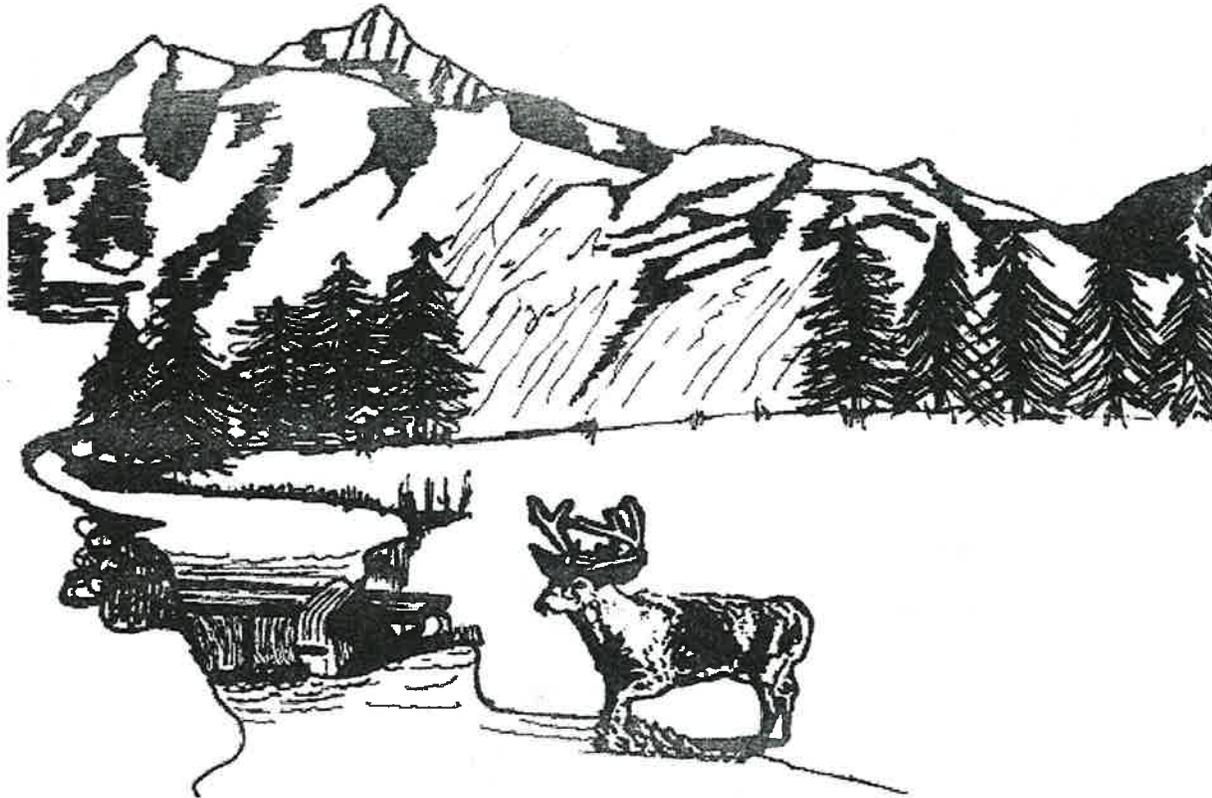

Drainage Report For:

2-Lot Short Plat

Gary Peterson & Dave Molstad – File Number: Z-04-005-SP

March 23, 2004



RECEIVED
MAR 26 2004
Utilities Div.

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MAR 23 2004
CITY OF ARLINGTON



EXPIRES: 01/01/06

Prepared by:
Cascade Surveying & Eng., Inc

Job #15477

Project Summary

Erosion Control Risk Assessment

Upstream & Downstream Analysis

Stream Bank Erosion Control & Water Quality BMP's

Appendix

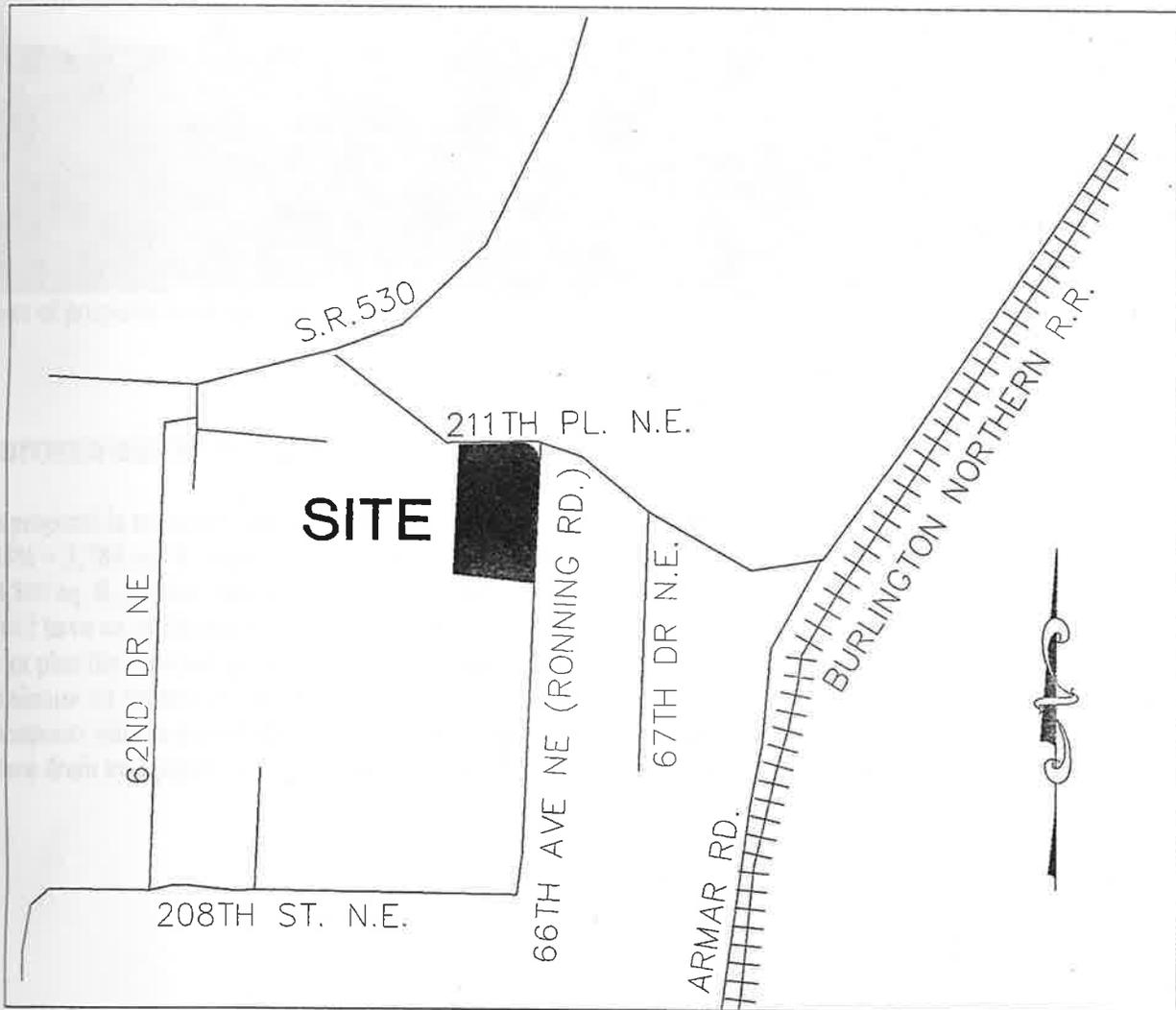
Basin & Soil Log Map
Infiltration Trench Detail
Drainage Calculations
Maintenance Requirements

PROJECT SUMMARY

PROPERTY DESCRIPTION

The site of proposed development is located in the NE ¼ of the SE ¼ of Section 10, Township 31 N, Range 5E, W.M. The properties tax number is 310510-004-019-00. The property is 0.50 acres in size (See Vicinity Map below).

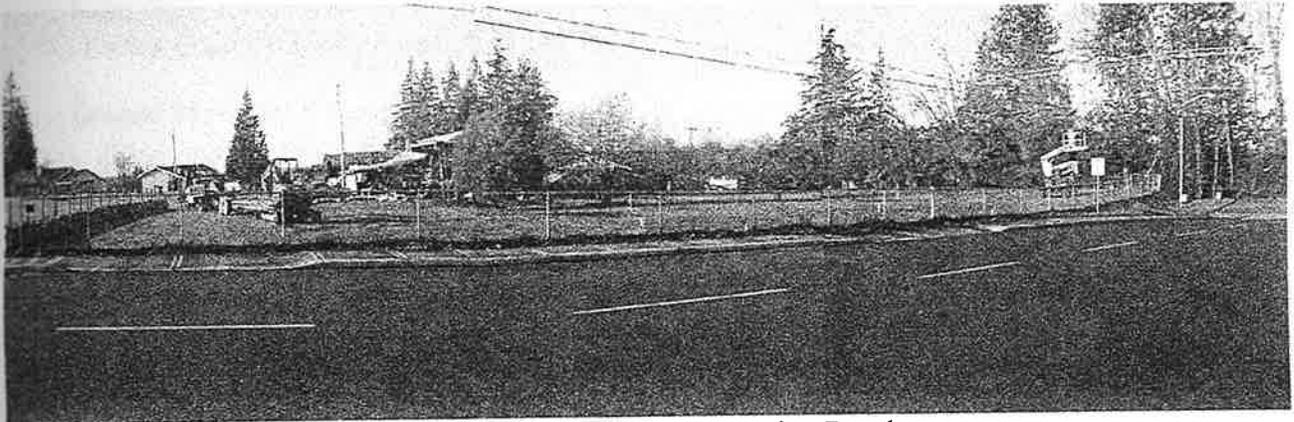
Figure 1: Vicinity Map



NOT TO SCALE

EXISTING CONDITIONS

The property consists of lawn, with 4 fruit trees and two ornamental trees. The property is bounded on the North and East by public right of way (211th Pl NE and Ronning Road). The property is flat (0.5% to 1% slopes) with very deep gravels and sands (Everett gravelly sandy loam). Rain water infiltrates directly into the ground with no significant lateral movement. Currently there are no impervious areas on the site.



Views of property looking West to Northwest from across Ronning Road.

PROPOSED DEVELOPMENT

The proposal is to subdivide the property into two 10,810 sq. ft. lots. Each lot will have a duplex (10,810 X 35% = 3,784 sq. ft. maximum building impervious), a driveway and parking area for a maximum total of 4,500 sq. ft. per lot. Water Quality and Water Quantity control will be provided by infiltration. Each lot will have an infiltration trench sized to support runoff generated by the maximum impervious area per lot plus the remaining pervious areas. Due to the sandy soil conditions, each trench will be lined with a minimum 18 inches of loamy sand for storm water treatment during the infiltration process. Roof downspouts will be piped directly to the infiltration trenches. All driving surfaces will be graded to a surface drain and piped to the infiltration trenches. See Infiltration Trench Detail, Figure 2, Page 9.

RISK ASSESSMENT ANALYSIS AND EROSION CONTROL

Slope: Site slopes are 0-1%, risk is low.

Critical Areas: Steep slopes located along north property line and extending around northeast corner.

Soils: Soils consist of:
Everett Gravelly Sandy Loam, 0 to 1%

Ground Movement Potential: None

Source of Water Erosion: Rainfall.

1.

Measures Proposed to Prevent/Minimize Erosion:

1.

During Construction: Temporary construction BMP's (see T.E.S.C. plan)

After Construction: Seeding and planting of exposed soils

Nearest Downstream body of water other than road ditches: Marsh Creek (1/4 mile)?

Nearest fish bearing water: Stillaguamish River

Conclusion: Potential for significant erosion/siltation impact onsite is **LOW**.
Because of the following reasons:

1. Site slopes are nearly flat in the area of proposed development.
2. Soil permeability is good.
3. Available water capacity of the soil is good.

UPSTREAM & DOWNSTREAM ANALYSIS

UPSTREAM ANALYSIS

The Everett gravelly sandy loam soils group is good for building sites. The site is relatively flat with about a 1% slope. The contours of the adjacent properties are parallel to the site and do not allow any upstream water to run onto the property in a concentrated flow. All onsite water is from rainfall.

DOWNSTREAM ANALYSIS

Since infiltration is being proposed for this site, there is no downstream receiving water. Therefore, a downstream analysis is not necessary.

In the event of trench failure, stormwater will back up in the trench, into the catch basin and out the top. The stormwater will then infiltrate into the ground through the native Everett gravelly sandy loam.

STREAMBANK EROSION CONTROL & WATER QUALITY BEST MANAGEMENT PLANS

STREAMBANK EROSION CONTROL AND WATER QUALITY BMP'S

The streambank erosion control and water quality BMP proposed for this site is water quality infiltration trench. Each lot will have its own infiltration trench and will be analyzed separately. The upper bench of the infiltration trench will be a trapezoid with 1 to 1 side slopes and will be 4 x 77-ft. x 1.5-ft deep. The lower water quality portion of the infiltration trench will be a trapezoid with 1 to 1 side slopes, will be 2 x 75-ft. x 1-ft. deep and will be lined on the bottom and sides with a minimum of 18" of loamy sand. Both parts will be back filled with drain rock. 30% voids (31% with piping factored in) was assumed in order to develop a staged-storage volume relationship for the infiltration trench. The infiltration trench has been sized to retain the 100-yr storm runoff generated by the drainage basin. In modeling the storm drainage facility, an infiltration rate of 10.1 in/hr (half the D.O.E. rate for gravely medium sand, 20.0 in/hr) was used for the native soils and an infiltration rate of 1.205 in/hr (half the D.O.E. rate for loamy sand, 2.41 in/hr) was used for the lined portion of the bed.

DRAINAGE MODEL SUMMARY

The storm drainage modeling software used is StormSHED Rel. 6.1.6.8. The following table summarizes the results of the drainage model. Trench bottoms were modeled at an elevation of 92.50-ft.

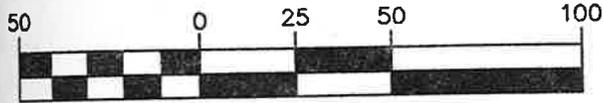
STORM EVENT	INFILTRATION TRENCH STORAGE	INFILTRATION TRENCH STAGE
	cf	ft
DEV. 6-mo.	56	93.31
DEV. 100-yr	243	94.84

Table 1: Calculations Summary.

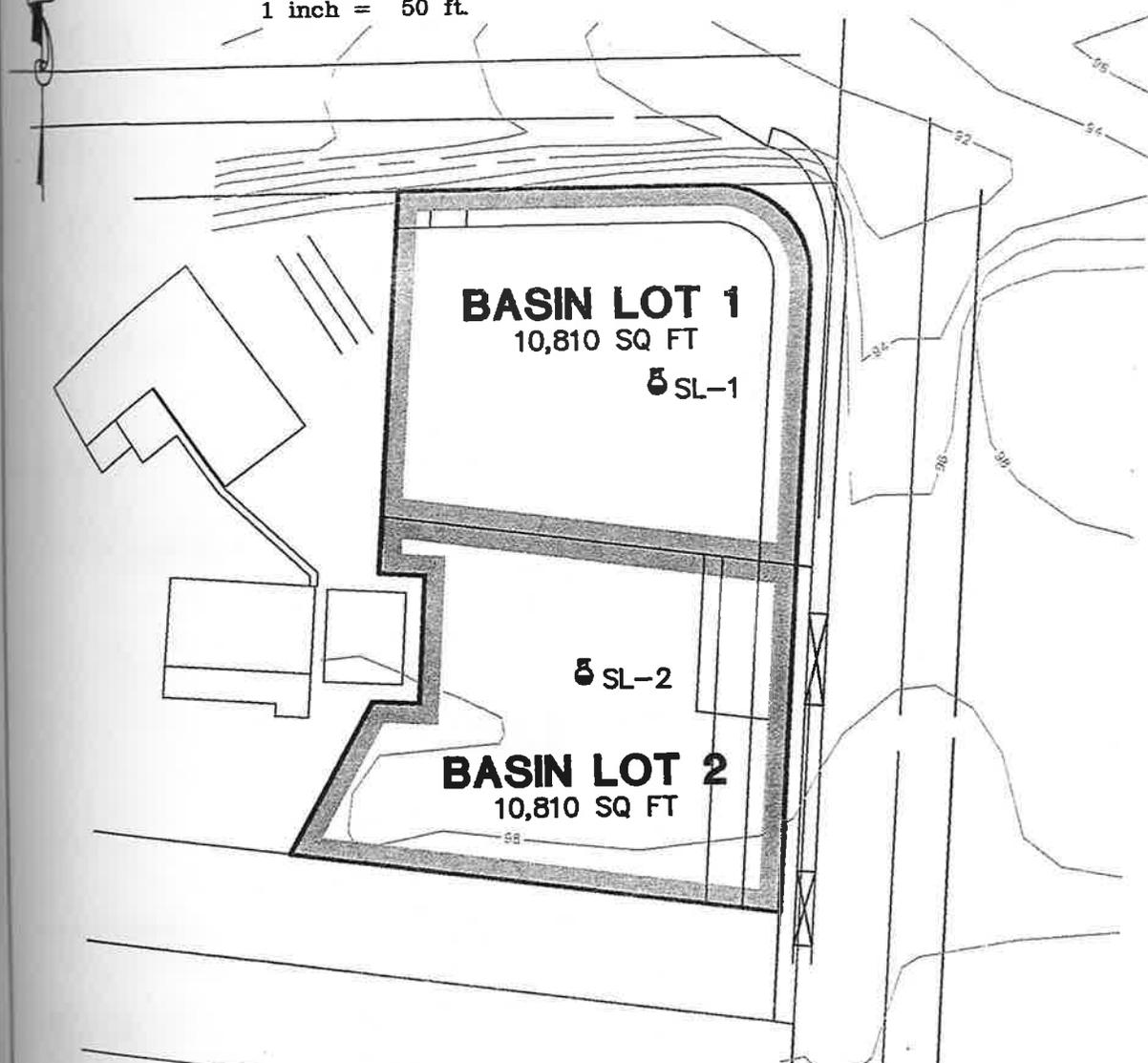
Refer to drainage model calculations (pp. 10-15) for more detail.

APPENDIX

GRAPHIC SCALE



1 inch = 50 ft.



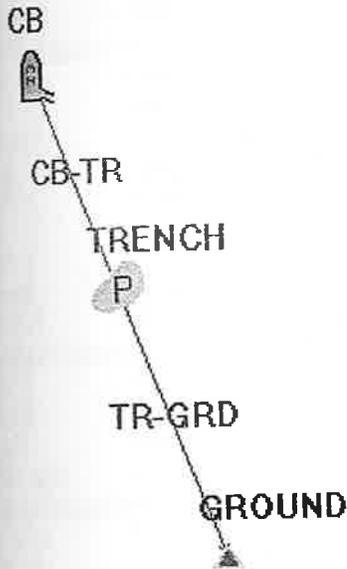
DRAINAGE BASIN & SOIL LOG MAP

LOT 1	SL-1	0-12" 12-42" 42-96+"	DARK BROWN SANDY LOAM TAN GRAVELY MEDIUM SAND GRAY GRAVELY MEDIUM SAND
LOT 2	SL-2	0-8" 8-24" 24-96+"	DARK BROWN SANDY LOAM TAN GRAVELY MEDIUM SAND GRAY GRAVELY MEDIUM SAND

NOTE:
THE SOIL LOG HOLES WERE DUG ON DECEMBER 17, 2003. NO SIGNS OF MOTTLING WAS OBSERVED IN EITHER HOLE. IT IS THE ENGINEERS OPINION THAT THE REQUIRED SEPERATION BETWEEN THE BOTTOM OF THE TRENCH AND THE HIGH GROUNDWATER CAN BE MET, EVEN DURING PERIODS OF HIGH GROUND WATER.

DRAINAGE CALCULATIONS

DRAINAGE MODEL REPORT



Project Precip

[6 mo]	1.15 in
[2 yr]	1.80 in
[10 yr]	2.75 in
[100 yr]	3.75 in
[0]	0.00 in
[0]	0.00 in

Reach Records

Reach ID: CB-TR

Section Properties:

Shape:	Circular	Routing Method:	Travel Time Translation		
Size	Material	Mannings n	Hyd params By		
6" Diam	Smooth CDEP	0.0120	Mannings Formula		
Length	Slope	Entrance Loss	Square Edge w/Headwall		
10.0000 ft	2.00 %				
Diam					
0.5000 ft					
Up Node	Dn Node	Up Invert	Dn Invert		
CB	TRENCH	93.2000 ft	93.0000 ft		
Conduit Constraints:					
Min Vel	Max Vel	Min Cov	Min Slope	Max Slope	Min drop
2.0000 ft	15.0000 ft	3.0000 ft	0.5000 ft	2.0000 ft	0.0000 ft
In/Exfil	Hold Up	Hold Dn	Match Inv	Allow Smaller	
0.0000 in/hr	NO	NO	YES	NO	

Conduit Summary:

Trib Area	Flow	Capacity	Velocity	Normal Depth
0.2482 ac	0.1220 cf	0.8620 cf	3.1048 ft/s	0.1271 ft
Ent Loss	Exit Loss	Frict Loss	Start TW	
0.002996 ft	0.005993 ft	0.004004 ft	94.8440 ft	

Reach ID: TR-GRD**Section Properties:**

Shape:	Circular	Routing Method:	Travel Time Translation
Size	Material	Mannings n	Hyd params By
48" Diam	Smooth CDEP	0.0120	Mannings Formula
Length	Slope	Entrance Loss	
0.0010 ft	100.00 %	Square Edge w/Headwall	

Diam			
4.0000 ft			
Up Node	Dn Node	Up Invert	Dn Invert
TRENCH	GROUND	92.5000 ft	92.4990 ft

Conduit Constraints:

Min Vel	Max Vel	Min Cov	Min Slope	Max Slope	Min drop
2.0000 ft	15.0000 ft	3.0000 ft	0.5000 ft	2.0000 ft	0.0000 ft
In/Exfil	Hold Up	Hold Dn	Match Inv	Allow Smaller	
0.0000 in/hr	NO	NO	YES	NO	

Conduit Summary:

Trib Area	Flow	Capacity	Velocity	Normal Depth
0.2482 ac	0.0608 cf	1560.3243 cf	7.2565 ft/s	0.0215 ft
Ent Loss	Exit Loss	Frict Loss	Start TW	
0.408828 ft	0.817657 ft	0.000000 ft	92.5693 ft	

Contributing Drainage Areas

Drainage Area: SITE

Hyd Method: SBUH Hyd

Peak Factor: 484.00

Storm Dur: 24.00 hrs

	Area	CN
--	------	----

Pervious	0.1449 ac	68.00
----------	-----------	-------

Impervious	0.1033 ac	98.00
------------	-----------	-------

Total	0.2482 ac	
-------	-----------	--

Loss Method: SCS CN Number

SCS Abs: 0.20

Intv: 10.00 min

TC

0.01 hrs

0.02 hrs

Supporting Data:

Pervious CN Data:

LANDSCAPE	68.00
-----------	-------

0.1449 ac

Impervious CN Data:

DUPLEX, DRIVE, PARKING, ECT.

98.00

0.1033 ac

Pervious TC Data:

Flow type:	Description:
Sheet	ACROSS LANDSCAPE

Length:	Slope:	Coeff:	Travel Time
1.00 ft	1.00%	0.1500	0.43 min

Impervious TC Data:

Flow type:	Description:
Sheet	IMPERVIOUS SURFACES

Length:	Slope:	Coeff:	Travel Time
50.00 ft	1.00%	0.0110	1.22 min

Ground Hydrographs

Hydrograph ID: **GROUND - 6 mo**

Area: 0.2482 ac Hyd Int: 10.00 min Base Flow:

Timing translation: 0.00 min

Peak Flow: 0.0077 cfs Peak Time: 9.00 hrs Hyd Vol: 0.0081 acft

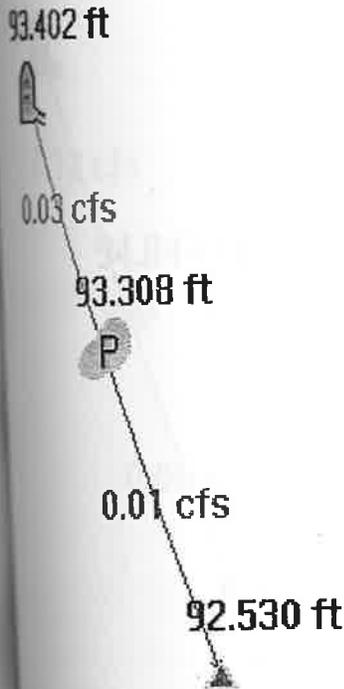
Flow cfs	Time hr	Flow cfs	Time hr	Flow cfs
0.0016	9.83	0.0075	17.17	0.0046
0.0000	10.00	0.0075	17.33	0.0045
0.0016	10.17	0.0075	17.50	0.0045
0.0015	10.33	0.0074	17.67	0.0044
0.0012	10.50	0.0073	17.83	0.0044
0.0016	10.67	0.0072	18.00	0.0044
0.0012	10.83	0.0071	18.17	0.0043
0.0016	11.00	0.0071	18.33	0.0043
0.0025	11.17	0.0070	18.50	0.0042
0.0015	11.33	0.0069	18.67	0.0033
0.0025	11.50	0.0068	18.83	0.0030
0.0016	11.67	0.0067	19.00	0.0033
0.0033	11.83	0.0067	19.17	0.0029
0.0024	12.00	0.0066	19.33	0.0030
0.0031	12.17	0.0065	19.50	0.0028
0.0030	12.33	0.0064	19.67	0.0030
0.0031	12.50	0.0063	19.83	0.0028
0.0033	12.67	0.0062	20.00	0.0031
0.0033	12.83	0.0062	20.17	0.0029
0.0042	13.00	0.0061	20.33	0.0031
0.0033	13.17	0.0060	20.50	0.0029
0.0042	13.33	0.0060	20.67	0.0031
0.0043	13.50	0.0059	20.83	0.0029
0.0043	13.67	0.0058	21.00	0.0031
0.0043	13.83	0.0058	21.17	0.0029
0.0043	14.00	0.0057	21.33	0.0031
0.0044	14.17	0.0056	21.50	0.0029
0.0045	14.33	0.0055	21.67	0.0032
0.0046	14.50	0.0055	21.83	0.0029
0.0046	14.67	0.0054	22.00	0.0032
0.0048	14.83	0.0054	22.17	0.0027
0.0049	15.00	0.0053	22.33	0.0029
0.0053	15.17	0.0052	22.50	0.0027
0.0060	15.33	0.0052	22.67	0.0029
0.0067	15.50	0.0051	22.83	0.0027
0.0071	15.67	0.0051	23.00	0.0029
0.0073	15.83	0.0050	23.17	0.0027
0.0075	16.00	0.0050	23.33	0.0030
0.0077	16.17	0.0049	23.50	0.0027
0.0077	16.33	0.0048	23.67	0.0030
0.0077	16.50	0.0048	23.83	0.0028
0.0077	16.67	0.0047	24.00	0.0030
0.0077	16.83	0.0047	24.17	0.0000
0.0077	17.00	0.0046	24.33	0.0000
0.0076	17.17	0.0046	24.50	0.0000

Graph ID: **GROUND - 100 yr**

0.2482 ac Hyd Int: 10.00 min Base Flow:
 translation: 0.00 min
 0.0608 cfs Peak Time: 8.17 hrs Hyd Vol: 0.0411 acft
 Flow Time Flow Time Flow
 cfs hr cfs hr cfs

0.0042	9.00	0.0545	16.67	0.0207
0.0042	9.17	0.0522	16.83	0.0207
0.0043	9.33	0.0492	17.00	0.0205
0.0043	9.50	0.0467	17.17	0.0205
0.0044	9.67	0.0445	17.33	0.0202
0.0045	9.83	0.0424	17.50	0.0201
0.0046	10.00	0.0407	17.67	0.0199
0.0048	10.17	0.0390	17.83	0.0198
0.0050	10.33	0.0372	18.00	0.0198
0.0051	10.50	0.0358	18.17	0.0195
0.0053	10.67	0.0345	18.33	0.0193
0.0055	10.83	0.0333	18.50	0.0190
0.0056	11.00	0.0320	18.67	0.0189
0.0058	11.17	0.0311	18.83	0.0187
0.0060	11.33	0.0302	19.00	0.0186
0.0062	11.50	0.0295	19.17	0.0183
0.0064	11.67	0.0289	19.33	0.0183
0.0066	11.83	0.0283	19.50	0.0180
0.0068	12.00	0.0277	19.67	0.0178
0.0070	12.17	0.0272	19.83	0.0175
0.0073	12.33	0.0266	20.00	0.0175
0.0075	12.50	0.0261	20.17	0.0173
0.0078	12.67	0.0257	20.33	0.0172
0.0081	12.83	0.0254	20.50	0.0172
0.0084	13.00	0.0249	20.67	0.0172
0.0092	13.17	0.0246	20.83	0.0172
0.0104	13.33	0.0243	21.00	0.0170
0.0116	13.50	0.0242	21.17	0.0170
0.0127	13.67	0.0239	21.33	0.0170
0.0136	13.83	0.0236	21.50	0.0170
0.0148	14.00	0.0234	21.67	0.0170
0.0158	14.17	0.0231	21.83	0.0170
0.0167	14.33	0.0230	22.00	0.0170
0.0180	14.50	0.0230	22.17	0.0169
0.0193	14.67	0.0227	22.33	0.0167
0.0205	14.83	0.0225	22.50	0.0166
0.0220	15.00	0.0222	22.67	0.0164
0.0239	15.17	0.0220	22.83	0.0163
0.0258	15.33	0.0219	23.00	0.0163
0.0319	15.50	0.0217	23.17	0.0161
0.0436	15.67	0.0216	23.33	0.0161
0.0551	15.83	0.0214	23.50	0.0161
0.0608	16.00	0.0211	23.67	0.0160
0.0607	16.17	0.0210	23.83	0.0160
0.0599	16.33	0.0208	24.00	0.0160
0.0590	16.50	0.0208	24.17	0.0155
0.0564	16.67	0.0207	24.33	0.0130

6-MONTH CALCULATIONS

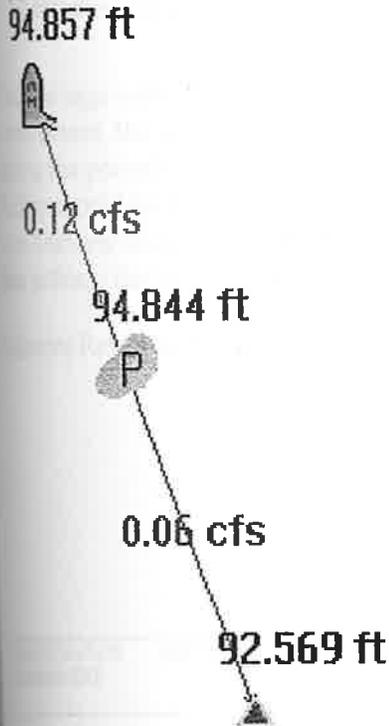


ROUTEHYD [] THRU [DEV] USING TYPE1A AND [6 mo] NOTZERO RELATIVE

Reach	Area ac	Flow cfs	Full Q cfs	% Full ratio	nDepth ft	Size ---	nVel ft/s	fVel ft/s	CBasin / Hyd -----
Routing thru RLPool Node CB; 6 mo event									
Line	Match Q: 0.0000 cfs Peak Out Q: 0.0281 cfs - Peak Stg: 93.29 ft - Active Vol: 0.57 cf								
REACH	0.2482	0.0281	0.8620	0.03	0.0620	6" Diam	2.0057	4.3900	SITE
Routing thru RLPool Node TRENCH; 6 mo event									
Line	Match Q: 0.0000 cfs Peak Out Q: 0.0077 cfs - Peak Stg: 93.31 ft - Active Vol: 55.63 cf								
REACH	0.2482	0.0077	1560.32	0.00	0.0078	48" Diam	4.2014	124.1667	

From Node	To Node	Rch Loss ft	App Head ft	Bend Loss ft	Junct Loss ft	HW Elev ft	Max EI/ Rim EI ft
	GROUND					92.5303	
TRENCH	GROUND	90.5355	--na--	--na--	--na--	93.3082	95.5000
	TRENCH	93.4021				93.4021	98.0000

100-YR CALCULATIONS



ROUTEHYD [] THRU [DEV] USING TYPE1A AND [100 yr] NOTZERO RELATIVE

Reach	Area ac	Flow cfs	Full Q cfs	% Full ratio	nDepth ft	Size —	nVel ft/s	fVel ft/s	CBasin / Hyd —
Routing thru RLPool Node CB; 100 yr event									
100 yr	Match Q: 0.0000 cfs Peak Out Q: 0.1220 cfs - Peak Stg: 93.28 ft - Active Vol: 0.50 cf								
CBTR	0.2482	0.1220	0.8620	0.14	0.1271	6" Diam	3.1048	4.3900	SITE
Routing thru RLPool Node TRENCH; 100 yr event									
100 yr	Match Q: 0.0000 cfs Peak Out Q: 0.0608 cfs - Peak Stg: 94.84 ft - Active Vol: 242.79 cf								
TRENCH	0.2482	0.0608	1560.32	0.00	0.0215	48" Diam	7.2565	124.1667	
From Node	To Node	Rch Loss ft	App Head ft	Bend Loss ft	Junct Loss ft	HW Elev ft	Max El/ Rim El ft		
TRENCH	GROUND	90.5938	-na-	-na-	-na-	92.5693	95.5000		
3	TRENCH	94.8569				94.8440	98.0000		

MAINTENANCE REQUIREMENTS

Infiltration Trench Inspection Schedule:

The drainage system should be monitored periodically. For the first year after completion of construction, the system should be monitored after every large storm event (> 1-in in 24-hrs), and, during the period Oct. 1- Mar. 31 inspections should be conducted monthly. From April 1-Sept. 30, the facility should be monitored on a quarterly basis. Once the performance characteristics of the facility have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicate that a more frequent schedule is required.

Sediment Removal:

Sediment buildup in the top foot of stone aggregate or the surface inlet should be monitored on the same schedule as the system. Sediment deposits shall not be allowed to build up to the point where it will reduce the rate of infiltration into the trench.

MAINTENANCE COMPONENT	DEFECT	CONDITIONS WHEN MAINTENANCE IS NEEDED	RESULTS EXPECTED WHEN MAINTENANCE IS PERFORMED
INFILTRATION TRENCH	SEDIMENT	A PERCOLATION TEST PIT OR TEST OF FACILITY INDICATES FACILITY IS ONLY WORKING AT 90% OF ITS DESIGNED CAPABILITIES. IF TWO INCHES OR MORE SEDIMENT IS PRESENT, REMOVE.	SEDIMENT IS REMOVED AND/OR FACILITY IS CLEANED SO THAT INFILTRATION SYSTEM WORKS ACCORDING TO DESIGN.
CATCH BASIN	COVER NOT IN PLACE	COVER IS MISSING OR ONLY PARTIALLY IN PLACE. ANY OPEN MANHOLE REQUIRED MAINTENANCE.	MANHOLE IS CLOSED.
	TRASH & DEBRIS (INCLUDES SEDIMENT)	TRASH OR DEBRIS OF MORE THAN 1/2 CUBIC FOOT WHICH IS LOCATED IMMEDIATELY IN FRONT OF THE CATCH BASIN OPENING OR IS BLOCKING CAPACITY OF BASIN BY MORE THAN 10%.	NO TRASH OR DEBRIS LOCATED IMMEDIATELY IN FRONT OF CATCH BASIN OPENING.
		TRASH OR DEBRIS (IN THE BASIN) THAT EXCEEDS 1/3 THE DEPTH FROM THE BOTTOM OF BASIN TO INVERT T OF THE LOWEST PIPE INTO OR OUT OF THE BASIN.	NO TRASH OR DEBRIS IN THE CATCH BASIN.
		TRASH OR DEBRIS IN ANY INLET OR OUTLET PIPE BLOCKING MORE THAN 1/3 OF ITS HEIGHT.	INLET AND OUTLET PIPES FREE OF TRASH OR DEBRIS.
		DEAD ANIMALS OR VEGETATION THAT COULD GENERATE ODORS THAT WOULD CAUSE COMPLAINTS OR DANGEROUS GASES (E.G., METHANE).	NO DEAD ANIMALS OR VEGETATION PRESENT WITHIN THE CATCH BASIN.
		DEPOSITS OF GARBAGE EXCEEDING 1 CUBIC	NO CONDITION

	FOOT IN VOLUME.	PRESENT WHICH WOULD ATTRACT OR SUPPORT THE BREEDING OF INSECTS OR RODENTS.
STRUCTURAL DAMAGE TO FRAME AND/OR TOP SLAB	CORNER OF FRAME EXTENDS MORE THAN 3/4 INCH PAST CURB FACE INTO THE STREET (IF APPLICABLE).	FRAME IS EVEN WITH CURB.
	TOP SLAB HAS HOLES LARGER THAN 2 SQUARE INCHES OR CRACKS WIDER THAN 1/4 INCH (INTENT IS TO MAKE SURE ALL MATERIAL IS RUNNING INTO THE BASIN).	TOP SLAB IS FREE OF HOLES AND CRACKS.
	FRAME NOT SITTING FLUSH ON TOP SLAB, I. E., SEPARATION OF MORE THAN 3/4 INCH OF THE FRAME FROM THE TOP SLAB.	FRAME IS SITTING FLUSH ON TOP SLAB.
CRACKS IN BASIN WALLS/BOTTOM	CRACKS WIDER THAN 1/2 INCH AND LONGER THAN 3 FEET, ANY EVIDENCE OF SOIL PARTICLES ENTERING CATCH BASIN THROUGH CRACKS, OR MAINTENANCE PERSON JUDGES THAT STRUCTURE IS UNSOUND.	BASIN REPLACED OR REPAIRED TO DESIGN STANDARDS.
	CRACKS WIDER THAN 1/2 INCH AND LONGER THAN 1 FOOT AT THE JOINT OF ANY INLET/OUTLET PIPE OR ANY EVIDENCE OF SOIL PARTICLES ENTERING CATCH BASIN THROUGH CRACKS.	NO CRACKS MORE THAN 1/4 INCH WIDE AT THE JOINT OF INLET/OUTLET PIPE.
SETTLEMENT/MISALIGNMENT	BASIN HAS SETTLED MORE THAN 1 INCH OR HAS ROTATED MORE THAN 2 INCHES OUT OF ALIGNMENT.	BASIN REPLACED OR REPAIRED TO DESIGN STANDARDS.
FIRE HAZARD	PRESENCE OF CHEMICALS SUCH AS NATURAL GAS, OIL, GASOLINE.	NO FLAMMABLE CHEMICALS PRESENT.
VEGETATION	VEGETATION GROWING ACROSS AND BLOCKING MORE THAN 10% OF THE BASIN OPENING.	NO VEGETATION BLOCKING OPENING TO BASIN.
	VEGETATION GROWING IN INLET/OUTLET PIPE JOINTS THAT IS MORE THAN SIX INCHES TALL AND LESS THAN SIX INCHES APART.	NO VEGETATION OR ROOT GROWTH PRESENT.
POLLUTION	NONFLAMMABLE CHEMICALS OF MORE THAN 1/2 CUBIC FOOT PER THREE FEET OF BASIN LENGTH.	NO POLLUTION PRESENT OTHER THAN SURFACE FILM.
CATCH BASIN COVER	COVER NOT IN PLACE	COVER IS MISSING OR ONLY PARTIALLY IN PLACE. ANY OPEN CATCH BASIN REQUIRED MAINTENANCE.
	LOCKING MECHANISM NOT WORKING	MECHANISM CANNOT BE OPENED BY ONE MAINTENANCE PERSON WITH PROPER TOOLS. BOLTS INTO FRAME HAVE LESS THAN 1/2 INCH OF THREAD.
	COVER DIFFICULT TO REMOVE	MECHANISM OPENS WITH PROPER TOOLS.
		COVER CAN BE REMOVED BY ONE MAINTENANCE PERSON.

MAINTENANCE.			
PIPES	SEDIMENT & DEBRIS	ACCUMULATED SEDIMENT THAT EXCEEDS 20% OF THE DIAMETER OF THE PIPE.	PIPE CLEANED OF ALL SEDIMENT AND DEBRIS.
	VEGETATION	VEGETATION THAT REDUCES FREE MOVEMENT OF WATER THROUGH PIPES.	ALL VEGETATION REMOVED SO WATER FLOWS FREELY THROUGH PIPES.
	DAMAGED	PROTECTIVE COATING IS DAMAGED; RUST IS CAUSING MORE THAN 50% DETERIORATION TO ANY PART OF PIPE.	PIPE REPAIRED OR REPLACED.
		ANY DENT THAT DECREASES THE CROSS SECTION AREA OF PIPE BY MORE THAN 20%.	PIPE REPAIRED OR REPLACED.
	TRASH & DEBRIS	TRASH AND DEBRIS EXCEEDS 1 CUBIC FOOT PER 1,000 SQUARE FEET OF DITCH AND SLOPES.	TRASH AND DEBRIS CLEARED FROM DITCHES.