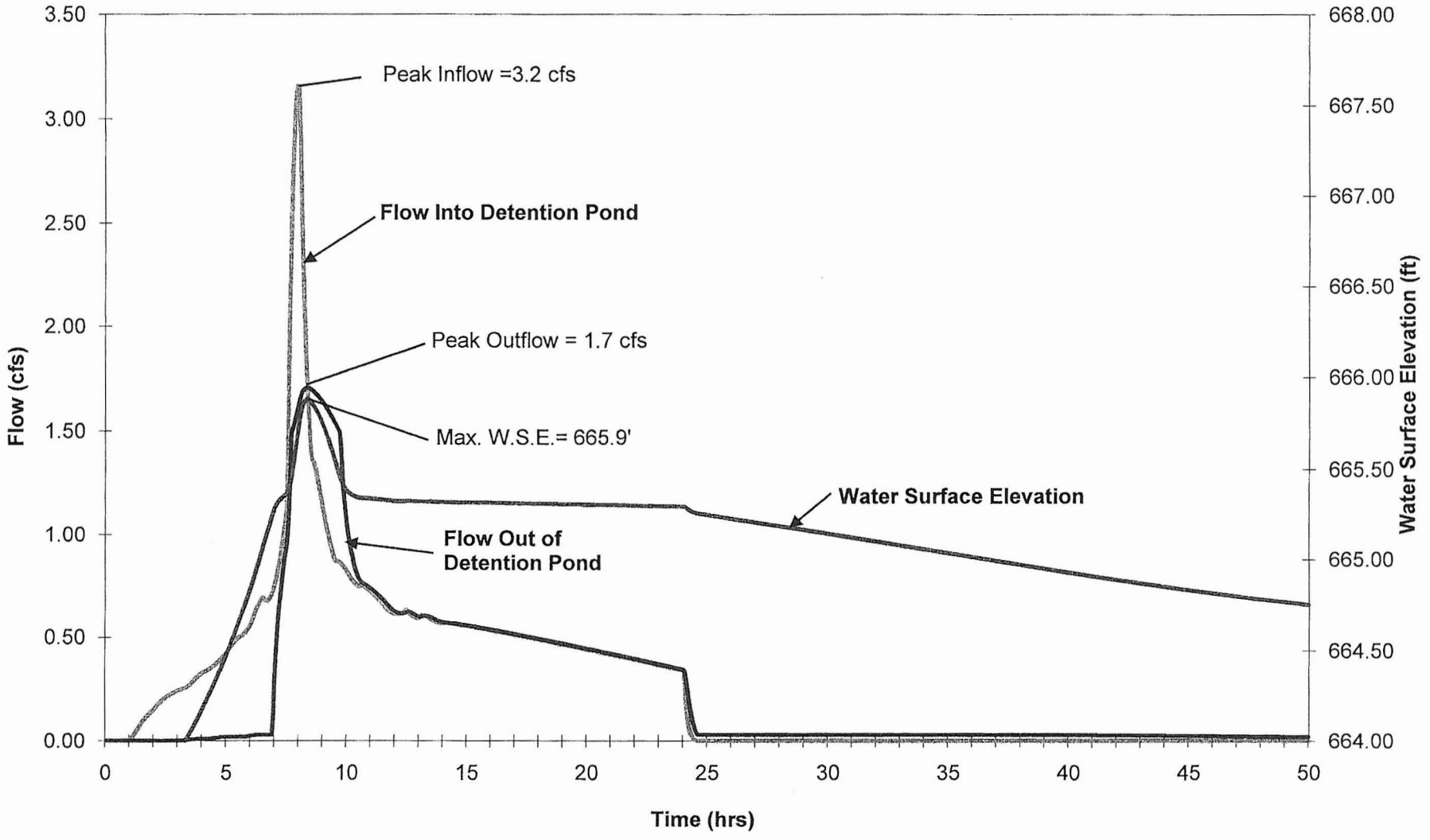
Calculations for Hydrologic Analysis of Proposed Conditions

ROSEMONT RIDGE MIDDLE SCHOOL
Runoff Hydrographs for Proposed Conditions



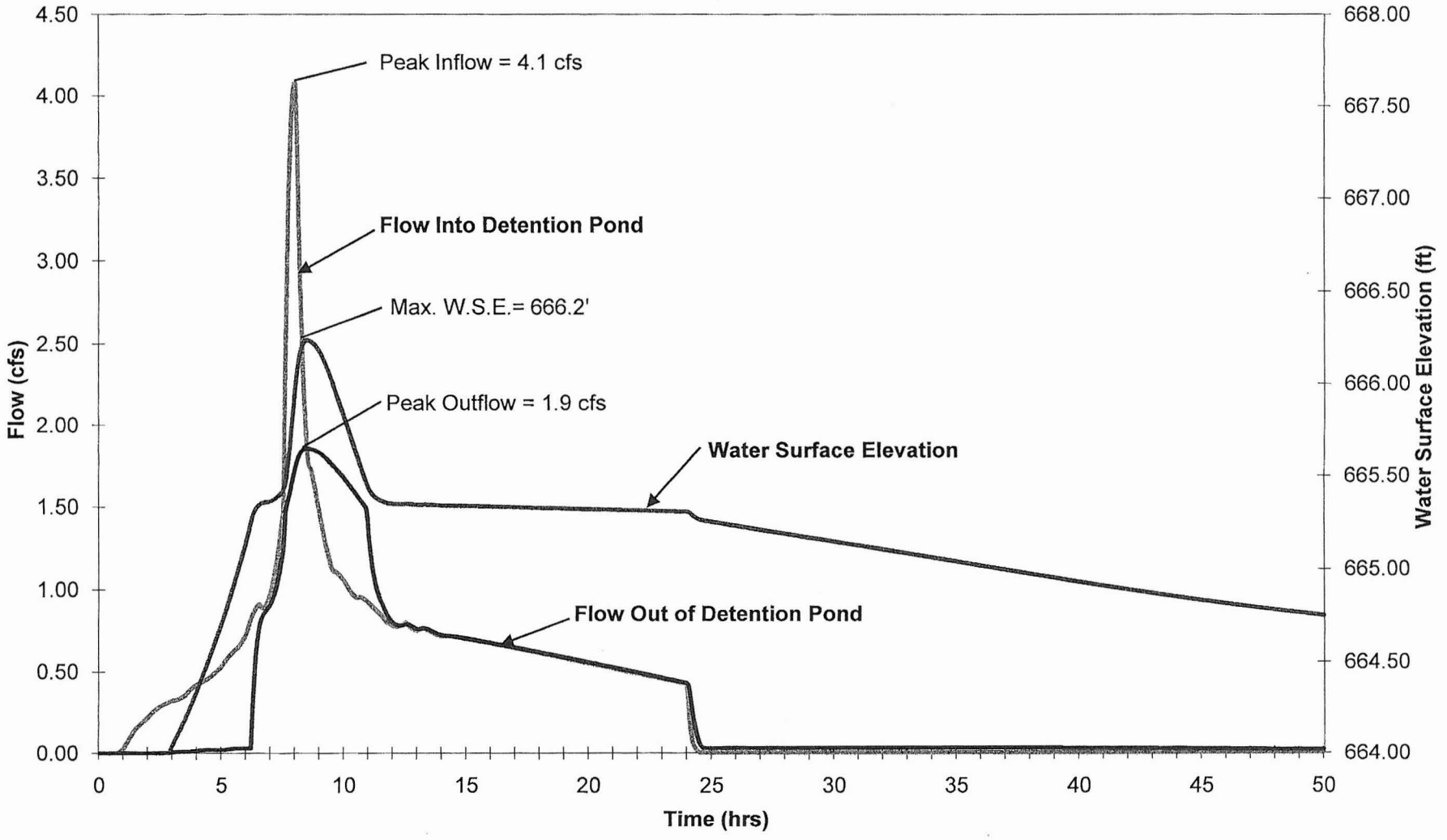
ROSEMONT RIDGE MIDDLE SCHOOL

Hydrograph and Detention Summary for Proposed Conditions 2-Year Storm



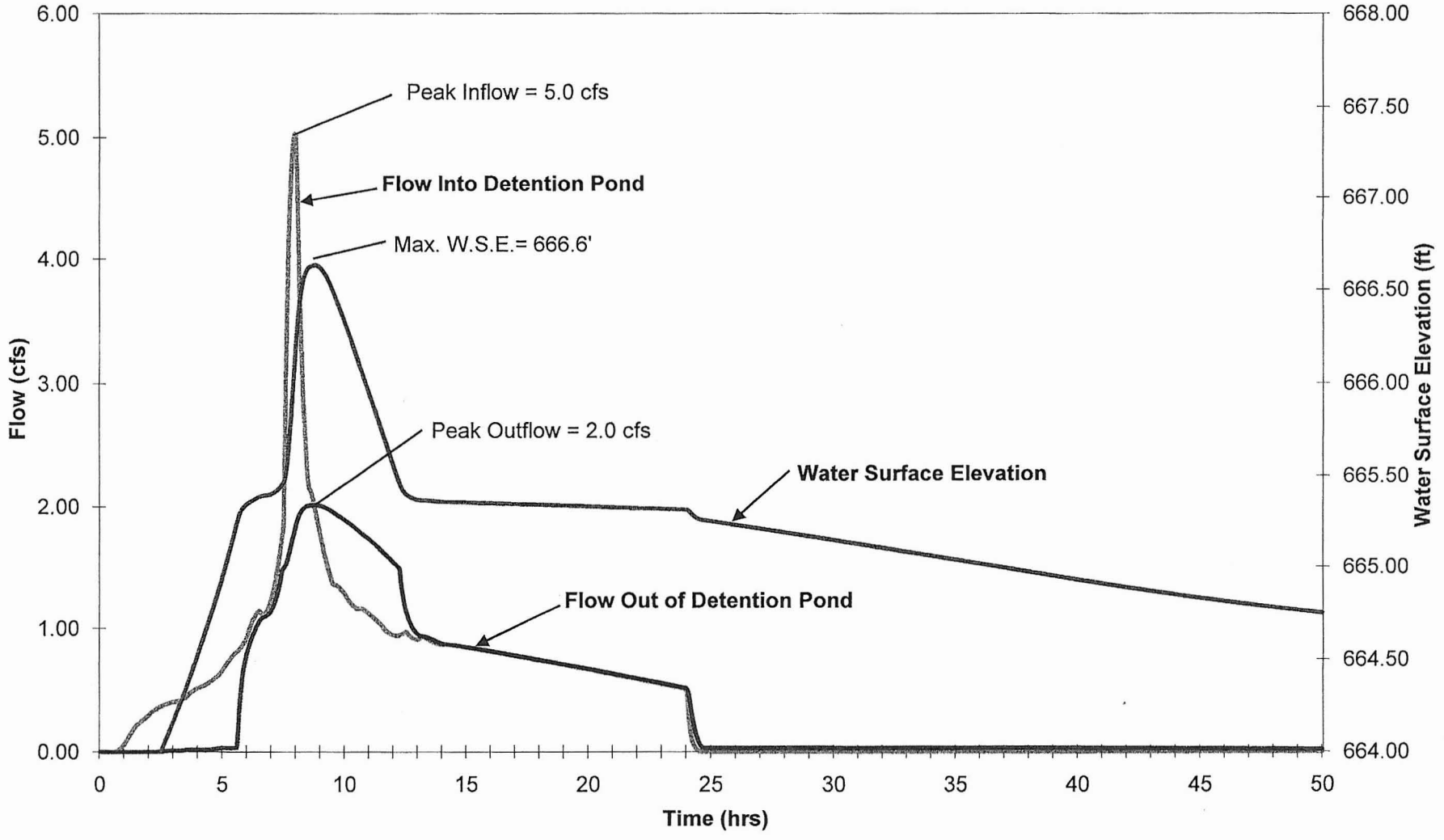
ROSEMONT RIDGE MIDDLE SCHOOL

Hydrograph and Detention Summary for Proposed Conditions 5-Year Storm



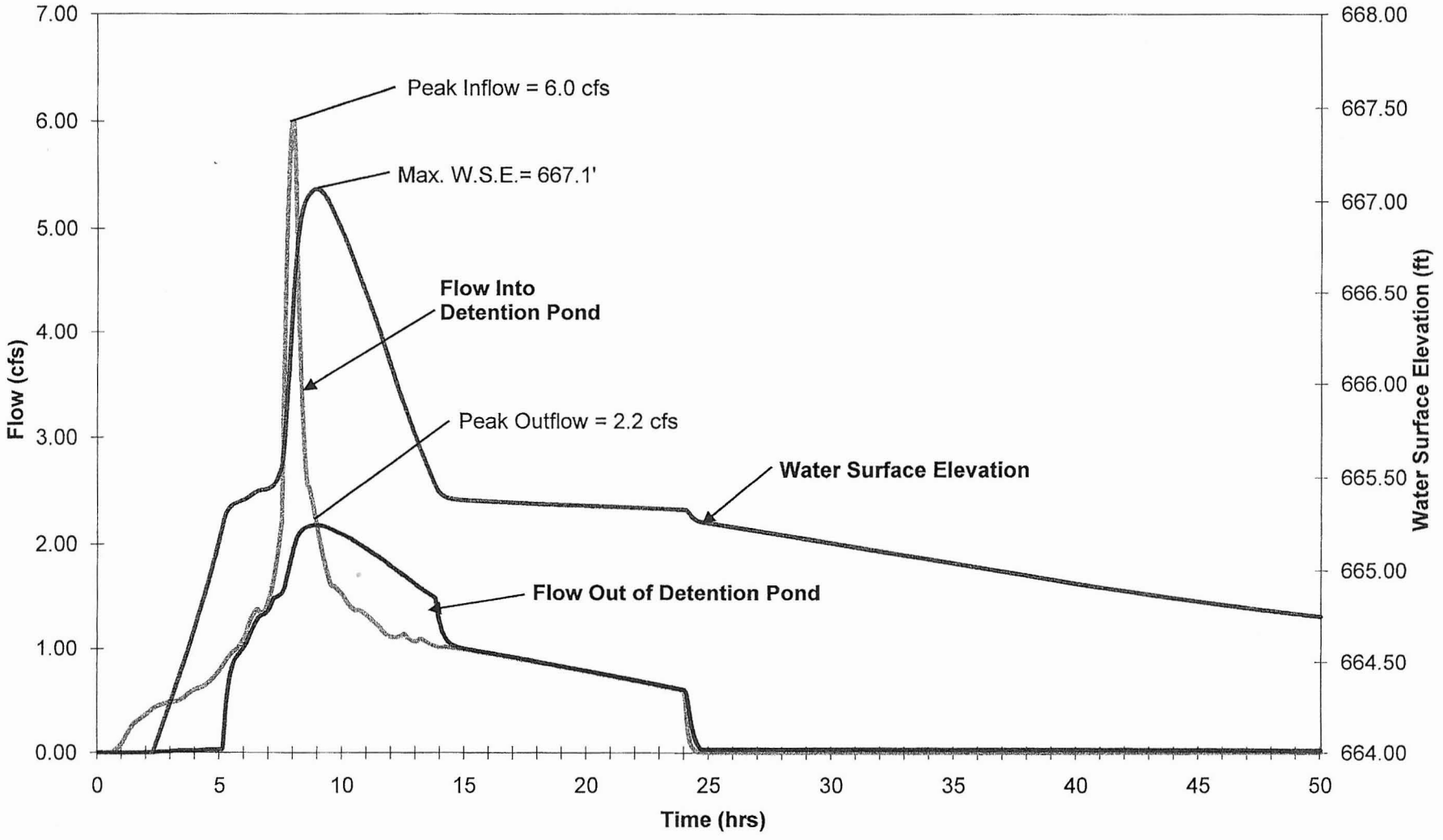
ROSEMONT RIDGE MIDDLE SCHOOL

Hydrograph and Detention Summary for Proposed Conditions 10-Year Storm



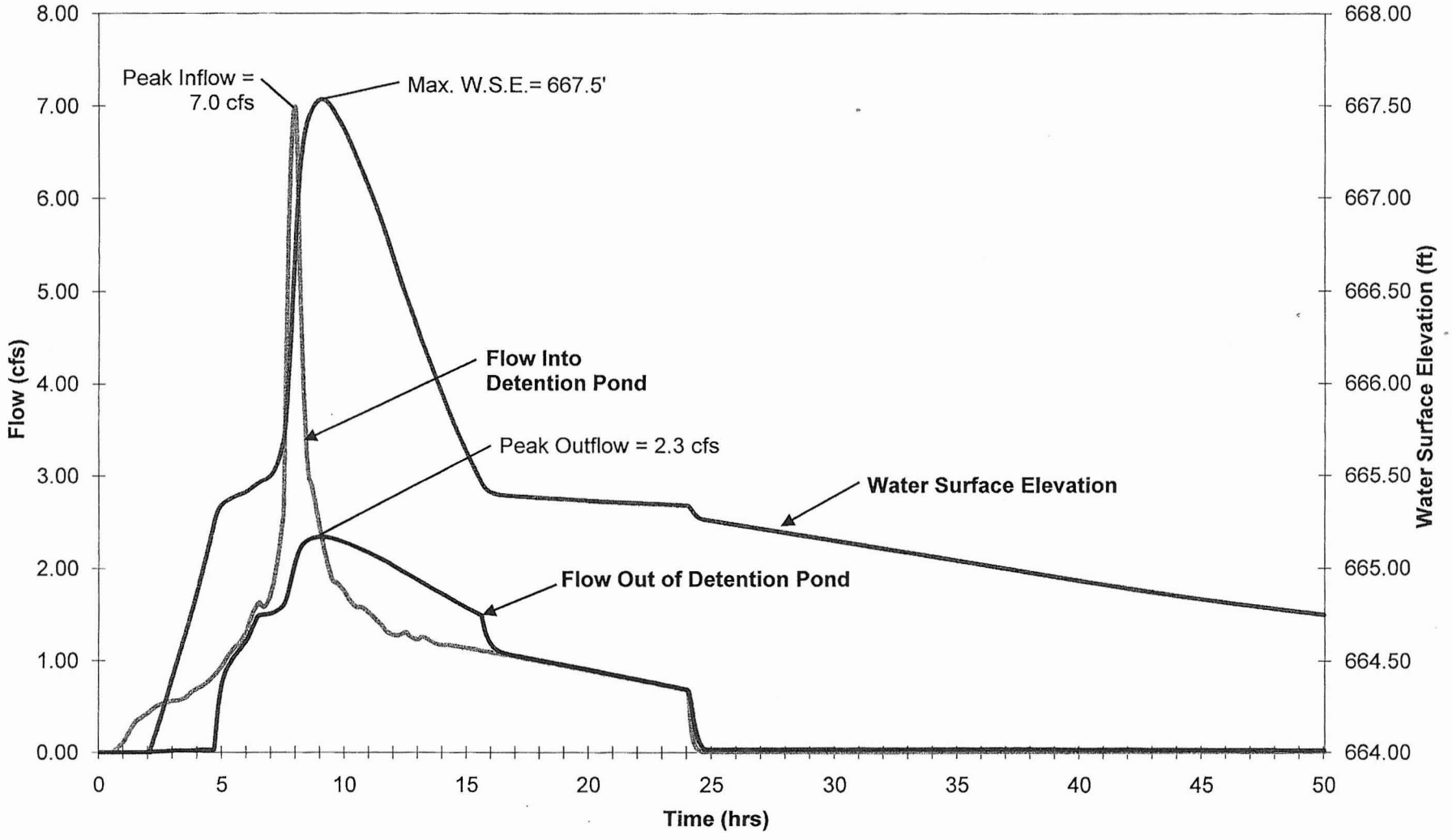
ROSEMONT RIDGE MIDDLE SCHOOL

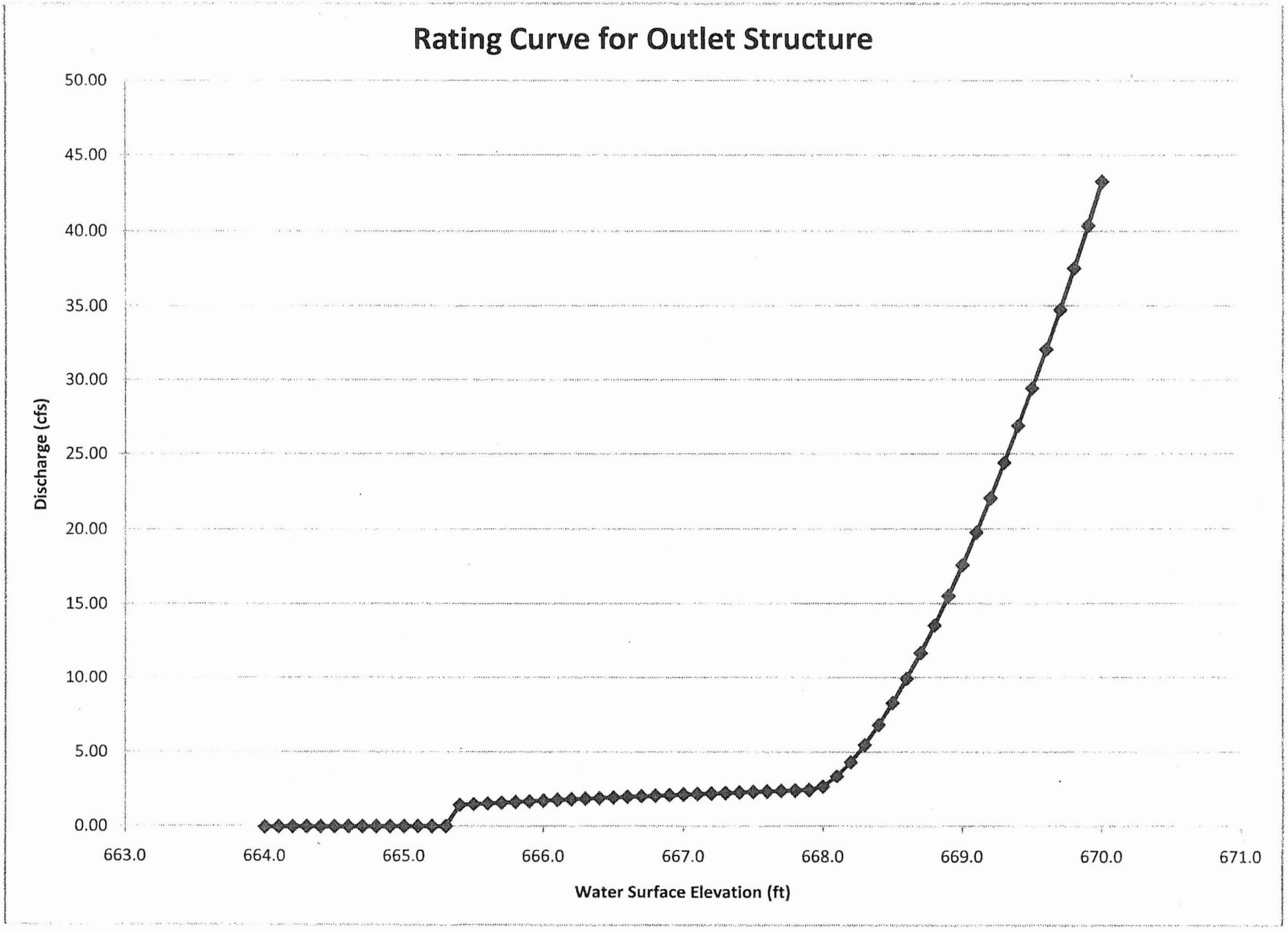
Hydrograph and Detention Summary for Proposed Conditions 25-Year Storm



ROSEMONT RIDGE MIDDLE SCHOOL

Hydrograph and Detention Summary for Proposed Conditions 100-Year Storm




Rating Curve for Outlet Structure
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Discharge (cfs)
663.0
664.0
665.0
666.0
667.0
668.0
669.0
670.0
671.0
Water Surface Elevation (ft)

PROPOSED CONDITIONS

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area [2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

ROSEMONT RIDGE MIDDLE SCHOOL

Hydrographs and Water Surface Elevation for Proposed Conditions (All Sub-Basins)

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.60	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.65	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.70	0.00	0.00	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.75	0.00	0.00	0.01	0.02	0.05	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.66
0.80	0.00	0.00	0.01	0.03	0.06	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.66	663.67
0.85	0.00	0.01	0.02	0.05	0.07	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.67	663.67
0.90	0.00	0.01	0.03	0.06	0.09	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.67	663.67
0.95	0.00	0.02	0.04	0.07	0.10	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.66	663.67	663.68
1.00	0.01	0.03	0.05	0.08	0.12	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.67	663.67	663.68
1.05	0.01	0.04	0.07	0.10	0.14	0.00	0.00	0.00	0.00	0.00	663.66	663.66	663.67	663.68	663.69
1.10	0.02	0.05	0.08	0.12	0.17	0.00	0.00	0.00	0.00	0.00	663.66	663.67	663.67	663.68	663.70
1.15	0.03	0.06	0.10	0.15	0.19	0.00	0.00	0.00	0.00	0.00	663.66	663.67	663.68	663.69	663.71
1.20	0.03	0.07	0.12	0.17	0.22	0.00	0.00	0.00	0.00	0.00	663.66	663.67	663.68	663.70	663.72
1.25	0.04	0.09	0.13	0.19	0.24	0.00	0.00	0.00	0.00	0.00	663.67	663.68	663.69	663.71	663.73
1.30	0.05	0.10	0.15	0.21	0.27	0.00	0.00	0.00	0.00	0.00	663.67	663.68	663.70	663.72	663.74
1.35	0.06	0.11	0.17	0.23	0.29	0.00	0.00	0.00	0.00	0.00	663.67	663.68	663.70	663.73	663.75
1.40	0.07	0.13	0.18	0.25	0.31	0.00	0.00	0.00	0.00	0.00	663.67	663.69	663.71	663.74	663.77
1.45	0.08	0.14	0.20	0.26	0.33	0.00	0.00	0.00	0.00	0.00	663.68	663.70	663.72	663.75	663.78
1.50	0.09	0.15	0.21	0.28	0.35	0.00	0.00	0.00	0.00	0.00	663.68	663.70	663.73	663.76	663.80
1.55	0.10	0.16	0.22	0.29	0.36	0.00	0.00	0.00	0.00	0.00	663.69	663.71	663.74	663.77	663.81
1.60	0.11	0.16	0.23	0.30	0.37	0.00	0.00	0.00	0.00	0.00	663.69	663.72	663.75	663.79	663.83
1.65	0.11	0.17	0.24	0.31	0.38	0.00	0.00	0.00	0.00	0.00	663.70	663.73	663.76	663.80	663.85
1.70	0.12	0.18	0.24	0.31	0.39	0.00	0.00	0.00	0.00	0.00	663.70	663.73	663.77	663.82	663.86
1.75	0.12	0.19	0.25	0.32	0.39	0.00	0.00	0.00	0.00	0.00	663.71	663.74	663.78	663.83	663.88
1.80	0.13	0.19	0.26	0.33	0.40	0.00	0.00	0.00	0.00	0.00	663.71	663.75	663.80	663.85	663.90
1.85	0.14	0.20	0.27	0.34	0.41	0.00	0.00	0.00	0.00	0.00	663.72	663.76	663.81	663.86	663.92
1.90	0.14	0.21	0.28	0.35	0.42	0.00	0.00	0.00	0.00	0.00	663.73	663.77	663.82	663.88	663.94
1.95	0.15	0.21	0.28	0.36	0.43	0.00	0.00	0.00	0.00	0.00	663.73	663.78	663.83	663.89	663.96
2.00	0.15	0.22	0.29	0.37	0.44	0.00	0.00	0.00	0.00	0.00	663.74	663.79	663.85	663.91	663.98
2.05	0.16	0.23	0.30	0.38	0.45	0.00	0.00	0.00	0.00	0.00	663.75	663.80	663.86	663.93	664.00
2.10	0.17	0.24	0.31	0.39	0.46	0.00	0.00	0.00	0.00	0.00	663.76	663.81	663.88	663.94	664.02
2.15	0.17	0.25	0.32	0.40	0.48	0.00	0.00	0.00	0.00	0.00	663.76	663.82	663.89	663.96	664.04
2.20	0.18	0.25	0.33	0.41	0.49	0.00	0.00	0.00	0.00	0.01	663.77	663.83	663.90	663.98	664.06
2.25	0.19	0.26	0.34	0.42	0.50	0.00	0.00	0.00	0.00	0.01	663.78	663.85	663.92	664.00	664.08
2.30	0.19	0.27	0.34	0.42	0.50	0.00	0.00	0.00	0.00	0.01	663.79	663.86	663.93	664.02	664.10
2.35	0.20	0.27	0.35	0.43	0.51	0.00	0.00	0.00	0.00	0.01	663.80	663.87	663.95	664.04	664.12
2.40	0.20	0.28	0.36	0.44	0.52	0.00	0.00	0.00	0.01	0.01	663.81	663.88	663.97	664.05	664.14
2.45	0.21	0.28	0.36	0.45	0.53	0.00	0.00	0.00	0.01	0.01	663.82	663.90	663.98	664.07	664.17
2.50	0.21	0.29	0.37	0.45	0.53	0.00	0.00	0.00	0.01	0.01	663.83	663.91	664.00	664.09	664.19
2.55	0.22	0.29	0.37	0.46	0.54	0.00	0.00	0.00	0.01	0.01	663.84	663.92	664.02	664.11	664.21
2.60	0.22	0.30	0.38	0.46	0.54	0.00	0.00	0.00	0.01	0.01	663.85	663.94	664.03	664.13	664.23
2.65	0.22	0.30	0.38	0.46	0.55	0.00	0.00	0.01	0.01	0.01	663.86	663.95	664.05	664.15	664.26
2.70	0.23	0.31	0.39	0.47	0.55	0.00	0.00	0.01	0.01	0.01	663.87	663.96	664.07	664.17	664.28
2.75	0.23	0.31	0.39	0.47	0.55	0.00	0.00	0.01	0.01	0.01	663.88	663.98	664.08	664.19	664.30
2.80	0.23	0.31	0.39	0.47	0.56	0.00	0.00	0.01	0.01	0.01	663.89	663.99	664.10	664.21	664.33
2.85	0.24	0.32	0.40	0.48	0.56	0.00	0.00	0.01	0.01	0.02	663.90	664.00	664.12	664.23	664.35
2.90	0.24	0.32	0.40	0.48	0.56	0.00	0.00	0.01	0.01	0.02	663.91	664.02	664.13	664.25	664.37
2.95	0.24	0.32	0.40	0.48	0.57	0.00	0.00	0.01	0.01	0.02	663.92	664.03	664.15	664.27	664.39
3.00	0.24	0.32	0.41	0.49	0.57	0.00	0.01	0.01	0.01	0.02	663.93	664.05	664.17	664.29	664.42
3.05	0.25	0.33	0.41	0.49	0.57	0.00	0.01	0.01	0.01	0.02	663.94	664.06	664.18	664.31	664.44
3.10	0.25	0.33	0.41	0.49	0.57	0.00	0.01	0.01	0.01	0.02	663.95	664.07	664.20	664.33	664.46
3.15	0.25	0.33	0.41	0.49	0.57	0.00	0.01	0.01	0.02	0.02	663.96	664.09	664.22	664.35	664.48
3.20	0.25	0.33	0.41	0.49	0.57	0.00	0.01	0.01	0.02	0.02	663.98	664.10	664.23	664.37	664.51
3.25	0.25	0.33	0.41	0.50	0.58	0.00	0.01	0.01	0.02	0.02	663.99	664.12	664.25	664.39	664.53
3.30	0.26	0.34	0.42	0.50	0.58	0.00	0.01	0.01	0.02	0.02	664.00	664.13	664.27	664.41	664.55
3.35	0.26	0.34	0.42	0.50	0.59	0.00	0.01	0.01	0.02	0.02	664.01	664.15	664.29	664.43	664.57
3.40	0.26	0.35	0.43	0.51	0.59	0.00	0.01	0.01	0.02	0.02	664.02	664.16	664.30	664.45	664.59
3.45	0.27	0.35	0.43	0.52	0.60	0.00	0.01	0.01	0.02	0.02	664.03	664.17	664.32	664.47	664.62
3.50	0.27	0.36	0.44	0.52	0.60	0.01	0.01	0.01	0.02	0.02	664.04	664.19	664.34	664.49	664.64
3.55	0.28	0.36	0.45	0.53	0.62	0.01	0.01	0.02	0.02	0.02	664.06	664.20	664.36	664.51	664.66
3.60	0.29	0.37	0.46	0.54	0.63	0.01	0.01	0.02	0.02	0.02	664.07	664.22	664.37	664.53	664.69

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
3.65	0.29	0.38	0.47	0.55	0.64	0.01	0.01	0.02	0.02	0.02	664.08	664.24	664.39	664.55	664.71
3.70	0.30	0.39	0.48	0.56	0.65	0.01	0.01	0.02	0.02	0.02	664.09	664.25	664.41	664.57	664.73
3.75	0.30	0.39	0.48	0.57	0.66	0.01	0.01	0.02	0.02	0.02	664.11	664.27	664.43	664.59	664.76
3.80	0.31	0.40	0.49	0.58	0.67	0.01	0.01	0.02	0.02	0.02	664.12	664.28	664.45	664.62	664.78
3.85	0.32	0.41	0.50	0.59	0.68	0.01	0.01	0.02	0.02	0.02	664.13	664.30	664.47	664.64	664.81
3.90	0.32	0.41	0.50	0.60	0.69	0.01	0.01	0.02	0.02	0.02	664.15	664.32	664.49	664.66	664.83
3.95	0.32	0.42	0.51	0.60	0.70	0.01	0.01	0.02	0.02	0.03	664.16	664.33	664.51	664.68	664.86
4.00	0.33	0.42	0.52	0.61	0.70	0.01	0.02	0.02	0.02	0.03	664.17	664.35	664.53	664.71	664.88
4.05	0.33	0.43	0.52	0.61	0.71	0.01	0.02	0.02	0.02	0.03	664.19	664.37	664.55	664.73	664.91
4.10	0.33	0.43	0.52	0.62	0.71	0.01	0.02	0.02	0.02	0.03	664.20	664.38	664.57	664.75	664.93
4.15	0.34	0.43	0.53	0.62	0.72	0.01	0.02	0.02	0.02	0.03	664.22	664.40	664.59	664.78	664.96
4.20	0.34	0.44	0.53	0.62	0.73	0.01	0.02	0.02	0.02	0.03	664.23	664.42	664.61	664.80	664.99
4.25	0.34	0.44	0.53	0.63	0.74	0.01	0.02	0.02	0.02	0.03	664.24	664.44	664.63	664.82	665.01
4.30	0.35	0.44	0.54	0.64	0.75	0.01	0.02	0.02	0.03	0.03	664.26	664.45	664.65	664.84	665.04
4.35	0.35	0.45	0.55	0.64	0.76	0.01	0.02	0.02	0.03	0.03	664.27	664.47	664.67	664.87	665.06
4.40	0.36	0.45	0.55	0.65	0.77	0.01	0.02	0.02	0.03	0.03	664.29	664.49	664.69	664.89	665.09
4.45	0.36	0.46	0.56	0.66	0.78	0.01	0.02	0.02	0.03	0.03	664.30	664.50	664.71	664.91	665.12
4.50	0.37	0.47	0.56	0.67	0.80	0.01	0.02	0.02	0.03	0.03	664.32	664.52	664.73	664.94	665.14
4.55	0.37	0.47	0.57	0.68	0.81	0.01	0.02	0.02	0.03	0.03	664.33	664.54	664.75	664.96	665.17
4.60	0.38	0.48	0.58	0.69	0.82	0.02	0.02	0.02	0.03	0.03	664.35	664.56	664.77	664.98	665.20
4.65	0.38	0.48	0.58	0.70	0.84	0.02	0.02	0.02	0.03	0.03	664.36	664.58	664.79	665.01	665.23
4.70	0.39	0.49	0.59	0.71	0.85	0.02	0.02	0.02	0.03	0.03	664.38	664.60	664.82	665.03	665.26
4.75	0.39	0.50	0.60	0.72	0.86	0.02	0.02	0.02	0.03	0.21	664.39	664.61	664.84	665.06	665.28
4.80	0.40	0.50	0.61	0.74	0.88	0.02	0.02	0.03	0.03	0.38	664.41	664.63	664.86	665.08	665.30
4.85	0.40	0.51	0.62	0.75	0.90	0.02	0.02	0.03	0.03	0.51	664.42	664.65	664.88	665.11	665.32
4.90	0.41	0.52	0.63	0.77	0.91	0.02	0.02	0.03	0.03	0.61	664.44	664.67	664.90	665.13	665.33
4.95	0.42	0.53	0.64	0.78	0.93	0.02	0.02	0.03	0.03	0.69	664.45	664.69	664.93	665.16	665.34
5.00	0.42	0.53	0.65	0.80	0.95	0.02	0.02	0.03	0.03	0.76	664.47	664.71	664.95	665.19	665.34
5.05	0.43	0.54	0.66	0.81	0.97	0.02	0.02	0.03	0.03	0.81	664.49	664.73	664.97	665.22	665.35
5.10	0.44	0.56	0.68	0.83	0.99	0.02	0.02	0.03	0.03	0.85	664.50	664.75	664.99	665.24	665.36
5.15	0.45	0.57	0.70	0.85	1.01	0.02	0.02	0.03	0.12	0.89	664.52	664.77	665.02	665.27	665.36
5.20	0.46	0.58	0.71	0.87	1.03	0.02	0.02	0.03	0.31	0.91	664.54	664.79	665.04	665.29	665.36
5.25	0.47	0.58	0.72	0.89	1.05	0.02	0.02	0.03	0.45	0.94	664.56	664.81	665.07	665.31	665.37
5.30	0.47	0.59	0.74	0.90	1.07	0.02	0.02	0.03	0.57	0.96	664.57	664.84	665.09	665.32	665.37
5.35	0.48	0.60	0.75	0.92	1.09	0.02	0.03	0.03	0.66	0.98	664.59	664.86	665.12	665.33	665.38
5.40	0.49	0.61	0.77	0.93	1.11	0.02	0.03	0.03	0.73	1.01	664.61	664.88	665.15	665.34	665.38
5.45	0.49	0.62	0.78	0.95	1.13	0.02	0.03	0.03	0.78	1.03	664.63	664.90	665.17	665.35	665.38
5.50	0.50	0.63	0.79	0.96	1.15	0.02	0.03	0.03	0.83	1.05	664.65	664.92	665.20	665.35	665.39
5.55	0.50	0.63	0.80	0.97	1.16	0.02	0.03	0.03	0.86	1.07	664.67	664.94	665.23	665.36	665.39
5.60	0.50	0.64	0.81	0.98	1.16	0.02	0.03	0.03	0.89	1.08	664.68	664.97	665.25	665.36	665.39
5.65	0.51	0.64	0.81	0.99	1.18	0.02	0.03	0.17	0.91	1.10	664.70	664.99	665.28	665.36	665.40
5.70	0.51	0.65	0.82	1.00	1.19	0.02	0.03	0.34	0.93	1.12	664.72	665.01	665.30	665.37	665.40
5.75	0.52	0.66	0.84	1.02	1.21	0.02	0.03	0.47	0.94	1.13	664.74	665.03	665.31	665.37	665.40
5.80	0.53	0.67	0.85	1.04	1.23	0.02	0.03	0.56	0.96	1.15	664.76	665.06	665.32	665.37	665.40
5.85	0.53	0.69	0.87	1.05	1.25	0.02	0.03	0.64	0.97	1.16	664.78	665.08	665.33	665.37	665.41
5.90	0.54	0.70	0.88	1.07	1.27	0.02	0.03	0.70	0.99	1.18	664.80	665.10	665.34	665.38	665.41
5.95	0.55	0.71	0.90	1.09	1.29	0.02	0.03	0.75	1.01	1.20	664.82	665.13	665.34	665.38	665.41
6.00	0.56	0.73	0.92	1.12	1.32	0.02	0.03	0.79	1.03	1.22	664.84	665.15	665.35	665.38	665.42
6.05	0.57	0.75	0.95	1.15	1.36	0.03	0.03	0.83	1.05	1.24	664.86	665.18	665.35	665.39	665.42
6.10	0.59	0.78	0.98	1.19	1.41	0.03	0.03	0.86	1.07	1.27	664.88	665.20	665.36	665.39	665.42
6.15	0.61	0.80	1.01	1.23	1.45	0.03	0.03	0.89	1.10	1.30	664.90	665.23	665.36	665.39	665.43
6.20	0.63	0.83	1.04	1.26	1.49	0.03	0.03	0.92	1.12	1.33	664.92	665.26	665.37	665.40	665.43
6.25	0.64	0.84	1.06	1.29	1.52	0.03	0.23	0.94	1.15	1.36	664.95	665.28	665.37	665.40	665.44
6.30	0.65	0.86	1.08	1.31	1.55	0.03	0.39	0.97	1.18	1.39	664.97	665.30	665.37	665.41	665.44
6.35	0.66	0.88	1.10	1.33	1.57	0.03	0.52	0.99	1.20	1.42	664.99	665.32	665.38	665.41	665.45
6.40	0.67	0.89	1.12	1.35	1.59	0.03	0.61	1.01	1.23	1.45	665.02	665.33	665.38	665.42	665.45
6.45	0.68	0.90	1.13	1.37	1.61	0.03	0.68	1.03	1.25	1.48	665.04	665.34	665.38	665.42	665.46
6.50	0.69	0.91	1.14	1.38	1.63	0.03	0.74	1.05	1.28	1.49	665.06	665.34	665.39	665.42	665.46
6.55	0.69	0.91	1.14	1.38	1.62	0.03	0.79	1.07	1.30	1.49	665.09	665.35	665.39	665.43	665.47
6.60	0.68	0.89	1.12	1.35	1.60	0.03	0.82	1.08	1.31	1.50	665.11	665.35	665.39	665.43	665.47
6.65	0.67	0.89	1.11	1.34	1.58	0.03	0.83	1.09	1.32	1.50	665.13	665.35	665.39	665.43	665.47
6.70	0.68	0.89	1.11	1.34	1.58	0.03	0.85	1.09	1.32	1.50	665.16	665.36	665.39	665.43	665.48
6.75	0.68	0.89	1.12	1.35	1.59	0.03	0.86	1.10	1.33	1.50	665.18	665.36	665.39	665.43	665.48
6.80	0.69	0.91	1.13	1.37	1.61	0.03	0.87	1.10	1.33	1.50	665.20	665.36	665.40	665.43	665.48
6.85	0.70	0.92	1.15	1.39	1.64	0.03	0.88	1.11	1.34	1.50	665.23	665.36	665.40	665.44	665.49
6.90	0.72	0.94	1.17	1.42	1.67	0.03	0.89	1.12	1.35	1.51	665.25	665.36	665.40	665.44	665.49
6.95	0.73	0.96	1.20	1.45	1.71	0.13	0.90	1.13	1.37	1.51	665.27	665.36	665.40	665.44	665.50
7.00	0.76	0.99	1.24	1.49	1.75	0.29	0.92	1.15	1.39	1.51	665.29	665.36	665.40	665.44	665.51
7.05	0.78	1.02	1.27	1.54	1.80	0.41	0.93	1.17	1.41	1.52	665.30	665.37	665.41	665.45	665.51
7.10	0.81	1.06	1.32	1.59	1.86	0.51	0.95	1.19	1.44	1.52	665.32	665.37	665.41	665.45	665.52
7.15	0.84	1.09	1.36	1.64	1.93	0.59	0.98	1.22	1.47	1.53	665.33	665.37	665.42	665.46	665.54
7.20	0.87	1.14	1.42	1.70	2.00	0.66	1.00	1.25	1.49	1.54	665.33	665.38	665.42	665.46	665.55
7.25	0.91	1.18	1.47	1.77	2.08	0.72	1.03	1.29	1.50	1.54	665.34	665.38	665.43	665.47	665.57
7.30	0.94	1.23	1.53	1.85	2.17	0.77	1.06	1.33	1.50	1.55	665.35	665.39	665.43	665.48	665.59
7.35	0.99	1.29	1.60	1.93	2.26	0.82	1.10	1.37	1.51	1.56	665.35	665.40	665.44	665.49	665.61
7.40	1.03	1.35	1.67	2.01	2.36	0.87	1.14	1.42	1.51	1.58	665.36	665.40	665.45	665.51	665.63
7.45	1.08	1.41	1.75	2.10	2.47	0.91	1.18	1.48	1.52	1.59	665.36	665.41	665.46	665.53	665.66
7.50	1.13	1.48	1.83	2.20	2.58	0.95	1.23	1.49	1.53	1.60	665.37	665.42	665.47	665.55	665.69

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
7.55	1.43	1.86	2.31	2.77	3.24	1.01	1.31	1.50	1.55	1.63	665.38	665.43	665.49	665.58	665.73
7.60	1.89	2.45	3.04	3.65	4.27	1.13	1.47	1.52	1.58	1.66	665.40	665.46	665.53	665.63	665.80
7.65	2.24	2.91	3.60	4.32	5.05	1.30	1.51	1.55	1.62	1.70	665.43	665.50	665.58	665.71	665.89
7.70	2.53	3.28	4.06	4.86	5.67	1.49	1.53	1.59	1.66	1.75	665.46	665.55	665.66	665.81	666.00
7.75	2.74	3.56	4.40	5.26	6.14	1.51	1.57	1.63	1.71	1.81	665.50	665.61	665.74	665.91	666.13
7.80	2.92	3.78	4.67	5.58	6.52	1.53	1.60	1.68	1.76	1.87	665.54	665.68	665.83	666.02	666.26
7.85	3.04	3.93	4.85	5.80	6.76	1.56	1.64	1.72	1.81	1.92	665.59	665.75	665.93	666.14	666.40
7.90	3.12	4.04	4.98	5.95	6.93	1.58	1.67	1.76	1.87	1.98	665.64	665.82	666.03	666.26	666.54
7.95	3.16	4.08	5.03	6.00	6.99	1.61	1.71	1.80	1.91	2.03	665.69	665.90	666.13	666.38	666.68
8.00	3.16	4.07	5.02	5.99	6.97	1.63	1.74	1.85	1.96	2.08	665.74	665.97	666.22	666.50	666.81
8.05	2.97	3.83	4.71	5.62	6.54	1.65	1.77	1.88	2.00	2.13	665.79	666.04	666.31	666.60	666.94
8.10	2.65	3.41	4.20	5.01	5.83	1.67	1.79	1.91	2.04	2.17	665.82	666.09	666.38	666.70	667.04
8.15	2.39	3.08	3.80	4.52	5.26	1.68	1.81	1.94	2.07	2.20	665.85	666.14	666.44	666.77	667.13
8.20	2.18	2.81	3.45	4.11	4.78	1.69	1.83	1.96	2.09	2.22	665.87	666.17	666.49	666.83	667.20
8.25	2.00	2.58	3.17	3.77	4.38	1.70	1.84	1.97	2.10	2.24	665.88	666.20	666.53	666.88	667.26
8.30	1.85	2.37	2.92	3.47	4.04	1.70	1.84	1.98	2.12	2.26	665.89	666.22	666.56	666.92	667.31
8.35	1.71	2.20	2.70	3.22	3.74	1.70	1.85	1.99	2.13	2.27	665.89	666.23	666.58	666.95	667.35
8.40	1.59	2.05	2.51	2.99	3.47	1.70	1.85	2.00	2.14	2.29	665.89	666.24	666.60	666.98	667.38
8.45	1.49	1.92	2.35	2.80	3.25	1.70	1.86	2.00	2.15	2.30	665.88	666.24	666.61	667.00	667.41
8.50	1.40	1.80	2.21	2.63	3.05	1.70	1.86	2.01	2.15	2.30	665.88	666.24	666.62	667.01	667.43
8.55	1.36	1.75	2.15	2.55	2.96	1.69	1.85	2.01	2.16	2.31	665.87	666.24	666.62	667.02	667.45
8.60	1.36	1.74	2.13	2.54	2.94	1.69	1.85	2.01	2.16	2.32	665.86	666.24	666.63	667.03	667.46
8.65	1.34	1.72	2.11	2.50	2.90	1.68	1.85	2.01	2.17	2.32	665.84	666.23	666.63	667.04	667.48
8.70	1.32	1.69	2.07	2.45	2.84	1.68	1.85	2.01	2.17	2.32	665.83	666.23	666.63	667.05	667.49
8.75	1.29	1.65	2.02	2.40	2.78	1.67	1.85	2.01	2.17	2.33	665.82	666.22	666.63	667.06	667.50
8.80	1.26	1.61	1.97	2.34	2.71	1.66	1.84	2.01	2.17	2.33	665.81	666.22	666.63	667.06	667.51
8.85	1.22	1.57	1.92	2.27	2.64	1.66	1.84	2.01	2.18	2.33	665.80	666.21	666.63	667.06	667.52
8.90	1.19	1.52	1.87	2.21	2.56	1.65	1.84	2.01	2.18	2.34	665.78	666.20	666.63	667.07	667.53
8.95	1.16	1.48	1.82	2.15	2.49	1.64	1.83	2.01	2.18	2.34	665.77	666.19	666.62	667.07	667.53
9.00	1.13	1.44	1.76	2.09	2.42	1.64	1.83	2.01	2.18	2.34	665.75	666.18	666.62	667.07	667.53
9.05	1.10	1.40	1.72	2.03	2.36	1.63	1.82	2.00	2.17	2.34	665.73	666.17	666.61	667.06	667.54
9.10	1.07	1.37	1.67	1.98	2.29	1.62	1.82	2.00	2.17	2.34	665.72	666.15	666.60	667.06	667.54
9.15	1.04	1.33	1.62	1.92	2.23	1.61	1.81	2.00	2.17	2.34	665.70	666.14	666.59	667.05	667.53
9.20	1.01	1.29	1.58	1.87	2.17	1.60	1.80	1.99	2.17	2.34	665.68	666.12	666.58	667.05	667.53
9.25	0.99	1.26	1.54	1.82	2.11	1.59	1.80	1.99	2.16	2.34	665.66	666.11	666.57	667.04	667.53
9.30	0.96	1.23	1.50	1.78	2.06	1.58	1.79	1.98	2.16	2.33	665.64	666.09	666.55	667.03	667.52
9.35	0.94	1.20	1.46	1.73	2.01	1.57	1.78	1.98	2.16	2.33	665.62	666.08	666.54	667.02	667.51
9.40	0.92	1.17	1.43	1.69	1.96	1.56	1.77	1.97	2.15	2.33	665.60	666.06	666.53	667.01	667.50
9.45	0.90	1.14	1.40	1.65	1.91	1.55	1.77	1.96	2.15	2.33	665.58	666.04	666.51	666.99	667.49
9.50	0.88	1.12	1.37	1.62	1.87	1.54	1.76	1.96	2.14	2.32	665.56	666.02	666.49	666.98	667.48
9.55	0.87	1.11	1.36	1.60	1.85	1.53	1.75	1.95	2.14	2.32	665.53	666.00	666.48	666.97	667.47
9.60	0.87	1.11	1.36	1.61	1.86	1.52	1.74	1.94	2.13	2.31	665.51	665.98	666.46	666.95	667.46
9.65	0.87	1.11	1.35	1.60	1.85	1.51	1.73	1.94	2.13	2.31	665.49	665.96	666.44	666.94	667.45
9.70	0.87	1.10	1.35	1.59	1.84	1.50	1.73	1.93	2.12	2.31	665.47	665.94	666.43	666.92	667.44
9.75	0.86	1.10	1.34	1.58	1.83	1.43	1.72	1.92	2.12	2.30	665.45	665.92	666.41	666.91	667.43
9.80	0.85	1.09	1.33	1.57	1.81	1.33	1.71	1.92	2.11	2.30	665.43	665.90	666.39	666.90	667.42
9.85	0.85	1.08	1.32	1.56	1.80	1.24	1.70	1.91	2.11	2.29	665.42	665.88	666.38	666.88	667.40
9.90	0.84	1.07	1.30	1.54	1.78	1.16	1.69	1.90	2.10	2.29	665.41	665.86	666.36	666.87	667.39
9.95	0.83	1.06	1.29	1.53	1.76	1.10	1.68	1.90	2.10	2.28	665.40	665.85	666.34	666.85	667.38
10.00	0.82	1.05	1.28	1.51	1.75	1.05	1.67	1.89	2.09	2.28	665.39	665.83	666.32	666.84	667.37
10.05	0.81	1.04	1.26	1.49	1.73	1.01	1.66	1.88	2.08	2.28	665.38	665.81	666.31	666.82	667.35
10.10	0.80	1.02	1.25	1.47	1.70	0.97	1.65	1.87	2.08	2.27	665.37	665.79	666.29	666.80	667.34
10.15	0.79	1.01	1.23	1.45	1.68	0.94	1.64	1.87	2.07	2.27	665.37	665.77	666.27	666.79	667.32
10.20	0.78	1.00	1.22	1.44	1.66	0.91	1.63	1.86	2.07	2.26	665.36	665.75	666.25	666.77	667.31
10.25	0.78	0.99	1.20	1.42	1.64	0.89	1.62	1.85	2.06	2.26	665.36	665.72	666.23	666.75	667.29
10.30	0.77	0.98	1.19	1.41	1.63	0.86	1.61	1.84	2.05	2.25	665.36	665.70	666.21	666.74	667.28
10.35	0.76	0.97	1.18	1.40	1.61	0.83	1.60	1.83	2.05	2.24	665.35	665.68	666.19	666.72	667.26
10.40	0.76	0.96	1.17	1.39	1.60	0.82	1.59	1.83	2.04	2.24	665.35	665.66	666.17	666.70	667.25
10.45	0.75	0.96	1.17	1.38	1.59	0.80	1.58	1.82	2.03	2.23	665.35	665.64	666.15	666.68	667.23
10.50	0.75	0.95	1.16	1.37	1.58	0.79	1.57	1.81	2.03	2.23	665.35	665.62	666.13	666.66	667.21
10.55	0.75	0.95	1.16	1.37	1.58	0.78	1.56	1.80	2.02	2.22	665.35	665.60	666.11	666.65	667.20
10.60	0.75	0.95	1.16	1.37	1.58	0.77	1.55	1.79	2.01	2.22	665.35	665.58	666.10	666.63	667.18
10.65	0.75	0.95	1.16	1.37	1.58	0.76	1.54	1.78	2.00	2.21	665.35	665.56	666.08	666.61	667.16
10.70	0.75	0.95	1.16	1.37	1.58	0.76	1.53	1.77	2.00	2.20	665.35	665.54	666.06	666.59	667.15
10.75	0.75	0.95	1.15	1.36	1.57	0.76	1.52	1.77	1.99	2.20	665.34	665.52	666.04	666.58	667.13
10.80	0.74	0.94	1.15	1.35	1.56	0.75	1.51	1.76	1.98	2.19	665.34	665.51	666.02	666.56	667.12
10.85	0.74	0.94	1.14	1.35	1.55	0.75	1.50	1.75	1.98	2.19	665.34	665.49	666.00	666.54	667.10
10.90	0.73	0.93	1.13	1.34	1.54	0.75	1.49	1.74	1.97	2.18	665.34	665.47	665.98	666.52	667.08
10.95	0.73	0.92	1.12	1.33	1.53	0.74	1.43	1.74	1.96	2.18	665.34	665.45	665.96	666.50	667.07
11.00	0.72	0.92	1.12	1.32	1.52	0.74	1.34	1.73	1.95	2.17	665.34	665.43	665.95	666.49	667.05
11.05	0.72	0.91	1.11	1.31	1.51	0.73	1.26	1.72	1.95	2.16	665.34	665.42	665.93	666.47	667.03
11.10	0.71	0.90	1.10	1.29	1.49	0.73	1.19	1.71	1.94	2.16	665.34	665.41	665.91	666.45	667.02
11.15	0.71	0.90	1.09	1.28	1.48	0.72	1.14	1.70	1.93	2.15	665.34	665.40	665.89	666.43	667.00
11.20	0.70	0.89	1.08	1.27	1.47	0.72	1.09	1.69	1.93	2.14	665.34	665.39	665.87	666.41	666.98
11.25	0.69	0.88	1.07	1.26	1.46	0.71	1.05	1.68	1.92	2.14	665.34	665.39	665.85	666.39	666.96
11.30	0.69	0.87	1.06	1.25	1.44	0.71	1.02	1.68	1.91	2.13	665.34	665.38	665.83	666.38	666.94
11.35	0.68	0.87	1.05	1.24	1.43	0.70	0.99	1.67	1.90	2.12	665.34	665.38	665.81	666.36	666.93
11.40	0.68	0.86	1.04	1.23	1.42	0.70	0.97	1.66	1.89	2.12	665.34	665.37	665.79	666.34	666.91

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
11.45	0.67	0.85	1.03	1.22	1.41	0.69	0.95	1.65	1.89	2.11	665.34	665.37	665.77	666.32	666.89
11.50	0.67	0.84	1.02	1.21	1.39	0.68	0.93	1.64	1.88	2.10	665.34	665.37	665.75	666.30	666.87
11.55	0.66	0.83	1.01	1.19	1.38	0.68	0.91	1.63	1.87	2.10	665.34	665.36	665.73	666.28	666.85
11.60	0.65	0.82	1.00	1.18	1.36	0.67	0.90	1.62	1.86	2.09	665.33	665.36	665.71	666.26	666.83
11.65	0.64	0.81	0.99	1.16	1.34	0.66	0.88	1.61	1.85	2.08	665.33	665.36	665.69	666.24	666.81
11.70	0.63	0.80	0.98	1.15	1.33	0.66	0.86	1.60	1.85	2.07	665.33	665.36	665.67	666.22	666.79
11.75	0.63	0.80	0.97	1.14	1.31	0.65	0.85	1.59	1.84	2.07	665.33	665.36	665.65	666.20	666.77
11.80	0.62	0.79	0.96	1.13	1.31	0.64	0.83	1.58	1.83	2.06	665.33	665.35	665.63	666.18	666.75
11.85	0.62	0.79	0.96	1.13	1.30	0.64	0.82	1.57	1.82	2.05	665.33	665.35	665.61	666.16	666.73
11.90	0.62	0.78	0.95	1.12	1.29	0.63	0.81	1.56	1.81	2.04	665.33	665.35	665.59	666.14	666.71
11.95	0.62	0.78	0.95	1.11	1.28	0.63	0.80	1.55	1.80	2.04	665.33	665.35	665.57	666.11	666.69
12.00	0.61	0.78	0.94	1.11	1.28	0.63	0.80	1.54	1.79	2.03	665.33	665.35	665.55	666.09	666.67
12.05	0.61	0.78	0.94	1.11	1.28	0.62	0.79	1.53	1.78	2.02	665.33	665.35	665.53	666.07	666.65
12.10	0.61	0.77	0.94	1.11	1.27	0.62	0.79	1.52	1.77	2.01	665.33	665.35	665.51	666.05	666.63
12.15	0.61	0.77	0.94	1.11	1.27	0.62	0.78	1.51	1.76	2.00	665.33	665.35	665.50	666.03	666.61
12.20	0.61	0.78	0.94	1.11	1.28	0.62	0.78	1.50	1.76	2.00	665.33	665.35	665.48	666.01	666.59
12.25	0.61	0.78	0.94	1.11	1.28	0.62	0.78	1.48	1.75	1.99	665.33	665.35	665.46	665.99	666.57
12.30	0.62	0.78	0.95	1.12	1.28	0.62	0.78	1.38	1.74	1.98	665.33	665.35	665.44	665.97	666.55
12.35	0.62	0.78	0.95	1.12	1.29	0.62	0.78	1.30	1.73	1.97	665.33	665.35	665.43	665.96	666.53
12.40	0.62	0.79	0.96	1.13	1.30	0.62	0.78	1.24	1.72	1.96	665.33	665.35	665.42	665.94	666.51
12.45	0.63	0.79	0.96	1.13	1.30	0.62	0.78	1.19	1.72	1.96	665.33	665.35	665.41	665.92	666.49
12.50	0.63	0.80	0.97	1.14	1.31	0.62	0.79	1.14	1.71	1.95	665.33	665.35	665.40	665.90	666.47
12.55	0.63	0.79	0.96	1.13	1.31	0.62	0.79	1.11	1.70	1.94	665.33	665.35	665.40	665.88	666.45
12.60	0.62	0.78	0.95	1.12	1.29	0.62	0.79	1.08	1.69	1.93	665.33	665.35	665.39	665.86	666.44
12.65	0.61	0.77	0.94	1.10	1.27	0.62	0.79	1.06	1.68	1.93	665.33	665.35	665.39	665.85	666.42
12.70	0.61	0.77	0.93	1.10	1.26	0.62	0.78	1.03	1.67	1.92	665.33	665.35	665.38	665.83	666.40
12.75	0.60	0.76	0.92	1.09	1.25	0.61	0.78	1.01	1.67	1.91	665.33	665.35	665.38	665.81	666.38
12.80	0.60	0.76	0.92	1.08	1.24	0.61	0.77	1.00	1.66	1.90	665.33	665.35	665.38	665.79	666.36
12.85	0.60	0.75	0.92	1.08	1.24	0.61	0.77	0.98	1.65	1.90	665.33	665.35	665.38	665.77	666.34
12.90	0.60	0.75	0.91	1.07	1.24	0.60	0.77	0.97	1.64	1.89	665.33	665.35	665.37	665.76	666.32
12.95	0.59	0.75	0.91	1.07	1.23	0.60	0.76	0.96	1.63	1.88	665.33	665.35	665.37	665.74	666.30
13.00	0.59	0.75	0.91	1.07	1.23	0.60	0.76	0.95	1.62	1.87	665.33	665.34	665.37	665.72	666.28
13.05	0.60	0.75	0.91	1.07	1.24	0.60	0.76	0.94	1.61	1.87	665.33	665.34	665.37	665.70	666.27
13.10	0.60	0.76	0.92	1.09	1.25	0.60	0.76	0.94	1.60	1.86	665.33	665.34	665.37	665.69	666.25
13.15	0.61	0.77	0.93	1.09	1.26	0.60	0.76	0.94	1.59	1.85	665.33	665.35	665.37	665.67	666.23
13.20	0.61	0.77	0.93	1.09	1.26	0.60	0.76	0.93	1.59	1.84	665.33	665.35	665.37	665.65	666.21
13.25	0.60	0.76	0.93	1.09	1.25	0.60	0.76	0.93	1.58	1.84	665.33	665.35	665.37	665.64	666.20
13.30	0.60	0.76	0.92	1.08	1.25	0.60	0.76	0.93	1.57	1.83	665.33	665.35	665.37	665.62	666.18
13.35	0.60	0.76	0.92	1.08	1.24	0.60	0.76	0.93	1.56	1.82	665.33	665.35	665.37	665.60	666.16
13.40	0.60	0.75	0.91	1.07	1.23	0.60	0.76	0.93	1.55	1.81	665.33	665.35	665.37	665.59	666.14
13.45	0.59	0.75	0.91	1.06	1.22	0.60	0.76	0.92	1.55	1.80	665.33	665.34	665.37	665.57	666.13
13.50	0.59	0.74	0.90	1.06	1.22	0.60	0.75	0.92	1.54	1.80	665.33	665.34	665.37	665.56	666.11
13.55	0.58	0.74	0.89	1.05	1.21	0.59	0.75	0.92	1.53	1.79	665.33	665.34	665.36	665.54	666.09
13.60	0.58	0.73	0.89	1.05	1.20	0.59	0.75	0.91	1.52	1.78	665.33	665.34	665.36	665.53	666.07
13.65	0.58	0.73	0.88	1.04	1.20	0.59	0.74	0.91	1.51	1.77	665.33	665.34	665.36	665.51	666.06
13.70	0.58	0.73	0.88	1.03	1.19	0.59	0.74	0.90	1.51	1.77	665.32	665.34	665.36	665.49	666.04
13.75	0.57	0.72	0.88	1.03	1.18	0.58	0.74	0.90	1.50	1.76	665.32	665.34	665.36	665.48	666.02
13.80	0.57	0.72	0.87	1.03	1.18	0.58	0.73	0.89	1.49	1.75	665.32	665.34	665.36	665.46	666.00
13.85	0.57	0.72	0.87	1.02	1.18	0.58	0.73	0.89	1.42	1.74	665.32	665.34	665.36	665.45	665.99
13.90	0.57	0.72	0.87	1.02	1.17	0.58	0.73	0.88	1.34	1.74	665.32	665.34	665.36	665.44	665.97
13.95	0.57	0.72	0.87	1.02	1.17	0.57	0.72	0.88	1.28	1.73	665.32	665.34	665.36	665.43	665.95
14.00	0.57	0.71	0.86	1.02	1.17	0.57	0.72	0.88	1.23	1.72	665.32	665.34	665.36	665.42	665.93
14.05	0.57	0.71	0.87	1.02	1.17	0.57	0.72	0.87	1.19	1.72	665.32	665.34	665.36	665.41	665.92
14.10	0.57	0.72	0.87	1.02	1.17	0.57	0.72	0.87	1.16	1.71	665.32	665.34	665.36	665.41	665.90
14.15	0.57	0.72	0.87	1.02	1.17	0.57	0.72	0.87	1.13	1.70	665.32	665.34	665.36	665.40	665.88
14.20	0.57	0.72	0.87	1.02	1.17	0.57	0.72	0.87	1.11	1.69	665.32	665.34	665.36	665.40	665.87
14.25	0.57	0.72	0.87	1.02	1.17	0.57	0.72	0.87	1.10	1.69	665.32	665.34	665.36	665.39	665.85
14.30	0.57	0.71	0.86	1.02	1.17	0.57	0.72	0.87	1.08	1.68	665.32	665.34	665.36	665.39	665.83
14.35	0.57	0.71	0.86	1.01	1.17	0.57	0.72	0.87	1.07	1.67	665.32	665.34	665.36	665.39	665.82
14.40	0.57	0.71	0.86	1.01	1.16	0.57	0.72	0.87	1.06	1.66	665.32	665.34	665.36	665.39	665.80
14.45	0.56	0.71	0.86	1.01	1.16	0.57	0.71	0.86	1.05	1.65	665.32	665.34	665.36	665.39	665.79
14.50	0.56	0.71	0.86	1.01	1.16	0.57	0.71	0.86	1.04	1.65	665.32	665.34	665.36	665.39	665.77
14.55	0.56	0.71	0.86	1.01	1.16	0.56	0.71	0.86	1.04	1.64	665.32	665.34	665.36	665.38	665.76
14.60	0.56	0.71	0.86	1.01	1.16	0.56	0.71	0.86	1.03	1.63	665.32	665.34	665.36	665.38	665.74
14.65	0.56	0.71	0.85	1.00	1.15	0.56	0.71	0.86	1.03	1.62	665.32	665.34	665.36	665.38	665.73
14.70	0.56	0.71	0.85	1.00	1.15	0.56	0.71	0.86	1.02	1.62	665.32	665.34	665.36	665.38	665.71
14.75	0.56	0.70	0.85	1.00	1.15	0.56	0.71	0.86	1.02	1.61	665.32	665.34	665.36	665.38	665.70
14.80	0.56	0.70	0.85	1.00	1.15	0.56	0.71	0.85	1.01	1.60	665.32	665.34	665.36	665.38	665.68
14.85	0.56	0.70	0.85	0.99	1.14	0.56	0.71	0.85	1.01	1.59	665.32	665.34	665.36	665.38	665.67
14.90	0.55	0.70	0.85	0.99	1.14	0.56	0.70	0.85	1.01	1.59	665.32	665.34	665.36	665.38	665.65
14.95	0.55	0.70	0.84	0.99	1.14	0.56	0.70	0.85	1.00	1.58	665.32	665.34	665.36	665.38	665.64
15.00	0.55	0.70	0.84	0.99	1.14	0.56	0.70	0.85	1.00	1.57	665.32	665.34	665.36	665.38	665.62
15.05	0.55	0.70	0.84	0.99	1.14	0.56	0.70	0.85	1.00	1.56	665.32	665.34	665.36	665.38	665.61
15.10	0.55	0.70	0.84	0.99	1.13	0.55	0.70	0.85	1.00	1.56	665.32	665.34	665.36	665.38	665.59
15.15	0.55	0.69	0.84	0.98	1.13	0.55	0.70	0.84	1.00	1.55	665.32	665.34	665.35	665.38	665.58
15.20	0.55	0.69	0.84	0.98	1.13	0.55	0.70	0.84	0.99	1.54	665.32	665.34	665.35	665.38	665.57
15.25	0.55	0.69	0.84	0.98	1.13	0.55	0.70	0.84	0.99	1.54	665.32	665.34	665.35	665.38	665.55
15.30	0.55	0.69	0.83	0.98	1.12	0.55	0.69	0.84	0.99	1.53	665.32	665.34	665.35	665.38	665.54

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
15.35	0.55	0.69	0.83	0.98	1.12	0.55	0.69	0.84	0.99	1.52	665.32	665.34	665.35	665.38	665.53
15.40	0.54	0.69	0.83	0.97	1.12	0.55	0.69	0.84	0.98	1.52	665.32	665.34	665.35	665.38	665.51
15.45	0.54	0.69	0.83	0.97	1.12	0.55	0.69	0.83	0.98	1.51	665.32	665.34	665.35	665.38	665.50
15.50	0.54	0.68	0.83	0.97	1.11	0.55	0.69	0.83	0.98	1.50	665.32	665.34	665.35	665.38	665.49
15.55	0.54	0.68	0.82	0.97	1.11	0.55	0.69	0.83	0.98	1.50	665.32	665.34	665.35	665.38	665.47
15.60	0.54	0.68	0.82	0.97	1.11	0.54	0.69	0.83	0.98	1.49	665.32	665.34	665.35	665.37	665.46
15.65	0.54	0.68	0.82	0.96	1.11	0.54	0.68	0.83	0.97	1.42	665.32	665.34	665.35	665.37	665.45
15.70	0.54	0.68	0.82	0.96	1.10	0.54	0.68	0.83	0.97	1.37	665.32	665.34	665.35	665.37	665.44
15.75	0.54	0.68	0.82	0.96	1.10	0.54	0.68	0.82	0.97	1.32	665.32	665.34	665.35	665.37	665.43
15.80	0.54	0.68	0.82	0.96	1.10	0.54	0.68	0.82	0.97	1.28	665.32	665.34	665.35	665.37	665.42
15.85	0.54	0.68	0.82	0.96	1.10	0.54	0.68	0.82	0.97	1.24	665.32	665.34	665.35	665.37	665.42
15.90	0.54	0.67	0.81	0.95	1.10	0.54	0.68	0.82	0.96	1.22	665.32	665.34	665.35	665.37	665.41
15.95	0.53	0.67	0.81	0.95	1.09	0.54	0.68	0.82	0.96	1.19	665.32	665.34	665.35	665.37	665.41
16.00	0.53	0.67	0.81	0.95	1.09	0.54	0.68	0.82	0.96	1.17	665.32	665.34	665.35	665.37	665.41
16.05	0.53	0.67	0.81	0.95	1.09	0.54	0.67	0.81	0.96	1.16	665.32	665.34	665.35	665.37	665.41
16.10	0.53	0.67	0.81	0.95	1.09	0.53	0.67	0.81	0.96	1.15	665.32	665.33	665.35	665.37	665.40
16.15	0.53	0.67	0.80	0.94	1.08	0.53	0.67	0.81	0.95	1.13	665.32	665.33	665.35	665.37	665.40
16.20	0.53	0.66	0.80	0.94	1.08	0.53	0.67	0.81	0.95	1.12	665.32	665.33	665.35	665.37	665.40
16.25	0.53	0.66	0.80	0.94	1.08	0.53	0.67	0.81	0.95	1.12	665.32	665.33	665.35	665.37	665.40
16.30	0.53	0.66	0.80	0.94	1.08	0.53	0.67	0.81	0.95	1.11	665.32	665.33	665.35	665.37	665.40
16.35	0.53	0.66	0.80	0.94	1.07	0.53	0.67	0.80	0.95	1.10	665.32	665.33	665.35	665.37	665.40
16.40	0.52	0.66	0.80	0.93	1.07	0.53	0.66	0.80	0.94	1.10	665.32	665.33	665.35	665.37	665.39
16.45	0.52	0.66	0.79	0.93	1.07	0.53	0.66	0.80	0.94	1.09	665.32	665.33	665.35	665.37	665.39
16.50	0.52	0.66	0.79	0.93	1.07	0.53	0.66	0.80	0.94	1.09	665.32	665.33	665.35	665.37	665.39
16.55	0.52	0.66	0.79	0.93	1.06	0.52	0.66	0.80	0.94	1.08	665.32	665.33	665.35	665.37	665.39
16.60	0.52	0.65	0.79	0.93	1.06	0.52	0.66	0.80	0.94	1.08	665.32	665.33	665.35	665.37	665.39
16.65	0.52	0.65	0.79	0.92	1.06	0.52	0.66	0.79	0.93	1.08	665.32	665.33	665.35	665.37	665.39
16.70	0.52	0.65	0.79	0.92	1.06	0.52	0.66	0.79	0.93	1.07	665.32	665.33	665.35	665.37	665.39
16.75	0.52	0.65	0.78	0.92	1.05	0.52	0.65	0.79	0.93	1.07	665.32	665.33	665.35	665.37	665.39
16.80	0.52	0.65	0.78	0.92	1.05	0.52	0.65	0.79	0.93	1.07	665.32	665.33	665.35	665.37	665.39
16.85	0.51	0.65	0.78	0.91	1.05	0.52	0.65	0.79	0.93	1.06	665.32	665.33	665.35	665.37	665.39
16.90	0.51	0.65	0.78	0.91	1.05	0.52	0.65	0.78	0.92	1.06	665.32	665.33	665.35	665.37	665.39
16.95	0.51	0.64	0.78	0.91	1.04	0.52	0.65	0.78	0.92	1.06	665.32	665.33	665.35	665.37	665.39
17.00	0.51	0.64	0.78	0.91	1.04	0.51	0.65	0.78	0.92	1.06	665.32	665.33	665.35	665.37	665.39
17.05	0.51	0.64	0.77	0.91	1.04	0.51	0.65	0.78	0.92	1.05	665.32	665.33	665.35	665.36	665.39
17.10	0.51	0.64	0.77	0.90	1.04	0.51	0.64	0.78	0.91	1.05	665.32	665.33	665.35	665.36	665.39
17.15	0.51	0.64	0.77	0.90	1.04	0.51	0.64	0.78	0.91	1.05	665.32	665.33	665.35	665.36	665.39
17.20	0.51	0.64	0.77	0.90	1.03	0.51	0.64	0.77	0.91	1.05	665.32	665.33	665.35	665.36	665.39
17.25	0.51	0.64	0.77	0.90	1.03	0.51	0.64	0.77	0.91	1.04	665.32	665.33	665.35	665.36	665.39
17.30	0.50	0.63	0.76	0.90	1.03	0.51	0.64	0.77	0.91	1.04	665.32	665.33	665.35	665.36	665.39
17.35	0.50	0.63	0.76	0.89	1.02	0.51	0.64	0.77	0.90	1.04	665.32	665.33	665.35	665.36	665.38
17.40	0.50	0.63	0.76	0.89	1.02	0.51	0.64	0.77	0.90	1.03	665.32	665.33	665.35	665.36	665.38
17.45	0.50	0.63	0.76	0.89	1.02	0.50	0.63	0.77	0.90	1.03	665.32	665.33	665.35	665.36	665.38
17.50	0.50	0.63	0.76	0.89	1.02	0.50	0.63	0.76	0.90	1.03	665.32	665.33	665.35	665.36	665.38
17.55	0.50	0.63	0.76	0.89	1.02	0.50	0.63	0.76	0.90	1.03	665.32	665.33	665.35	665.36	665.38
17.60	0.50	0.63	0.75	0.88	1.01	0.50	0.63	0.76	0.89	1.02	665.31	665.33	665.35	665.36	665.38
17.65	0.50	0.62	0.75	0.88	1.01	0.50	0.63	0.76	0.89	1.02	665.31	665.33	665.34	665.36	665.38
17.70	0.50	0.62	0.75	0.88	1.01	0.50	0.63	0.76	0.89	1.02	665.31	665.33	665.34	665.36	665.38
17.75	0.49	0.62	0.75	0.88	1.01	0.50	0.63	0.76	0.89	1.02	665.31	665.33	665.34	665.36	665.38
17.80	0.49	0.62	0.75	0.88	1.00	0.50	0.62	0.75	0.88	1.02	665.31	665.33	665.34	665.36	665.38
17.85	0.49	0.62	0.75	0.87	1.00	0.50	0.62	0.75	0.88	1.01	665.31	665.33	665.34	665.36	665.38
17.90	0.49	0.62	0.74	0.87	1.00	0.49	0.62	0.75	0.88	1.01	665.31	665.33	665.34	665.36	665.38
17.95	0.49	0.61	0.74	0.87	0.99	0.49	0.62	0.75	0.88	1.01	665.31	665.33	665.34	665.36	665.38
18.00	0.49	0.61	0.74	0.87	0.99	0.49	0.62	0.75	0.87	1.01	665.31	665.33	665.34	665.36	665.38
18.05	0.49	0.61	0.74	0.86	0.99	0.49	0.62	0.74	0.87	1.00	665.31	665.33	665.34	665.36	665.38
18.10	0.49	0.61	0.74	0.86	0.99	0.49	0.62	0.74	0.87	1.00	665.31	665.33	665.34	665.36	665.38
18.15	0.48	0.61	0.73	0.86	0.98	0.49	0.61	0.74	0.87	1.00	665.31	665.33	665.34	665.36	665.38
18.20	0.48	0.61	0.73	0.86	0.98	0.49	0.61	0.74	0.86	0.99	665.31	665.33	665.34	665.36	665.38
18.25	0.48	0.61	0.73	0.86	0.98	0.49	0.61	0.74	0.86	0.99	665.31	665.33	665.34	665.36	665.38
18.30	0.48	0.61	0.73	0.85	0.98	0.49	0.61	0.73	0.86	0.99	665.31	665.33	665.34	665.36	665.38
18.35	0.48	0.60	0.73	0.85	0.98	0.48	0.61	0.73	0.86	0.99	665.31	665.33	665.34	665.36	665.38
18.40	0.48	0.60	0.73	0.85	0.97	0.48	0.61	0.73	0.86	0.99	665.31	665.33	665.34	665.36	665.38
18.45	0.48	0.60	0.72	0.85	0.97	0.48	0.61	0.73	0.85	0.98	665.31	665.33	665.34	665.36	665.38
18.50	0.48	0.60	0.72	0.84	0.97	0.48	0.60	0.73	0.85	0.98	665.31	665.33	665.34	665.36	665.38
18.55	0.48	0.60	0.72	0.84	0.97	0.48	0.60	0.73	0.85	0.98	665.31	665.33	665.34	665.36	665.38
18.60	0.47	0.60	0.72	0.84	0.96	0.48	0.60	0.72	0.85	0.98	665.31	665.33	665.34	665.36	665.37
18.65	0.47	0.59	0.72	0.84	0.96	0.48	0.60	0.72	0.85	0.97	665.31	665.33	665.34	665.36	665.37
18.70	0.47	0.59	0.71	0.84	0.96	0.48	0.60	0.72	0.84	0.97	665.31	665.33	665.34	665.35	665.37
18.75	0.47	0.59	0.71	0.83	0.96	0.48	0.60	0.72	0.84	0.97	665.31	665.33	665.34	665.35	665.37
18.80	0.47	0.59	0.71	0.83	0.95	0.47	0.59	0.72	0.84	0.97	665.31	665.33	665.34	665.35	665.37
18.85	0.47	0.59	0.71	0.83	0.95	0.47	0.59	0.71	0.84	0.96	665.31	665.33	665.34	665.35	665.37
18.90	0.47	0.59	0.71	0.83	0.95	0.47	0.59	0.71	0.83	0.96	665.31	665.33	665.34	665.35	665.37
18.95	0.47	0.59	0.70	0.83	0.95	0.47	0.59	0.71	0.83	0.96	665.31	665.33	665.34	665.35	665.37
19.00	0.47	0.58	0.70	0.82	0.94	0.47	0.59	0.71	0.83	0.96	665.31	665.33	665.34	665.35	665.37
19.05	0.46	0.58	0.70	0.82	0.94	0.47	0.59	0.71	0.83	0.95	665.31	665.33	665.34	665.35	665.37
19.10	0.46	0.58	0.70	0.82	0.94	0.47	0.59	0.71	0.83	0.95	665.31	665.32	665.34	665.35	665.37
19.15	0.46	0.58	0.70	0.82	0.94	0.47	0.58	0.70	0.82	0.95	665.31	665.32	665.34	665.35	665.37
19.20	0.46	0.58	0.70	0.81	0.93	0.46	0.58	0.70	0.82	0.95	665.31	665.32	665.34	665.35	665.37

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
19.25	0.46	0.58	0.69	0.81	0.93	0.46	0.58	0.70	0.82	0.94	665.31	665.32	665.34	665.35	665.37
19.30	0.46	0.57	0.69	0.81	0.93	0.46	0.58	0.70	0.82	0.94	665.31	665.32	665.34	665.35	665.37
19.35	0.46	0.57	0.69	0.81	0.93	0.46	0.58	0.70	0.82	0.94	665.31	665.32	665.34	665.35	665.37
19.40	0.46	0.57	0.69	0.81	0.92	0.46	0.58	0.69	0.81	0.94	665.31	665.32	665.34	665.35	665.37
19.45	0.46	0.57	0.69	0.80	0.92	0.46	0.58	0.69	0.81	0.93	665.31	665.32	665.34	665.35	665.37
19.50	0.45	0.57	0.68	0.80	0.92	0.46	0.57	0.69	0.81	0.93	665.31	665.32	665.34	665.35	665.37
19.55	0.45	0.57	0.68	0.80	0.92	0.46	0.57	0.69	0.81	0.93	665.31	665.32	665.34	665.35	665.37
19.60	0.45	0.57	0.68	0.80	0.91	0.46	0.57	0.69	0.80	0.93	665.31	665.32	665.34	665.35	665.37
19.65	0.45	0.56	0.68	0.80	0.91	0.45	0.57	0.69	0.80	0.92	665.31	665.32	665.34	665.35	665.37
19.70	0.45	0.56	0.68	0.79	0.91	0.45	0.57	0.68	0.80	0.92	665.31	665.32	665.34	665.35	665.37
19.75	0.45	0.56	0.68	0.79	0.90	0.45	0.57	0.68	0.80	0.92	665.31	665.32	665.34	665.35	665.36
19.80	0.45	0.56	0.67	0.79	0.90	0.45	0.56	0.68	0.80	0.91	665.31	665.32	665.34	665.35	665.36
19.85	0.44	0.56	0.67	0.78	0.90	0.45	0.56	0.68	0.79	0.91	665.31	665.32	665.34	665.35	665.36
19.90	0.44	0.56	0.67	0.78	0.90	0.45	0.56	0.68	0.79	0.91	665.31	665.32	665.34	665.35	665.36
19.95	0.44	0.55	0.67	0.78	0.89	0.45	0.56	0.67	0.79	0.91	665.31	665.32	665.34	665.35	665.36
20.00	0.44	0.55	0.67	0.78	0.89	0.45	0.56	0.67	0.79	0.90	665.31	665.32	665.33	665.35	665.36
20.05	0.44	0.55	0.66	0.78	0.89	0.44	0.56	0.67	0.78	0.90	665.31	665.32	665.33	665.35	665.36
20.10	0.44	0.55	0.66	0.77	0.89	0.44	0.56	0.67	0.78	0.90	665.31	665.32	665.33	665.35	665.36
20.15	0.44	0.55	0.66	0.77	0.89	0.44	0.55	0.67	0.78	0.90	665.31	665.32	665.33	665.35	665.36
20.20	0.44	0.55	0.66	0.77	0.88	0.44	0.55	0.67	0.78	0.89	665.31	665.32	665.33	665.35	665.36
20.25	0.44	0.55	0.66	0.77	0.88	0.44	0.55	0.66	0.78	0.89	665.31	665.32	665.33	665.35	665.36
20.30	0.43	0.54	0.66	0.77	0.88	0.44	0.55	0.66	0.77	0.89	665.31	665.32	665.33	665.35	665.36
20.35	0.43	0.54	0.65	0.76	0.87	0.44	0.55	0.66	0.77	0.89	665.31	665.32	665.33	665.35	665.36
20.40	0.43	0.54	0.65	0.76	0.87	0.44	0.55	0.66	0.77	0.88	665.31	665.32	665.33	665.35	665.36
20.45	0.43	0.54	0.65	0.76	0.87	0.43	0.54	0.66	0.77	0.88	665.31	665.32	665.33	665.35	665.36
20.50	0.43	0.54	0.65	0.76	0.87	0.43	0.54	0.65	0.76	0.88	665.31	665.32	665.33	665.35	665.36
20.55	0.43	0.54	0.65	0.75	0.86	0.43	0.54	0.65	0.76	0.87	665.31	665.32	665.33	665.35	665.36
20.60	0.43	0.53	0.64	0.75	0.86	0.43	0.54	0.65	0.76	0.87	665.31	665.32	665.33	665.35	665.36
20.65	0.43	0.53	0.64	0.75	0.86	0.43	0.54	0.65	0.76	0.87	665.31	665.32	665.33	665.34	665.36
20.70	0.42	0.53	0.64	0.75	0.86	0.43	0.54	0.65	0.76	0.86	665.31	665.32	665.33	665.34	665.36
20.75	0.42	0.53	0.64	0.75	0.85	0.43	0.54	0.64	0.75	0.86	665.31	665.32	665.33	665.34	665.36
20.80	0.42	0.53	0.64	0.74	0.85	0.43	0.53	0.64	0.75	0.86	665.31	665.32	665.33	665.34	665.36
20.85	0.42	0.53	0.63	0.74	0.85	0.43	0.53	0.64	0.75	0.86	665.31	665.32	665.33	665.34	665.36
20.90	0.42	0.53	0.63	0.74	0.85	0.42	0.53	0.64	0.75	0.86	665.31	665.32	665.33	665.34	665.36
20.95	0.42	0.52	0.63	0.74	0.84	0.42	0.53	0.64	0.74	0.85	665.31	665.32	665.33	665.34	665.36
21.00	0.42	0.52	0.63	0.73	0.84	0.42	0.53	0.63	0.74	0.85	665.31	665.32	665.33	665.34	665.36
21.05	0.42	0.52	0.63	0.73	0.84	0.42	0.53	0.63	0.74	0.85	665.31	665.32	665.33	665.34	665.36
21.10	0.41	0.52	0.62	0.73	0.84	0.42	0.52	0.63	0.74	0.84	665.31	665.32	665.33	665.34	665.35
21.15	0.41	0.52	0.62	0.73	0.83	0.42	0.52	0.63	0.74	0.84	665.31	665.32	665.33	665.34	665.35
21.20	0.41	0.52	0.62	0.73	0.83	0.42	0.52	0.63	0.73	0.84	665.31	665.32	665.33	665.34	665.35
21.25	0.41	0.51	0.62	0.72	0.83	0.42	0.52	0.63	0.73	0.84	665.30	665.32	665.33	665.34	665.35
21.30	0.41	0.51	0.62	0.72	0.83	0.41	0.52	0.62	0.73	0.83	665.30	665.32	665.33	665.34	665.35
21.35	0.41	0.51	0.61	0.72	0.82	0.41	0.52	0.62	0.73	0.83	665.30	665.32	665.33	665.34	665.35
21.40	0.41	0.51	0.61	0.72	0.82	0.41	0.52	0.62	0.72	0.83	665.30	665.32	665.33	665.34	665.35
21.45	0.41	0.51	0.61	0.71	0.82	0.41	0.51	0.62	0.72	0.83	665.30	665.32	665.33	665.34	665.35
21.50	0.40	0.51	0.61	0.71	0.81	0.41	0.51	0.62	0.72	0.82	665.30	665.32	665.33	665.34	665.35
21.55	0.40	0.51	0.61	0.71	0.81	0.41	0.51	0.61	0.72	0.82	665.30	665.32	665.33	665.34	665.35
21.60	0.40	0.50	0.61	0.71	0.81	0.41	0.51	0.61	0.71	0.82	665.30	665.32	665.33	665.34	665.35
21.65	0.40	0.50	0.60	0.71	0.81	0.41	0.51	0.61	0.71	0.82	665.30	665.32	665.33	665.34	665.35
21.70	0.40	0.50	0.60	0.70	0.80	0.40	0.51	0.61	0.71	0.81	665.30	665.32	665.33	665.34	665.35
21.75	0.40	0.50	0.60	0.70	0.80	0.40	0.50	0.61	0.71	0.81	665.30	665.32	665.33	665.34	665.35
21.80	0.40	0.50	0.60	0.70	0.80	0.40	0.50	0.60	0.71	0.81	665.30	665.32	665.33	665.34	665.35
21.85	0.40	0.50	0.60	0.70	0.80	0.40	0.50	0.60	0.70	0.81	665.30	665.31	665.33	665.34	665.35
21.90	0.39	0.49	0.59	0.69	0.79	0.40	0.50	0.60	0.70	0.80	665.30	665.31	665.33	665.34	665.35
21.95	0.39	0.49	0.59	0.69	0.79	0.40	0.50	0.60	0.70	0.80	665.30	665.31	665.33	665.34	665.35
22.00	0.39	0.49	0.59	0.69	0.79	0.40	0.50	0.60	0.70	0.80	665.30	665.31	665.33	665.34	665.35
22.05	0.39	0.49	0.59	0.69	0.79	0.40	0.49	0.59	0.69	0.80	665.30	665.31	665.33	665.34	665.35
22.10	0.39	0.49	0.59	0.69	0.78	0.39	0.49	0.59	0.69	0.79	665.30	665.31	665.33	665.34	665.35
22.15	0.39	0.49	0.58	0.68	0.78	0.39	0.49	0.59	0.69	0.79	665.30	665.31	665.33	665.34	665.35
22.20	0.39	0.48	0.58	0.68	0.78	0.39	0.49	0.59	0.69	0.79	665.30	665.31	665.33	665.34	665.35
22.25	0.39	0.48	0.58	0.68	0.78	0.39	0.49	0.59	0.69	0.78	665.30	665.31	665.32	665.34	665.35
22.30	0.38	0.48	0.58	0.67	0.77	0.39	0.49	0.58	0.68	0.78	665.30	665.31	665.32	665.34	665.35
22.35	0.38	0.48	0.58	0.67	0.77	0.39	0.48	0.58	0.68	0.78	665.30	665.31	665.32	665.34	665.35
22.40	0.38	0.48	0.57	0.67	0.77	0.39	0.48	0.58	0.68	0.78	665.30	665.31	665.32	665.34	665.35
22.45	0.38	0.48	0.57	0.67	0.76	0.38	0.48	0.58	0.68	0.77	665.30	665.31	665.32	665.34	665.35
22.50	0.38	0.47	0.57	0.67	0.76	0.38	0.48	0.58	0.67	0.77	665.30	665.31	665.32	665.34	665.35
22.55	0.38	0.47	0.57	0.66	0.76	0.38	0.48	0.58	0.67	0.77	665.30	665.31	665.32	665.33	665.35
22.60	0.38	0.47	0.57	0.66	0.76	0.38	0.48	0.57	0.67	0.77	665.30	665.31	665.32	665.33	665.35
22.65	0.38	0.47	0.57	0.66	0.75	0.38	0.48	0.57	0.67	0.76	665.30	665.31	665.32	665.33	665.35
22.70	0.37	0.47	0.56	0.66	0.75	0.38	0.47	0.57	0.67	0.76	665.30	665.31	665.32	665.33	665.35
22.75	0.37	0.47	0.56	0.66	0.75	0.38	0.47	0.57	0.66	0.76	665.30	665.31	665.32	665.33	665.34
22.80	0.37	0.47	0.56	0.65	0.75	0.38	0.47	0.57	0.66	0.76	665.30	665.31	665.32	665.33	665.34
22.85	0.37	0.46	0.56	0.65	0.74	0.38	0.47	0.56	0.66	0.75	665.30	665.31	665.32	665.33	665.34
22.90	0.37	0.46	0.55	0.65	0.74	0.37	0.47	0.56	0.66	0.75	665.30	665.31	665.32	665.33	665.34
22.95	0.37	0.46	0.55	0.65	0.74	0.37	0.47	0.56	0.65	0.75	665.30	665.31	665.32	665.33	665.34
23.00	0.37	0.46	0.55	0.64	0.74	0.37	0.46	0.56	0.65	0.74	665.30	665.31	665.32	665.33	665.34
23.05	0.37	0.46	0.55	0.64	0.73	0.37	0.46	0.56	0.65	0.74	665.30	665.31	665.32	665.33	665.34
23.10	0.36	0.45	0.55	0.64	0.73	0.37	0.46	0.55	0.65	0.74	665.30	665.31	665.32	665.33	665.34

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
23.15	0.36	0.45	0.54	0.64	0.73	0.37	0.46	0.55	0.64	0.74	665.30	665.31	665.32	665.33	665.34
23.20	0.36	0.45	0.54	0.63	0.73	0.37	0.46	0.55	0.64	0.73	665.30	665.31	665.32	665.33	665.34
23.25	0.36	0.45	0.54	0.63	0.72	0.36	0.46	0.55	0.64	0.73	665.30	665.31	665.32	665.33	665.34
23.30	0.36	0.45	0.54	0.63	0.72	0.36	0.45	0.55	0.64	0.73	665.30	665.31	665.32	665.33	665.34
23.35	0.36	0.45	0.54	0.63	0.72	0.36	0.45	0.54	0.64	0.73	665.30	665.31	665.32	665.33	665.34
23.40	0.36	0.45	0.54	0.63	0.72	0.36	0.45	0.54	0.63	0.72	665.30	665.31	665.32	665.33	665.34
23.45	0.36	0.44	0.53	0.62	0.71	0.36	0.45	0.54	0.63	0.72	665.30	665.31	665.32	665.33	665.34
23.50	0.35	0.44	0.53	0.62	0.71	0.36	0.45	0.54	0.63	0.72	665.30	665.31	665.32	665.33	665.34
23.55	0.35	0.44	0.53	0.62	0.71	0.36	0.45	0.54	0.63	0.72	665.30	665.31	665.32	665.33	665.34
23.60	0.35	0.44	0.53	0.62	0.70	0.36	0.44	0.53	0.62	0.71	665.30	665.31	665.32	665.33	665.34
23.65	0.35	0.44	0.53	0.61	0.70	0.35	0.44	0.53	0.62	0.71	665.30	665.31	665.32	665.33	665.34
23.70	0.35	0.44	0.52	0.61	0.70	0.35	0.44	0.53	0.62	0.71	665.30	665.31	665.32	665.33	665.34
23.75	0.35	0.43	0.52	0.61	0.70	0.35	0.44	0.53	0.62	0.71	665.30	665.31	665.32	665.33	665.34
23.80	0.35	0.43	0.52	0.61	0.69	0.35	0.44	0.53	0.61	0.70	665.30	665.31	665.32	665.33	665.34
23.85	0.34	0.43	0.52	0.60	0.69	0.35	0.44	0.52	0.61	0.70	665.30	665.31	665.32	665.33	665.34
23.90	0.34	0.43	0.52	0.60	0.69	0.35	0.43	0.52	0.61	0.70	665.30	665.31	665.32	665.33	665.34
23.95	0.34	0.43	0.51	0.60	0.69	0.35	0.43	0.52	0.61	0.69	665.30	665.31	665.32	665.33	665.34
24.00	0.34	0.43	0.51	0.60	0.68	0.35	0.43	0.52	0.61	0.69	665.30	665.31	665.32	665.33	665.34
24.05	0.28	0.35	0.42	0.49	0.56	0.34	0.42	0.51	0.59	0.67	665.30	665.31	665.32	665.33	665.34
24.10	0.18	0.23	0.28	0.32	0.37	0.31	0.39	0.47	0.54	0.62	665.29	665.30	665.31	665.32	665.33
24.15	0.12	0.15	0.18	0.21	0.24	0.27	0.34	0.40	0.47	0.54	665.29	665.30	665.30	665.31	665.32
24.20	0.08	0.10	0.12	0.14	0.16	0.23	0.28	0.34	0.40	0.45	665.28	665.29	665.30	665.30	665.31
24.25	0.05	0.07	0.08	0.09	0.11	0.18	0.23	0.28	0.32	0.37	665.28	665.28	665.29	665.29	665.30
24.30	0.03	0.04	0.05	0.06	0.07	0.15	0.19	0.22	0.26	0.30	665.27	665.28	665.28	665.29	665.29
24.35	0.02	0.03	0.03	0.04	0.05	0.12	0.15	0.18	0.21	0.24	665.27	665.27	665.28	665.28	665.28
24.40	0.01	0.02	0.02	0.03	0.03	0.09	0.12	0.14	0.16	0.19	665.27	665.27	665.27	665.28	665.28
24.45	0.01	0.01	0.02	0.02	0.02	0.07	0.09	0.11	0.13	0.14	665.26	665.27	665.27	665.27	665.27
24.50	0.00	0.00	0.01	0.01	0.01	0.05	0.07	0.08	0.10	0.11	665.26	665.26	665.27	665.27	665.27
24.55	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.06	0.07	0.08	665.26	665.26	665.26	665.27	665.27
24.60	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.05	0.05	0.06	665.26	665.26	665.26	665.26	665.26
24.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.04	0.05	665.26	665.26	665.26	665.26	665.26
24.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.26	665.26	665.26	665.26	665.26
24.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.26	665.26	665.26	665.26	665.26
24.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.26	665.26	665.26	665.26	665.26
24.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.26	665.26	665.26	665.26
24.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.25	665.26	665.26	665.26
24.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.25	665.25	665.25	665.26
25.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.25	665.25	665.25	665.25
25.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.25	665.25	665.25	665.25
25.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.25	665.25	665.25	665.25
25.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.25	665.25	665.25	665.25
25.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.25	665.25	665.25	665.25
25.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.25	665.25	665.25	665.25
25.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.25	665.25	665.25	665.25	665.25
25.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.24	665.24	665.25	665.25	665.25
25.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.24	665.24	665.24	665.25	665.25
25.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.24	665.24	665.24	665.24	665.24
25.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.24	665.24	665.24	665.24	665.24
25.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.24	665.24	665.24	665.24	665.24
25.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.24	665.24	665.24	665.24	665.24
25.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.24	665.24	665.24	665.24	665.24
25.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.24	665.24	665.24	665.24	665.24
25.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.24	665.24	665.24	665.24	665.24
25.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.24	665.24	665.24	665.24
25.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.23	665.24	665.24	665.24
25.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.23	665.23	665.23	665.24
25.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.23	665.23	665.23	665.23
26.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.23	665.23	665.23	665.23
26.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.23	665.23	665.23	665.23
26.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.23	665.23	665.23	665.23
26.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.23	665.23	665.23	665.23
26.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.23	665.23	665.23	665.23
26.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.23	665.23	665.23	665.23	665.23
26.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.22	665.22	665.23	665.23	665.23
26.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.22	665.22	665.22	665.23	665.23
26.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.22	665.22	665.22	665.22	665.22
26.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.22	665.22	665.22	665.22	665.22
26.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.22	665.22	665.22	665.22	665.22
26.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.22	665.22	665.22	665.22	665.22
26.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.22	665.22	665.22	665.22	665.22
26.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.22	665.22	665.22	665.22	665.22
26.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.22	665.22	665.22	665.22	665.22
26.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.22	665.22	665.22	665.22
26.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.21	665.22	665.22	665.22
26.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.21	665.21	665.21	665.22
26.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.21	665.21	665.21	665.21
26.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.21	665.21	665.21	665.21
27.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.21	665.21	665.21	665.21

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
27.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.21	665.21	665.21	665.21
27.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.21	665.21	665.21	665.21
27.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.21	665.21	665.21	665.21
27.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.21	665.21	665.21	665.21	665.21
27.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.20	665.20	665.21	665.21	665.21
27.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.20	665.20	665.20	665.21	665.21
27.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.20	665.20	665.20	665.20	665.20
27.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.20	665.20	665.20	665.20	665.20
27.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.20	665.20	665.20	665.20	665.20
27.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.20	665.20	665.20	665.20	665.20
27.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.20	665.20	665.20	665.20	665.20
27.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.20	665.20	665.20	665.20	665.20
27.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.20	665.20	665.20	665.20	665.20
27.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.19	665.20	665.20	665.20	665.20
27.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.19	665.19	665.19	665.20	665.20
27.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.19	665.19	665.19	665.19	665.20
27.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.19	665.19	665.19	665.19	665.19
27.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.19	665.19	665.19	665.19	665.19
27.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.19	665.19	665.19	665.19	665.19
28.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.19	665.19	665.19	665.19	665.19
28.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.19	665.19	665.19	665.19	665.19
28.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.19	665.19	665.19	665.19	665.19
28.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.19	665.19	665.19	665.19
28.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.18	665.19	665.19	665.19
28.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.18	665.18	665.19	665.19
28.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.18	665.18	665.18	665.18
28.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.18	665.18	665.18	665.18
28.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.18	665.18	665.18	665.18
28.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.18	665.18	665.18	665.18
28.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.18	665.18	665.18	665.18
28.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.18	665.18	665.18	665.18
28.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.18	665.18	665.18	665.18	665.18
28.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.17	665.18	665.18	665.18	665.18
28.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.17	665.17	665.17	665.18	665.18
28.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.17	665.17	665.17	665.17	665.18
28.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.17	665.17	665.17	665.17	665.17
28.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.17	665.17	665.17	665.17	665.17
28.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.17	665.17	665.17	665.17	665.17
28.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.17	665.17	665.17	665.17	665.17
29.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.17	665.17	665.17	665.17	665.17
29.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.17	665.17	665.17	665.17	665.17
29.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.17	665.17	665.17	665.17
29.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.16	665.17	665.17	665.17
29.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.16	665.16	665.17	665.17
29.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.16	665.16	665.16	665.16
29.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.16	665.16	665.16	665.16
29.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.16	665.16	665.16	665.16
29.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.16	665.16	665.16	665.16
29.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.16	665.16	665.16	665.16
29.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.16	665.16	665.16	665.16
29.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.16	665.16	665.16	665.16	665.16
29.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.15	665.16	665.16	665.16	665.16
29.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.15	665.15	665.15	665.16	665.16
29.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.15	665.15	665.15	665.15	665.15
29.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.15	665.15	665.15	665.15	665.15
29.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.15	665.15	665.15	665.15	665.15
29.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.15	665.15	665.15	665.15	665.15
29.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.15	665.15	665.15	665.15	665.15
29.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.15	665.15	665.15	665.15	665.15
30.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.15	665.15	665.15	665.15	665.15
30.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.14	665.15	665.15	665.15	665.15
30.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.14	665.14	665.15	665.15	665.15
30.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.14	665.14	665.14	665.14	665.15
30.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.14	665.14	665.14	665.14	665.14
30.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.14	665.14	665.14	665.14	665.14
30.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.14	665.14	665.14	665.14	665.14
30.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.14	665.14	665.14	665.14	665.14
30.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.14	665.14	665.14	665.14	665.14
30.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.14	665.14	665.14	665.14	665.14
30.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.14	665.14	665.14	665.14
30.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.13	665.14	665.14	665.14
30.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.13	665.13	665.14	665.14
30.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.13	665.13	665.13	665.13
30.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.13	665.13	665.13	665.13
30.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.13	665.13	665.13	665.13
30.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.13	665.13	665.13	665.13
30.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.13	665.13	665.13	665.13
30.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.13	665.13	665.13	665.13

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
30.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.13	665.13	665.13	665.13	665.13
31.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.12	665.13	665.13	665.13	665.13
31.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.12	665.12	665.12	665.13	665.13
31.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.12	665.12	665.12	665.12	665.12
31.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.12	665.12	665.12	665.12	665.12
31.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.12	665.12	665.12	665.12	665.12
31.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.12	665.12	665.12	665.12	665.12
31.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.12	665.12	665.12	665.12	665.12
31.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.12	665.12	665.12	665.12	665.12
31.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.12	665.12	665.12	665.12	665.12
31.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.11	665.12	665.12	665.12	665.12
31.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.11	665.11	665.12	665.12	665.12
31.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.11	665.11	665.11	665.11	665.12
31.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.11	665.11	665.11	665.11	665.11
31.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.11	665.11	665.11	665.11	665.11
31.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.11	665.11	665.11	665.11	665.11
31.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.11	665.11	665.11	665.11	665.11
31.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.11	665.11	665.11	665.11	665.11
31.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.11	665.11	665.11	665.11	665.11
31.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.11	665.11	665.11	665.11
31.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.10	665.11	665.11	665.11
32.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.10	665.10	665.10	665.11
32.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.10	665.10	665.10	665.10
32.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.10	665.10	665.10	665.10
32.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.10	665.10	665.10	665.10
32.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.10	665.10	665.10	665.10
32.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.10	665.10	665.10	665.10
32.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.10	665.10	665.10	665.10
32.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.10	665.10	665.10	665.10	665.10
32.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.09	665.10	665.10	665.10	665.10
32.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.09	665.09	665.09	665.10	665.10
32.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.09	665.09	665.09	665.09	665.09
32.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.09	665.09	665.09	665.09	665.09
32.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.09	665.09	665.09	665.09	665.09
32.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.09	665.09	665.09	665.09	665.09
32.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.09	665.09	665.09	665.09	665.09
32.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.09	665.09	665.09	665.09	665.09
32.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.09	665.09	665.09	665.09	665.09
32.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.08	665.09	665.09	665.09	665.09
32.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.08	665.08	665.09	665.09	665.09
32.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.08	665.08	665.08	665.08	665.09
33.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.08	665.08	665.08	665.08	665.08
33.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.08	665.08	665.08	665.08	665.08
33.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.08	665.08	665.08	665.08	665.08
33.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.08	665.08	665.08	665.08	665.08
33.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.08	665.08	665.08	665.08	665.08
33.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.08	665.08	665.08	665.08	665.08
33.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.08	665.08	665.08	665.08
33.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.07	665.08	665.08	665.08
33.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.07	665.07	665.07	665.08
33.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.07	665.07	665.07	665.07
33.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.07	665.07	665.07	665.07
33.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.07	665.07	665.07	665.07
33.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.07	665.07	665.07	665.07
33.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.07	665.07	665.07	665.07
33.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.07	665.07	665.07	665.07
33.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.07	665.07	665.07	665.07	665.07
33.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.06	665.06	665.07	665.07	665.07
33.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.06	665.06	665.06	665.07	665.07
33.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.06	665.06	665.06	665.06	665.06
33.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.06	665.06	665.06	665.06	665.06
34.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.06	665.06	665.06	665.06	665.06
34.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.06	665.06	665.06	665.06	665.06
34.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.06	665.06	665.06	665.06	665.06
34.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.06	665.06	665.06	665.06	665.06
34.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.06	665.06	665.06	665.06	665.06
34.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.05	665.06	665.06	665.06	665.06
34.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.05	665.05	665.05	665.06	665.06
34.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.05	665.05	665.05	665.05	665.05
34.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.05	665.05	665.05	665.05	665.05
34.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.05	665.05	665.05	665.05	665.05
34.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.05	665.05	665.05	665.05	665.05
34.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.05	665.05	665.05	665.05	665.05
34.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.05	665.05	665.05	665.05	665.05
34.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.05	665.05	665.05	665.05	665.05
34.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.04	665.05	665.05	665.05	665.05
34.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.04	665.04	665.04	665.05	665.05
34.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.04	665.04	665.04	665.04	665.05

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
34.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.04	665.04	665.04	665.04	665.04
34.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.04	665.04	665.04	665.04	665.04
34.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.04	665.04	665.04	665.04	665.04
35.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.04	665.04	665.04	665.04	665.04
35.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.04	665.04	665.04	665.04	665.04
35.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.04	665.04	665.04	665.04	665.04
35.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.03	665.04	665.04	665.04	665.04
35.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.03	665.03	665.04	665.04	665.04
35.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.03	665.03	665.03	665.03	665.04
35.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.03	665.03	665.03	665.03	665.03
35.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.03	665.03	665.03	665.03	665.03
35.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.03	665.03	665.03	665.03	665.03
35.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.03	665.03	665.03	665.03	665.03
35.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.03	665.03	665.03	665.03	665.03
35.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.03	665.03	665.03	665.03	665.03
35.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.02	665.03	665.03	665.03	665.03
35.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.02	665.02	665.03	665.03	665.03
35.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.02	665.02	665.02	665.02	665.03
35.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.02	665.02	665.02	665.02	665.02
35.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.02	665.02	665.02	665.02	665.02
35.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.02	665.02	665.02	665.02	665.02
35.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.02	665.02	665.02	665.02	665.02
35.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.02	665.02	665.02	665.02	665.02
36.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.02	665.02	665.02	665.02	665.02
36.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.02	665.02	665.02	665.02
36.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.01	665.02	665.02	665.02
36.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.01	665.01	665.02	665.02
36.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.01	665.01	665.01	665.01
36.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.01	665.01	665.01	665.01
36.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.01	665.01	665.01	665.01
36.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.01	665.01	665.01	665.01
36.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.01	665.01	665.01	665.01
36.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.01	665.01	665.01	665.01
36.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.01	665.01	665.01	665.01	665.01
36.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.00	665.00	665.01	665.01	665.01
36.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.00	665.00	665.00	665.01	665.01
36.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.00	665.00	665.00	665.00	665.00
36.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.00	665.00	665.00	665.00	665.00
36.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.00	665.00	665.00	665.00	665.00
36.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.00	665.00	665.00	665.00	665.00
36.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.00	665.00	665.00	665.00	665.00
36.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.00	665.00	665.00	665.00	665.00
36.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	665.00	665.00	665.00	665.00	665.00
37.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.99	664.99	665.00	665.00	665.00
37.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.99	664.99	664.99	665.00	665.00
37.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.99	664.99	664.99	664.99	664.99
37.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.99	664.99	664.99	664.99	664.99
37.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.99	664.99	664.99	664.99	664.99
37.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.99	664.99	664.99	664.99	664.99
37.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.99	664.99	664.99	664.99	664.99
37.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.99	664.99	664.99	664.99	664.99
37.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.99	664.99	664.99	664.99	664.99
37.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.98	664.99	664.99	664.99	664.99
37.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.98	664.98	664.98	664.99	664.99
37.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.98	664.98	664.98	664.98	664.98
37.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.98	664.98	664.98	664.98	664.98
37.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.98	664.98	664.98	664.98	664.98
37.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.98	664.98	664.98	664.98	664.98
37.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.98	664.98	664.98	664.98	664.98
37.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.98	664.98	664.98	664.98	664.98
37.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.98	664.98	664.98	664.98	664.98
37.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.97	664.98	664.98	664.98	664.98
37.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.97	664.97	664.97	664.98	664.98
38.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.97	664.97	664.97	664.97	664.98
38.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.97	664.97	664.97	664.97	664.97
38.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.97	664.97	664.97	664.97	664.97
38.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.97	664.97	664.97	664.97	664.97
38.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.97	664.97	664.97	664.97	664.97
38.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.97	664.97	664.97	664.97	664.97
38.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.97	664.97	664.97	664.97	664.97
38.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.96	664.97	664.97	664.97	664.97
38.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.96	664.96	664.97	664.97	664.97
38.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.96	664.96	664.96	664.96	664.97
38.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.96	664.96	664.96	664.96	664.96
38.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.96	664.96	664.96	664.96	664.96
38.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.96	664.96	664.96	664.96	664.96
38.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.96	664.96	664.96	664.96	664.96
38.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.96	664.96	664.96	664.96	664.96

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
38.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.96	664.96	664.96	664.96	664.96
38.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.95	664.96	664.96	664.96	664.96
38.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.95	664.95	664.96	664.96	664.96
38.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.95	664.95	664.95	664.95	664.96
38.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.95	664.95	664.95	664.95	664.95
39.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.95	664.95	664.95	664.95	664.95
39.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.95	664.95	664.95	664.95	664.95
39.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.95	664.95	664.95	664.95	664.95
39.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.95	664.95	664.95	664.95	664.95
39.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.95	664.95	664.95	664.95	664.95
39.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.94	664.95	664.95	664.95	664.95
39.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.94	664.94	664.95	664.95	664.95
39.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.94	664.94	664.94	664.94	664.95
39.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.94	664.94	664.94	664.94	664.94
39.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.94	664.94	664.94	664.94	664.94
39.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.94	664.94	664.94	664.94	664.94
39.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.94	664.94	664.94	664.94	664.94
39.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.94	664.94	664.94	664.94	664.94
39.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.94	664.94	664.94	664.94	664.94
39.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.94	664.94	664.94	664.94
39.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.93	664.94	664.94	664.94
39.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.93	664.93	664.94	664.94
39.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.93	664.93	664.93	664.93
39.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.93	664.93	664.93	664.93
39.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.93	664.93	664.93	664.93
40.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.93	664.93	664.93	664.93
40.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.93	664.93	664.93	664.93
40.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.93	664.93	664.93	664.93
40.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.93	664.93	664.93	664.93	664.93
40.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.92	664.93	664.93	664.93	664.93
40.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.92	664.92	664.92	664.93	664.93
40.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.92	664.92	664.92	664.92	664.92
40.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.92	664.92	664.92	664.92	664.92
40.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.92	664.92	664.92	664.92	664.92
40.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.92	664.92	664.92	664.92	664.92
40.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.92	664.92	664.92	664.92	664.92
40.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.92	664.92	664.92	664.92	664.92
40.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.92	664.92	664.92	664.92	664.92
40.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.92	664.92	664.92	664.92
40.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.91	664.92	664.92	664.92
40.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.91	664.91	664.91	664.92
40.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.91	664.91	664.91	664.91
40.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.91	664.91	664.91	664.91
40.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.91	664.91	664.91	664.91
40.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.91	664.91	664.91	664.91
41.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.91	664.91	664.91	664.91
41.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.91	664.91	664.91	664.91
41.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.91	664.91	664.91	664.91	664.91
41.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.91	664.91	664.91	664.91
41.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.90	664.90	664.91	664.91
41.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.90	664.90	664.90	664.90
41.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.90	664.90	664.90	664.90
41.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.90	664.90	664.90	664.90
41.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.90	664.90	664.90	664.90
41.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.90	664.90	664.90	664.90
41.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.90	664.90	664.90	664.90
41.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.90	664.90	664.90	664.90
41.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.90	664.90	664.90	664.90	664.90
41.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.90	664.90	664.90
41.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.89	664.90	664.90
41.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.89	664.89	664.89
41.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.89	664.89	664.89
41.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.89	664.89	664.89
41.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.89	664.89	664.89
41.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.89	664.89	664.89
42.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.89	664.89	664.89
42.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.89	664.89	664.89
42.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.89	664.89	664.89	664.89	664.89
42.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.89	664.89	664.89
42.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.88	664.89	664.89
42.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.88	664.88	664.88
42.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.88	664.88	664.88
42.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.88	664.88	664.88
42.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.88	664.88	664.88
42.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.88	664.88	664.88
42.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.88	664.88	664.88
42.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.88	664.88	664.88
42.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.88	664.88	664.88	664.88	664.88

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
42.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.88	664.88	664.88
42.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.87	664.88	664.88
42.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.87	664.87	664.87
42.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.87	664.87	664.87
42.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.87	664.87	664.87
42.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.87	664.87	664.87
42.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.87	664.87	664.87
43.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.87	664.87	664.87
43.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.87	664.87	664.87
43.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.87	664.87	664.87	664.87	664.87
43.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.87	664.87	664.87	664.87
43.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.86	664.86	664.87	664.87
43.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.86	664.86	664.86	664.86
43.30	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.86	664.86	664.86	664.86
43.35	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.86	664.86	664.86	664.86
43.40	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.86	664.86	664.86	664.86
43.45	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.86	664.86	664.86	664.86
43.50	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.86	664.86	664.86	664.86
43.55	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.86	664.86	664.86	664.86
43.60	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.86	664.86	664.86	664.86	664.86
43.65	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.86	664.86	664.86	664.86
43.70	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.85	664.86	664.86	664.86
43.75	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.85	664.85	664.85	664.86
43.80	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.85	664.85	664.85	664.85
43.85	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.85	664.85	664.85	664.85
43.90	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.85	664.85	664.85	664.85
43.95	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.85	664.85	664.85	664.85
44.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.85	664.85	664.85	664.85
44.05	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.85	664.85	664.85	664.85
44.10	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.85	664.85	664.85	664.85	664.85
44.15	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.84	664.85	664.85	664.85	664.85
44.20	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.84	664.84	664.85	664.85	664.85
44.25	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	664.84	664.84	664.84	664.85	664.85
44.30	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.03	0.03	664.84	664.84	664.84	664.84	664.84
44.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.03	0.03	664.84	664.84	664.84	664.84	664.84
44.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.03	664.84	664.84	664.84	664.84	664.84
44.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.84	664.84	664.84	664.84	664.84
44.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.84	664.84	664.84	664.84	664.84
44.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.84	664.84	664.84	664.84	664.84
44.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.84	664.84	664.84	664.84	664.84
44.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.84	664.84	664.84	664.84	664.84
44.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.84	664.84	664.84	664.84
44.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.84	664.84	664.84
44.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.83	664.83	664.84
44.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.83	664.83	664.83
44.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.83	664.83	664.83
44.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.83	664.83	664.83
45.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.83	664.83	664.83
45.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.83	664.83	664.83
45.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.83	664.83	664.83
45.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.83	664.83	664.83
45.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.83	664.83	664.83	664.83	664.83
45.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.83	664.83	664.83	664.83
45.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.83	664.83	664.83
45.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.82	664.82	664.83
45.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.82	664.82	664.82
45.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.82	664.82	664.82
45.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.82	664.82	664.82
45.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.82	664.82	664.82
45.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.82	664.82	664.82
45.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.82	664.82	664.82
45.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.82	664.82	664.82
45.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.82	664.82	664.82	664.82	664.82
45.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.82	664.82	664.82	664.82
45.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.82	664.82	664.82
45.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.82
45.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.81
46.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.81
46.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.81
46.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.81
46.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.81
46.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.81
46.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.81
46.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.81
46.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.81	664.81	664.81	664.81	664.81
46.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.81	664.81	664.81
46.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.81	664.81
46.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.80	664.80

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
46.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.80	664.80
46.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.80	664.80
46.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.80	664.80
46.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.80	664.80
46.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.80	664.80
46.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.80	664.80
46.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.80	664.80
46.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.80	664.80	664.80	664.80	664.80
46.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.80	664.80	664.80	664.80
47.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.80	664.80	664.80
47.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.80
47.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.79	664.79	664.79	664.79	664.79
47.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.79	664.79	664.79
47.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.79	664.79
47.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
47.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
47.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
47.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
47.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
47.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
48.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
48.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
48.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
48.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.78	664.78	664.78	664.78	664.78
48.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.78	664.78	664.78	664.78
48.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.78	664.78
48.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.78
48.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.77	664.77	664.77	664.77	664.77
48.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.77	664.77	664.77	664.77
48.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.77	664.77
48.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.76	664.76	664.76	664.76	664.76
49.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.76	664.76	664.76	664.76
49.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.76	664.76
49.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
49.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
49.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
49.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
49.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
49.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
49.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
49.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
50.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
50.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
50.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.75	664.75	664.75	664.75	664.75
50.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.75	664.75	664.75	664.75
50.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.75	664.75
50.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
50.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.74	664.74	664.74	664.74	664.74
50.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.74	664.74	664.74
50.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.74	664.74
50.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
50.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.73	664.73	664.73	664.73	664.73
51.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.73	664.73	664.73
51.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.73	664.73
51.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
51.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
51.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
51.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
51.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
51.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
51.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
51.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
51.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
52.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
52.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.72	664.72	664.72	664.72	664.72
52.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.72	664.72	664.72
52.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.72	664.72
52.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.71	664.71	664.71	664.71	664.71
52.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.71	664.71	664.71
52.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.71	664.71
52.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
52.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
52.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
53.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
53.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
53.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
53.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
53.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
53.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
53.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.70	664.70	664.70	664.70	664.70
53.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.70	664.70	664.70	664.70
53.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.70	664.70	664.70
53.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.70
53.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
53.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
53.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
53.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
53.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
53.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
53.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
53.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
53.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
53.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.69	664.69	664.69	664.69	664.69
54.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.69	664.69	664.69	664.69
54.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.69	664.69	664.69
54.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.69
54.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68
54.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68
54.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68
54.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
54.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68
54.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68
54.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68
54.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68
54.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68
54.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.68	664.68	664.68	664.68	664.68
54.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.68	664.68	664.68	664.68
54.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.68	664.68	664.68
54.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.68
54.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
54.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
54.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
54.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
55.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
55.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
55.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
55.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
55.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
55.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.67	664.67	664.67	664.67	664.67
55.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.67	664.67	664.67	664.67
55.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.67	664.67	664.67
55.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.67
55.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.66	664.66	664.66	664.66	664.66
55.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.66	664.66	664.66	664.66
56.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.66	664.66	664.66
56.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.66
56.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.65	664.65	664.65	664.65	664.65
56.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.65	664.65	664.65	664.65
56.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.65	664.65
56.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
56.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
56.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
56.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
56.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
56.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
57.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
57.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
57.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
57.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.64	664.64	664.64	664.64	664.64
57.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.64	664.64	664.64	664.64
57.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.64	664.64	664.64
57.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.64
57.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.63	664.63	664.63	664.63	664.63
57.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.63	664.63	664.63	664.63
57.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.63	664.63	664.63
57.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.63
58.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62
58.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62
58.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62
58.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62
58.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62

	Flow into Basin (cfs)					Flow Out of Outlet Structure (cfs)					Water Surface Elevation in Basin				
Time (hrs)	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year
58.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62
58.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62
58.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62
58.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62
58.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.62	664.62	664.62	664.62	664.62
58.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.62	664.62	664.62	664.62
58.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.62	664.62
58.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
58.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
58.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
58.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
58.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
58.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
58.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
58.95	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
59.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
59.05	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.61	664.61	664.61	664.61	664.61
59.10	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.61	664.61	664.61	664.61
59.15	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.61	664.61	664.61
59.20	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.61	664.61
59.25	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.30	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.35	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.40	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.45	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.50	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.55	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.60	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.65	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.70	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.60	664.60	664.60	664.60	664.60
59.75	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.59	664.60	664.60	664.60	664.60
59.80	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.59	664.59	664.60	664.60	664.60
59.85	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.59	664.59	664.59	664.59	664.60
59.90	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	664.59	664.59	664.59	664.59	664.59

Appendix D

Water Quality Calculations

WINZLER & KELLY
15575 SW Sequoia Parkway, Suite 140
Portland, OR 97224-7233
(503) 226-3921

By STS Date 5/29/09 Client _____ Sheet No. _____ of _____

Subject EAST POND WATER QUALITY CALCULATION Job No. _____

CRITERIA

DESIGN RAINFALL DEPTH: 0.36"
DETENTION TIME: 48 HOURS
TRIBUTARY AREA: IMPERVIOUS AREA = 4.8 AC

REQUIRED VOLUME

$V = (0.36")(1\ FT/12")(4.8\ AC)(43{,}560\ FT/AC) = \underline{6270\ FT^3}$

ALLOWABLE PONDING DEPTH = 665.34 − 663.66 = 1.68' (FOR TREATMENT - SEE FIGURE 3)
TREATMENT VOLUME OF PROPOSED POND: 7150 FT³

PEAK OUTFLOW

ORIFICE FLOW: $Q = CA\sqrt{2gh}$

$A = \pi\left(\frac{1.02}{24}\right)^2 = 5.67 \times 10^{-3}\ FT^2$

$Q = (0.60)(5.67 \times 10^{-3}\ FT^3)\sqrt{2(32.2\ FT/S^2)(1.34')} = 0.032\ CFS$

DETENTION TIME

ASSUME CONSERVATIVELY THAT FLOW OUT OF POND = PEAK FLOW

$t_D = \frac{V}{Q} = \frac{7150\ FT^3}{0.032\ CFS}\left(\frac{1\ HR}{3600\ S}\right) = 62\ HRS > 48\ HRS$, OKAY

EXHIBIT C
Access/Circulation Study

DKS *Associates*
TRANSPORTATION SOLUTIONS

MEMORANDUM

TO: Tim Woodley, West Linn Wilsonville School District

FROM: Pamela O'Brien, P.E., PTOE, DKS Associates

DATE: April 28, 2009

SUBJECT: **Rosemont Ridge Middle School Access/Circulation Study** P09031-002

This memorandum summarizes work conducted by DKS Associates regarding the existing and proposed parking lot circulation at Rosemont Ridge Middle School.

The school site is located in the southwest quadrant of the intersection of Rosemont Road and Salamo Road in West Linn. Currently, a single access drive for buses and autos is located off of South Salamo Road south of Rosemont Road. The bus loading/unloading area is located next to the sidewalk along the front of the school and the buses must circulate back through the parking lot to exit the site. The parent pick-up/drop-off zone is located just prior to the exit drive from the parking lot. The conflict between the buses, autos and pedestrians have led to a proposal to change the bus access through the site. It is proposed to construct a bus drive aisle around the school and have the buses exit the school grounds using an existing maintenance access driveway onto Rosemont Road west of Salamo Road.

This access/circulation memorandum summarizes the impacts of modifications to the bus access to/from the school site and the impacts to the driveways on Rosemont Road and on Salamo Road along with the intersection of Rosemont Road/Salamo Road. The memo will also summarize the internal circulation pattern changes based on the modification of the bus exit.

Bus Circulation

Currently, fourteen school buses access Rosemont Ridge Middles School via a driveway on Salamo Road south of Rosemont Road. It is anticipated that the number of school buses will not change in the future. The access and circulation characteristics are different for the AM drop off than for the PM pick up.

AM Drop Off

Based on a recent site visit, the buses started to arrive at the school at 8:45 am with the last bus arriving at 9:02 am. The majority of the buses arrived within a four minute window between 8:58 am and 9:02 am. The buses dropped the students off at the curb in front of the school. Once the students were dropped off, the buses would exit the site. All of the buses turned right onto Salamo Road. While the buses were dropping students off in front of the school and circulating through and out of the parking lot, parents were also dropping students off. The designated drop-off area was located within the parking lot, right where the exit drive begins. It appeared that only one or two cars were able to drop students off at a time, which created a queue of parents

waiting to drop their student off. Since there is only one exit for the parking lot, the buses also had to wait in this queue. The auto/bus queue was cleared by 9:10 am.

PM Pick Up

During the afternoon pick-up, the buses started to arrive at the school at 3:30 pm and parked along the sidewalk in front of the school and around the corner in the parking lot. Parents also started to arrive around 3:30 pm and formed a line, starting at the pick-up/drop zone and winding through the parking lot, to wait for the students. For approximately 15 minutes, the parking lot was very crowded, but the vehicles flowed through in an orderly fashion. By the time the buses were ready to exit the site, most of the parents were gone and the buses had a minimal queue to wait behind. At the parking lot exit, 10 buses turned left and four buses turned right. All the buses and autos were cleared by 3:59 pm.

Figure 1: Bus and Auto interaction during afternoon pick-up

Operational Impacts

It is proposed to create a bus-only exit onto Rosemont Road. This new access will alter the circulation patterns within the parking lot and also alter the traffic volumes accessing Salamo Road and Rosemont Road. The buses exiting the site via the driveway on Rosemont Road will help to ease the congestion within the parking lot and reduce the friction between the autos, pedestrians and buses.

Queues

During the AM drop off, all of the buses exiting the site via Rosemont Road will turn right onto Rosemont Road and then right onto Salamo Road. A queue of 400 feet or more may be created at the proposed bus exit pm Rosemont Road as the buses approach the intersection after dropping the students off. The buses will also create a queue in the eastbound lane at the intersection of Salamo Road/Rosemont Road, but it should dissipate quickly, since there are only 14 buses.

During the PM pick up, all of the buses exiting the site via Rosemont Road will turn right onto Rosemont Road. Seven of the buses will turn left at Salamo Road, while three will go straight through the intersection and four will turn right. As with the AM peak, a queue of 400 feet or

more may be created at the new exit as the buses approach the intersection after dropping the students off. The buses will also create a queue in the eastbound lane at the intersection of Salamo Road/Rosemont Road, but it should dissipate quickly, since there are only 14 buses.

Intersection Level of Service

Existing turning movement volumes were collected at the intersection of Salamo Road/Rosemont Road. The intersection operation was evaluated to determine the impacts of modifying the bus circulation to and from the school on the all-way stop controlled intersection. The AM and PM peaks of the school do not coincide with the AM and PM peaks of the traffic along Rosemont Road and Salamo Road. The AM peak for the school was assumed to be from 8:30 to 9:30 am, while the PM peak for the school was assumed to be 3:30 to 4:30 pm. It was determined that the changes to the bus turning movements at the intersection do not have a negative impact on the operation of the intersection. During the AM peak, the intersection operates at a Level-of-Service B under existing and proposed conditions. During the PM peak, the intersection operates at a Level-of-Service C under existing and proposed conditions.

Intersection Sight Distance

The intersection sight distance was evaluated at the proposed driveway location. Rosemont Road, along the school frontage, is posted with a 20 mile per hour school speed zone during school hours. Since the buses will use the driveway during school hours, the required sight distance of 225 feet is based on the 20 mile per hour speed. There is adequate sight distance at the proposed driveway location.

Internal Circulation

The AM drop-off and PM pick-up are short, but intense events when looking a school parking lot access and circulation. The combination of the buses and autos creates more friction during the AM drop-off than the PM pick-up. This is due to the fact the buses arrive randomly and can exit the sight once all the students are dropped off, which coincides with the time the parents are dropping their kids off. The buses become incorporated into the drop-off queue. During the PM pick-up, the buses must wait until all the students are on board before departing. The PM bus departure is typically after the parents have picked up their kids and have exited the parking lot. The buses all depart at the same time, and typically do not have to wait in the pick-up queue.

Removing the buses from the current circulation pattern will help to alleviate the friction between the autos, pedestrians and buses. It will not, however, eliminate the queuing that is a result of the drop-off and pick-up events.

Considering the geographical constraints of the parking lot and circulation drive, the current method of drop-off and pick-up is a good solution. It provides a single, safe location for students to exit the vehicle and enter the school (with the assistance of a crossing guard). It does, however, create a queue of vehicles waiting to drop students off. One way to reduce the queue would be to create additional drop-off/pick-up locations. The existing pick-up drop-off area could possibly be expanded to allow for multiple vehicles to drop students off at the same time. If the buses are relocated to a new drive aisle on the west side of the school, there may be an

opportunity to create an additional drop off zone directly in front of the school, where the buses are located today.

Summary

- Creating a new drive aisle on the west side of Rosemont Ridge Middle School will allow the buses to be separated from the autos upon exiting the parking lot. This will ease the congestion within the parking lot and reduce the friction between the autos, pedestrians and buses.
- The unsignalized intersection of Rosemont Road/Salamo Road will continue to operate in an acceptable manner with the modification to the bus turning movement volumes.
- A queue of 400 feet or more may be created along the bus drive aisle as buses exit the sight at Rosemont Road. The buses will also create a queue in the eastbound lane at the intersection of Salamo Road/Rosemont Road, but it should dissipate quickly, since there are only 14 buses.
- There is adequate sight distance at the proposed driveway location.
- The existing pick-up drop-off area could possibly be expanded to allow for multiple vehicles to drop students off at the same time.
- If the buses are relocated to a new drive aisle on the west side of the school, there may be an opportunity to create an additional drop off zone directly in front of the school, where the buses are located today.

EXHIBIT D
School Bus Noise Study

May 11, 2009

Dull Olson Weekes
907 S.W. Stark St.
Portland, OR 97205

Attention: Ms. B. Karina Ruiz

Reference: Rosemont Ridge Middle School
West Linn/Wisonville School District
Bus Noise Study Proposal 09034

Dear Ms. Ruiz:

At your request, a study was made of the noise generated by bus activities at the Rosemont Ridge Middle School. The study was undertaken to ensure that future modifications to the bus delivery route does not cause sound levels at a nearby residential property to exceed the City of West Linn Noise Code.

1. Criterion

1.1 Noise in the City of West Linn is regulated by the Noise Code of Chapter 55 of the community development code. Specifically, for this project, the requirement is that the school bus activity on the project site does not cause measured sound levels at an adjacent residence to exceed L_{50} = 55 dBA, L_{10} = 60 dBA and L_1 = 75 dBA between the hours of 7 AM and 7 PM. The school busses only arrive and depart during these daytime hours, so the more strict nighttime criteria do not apply.

1.2 The City of West Linn Noise Code also requires that octave band sound levels do not exceed the following limits.

31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
68 dB	65 dB	61 dB	55 dB	52 dB	49 dB	46 dB	43 dB	40 dB

1.3 When the receiver is a residential property, these limits are assessed at any location within 25 feet of the residence.

522 SW Fifth Avenue, Suite 1200 Portland, Oregon 97204 (503) 221-1044 Fax: 221-1445

2. Existing Noise Levels & Background Sound Levels

2.1 Project site noise levels were measured on May 1, 2009. Overall measurements were made using a sound level meter meeting American National Standards Institute (ANSI) for a Type 2 Sound Level meter. The output of the sound level meter was recorded for Octave Band Analysis at a later date. The weather conditions were partially cloudy with winds of approximately 6-9 mph gusting to 20 mph.

2.2 Vehicle sound level measurements were made approximately 30 feet south of the existing car and bus exit lanes. The measurement location was approximately 315 feet west of the nearest lane of South Salmon Road. Idling car levels were measured between 65 and 68 dBA. A large diesel passenger truck was measured at 73 dBA while idling. This truck had left the parking lot before the buses started their engines.

2.3 When the buses slowly drove past the measurement position, the measured sound level was 71 dBA. After most of the vehicles had left the parking lot, the sound level was 58 dBA.

2.4 The sound level meter was moved approximately 40 feet to the east of the original measurement site to measure additional background sound levels. This location was shielded from wind gusts by nearby storage containers. The background sound level was measured at 45-47 dBA. The minimum measured sound level (L_{min}) was 44 dBA at this location.

2.5 Additional background sound level measurements were made approximately 40 feet south of the northwest corner of the school, approximately 6 feet out from the building. The background sound level was measured at 42-46 dBA. The minimum measured sound level (L_{min}) was 42 dBA at this location.

3. Observations

3.1 At the middle school, the busses were parked in the turn-about at the west end of the parking lot. While waiting for school to be dismissed and before the majority of parents vehicles had left the parking lot, the school bus engines were turned off. The duration of time from when the busses started their engines to when all the busses had left the school was less than 8 minutes.

3.2 Parents who were picking up there children lined up along the southern edge of the parking lot in front of the line of busses. A flagger directed traffic flow out of the main parking area. Most parents engines were left idling as they waited for school to dismiss.

4. Proposed Site Design & Predicted Sound Levels

4.1 The planned bus exit realignment will route busses along the north side of the existing school. To accomplish this, a roadway will be cut into the landscaping at the north side of the building. A 10 foot tall retaining wall is planned at the north side of the bus path.

4.2 The closest residence to the north is approximately 85 north of the center of the proposed new bus exit path. The compliance with the sound level limits would be assessed at a location 25 feet south of the residence. The distance between the bus path and the nearest site for determination of sound level compliance would be 60 feet.

4.3 The residential property is also elevated above the proposed bus path by about 16 feet.

4.4 Sound levels were predicted assuming a 10 foot tall retaining wall at 10 from the buses and total distance of 60 between the buses and the nearest residential receiver. During bus movements, the predicted short term L_{eq} (1 minute duration) sound level at the residential property was estimated to be 52 dBA with an L_{max} of 66 dBA.

4.5 The L_{50} sound level due to bus activities was estimated to be less than 50 dBA and the L_{10} to be less than 60 dBA (considering a total of 20 minutes of bus idling and driving at the project site). With a predicted L_{max} sound level for bus activity of 66 dBA the L_1 should also be below 66 dBA.

4.6 The predicted octave band sound levels did not exceed the West Linn Noise Code maximums.

5. Conclusion

5.1 Based on the above review, the proposed bus exit realignment should meet the sound level limit requirements of the West Linn Noise Code at the adjacent residential property.

Please contact me with any questions.

Sincerely,
ALTERMATT ASSOCIATES

Kent McKelvie
Staff Engineer

09034L01

EXHIBIT E
TVFR Comments

TUALATIN VALLEY FIRE & RESCUE - SOUTH DIVISION
COMMUNITY SERVICES • OPERATIONS • FIRE PREVENTION

August 7, 2009

Peter Spir
Associate Planner
Planning Department
City of West Linn
West Linn, Oregon 97068

Re: DR 09-05 Rosemont Middle School - Driveway and Field Lighting

Dear Mr. Spir;

Thank you for the opportunity to review the proposed site plan surrounding the above named development project. Tualatin Valley Fire & Rescue endorses this proposal predicated on the following criteria and conditions of approval:

1) **GATES:** If gates are used to secure the bus lane, the fire district would like to ensure the ability to operate gate and use bus lane. Please provide us with:
   Electric gates that are equipped with a means for operation by fire department personnel, and, or,
   Locking devices that are usable by the fire personnel

If you have questions, please call me at (503) 612-7012.

Sincerely,

Karen Mohling

Karen Mohling
Deputy Fire Marshal

TUALATIN VALLEY FIRE & RESCUE - SOUTH DIVISION
COMMUNITY SERVICES • OPERATIONS • FIRE PREVENTION

February 4, 2009

Peter Spir
Associate Planner
City of West Linn
22500 Salamo Road
West Linn, OR 97068

Re: Fire Plan Review Comments

Dear Mr. Spir;

Since I am unable to attend the February 5th Pre-Application meeting, I am submitting these general items that may apply to the development project. Please invite the applicant to contact me to schedule a meeting if desired, or call with any questions. Tualatin Valley Fire & Rescue endorses this proposal predicated on the following criteria and conditions of approval:

1) **FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDING AND TURNAROUNDS:** Access roads shall be within 150 feet of all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building. An approved turnaround is required if the remaining distance to an approved intersecting roadway, as measured along the fire apparatus access road, is greater than 150 feet. (IFC 503.1.1)

2) **DEAD END ROADS:** Dead end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround. (IFC 503.2.5) ***Please refer to the Fire District's Fire Code Applications Guide for specifications:***
http://www.tvfr.com/Dept/fm/const/doc_files/fire_code_applications_guide.pdf

3) **FIRE APPARATUS ACCESS ROAD EXCEPTION FOR AUTOMATIC SPRINKLER PROTECTION:** When buildings are completely protected with an approved automatic fire sprinkler system, the requirements for fire apparatus access may be modified as approved by the fire code official. (IFC 503.1.1)

4) **ADDITIONAL ACCESS ROADS – COMMERCIAL:** Where buildings exceed 30 feet in height or three stories in height shall have at least three separate means of fire apparatus access. Buildings or facilities having a gross area of more than 62,000 square feet shall be provided with at least two separate means of fire apparatus access. Buildings up to 124,000 square feet provided with fire sprinklers may have a single access. (IFC D104)

5) **ADDITIONAL ACCESS ROADS – ONE-OR TWO-FAMILY RESIDENTIAL:** Where there are more than 30 one- or two-family dwelling units, not less than two separate approved means of access shall be provided. Where there are more than 30 dwelling units and all are protected by approved residential sprinkler systems, a single access will be allowed. (IFC D107)

6) **ADDITIONAL ACCESS ROADS – MULTIPLE-FAMILY RESIDENTIAL:** Where there are more than 100 multiple-family dwelling units, not less than two separate approved means of access shall be provided. Projects up to 200 dwelling units that are protected by approved residential sprinkler systems may have a single access. Projects having more than 200 dwelling units shall have two separate approved means of access regardless of whether they are equipped with fire sprinkler systems. (IFC D106)

7) **AERIAL FIRE APPARATUS ACCESS:** Buildings or portions of buildings or facilities exceeding 30 feet in height above the lowest level of fire department vehicle access shall be provided with approved fire apparatus access roads capable of accommodating fire department aerial apparatus. Overhead utility and power lines shall not be located within the aerial fire apparatus access roadway. Fire apparatus access roads shall have a minimum unobstructed width of 26 feet in the immediate vicinity of any building or portion of building more than 30 feet in height. At least one of the required access routes meeting this condition shall be located within a minimum of 15 feet and a maximum of 30 feet from the building, and shall be positioned parallel to one entire side of the building. (IFC D105)

8) **REMOTENESS:** Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses. (IFC D104.3)

9) **FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE:** Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (12 feet for up to two dwelling units and accessory buildings), and an unobstructed vertical clearance of not less than 13 feet 6 inches. Where fire apparatus roadways are less than 26 feet wide, "NO PARKING" signs shall be installed on both sides of the roadway and in turnarounds as needed. Where fire apparatus roadways are more than 28 feet wide but less than 32 feet wide, "NO PARKING" signs shall be installed on one side of the roadway and in turnarounds as needed. Where fire apparatus roadways are 32 feet wide or more, parking is not restricted. (IFC 503.2.1) ***The Fire District does not endorse the design concept wherein twenty feet of unobstructed roadway width is not provided.***

10) **FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS:** Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet. (IFC D103.1)

11) **TURNOUTS:** When any fire apparatus access road exceeds 400 feet in length, turnouts 10 feet wide and 30 feet long shall be provided in addition to the required road width and shall be placed no more than 400 feet apart, unless otherwise approved by the fire code official. These distances may be adjusted based on visibility and light distances. (IFC 503.2.2)

12) **NO PARKING SIGNS:** Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, "No Parking" signs shall be installed on one or both sides of the roadway and in turnarounds as needed. Roads 26 feet wide or less shall be posted on both sides as a fire lane. Roads more than 26 feet wide to 32 feet wide shall be posted on one side as a fire lane. Signs shall read "NO PARKING - FIRE LANE" and shall be installed with a clear space above grade level of 7 feet. Signs shall be 12 inches wide by 18 inches high and shall have red letters on a white reflective background. (IFC D103.6)

13) **SURFACE AND LOAD CAPACITIES:** Fire apparatus access roads shall be of an all-weather surface that is easily distinguishable from the surrounding area and is capable of supporting not less than 12,500 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). You may need to provide documentation from a registered engineer that the design will be capable of supporting such loading. (IFC D102.1)

14) **BRIDGES:** Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with AASHTO *Standard Specification for Highway Bridges.* Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the fire code official. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the fire code official. (IFC 503.2.6)

15) **TURNING RADIUS:** The inside turning radius and outside turning radius shall be not less than 28 feet and 48 feet respectively, measured from the same center point. (IFC 503.2.4 & D103.3)

16) **PAINTED CURBS:** Where required, fire apparatus access roadway curbs shall be painted red and marked "NO PARKING FIRE LANE" at approved intervals. Lettering shall have a stroke of not less than one inch wide by six inches high. Lettering shall be white on red background. (IFC 503.3)

17) **GRADE:** Fire apparatus access roadway grades shall not exceed 10 percent. Intersections and turnarounds shall be level (maximum 5%) with the exception of crowning for water run-off. When fire

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sprinklers are installed, a maximum grade of 15% may be allowed. The approval of fire sprinklers as an alternate shall be accomplished in accordance with the provisions of ORS 455.610(5). (IFC 503.2.7 & D103.2)

18) **GATES:** Gates securing fire apparatus roads shall comply with all of the following: (IFC D103.5)
Minimum unobstructed width shall be 16 feet, or two 10 foot sections with a center post or island.
Gates serving one- or two-family dwellings shall be a minimum of 12 feet in width.
Gates shall be set back at minimum of 30 feet from the intersecting roadway.
Gates shall be of the swinging or sliding type
Manual operation shall be capable by one person
Electric gates shall be equipped with a means for operation by fire department personnel
Locking devices shall be approved.

19) **COMMERCIAL BUILDINGS - REQUIRED FIRE FLOW:** The required fire flow for the building shall not exceed 3,000 gallons per minute (GPM) or the available GPM in the water delivery system at 20 psi, whichever is less as calculated using IFC, Appendix B. A worksheet for calculating the required fire flow is available from the Fire Marshal's Office. (IFC B105.2) ***Please provide a current fire flow test of the nearest fire hydrant demonstrating available fire flow at 20 psi residual pressure, as well as fire flow calculation worksheets. Fire Flow calculation worksheets and instructions are available on our website: www.tvfr.com.***

20) **SINGLE FAMILY DWELLINGS - REQUIRED FIRE FLOW:** The minimum available fire flow for single family dwellings and duplexes served by a municipal water supply shall be 1,000 gallons per minute. If the structure(s) is (are) 3,600 square feet or larger, the required fire flow shall be determined according to IFC Appendix B. (IFC B105.1) ***Prior to issuance of a building permit, provide evidence of a current fire flow test of the nearest fire hydrant demonstrating available flow at 20 psi residual pressure.***

21) **RURAL BUILDINGS - REQUIRED FIRE FLOW:** Required fire flow for rural and suburban areas in which adequate and reliable water supply systems do not exist may be calculated in accordance with National Fire Protection Association Standard 1142, 2001 Edition, when approved by the fire code official. Please contact the Fire Marshal's Office for special assistance and other requirements that may apply. (IFC B105.1.1)

22) **FIRE HYDRANTS – COMMERCIAL BUILDINGS:** Where a portion of the building is more than 400 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the building, on-site fire hydrants and mains shall be provided. This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system. (IFC 508.5.1)

23) **FIRE HYDRANTS – ONE- AND TWO-FAMILY DWELLINGS & ACCESSORY STRUCTURES:** Where a portion of a structure is more than 600 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the structure(s), on-site fire hydrants and mains shall be provided. (IFC 508.5.1)

24) **FIRE HYDRANT NUMBER AND DISTRIBUTION:** The minimum number and distribution of fire hydrants available to a building shall not be less than that listed in Appendix C, Table C 105.1.

Considerations for placing fire hydrants may be as follows:

- Existing hydrants in the area may be used to meet the required number of hydrants as approved. Hydrants that are up to 600 feet away from the nearest point of a subject building that is protected with fire sprinklers may contribute to the required number of hydrants.
- Hydrants that are separated from the subject building by railroad tracks shall not contribute to the required number of hydrants unless approved by the fire code official.
- Hydrants that are separated from the subject building by divided highways or freeways shall not contribute to the required number of hydrants. Heavily traveled collector streets only as approved by the fire code official.
- Hydrants that are accessible only by a bridge shall be acceptable to contribute to the required number of hydrants only if approved by the fire code official.

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25) **FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD:** Fire hydrants shall be located not more than 15 feet from an approved fire apparatus access roadway. (IFC C102.1)

26) **REFLECTIVE HYDRANT MARKERS:** Fire hydrant locations shall be identified by the installation of reflective markers. The markers shall be blue. They shall be located adjacent and to the side of the centerline of the access road way that the fire hydrant is located on. In case that there is no center line, then assume a centerline, and place the reflectors accordingly. (IFC 508.5.4)

27) **FIRE HYDRANT/FIRE DEPARTMENT CONNECTION:** A fire hydrant shall be located within 100 feet of a fire department connection (FDC). Fire hydrants and FDC's shall be located on the same side of the fire apparatus access roadway. FDCs shall normally be remote except when approved by the fire code official. (IFC 912.2)

28) **ACCESS AND FIRE FIGHTING WATER SUPPLY DURING CONSTRUCTION:** Approved fire apparatus access roadways and fire fighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. (IFC 1410.1 & 1412.1)

29) **KNOX BOX:** A Knox Box for building access is required for this building. For gates securing an emergency access road a Knox box or Knox padlock will be required; a Knox switch will be required for electrically operated gates. Please contact the Fire Marshal's Office for an order form and instructions regarding installation and placement. (IFC 506)

30) **HIGH-PILED COMBUSTIBLE STORAGE:** Storage greater than 6' or 12' in height, depending on the commodity stored, must meet the requirements of 2007 Oregon Fire Code, Chapter 23. The requirements for High-Piled stock may include, but are not limited to: increased sprinkler density and/or rack sprinklers, fire detection system, additional building access, draft curtains, and, smoke and heat vents.

31) Complete the Building Survey Form prior to the issuance of the Building Permit: http://www.tvfr.com/Dept/fm/brochures/document_files/building_survey_form_ifc.pdf

32) Resubmit plans for final approval.

If you have questions or need clarification, please call me at (503) 612-7012.

Sincerely,

Karen Mohling

Karen Mohling
Deputy Fire Marshal

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TUALATIN VALLEY FIRE & RESCUE - SOUTH DIVISION
COMMUNITY SERVICES • OPERATIONS • FIRE PREVENTION

February 4, 2009

Peter Spir
Associate Planner
City of West Linn
22500 Salamo Road
West Linn, OR 97068

Re: PA 08-02 Rosemont Middle School - Site Improvements

Dear Mr. Spir;

Thank you for the opportunity to review the proposed site plan surrounding the above named development project. I am unable to attend the February 5th Pre-Application meeting so I am submitting comments for this project. It is recommended that the bus route is constructed to allow and provide emergency access by fire apparatus to the north side of the campus. Please invite the applicant to contact me for a meeting, or, with any questions. Tualatin Valley Fire & Rescue endorses this proposal predicated on the following criteria and conditions of approval:

1) **FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDING AND TURNAROUNDS:** Access roads shall be within 150 feet of all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building. An approved turnaround is required if the remaining distance to an approved intersecting roadway, as measured along the fire apparatus access road, is greater than 150 feet. (IFC 503.1.1)

2) **DEAD END ROADS:** Dead end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround. (IFC 503.2.5)

3) **FIRE APPARATUS ACCESS ROAD EXCEPTION FOR AUTOMATIC SPRINKLER PROTECTION:** When buildings are completely protected with an approved automatic fire sprinkler system, the requirements for fire apparatus access may be modified as approved by the fire code official. (IFC 503.1.1)

4) **ADDITIONAL ACCESS ROADS – COMMERCIAL:** Where buildings exceed 30 feet in height or three stories in height shall have at least three separate means of fire apparatus access. Buildings or facilities having a gross area of more than 62,000 square feet shall be provided with at least two separate means of fire apparatus access. Buildings up to 124,000 square feet provided with fire sprinklers may have a single access. (IFC D104)

5) **AERIAL FIRE APPARATUS ACCESS:** Buildings or portions of buildings or facilities exceeding 30 feet in height above the lowest level of fire department vehicle access shall be provided with approved fire apparatus access roads capable of accommodating fire department aerial apparatus. Overhead utility and power lines shall not be located within the aerial fire apparatus access roadway. Fire apparatus access roads shall have a minimum unobstructed width of 26 feet in the immediate vicinity of any building or portion of building more than 30 feet in height. At least one of the required access routes meeting this condition shall be located within a minimum of 15 feet and a maximum of 30 feet from the building, and shall be positioned parallel to one entire side of the building. (IFC D105)

6) **REMOTENESS:** Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses. (IFC D104.3)

7) **FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE:** Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (12 feet for up to two dwelling units and accessory buildings), and an unobstructed vertical clearance of not less than 13 feet 6 inches. Where fire apparatus roadways are less than 26 feet wide, "NO PARKING" signs shall be installed on both sides of the roadway and in turnarounds as needed. Where fire apparatus roadways are more than 28 feet wide but less than 32 feet wide, "NO PARKING" signs shall be installed on one side of the roadway and in turnarounds as needed. Where fire apparatus roadways are 32 feet wide or more, parking is not restricted. (IFC 503.2.1) ***The Fire District does not endorse the design concept wherein twenty feet of unobstructed roadway width is not provided.***

8) **FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS:** Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet. (IFC D103.1)

9) **TURNOUTS:** When any fire apparatus access road exceeds 400 feet in length, turnouts 10 feet wide and 30 feet long shall be provided in addition to the required road width and shall be placed no more than 400 feet apart, unless otherwise approved by the fire code official. These distances may be adjusted based on visibility and light distances. (IFC 503.2.2)

10) **NO PARKING SIGNS:** Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, "No Parking" signs shall be installed on one or both sides of the roadway and in turnarounds as needed. Roads 26 feet wide or less shall be posted on both sides as a fire lane. Roads more than 26 feet wide to 32 feet wide shall be posted on one side as a fire lane. Signs shall read "NO PARKING - FIRE LANE" and shall be installed with a clear space above grade level of 7 feet. Signs shall be 12 inches wide by 18 inches high and shall have red letters on a white reflective background. (IFC D103.6)

11) **SURFACE AND LOAD CAPACITIES:** Fire apparatus access roads shall be of an all-weather surface that is easily distinguishable from the surrounding area and is capable of supporting not less than 12,500 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). You may need to provide documentation from a registered engineer that the design will be capable of supporting such loading. (IFC D102.1)

12) **TURNING RADIUS:** The inside turning radius and outside turning radius shall be not less than 28 feet and 48 feet respectively, measured from the same center point. (IFC 503.2.4 & D103.3)

13) **PAINTED CURBS:** Where required, fire apparatus access roadway curbs shall be painted red and marked "NO PARKING FIRE LANE" at approved intervals. Lettering shall have a stroke of not less than one inch wide by six inches high. Lettering shall be white on red background. (IFC 503.3)

14) **GATES:** Gates securing fire apparatus roads shall comply with all of the following: (IFC D103.5)
    Minimum unobstructed width shall be 16 feet, or two 10 foot sections with a center post or island.
    Gates shall be set back at minimum of 30 feet from the intersecting roadway.
    Gates shall be of the swinging or sliding type
    Manual operation shall be capable by one person
    Electric gates shall be equipped with a means for operation by fire department personnel
    Locking devices shall be approved.

15) **COMMERCIAL BUILDINGS - REQUIRED FIRE FLOW:** The required fire flow for the building shall not exceed 3,000 gallons per minute (GPM) or the available GPM in the water delivery system at 20 psi, whichever is less as calculated using IFC, Appendix B. A worksheet for calculating the required fire flow is available from the Fire Marshal's Office. (IFC B105.2) ***Please provide a current fire flow test of the nearest fire hydrant demonstrating available fire flow at 20 psi residual pressure, as well as fire flow calculation worksheets. Fire Flow calculation worksheets and instructions are available on our website: www.tvfr.com.***

16) **FIRE HYDRANTS – COMMERCIAL BUILDINGS:** Where a portion of the building is more than 400 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the building, on-site fire hydrants and mains shall be provided. This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system. (IFC 508.5.1)

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17) **FIRE HYDRANT NUMBER AND DISTRIBUTION:** The minimum number and distribution of fire hydrants available to a building shall not be less than that listed in Appendix C, Table C 105.1.

Considerations for placing fire hydrants may be as follows:

- Existing hydrants in the area may be used to meet the required number of hydrants as approved. Hydrants that are up to 600 feet away from the nearest point of a subject building that is protected with fire sprinklers may contribute to the required number of hydrants.
- Hydrants that are separated from the subject building by railroad tracks shall not contribute to the required number of hydrants unless approved by the fire code official.
- Hydrants that are separated from the subject building by divided highways or freeways shall not contribute to the required number of hydrants. Heavily traveled collector streets only as approved by the fire code official.
- Hydrants that are accessible only by a bridge shall be acceptable to contribute to the required number of hydrants only if approved by the fire code official.

18) **FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD:** Fire hydrants shall be located not more than 15 feet from an approved fire apparatus access roadway. (IFC C102.1)

19) **REFLECTIVE HYDRANT MARKERS:** Fire hydrant locations shall be identified by the installation of reflective markers. The markers shall be blue. They shall be located adjacent and to the side of the centerline of the access road way that the fire hydrant is located on. In case that there is no center line, then assume a centerline, and place the reflectors accordingly. (IFC 508.5.4)

20) **FIRE HYDRANT/FIRE DEPARTMENT CONNECTION:** A fire hydrant shall be located within 100 feet of a fire department connection (FDC). Fire hydrants and FDC's shall be located on the same side of the fire apparatus access roadway. FDCs shall normally be remote except when approved by the fire code official. (IFC 912.2)

21) **ACCESS AND FIRE FIGHTING WATER SUPPLY DURING CONSTRUCTION:** Approved fire apparatus access roadways and fire fighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. (IFC 1410.1 & 1412.1)

22) **KNOX BOX:** A Knox Box for building access is required for this building. For gates securing an emergency access road a Knox box or Knox padlock will be required; a Knox switch will be required for electrically operated gates. Please contact the Fire Marshal's Office for an order form and instructions regarding installation and placement. (IFC 506)

23) Complete the Building Survey Form prior to the issuance of the Building Permit: http://www.tvfr.com/Dept/fm/brochures/document_files/building_survey_form_ifc.pdf

24) Resubmit plans for final approval.

If you have questions or need clarification, please call me at (503) 612-7012.

Sincerely,

Karen Mohling

Karen Mohling
Deputy Fire Marshal

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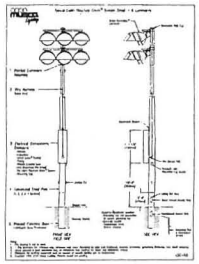
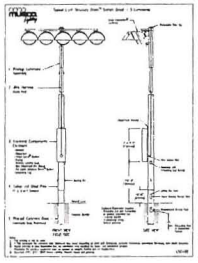
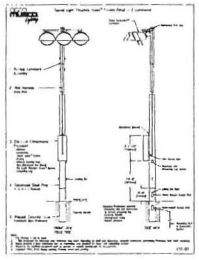
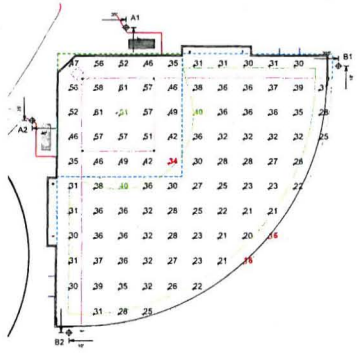
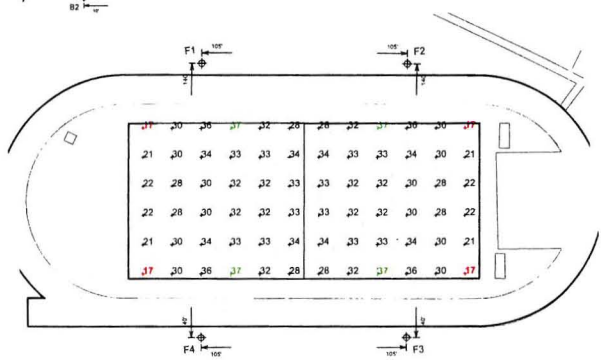
EXHIBIT F
Exterior Lighting Plans

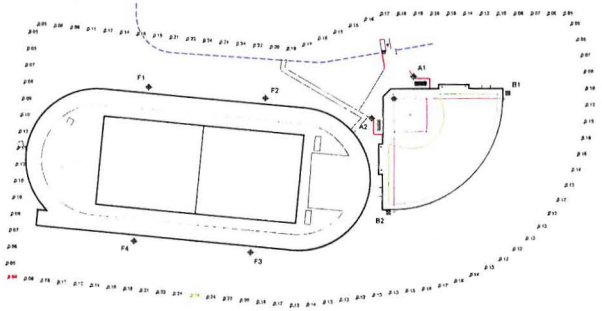










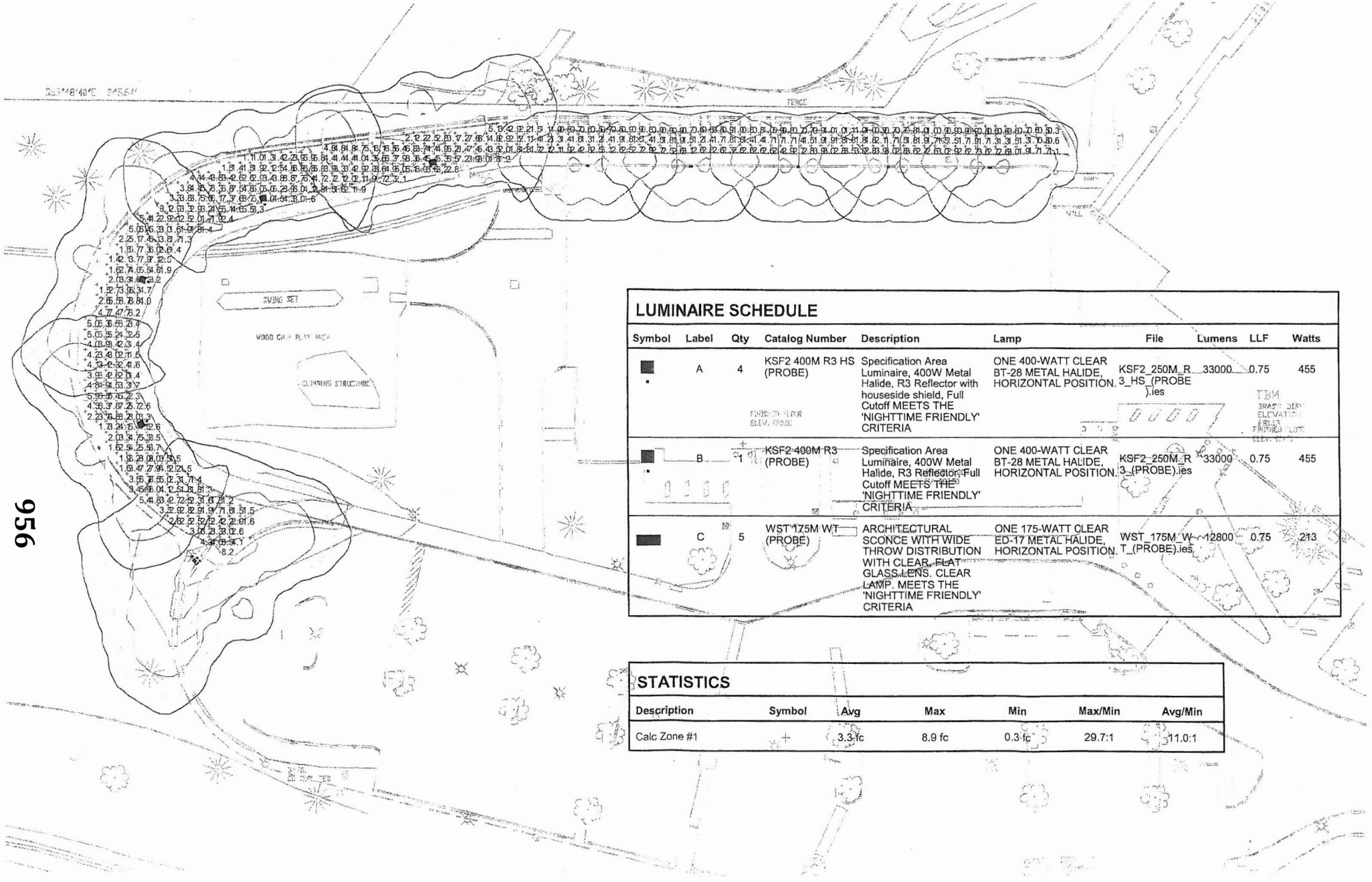


Rosemont Ridge Neighborhood Meeting

WEST LINN- WILSONVILLE SCHOOL DISTRICT

WALKER·MACY Landscape Architecture Urban Design Planning

DULL OLSON WEEKES architects



LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
■	A	4	KSF2 400M R3 HS (PROBE)	Specification Area Luminaire, 400W Metal Halide, R3 Reflector with houseside shield, Full Cutoff MEETS THE 'NIGHTTIME FRIENDLY' CRITERIA	ONE 400-WATT CLEAR BT-28 METAL HALIDE, HORIZONTAL POSITION.	KSF2_250M_R3_HS_(PROBE).ies	33000	0.75	455
■	B	1	KSF2 400M R3 (PROBE)	Specification Area Luminaire, 400W Metal Halide, R3 Reflector, Full Cutoff MEETS THE 'NIGHTTIME FRIENDLY' CRITERIA	ONE 400-WATT CLEAR BT-28 METAL HALIDE, HORIZONTAL POSITION.	KSF2_250M_R3_(PROBE).ies	33000	0.75	455
■	C	5	WST 175M WT (PROBE)	ARCHITECTURAL SCONCE WITH WIDE THROW DISTRIBUTION WITH CLEAR, FLAT GLASS LENS. CLEAR LAMP. MEETS THE 'NIGHTTIME FRIENDLY' CRITERIA	ONE 175-WATT CLEAR ED-17 METAL HALIDE, HORIZONTAL POSITION.	WST_175M_WT_(PROBE).ies	12800	0.75	213

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	3.3 fc	8.9 fc	0.3 fc	29.7:1	11.0:1

DEVELOPMENT REVIEW APPLICATION

TYPE OF REVIEW (Please check all boxes that apply):

[ ]	Annexation	[ ]	Non-Conforming Lots, Uses & Structures
[ ]	Appeal and Review *	[ ]	One-Year Extension *
[X]	Conditional Use	[ ]	Planned Unit Development
[X]	Design Review	[ ]	Pre-Application Meeting *
[ ]	Easement Vacation	[ ]	Quasi-Judicial Plan or Zone Change
[ ]	Extraterritorial Ext. of Utilities	[ ]	Street Vacation
[ ]	Final Plat or Plan	[ ]	Subdivision
[ ]	Flood Plain Construction	[ ]	Temporary Uses *
[ ]	Hillside Protection and Erosion Control	[ ]	Tualatin River Greenway
[ ]	Historic District Review	[X]	Variance (4)
[ ]	Legislative Plan or Change	[X]	Water Resource Area Protection/Wetland
[ ]	Lot Line Adjustment * /**	[ ]	Willamette River Greenway
[ ]	Minor Partition (Preliminary Plat or Plan)	[ ]	Other/Misc

Home Occupation, Pre-Application, Sidewalk Use Application *, Permanent Sign Review *, Temporary Sign Application require different application forms available in the forms and application section of the City Website or at City Hall.

TOTAL FEES/DEPOSIT _____

WEST LINN-WILS. SCHOOL DIST.	PO BOX 35	WEST LINN	OR	97062	503-673-7976
OWNER (PRINT)	ADDRESS	CITY		ZIP	PHONE & /OR E-MAIL

TIM WOODLEY	SAME AS ABOVE			
APPLICANT(PRINT)	ADDRESS	CITY	ZIP	PHONE &/OR E-MAIL

KEITH LIDEN	PARSONS BRINKERHOFF	400 SW 6TH #802	PORTLAND	97204	503-478-2348
CONSULTANT(PRINT)	ADDRESS	CITY		ZIP	PHONE &/OR E-MAIL

SITE LOCATION/ADDRESS ROSEMONT ROAD

Assessor's Map No.: 2S1E 23CD/S2 2S1E 26AL TL 5500 **Tax Lot(s):** 12500, 12700 & 12800 **Total Land Area:** 15.98 AC

1. All application fees are non-refundable (excluding deposit).
2. The owner/applicant or their representative should be present at all public hearings.
3. A denial or approval may be reversed on appeal. No permit will be in effect until the appeal period has expired.
4. Four (4) complete hard-copy sets (single sided) of application materials must be submitted with this application. One (1) complete set of digital application materials must also be submitted on CD in PDF format.

* No CD required / ** Only one copy needed

X Tim K. Woodley, Director of Operations, WLWV 6-18-10

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application.

SIGNATURE OF PROPERTY OWNER(S)

X Janet M. Gelling, Treasurer HSKLA **Date** 6-17-10

SIGNATURE OF APPLICANT(S)

X Keith A. Liden **Date** 5.7.10

ACCEPTANCE OF THIS APPLICATION DOES NOT INFER A COMPLETE SUBMITTAL. THE APPLICANT WAIVES THE RIGHT TO THE PROVISIONS OF ORS 94.020. ALL AMENDMENTS TO THE COMMUNITY DEVELOPMENT CODE AND TO OTHER REGULATIONS ADOPTED AFTER THE APPLICATION IS APPROVED SHALL BE ENFORCED WHERE APPLICABLE. APPROVED APPLICATIONS AND SUBSEQUENT DEVELOPMENT IS NOT VESTED UNDER THE PROVISIONS IN PLACE AT THE TIME OF INTIAL APPLICATION.

CONTACT: PLANNING AND BUILDING; 22500 SALAMO RD #1000; WEST LINN, OR 97068; PHONE: 656-4211 FAX: 656-4106
PLANNING@WESTLINNOREGON.GOV