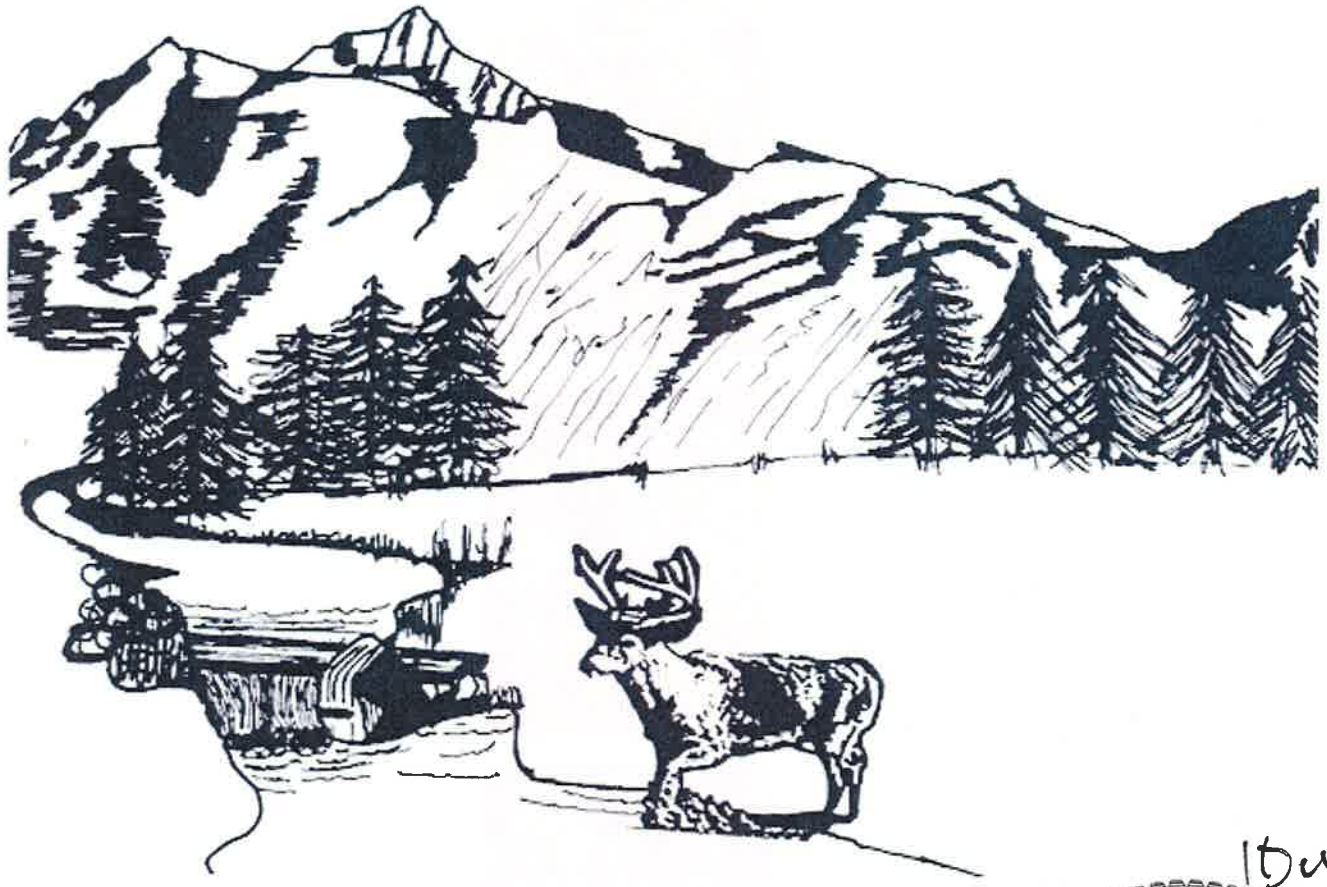
Conceptual Drainage Report for:

5-Lot Short Plat

Sapphire L.L.C. — File Number: Z-05-

November 15, 2005



12 Dec 05

EXPIRES: 01/01/06

Prepared by:

Cascade Surveying & Eng., Inc

Job #15677

NE and 188th St. NE. The project site is identified by tax account number 310521-002-003-00. (See Vicinity Map below).

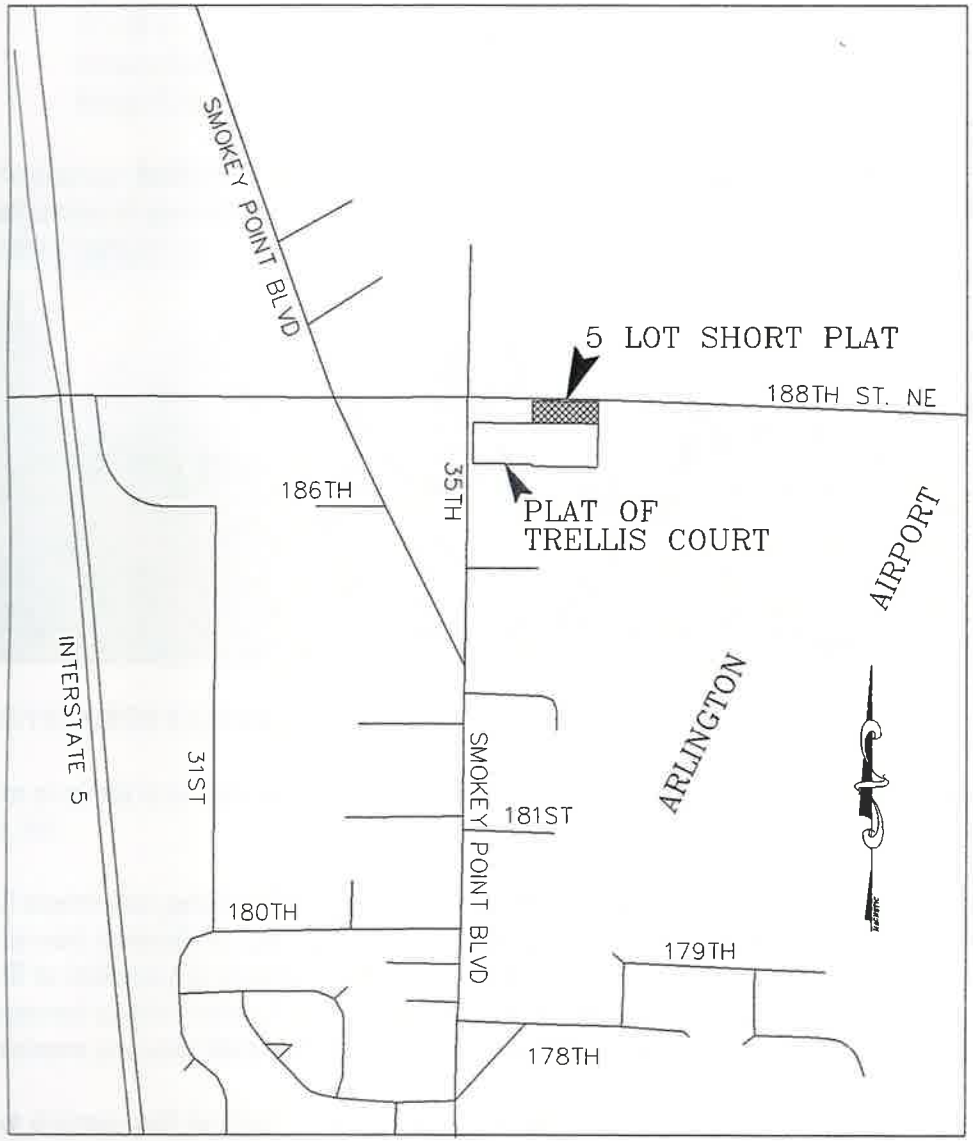


Figure 1: Vicinity Map. Not to scale.

EXISTING CONDITIONS

The subject property has a 2,244-sf house, 869-sf garage and a 148-sf shed, all of which will be removed. This parcel fronts, and will take access off of 188th St NE. The area of development is vegetated with lawn. Site topography is generally flat, slightly falling off to the north at a grade ranging from 0-1.50%. A soils investigation performed on September 12, 2003, for the plat of Trellis Court, revealed the upper soil layer to be loamy sand followed by a layer of medium sand. See Figure 2, page 11 for soil log location. See below for soil log specifics:

SL-3: 0'-2' Brown loamy sand
2'-10' Gray gravelly medium sand
10'-11' Gray gravelly fine sand
11'-18'+ Gray gravelly medium sand
Surface Elev. = 124.5'
Roots 12-ft, no hard pan or water found

No drainage facilities and or conveyance systems are located onsite. Site drainage consists of surface infiltration to groundwater.

DEVELOPED CONDITIONS

The proposal is to subdivide the parcel into 5-single family lots which will take their access off of 188th St. NE.

All stormwater generated along the public R/W frontage from the crown of the road to the back of the proposed sidewalk for the subject short plat and along the proposed Steve Younger Short Plat to the west will be infiltrated in trenches within the planting strip. Runoff will be collected by inlets along the proposed curb line then first directed to an infiltration trench lined with loamy sand for water quality treatment purposes followed by an unlined infiltration trench to be utilized by larger storm volumes.

Lot drainage will be dealt with separately from the road frontage. Each lot will have an infiltration system with both a water quality trench, lined with a minimum 18 inches of loamy sand, sized to handle a 6-month storm event and an unlined infiltration trench sized to handle a 100-year storm event. Each individual lot infiltration system is sized to handle the entire lot area. For design purposes, each lot is assumed to have a maximum of 35% site impervious.

Risk Assessment Analysis And Erosion Control

Slope: Site slopes are 0-1.5 %, risk is low

Critical Areas: None

Soils: Soils consist of loamy sands at the surface and medium sands below it.

Ground Movement Potential: none.

Source of Water Erosion: Rainfall.

Measures Proposed to Prevent/Minimize Erosion:

During Construction: Temporary construction BMP's (see T.E.S.C. construction plan)
After Construction: Seeding and planting of exposed soils

Nearest Downstream body of water other than road ditches: Portage Creek (½-mile)

Nearest fish bearing water: Portage Creek (1/2-mile)

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

1. Flat site with high infiltrating soils.

Erosion Sedimentation Control Notes

Although the risk of erosion is low, erosion control should be taken seriously. The following list is an example of typical erosion control notes.

(a) Erosion On-and Off-Site. During and after construction, all persons engaging in developing activities shall prevent or minimize erosion and sedimentation on-site and shall protect properties and water courses downstream from the site from erosion due to increases, in the volume, velocity and peak flow rate of storm water runoff from the site:

(b) Transport of Sediment onto Adjacent Properties. The applicant shall prevent the transport of sediment onto adjacent properties.

(c) Transport of Sediment onto Paved Surfaces. The applicant shall apply BMP's from the City of Arlington Construction Standards or as approved by the City, to prevent or minimize the transport of sediment onto paved surfaces during construction. If sediment is transported onto a paved surface the contractor is to clean the paved surface at the end of each day.

(d) Stabilizing Exposed soil. The applicant shall stabilize denuded areas and soil stockpiles as follows:

(i) From October 1 to April 30, no soil may remain exposed for more than 2 days. From May 1 to September 30, no soil may remain exposed for more than 7 days. On portions of the site where active grading is in progress, the City may extend the deadline for soil stabilization upon determining that the likelihood of erosion impacts is low. Reasons for this determination may include, but are not limited to the following, the type and amount of soil exposed, site topography, or the potential for discharge to critical areas and lakes. Upon finding a risk of erosion, the applicant shall immediately apply soil stabilization, regardless of any previously established deadline, and the City may require immediate stabilization at any time for this purpose. The applicant shall keep materials, equipment, and other resources on site at all times, in adequate quantities to immediately stabilize all soil.

(ii) Denuded areas shall be covered with mulch, sod, plastic, or other BMP's described in City of Arlington Construction Standard G-4 or as approved by the City.

(iii) Soil stockpiles shall be stabilized or protected with sediment retention BMPs within 24 hours of formation to prevent soil loss; and

(iv) Grading and construction shall be timed and conducted in stages to minimize soil exposure.

(e) Removal of Temporary Erosion and Sedimentation Control Measures. The applicant may remove all temporary erosion and sedimentation control BMPs within 30 days after final site stabilization or after they are no longer necessary.

(f) Permanent Vegetative Cover. Before construction acceptance by the City, the applicant shall establish a permanent vegetative ground cover to control soil erosion and to survive severe weather conditions on all areas of land disturbance not otherwise permanently stabilized by impervious surfaces or other means.

(g) Maintenance and Repair of Erosion and Sedimentation Control Measures. The applicant shall maintain and repair as necessary all temporary and permanent erosion and sedimentation control BMPs to assure their continued performance through construction acceptance and the potential for on site erosion has passed.

(h) Field Marking. Before performing any grading or clearing, the applicant shall mark, in the filed, the limits of all proposed clearing and grading, critical areas and their buffers, trees to be retained, and drainage courses.

(i) Protecting Storm Sewer Inlets. The applicant shall protect storm sewer inlets receiving storm water runoff during construction so that water will not enter the inlet without first being filtered or otherwise treated to minimize the amount of sediment entering the inlet.

(j) Sediment Retention. The applicant shall route storm water runoff from disturbed areas of the site through sediment ponds, traps or other sediment retention BMPs prior to discharge from the site. The BMPs shall be installed as the first step in grading, and shall be in operation before any other site disturbance occurs. The applicant shall stabilize temporary earth structures within the time period specified in subparagraph (d)(i). If site conditions warrant, the City may require additional sediment controls, including but not limited to, preserving a vegetated buffer strip around the lower perimeter of the site.

(k) Temporary Sediment Ponds and Traps shall be constructed per City of Arlington Construction Standard (G-5). Periodic removal of trapped sediments shall be performed as necessary, however trapped sediment may also be permanently stabilized onsite.

(l) The applicant shall design and construct temporary and permanent BMPs adequate to prevent erosion of outlets, adjacent stream banks, slopes and downstream reaches.

(m) The installation of underground utility lines shall be subject to the following additional requirements.

  (i) Between October 1 and March 31, no more than 500 feet of continuous trench may remain open at one time unless check dams to reduce flow velocities and prevent erosion are installed.

  (ii) Excavated material shall be placed on the uphill side of trenches, unless inconsistent with safety or site constraints.

(n) Water from a de-watering device shall discharge into a sediment-retention BMP.

The applicant shall implement fully the erosion and sedimentation control plan at each stage of site development.

DOWNSTREAM ANALYSIS

Since infiltration is being proposed for this site there is no downstream receiving water. If any system fails, overflow water will flow down the road, as it does now, and infiltrate into the ground at the edge of the road.

Stormwater Quantity Control & Water Quality B.M.P.'s

STORMWATER QUANTITY CONTROL BMP

The stormwater quantity control BMP specified for this site is infiltration to groundwater. Each lot will drain to individual lot infiltration trenches. Thirty-five percent of each lot area is assumed to be impervious. Runoff generated by the frontage roadway, landscaping strip and sidewalk will be directed to infiltration trenches located within the landscaping strip.

FRONTAGE INFILTRATION TRENCH

The lined (water quality) trenches in the landscape strip will be 3-ft wide by 3-ft deep and 38-ft long with 6" perforated PVC pipe. The trench is sized to retain the 6-month (water quality) storm event. The trench will be back filled with drain rock. A 32% voids for the trench was calculated assuming 30% void space for drain rock and 100% void space for the 6" perforated PVC pipe. The trench must be installed within the gravelly medium sand soil layer.

The unlined infiltration trench will be 3-ft wide by 4-ft deep and 35-ft long with 6" perforated PVC pipe. The trench is sized to retain the 100-yr storm event. The trench will be back filled with drain rock. A 32% voids for the trench was calculated assuming 30% void space for drain rock and 100% void space for the 6" perforated PVC pipe. The trench must be installed within the gravelly medium sand soil layer.

In modeling the storm drainage facility, an infiltration rate of 10.00 in/hr (half the D.O.E. rate for gravelly medium sand, 20.0 in/hr) was used for the native soils and an infiltration rate of 1.205in/hr (half the D.O.E. rate for loamy sand, 2.41 in/hr) was used for the imported loamy sand soils .

LOT TRENCHES

Each lined (water quality) trench will be 5-ft wide by 2.5-ft deep and 11-ft long with StormTech's SC-310 Chambers. The trench is sized to retain the 6-month (water quality) storm event. The trench will be back filled with drain rock. A void space of 40% was calculated for the trench design assuming 30% voids for drain rock and 100% for the Chambers. The trench must be installed within the gravelly medium sand soil layer.

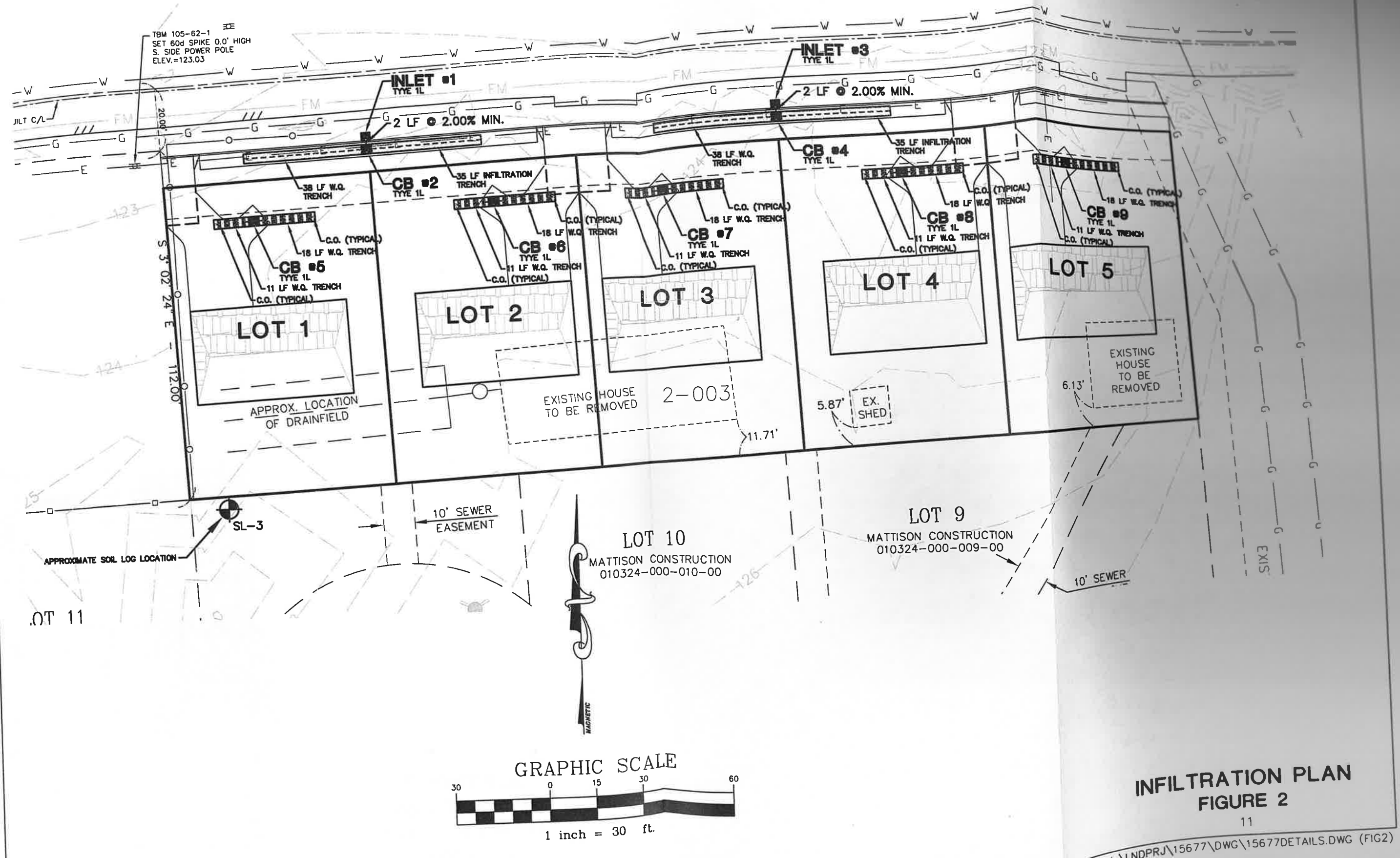
Each infiltration trench will be 5-ft wide by 2.5-ft. deep and 18-ft long with StormTech's SC-310 Chambers. The trench is sized to retain the 100-yr storm event. The trench will be back filled with drain rock. A void space of 40% was calculated for the trench design assuming 30% voids for drain rock and 100% for the Chambers. The trench must be installed within the gravelly medium sand soil layer

In modeling the storm drainage facility, an infiltration rate of 10.00 in/hr (half the D.O.E. rate for gravelly medium sand, 20.0 in/hr) was used for the native soils and an infiltration rate of 1.205in/hr (half the D.O.E. rate for loamy sand, 2.41 in/hr) was used for the imported loamy sand soils .

WATER QUALITY BMP

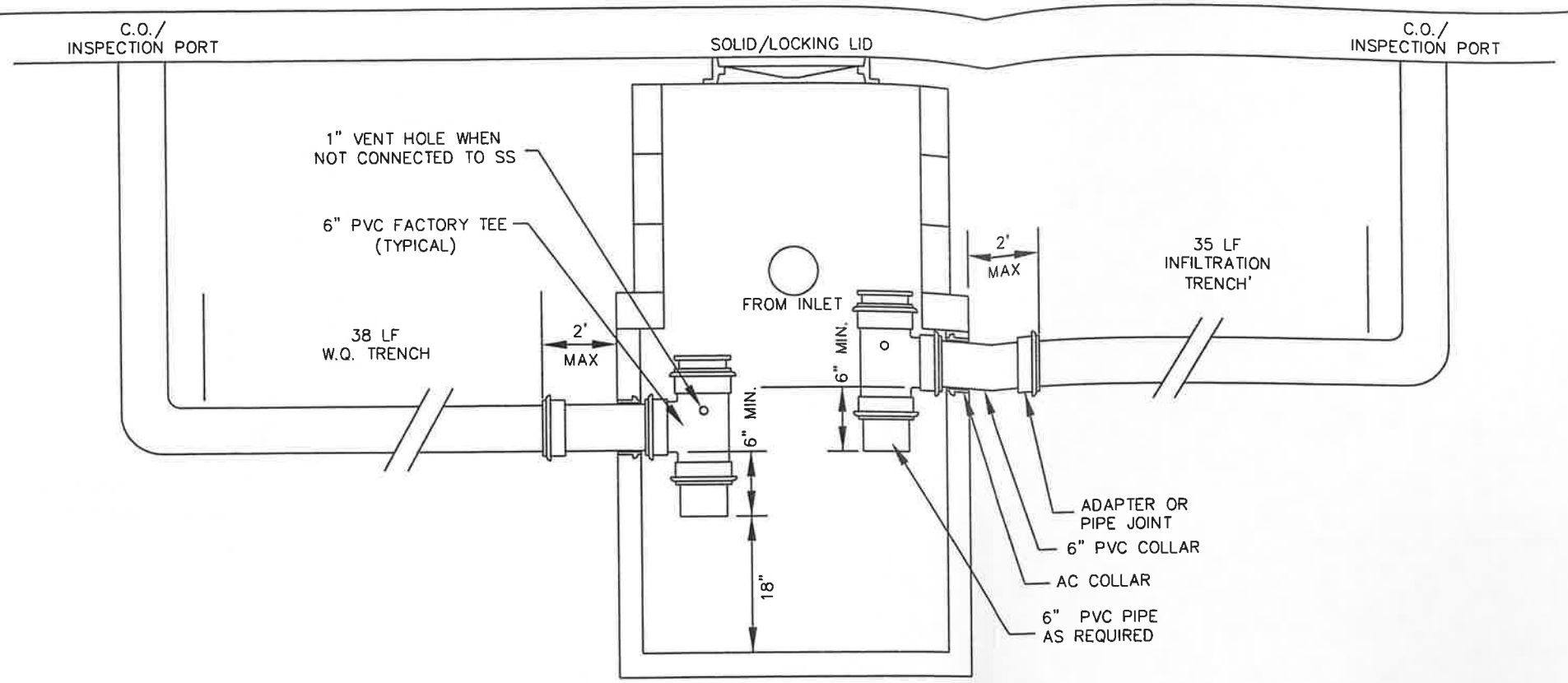
The water quality BMP proposed for this site is infiltration. Both the frontage and lot trenches will provide water quality treatment via infiltration through a minimum of 18-inches of loamy sand placed in the bottom of the water quality trenches. Since loamy sand has a cation exchange capacity of 5 milliequivalents / 100 grams, each infiltration system will be capable of providing water quality treatment.

Appendix



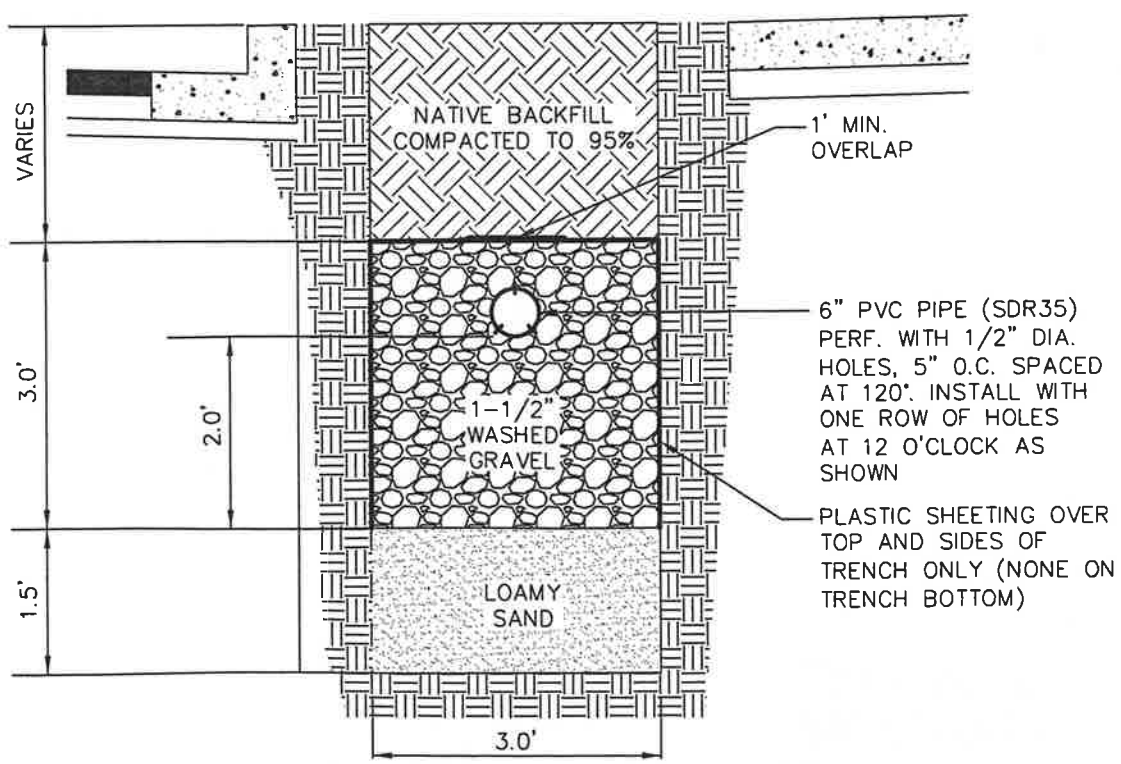
INFILTRATION PLAN
FIGURE 2

I:\LNDPRJ\15677\DWG\15677DETAILS.DWG (FIG2)

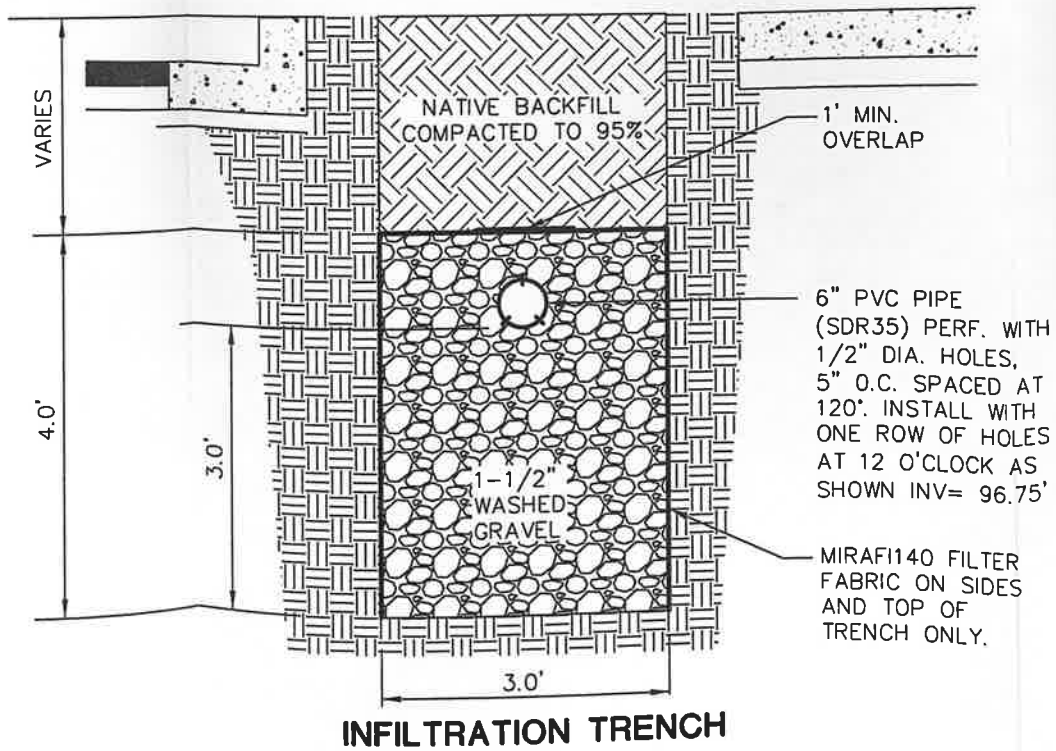


CB #2 & #4
TYPE 1

TYPICAL OIL/WATER SEPARATOR
NO SCALE



WATER QUALITY TRENCH (WQ)

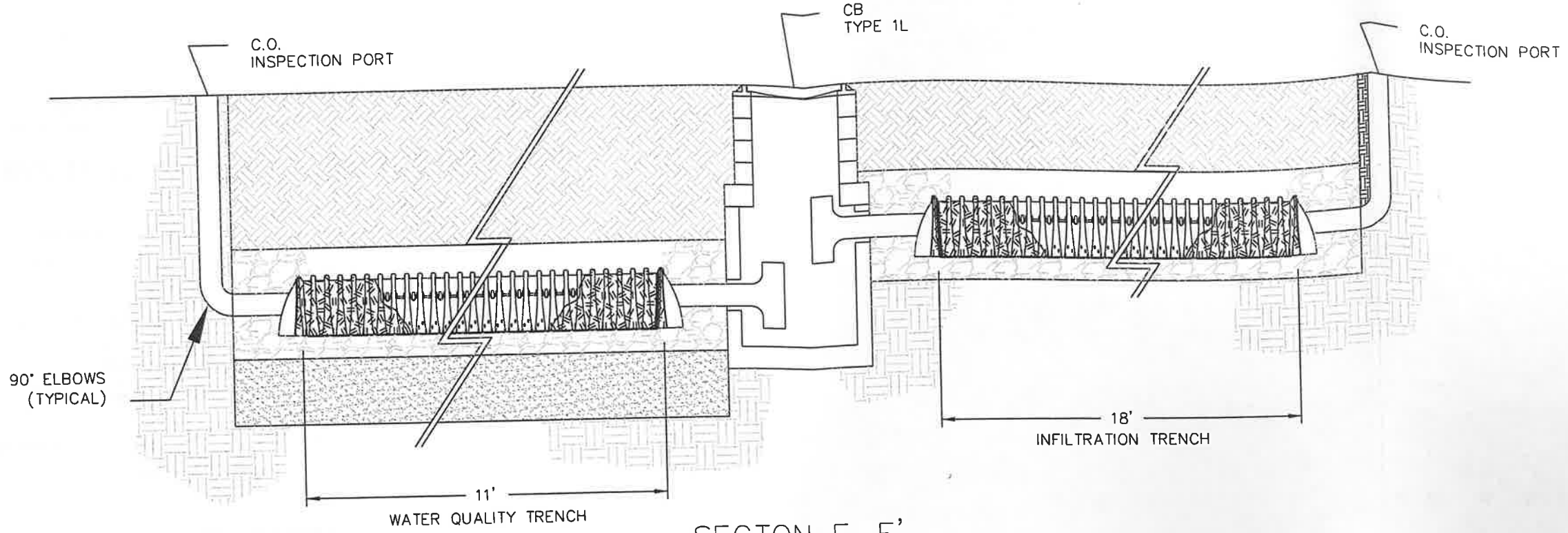


INFILTRATION TRENCH

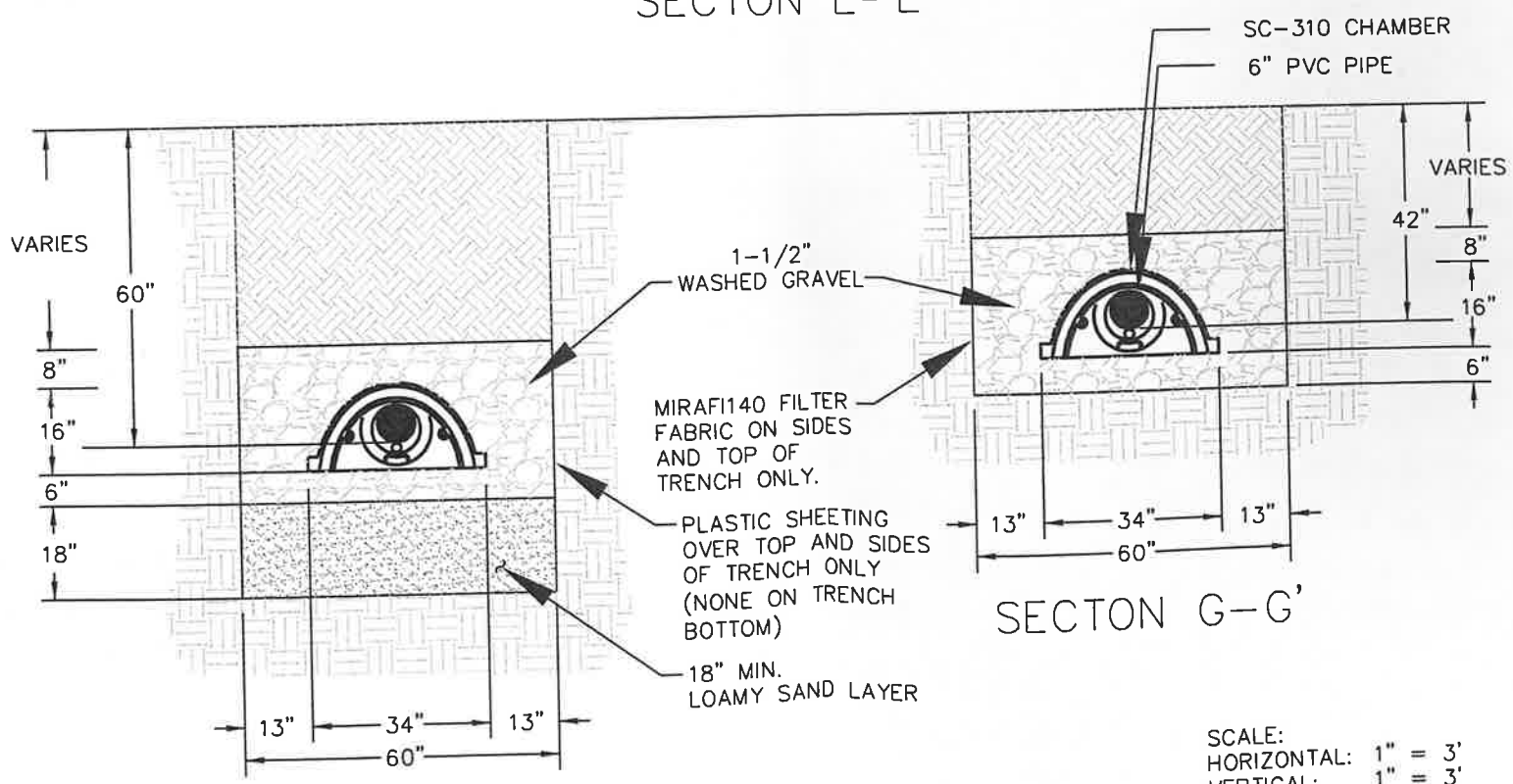
TRENCH SECTIONS
NO SCALE

FRONTAGE INFILTRATION TRENCH DETAIL
FIGURE 3

I:\LNDPRJ\15677\DWG\15677DETAILS.DWG (FIG3)



SECTON E-E'



SECTON F-F'

SECTON G-G'

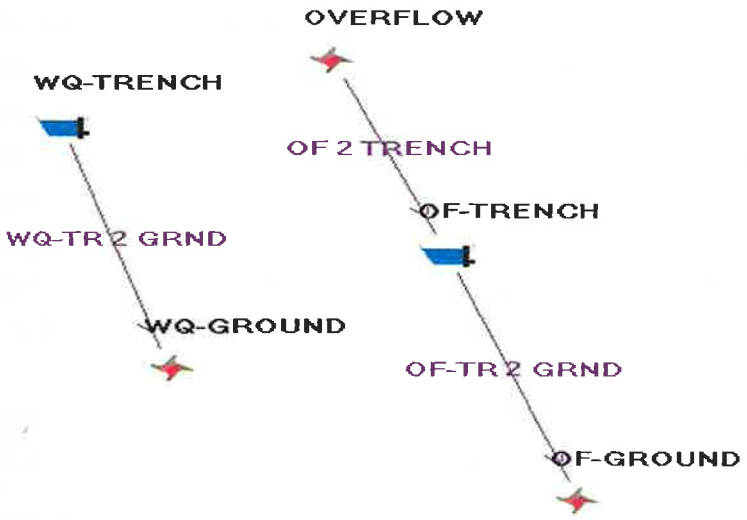
SCALE:
HORIZONTAL: 1" = 3'
VERTICAL: 1" = 3'

TYPICAL LOT INFILTRATION TRENCH DETAIL

FIGURE 4

I:\LNDPRJ\15677\DWG\15677DETAILS.DWG (FIG4)

FRONTAGE – TYPICAL INFILTRATION



Layout Report: FRONTAGE

PROJECT PRECIPS

Event	Precip (in)
6 mo	1.1500
2 yr	1.8000
10 yr	2.7500
100 yr	3.7500

Reach Records
Record Id: OF 2 TRENCH

Section Shape:	Circular		
Uniform Flow Method:	Manning's	Coefficient:	0.0120
Routing Method:	Travel Time Translation	Contributing Hyd	OVERFLOW V ORIFICE
DnNode	OF-TRENCH	UpNode	OVERFLOW
Material	Smooth CDEP	Size	6" Diam
Ent Losses	Square Edge w/Headwall		
Length	0.0010 ft	Slope	100.00%
Up Invert	96.0000 ft	Dn Invert	95.9990 ft

Conduit Constraints				
Min Vel	Max Vel	Min Slope	Max Slope	Min Cover
2.00 ft/s	15.00 ft/s	0.50%	2.00%	3.00 ft

Drop across MH	0.0000 ft	Ex/Infil Rate	0.0000 in/hr
Up Invert	95.9990 ft	Dn Invert	96.0000 ft
Match inverts.			
DnNode	OF-TRENCH	UpNode	OVERFLOW

Record Id: OF-TR 2 GRND

Section Shape:	Circular		
Uniform Flow Method:	Manning's	Coefficient:	0.0120
Routing Method:	Travel Time Translation		
DnNode	OF-GROUND	UpNode	OF-TRENCH
Material	Smooth CDEP	Size	48" Diam
Ent Losses	Groove End Projecting		
Length	0.0010 ft	Slope	100.00%
Up Invert	96.0000 ft	Dn Invert	95.9990 ft

Conduit Constraints				
Min Vel	Max Vel	Min Slope	Max Slope	Min Cover
2.00 ft/s	15.00 ft/s	0.50%	2.00%	3.00 ft

Drop across MH	0.0000 ft	Ex/Infil Rate	0.0000 in/hr
Up Invert	95.9990 ft	Dn Invert	96.0000 ft
Hold up invert.	Match inverts.		
DnNode	OF-GROUND	UpNode	OF-TRENCH

Record Id: WQ-TR 2 GRND

Section Shape:	Circular		
Uniform Flow Method:	Manning's	Coefficient:	0.0120
Routing Method:	Travel Time Translation	Contributing Hyd	WQ-LOAMY SAND
DnNode	WQ-GROUND	UpNode	WQ-TRENCH
Material	Smooth CDEP	Size	48" Diam
Ent Losses	Groove End Projecting		
Length	0.0010 ft	Slope	100.00%
Up Invert	93.0000 ft	Dn Invert	92.9990 ft

Conduit Constraints				
Min Vel	Max Vel	Min Slope	Max Slope	Min Cover
2.00 ft/s	15.00 ft/s	0.50%	2.00%	3.00 ft

Drop across MH	0.0000 ft	Ex/Infil Rate	0.0000 in/hr
Up Invert	92.9990 ft	Dn Invert	93.0000 ft
Match inverts.			
DnNode	WQ-GROUND	UpNode	WQ-TRENCH

Node Records

Record Id: OF-GROUND

Descrip:	OVERFLOW TRENCH TO GROUND	Increment	0.10 ft
Start El.	93.0000 ft	Max El.	97.0000 ft
Dummy Type Node			

Record Id: OF-TRENCH

Descrip:	OVERFLOW TRENCH	Increment	0.10 ft
Start El.	93.0000 ft	Max El.	98.0000 ft
Storage Node	OF-STORAGE	Discharge Node	OF-MED SAND

Record Id: OF-STORAGE

Descrip:	OVERFLOW TRENCH STORAGE	Increment	0.10 ft
Start El.	93.0000 ft	Max El.	97.0000 ft
Length	35.0000 ft	Width	3.0000 ft
Catch	32.0000	Consider Bottom Only	

Record Id: OF-MED SAND

Descrip:	MEDIUM SAND LAYER	Increment	0.10 ft
Start El.	93.0000 ft	Max El.	98.0000 ft
Infiltration rate	10.0000 in/hr	WP Multiplier	1.00

Record Id: OVERFLOW

Descrip:		Increment	0.10 ft
Start El.	96.0000 ft	Max El.	100.0000 ft
Dummy Type Node			

Record Id: WQ-GROUND

Descrip:	BOTTOM OF WQ TRENCH	Increment	0.10 ft
Start El.	93.0000 ft	Max El.	96.0000 ft
Dummy Type Node			

Record Id: WQ-TRENCH

Descrip:	WQ TRENCH	Increment	0.10 ft
Start El.	93.0000 ft	Max El.	97.0000 ft
Storage Node	WQ-STORAGE	Discharge Node	COMBO

Record Id: WQ-STORAGE

Descrip:	WATER QUALITY TRENCH	Increment	0.10 ft
Start El.	93.0000 ft	Max El.	96.0000 ft
Length	38.0000 ft	Width	3.0000 ft
Catch	32.0000	Consider Bottom Only	

Record Id: COMBO

Descrip:		Increment	0.10 ft
Start El.	93.0000 ft	Max El.	105.0000 ft
List of Discharge Structures:		WQ-LOAMY SAND OVERFLOW V ORIFICE	

Record Id: WQ-LOAMY SAND

Descrip:	LOAMY SAND LAYER	Increment	0.10 ft
Start El.	93.0000 ft	Max El.	96.0000 ft
Infiltration rate	1.2050 in/hr	WP Multiplier	1.00

Record Id: OVERFLOW V ORIFICE

Descrip:		Increment	0.10 ft
Start El.	96.0000 ft	Max El.	96.5000 ft
Weir Area	0.1963 sf	Weir Coeff	0.6100

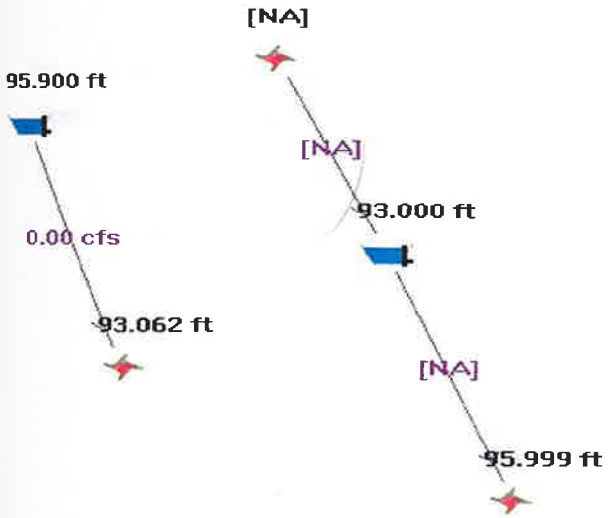
Contributing Drainage Areas
Record Id: FRONTAGE

Design Method	SBUH	**Rainfall type**	TYPE1A
Hyd Intv	10.00 min	**Peaking Factor**	484.00
		Abstraction Coeff	0.20
Pervious Area (AMC 2)	0.00 ac	**DCIA**	0.10 ac
Pervious CN	0.00	**DC CN**	98.00
Pervious TC	0.00 min	**DC TC**	0.48 min

Directly Connected CN Calc		
Description	**SubArea**	**Sub cn**
FRONTAGE	0.10 ac	98.00
DC Composited CN (AMC 2)		98.00

Directly Connected TC Calc						
Type	**Description**	**Length**	**Slope**	**Coeff**	**Misc**	**TT**
Sheet	ACROSS ASPHALT	22.00 ft	2.00%	0.0110	1.80 in	0.48 min
Directly Connected TC						0.48min

6-MONTH DRAINAGE CALCULATIONS



ROUTEHYD THRU FRONTAGE USING TYPE1A AND 6 mo

Routing split hyd 6 mo - OVERFLOW V ORIFICE through OF 2 TRENCH

Reach ID	Area (ac)	Flow (cfs)	Full Q (cfs)	Full ratio	nDepth (ft)	Size	nVel (ft/s)	fVel (ft/s)	CBasin
OF 2 TRENCH	0.0000	0.0000	6.0950	0.00	0.0000	6" Diam	0.0000	31.0417	

LPOOLCOMPUTE OF-TRENCH

Event	Match Q (cfs)	Peak Q (cfs)	Peak Stg (ft)	Vol (cf)	Vol (acft)	Time to Empty
6 mo	0.0000	0.0000	93.0000	0.00	0.0000	32.50

OF-TR 2 GRND	0.0000	0.0000	1560.32	0.00	0.0000	48" Diam	0.0000	124.1667	

LPOOLCOMPUTE WQ-TRENCH

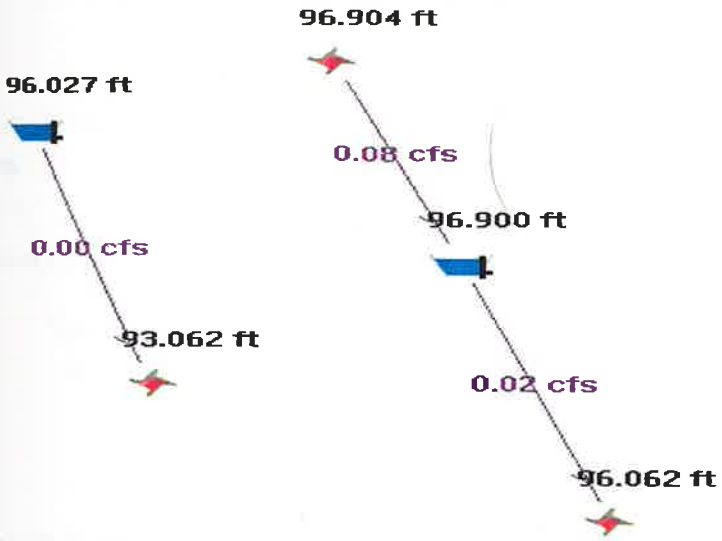
Event	Match Q (cfs)	Peak Q (cfs)	Peak Stg (ft)	Vol (cf)	Vol (acft)	Time to Empty
6 mo	0.0237	0.0032	95.9000	105.79	0.0024	32.50

Routing split hyd 6 mo -WQ-LOAMY SAND through WQ-TR 2 GRND

WQ-TR 2 GRND	0.0000	0.0032	1560.32	0.00	0.0054	48" Diam	3.0305	124.1667	FRONTAGE

From Node	To Node	Rch Loss (ft)	App (ft)	Bend (ft)	Junct Loss (ft)	HW Loss Elev (ft)	Max El (ft)
							95.9990
OF-TRENCH	OF-GROUND	0.0000	--na--	--na--	--na--	93.0000	98.0000
OVERFLOW	OF-TRENCH	0.0000	--na--	--na--	--na--	0.0000	100.0000
WQ-TRENCH	WQ-GROUND	91.0626	--na--	--na--	--na--	95.9000	97.0000

100-YEAR DRAINAGE CALCULATIONS



ROUTEHYD THRU FRONTAGE USING TYPE1A AND 100 yr
Routing split hyd 100 yr-OVERFLOW V ORIFICE through OF 2 TRENCH

Reach ID	Area (ac)	Flow (cfs)	Full Q (cfs)	Full ratio	nDepth (ft)	Size	nVel (ft/s)	fVel (ft/s)	CBasin/Hyd
OF 2 TRENCH	0.0000	0.0817	6.0950	0.01	0.0405	6" Diam	10.8960	31.0417	

LPOOLCOMPUTE OF-TRENCH

Event	Match Q (cfs)	Peak Q (cfs)	Peak Stg (ft)	Vol (cf)	Vol (acft)	Time to Empty
100 yr	0.0817	0.0243	96.9000	131.04	0.0030	34.17

OF-TR 2 GRND	0.0000	0.0243	1560.32	0.00	0.0142	48" Diam	5.4150	124.1667	

LPOOLCOMPUTE WQ-TRENCH

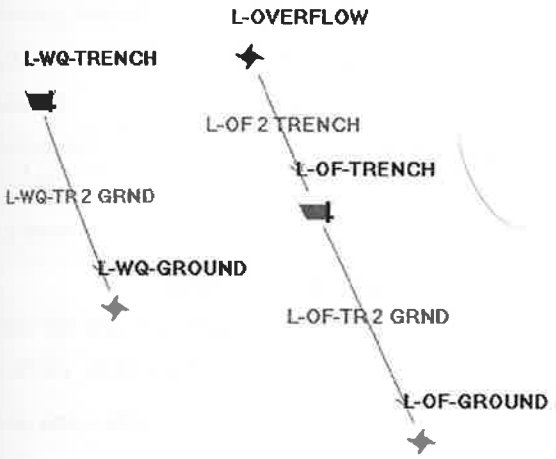
Event	Match Q (cfs)	Peak Q (cfs)	Peak Stg (ft)	Vol (cf)	Vol (acft)	Time to Empty
100 yr	0.0865	0.0849	96.0269	110.42	0.0025	34.17

Routing split hyd 100 yr - WQ-LOAMY SAND through WQ-TR 2 GRND

WQ-TR 2 GRND	0.0000	0.0032	1560.32	0.00	0.0054	48" Diam	3.0305	124.1667	FRONTAGE

From Node	To Node	Rch Loss (ft)	App (ft)	Bend (ft)	Junct Loss (ft)	HW Loss Elev (ft)	Max El (ft)
							96.0615
OF-TRENCH	OF-GROUND	94.0678	--na--	--na--	--na--	96.9000	98.0000
OVERFLOW	OF-TRENCH	96.9040	--na--	--na--	--na--	96.9040	100.0000
WQ-TRENCH	WQ-GROUND	91.0626	--na--	--na--	--na--	96.0269	97.0000

LOT INFILTRATION – TYPICAL EACH LOT



Layout Report: LOT

PROJECT PRECIPS

Event	Precip (in)
6 mo	1.1500
2 yr	1.8000
10 yr	2.7500
100 yr	3.7500

Reach Records
Record Id: L-OF 2 TRENCH

Section Shape:	Circular		
Uniform Flow Method:	Manning's	Coefficient:	0.0120
Routing Method:	Travel Time Translation	Contributing Hyd	L-OVERFLOW V ORIFICE
DnNode	L-OF-TRENCH	UpNode	L-OVERFLOW
Material	Smooth CDEP	Size	6" Diam
Ent Losses	Square Edge w/Headwall		
Length	0.0010 ft	Slope	100.00%
Up Invert	96.5000 ft	Dn Invert	96.4990 ft

Conduit Constraints				
Min Vel	Max Vel	Min Slope	Max Slope	Min Cover
2.00 ft/s	15.00 ft/s	0.50%	2.00%	3.00 ft

Drop across MH	0.0000 ft	Ex/Infil Rate	0.0000 in/hr
Up Invert	96.4990 ft	Dn Invert	96.5000 ft
Match inverts.			
DnNode	L-OF-TRENCH	UpNode	L-OVERFLOW

Record Id: L-OF-TR 2 GRND

Section Shape:	Circular		
Uniform Flow Method:	Manning's	Coefficient:	0.0120
Routing Method:	Travel Time Translation		
DnNode	L-OF-GROUND	UpNode	L-OF-TRENCH
Material	Smooth CDEP	Size	48" Diam
Ent Losses	Groove End Projecting		
Length	0.0010 ft	Slope	100.00%
Up Invert	95.5000 ft	Dn Invert	95.4990 ft

Conduit Constraints				
Min Vel	Max Vel	Min Slope	Max Slope	Min Cover
2.00 ft/s	15.00 ft/s	0.50%	2.00%	3.00 ft

Drop across MH	0.0000 ft	Ex/Infil Rate	0.0000 in/hr
Up Invert	95.4990 ft	Dn Invert	95.5000 ft
Match inverts.			
DnNode	L-OF-GROUND	UpNode	L-OF-TRENCH

Record Id: L-WQ-TR 2 GRND

Section Shape:	Circular		
Uniform Flow Method:	Manning's	Coefficient:	0.0120
Routing Method:	Travel Time Translation	Contributing Hyd	L-WQ-LOAMY SAND
DnNode	L-WQ-GROUND	UpNode	L-WQ-TRENCH
Material	Smooth CDEP	Size	48" Diam
Ent Losses	Groove End Projecting		
Length	0.0010 ft	Slope	100.00%
Up Invert	94.0000 ft	Dn Invert	93.9990 ft

Conduit Constraints				
Min Vel	Max Vel	Min Slope	Max Slope	Min Cover
2.00 ft/s	15.00 ft/s	0.50%	2.00%	3.00 ft

Drop across MH	0.0000 ft	Ex/Infil Rate	0.0000 in/hr
Up Invert	93.9990 ft	Dn Invert	94.0000 ft
Match inverts.			
DnNode	L-WQ-GROUND	UpNode	L-WQ-TRENCH

Node Records
Record Id: L-OF-GROUND

Descrip:	L OVERFLOW GROUND	Increment	0.10 ft
Start El.	95.5000 ft	Max El.	98.0000 ft
Dummy Type Node			

Record Id: L-OF-TRENCH

Descrip:	L1 OVERFLOW TRENCH	Increment	0.10 ft
Start El.	95.5000 ft	Max El.	98.0000 ft
Storage Node	L-OF-STORAGE	Discharge Node	L-OF-MED-SAND

Record Id: L-OF-STORAGE

Descrip:	L OVERFLOW STORAGE	Increment	0.10 ft
Start El.	95.5000 ft	Max El.	98.0000 ft
Length	18.0000 ft	Width	5.0000 ft
Catch	40.0000	Consider Bottom Only	

Record Id: L-OF-MED-SAND

Descrip:	MEDIUM SAND	Increment	0.10 ft
Start El.	95.5000 ft	Max El.	98.0000 ft
Infiltration rate	10.0000 in/hr	WP Multiplier	1.00

Record Id: L-OVERFLOW

Descrip:	OVERFLOW FROM WQ TRENCH	Increment	0.10 ft
Start El.	96.5000 ft	Max El.	100.0000 ft
Dummy Type Node			

Record Id: L-WQ-GROUND

Descrip:	BOTTOM OF WQ TRENCH	Increment	0.10 ft
Start El.	94.0000 ft	Max El.	96.5000 ft
Dummy Type Node			

Record Id: L-WQ-TRENCH

Descrip:	WQ TRENCH	Increment	0.10 ft
Start El.	94.0000 ft	Max El.	97.0000 ft
Storage Node	L-WQ-STORAGE	Discharge Node	L-COMBO

Record Id: L-WQ-STORAGE

Descrip:	WATER QUALITY TRENCH	Increment	0.10 ft
Start El.	94.0000 ft	Max El.	96.5000 ft
Length	11.0000 ft	Width	5.0000 ft
Catch	40.0000	Consider Bottom Only	

Record Id: L-COMBO

Descrip:	Multiple Orifice	Increment	0.10 ft
Start El.	94.0000 ft	Max El.	96.5000 ft
List of Discharge Structures:		L-WQ-LOAMY SAND L-OVERFLOW V ORIFICE	

Record Id: L-WQ-LOAMY SAND

Descrip:	LOAMY SAND LAYER	Increment	0.10 ft
Start El.	94.0000 ft	Max El.	97.0000 ft
Infiltration rate	1.2050 in/hr	WP Multiplier	1.00

Record Id: L-OVERFLOW V ORIFICE

Descrip:		Increment	0.10 ft
Start El.	96.5000 ft	Max El.	99.0000 ft
Weir Area	0.1963 sf	Weir Coeff	0.6100

Contributing Drainage Areas
Record Id: LOT

Design Method	SBUH	**Rainfall type**	TYPE1A
Hyd Intv	10.00 min	**Peaking Factor**	484.00
		Abstraction Coeff	0.20
Pervious Area (AMC 2)	0.10 ac	**DCIA**	0.05 ac
Pervious CN	68.00	**DC CN**	98.00
Pervious TC	5.50 min	**DC TC**	0.88 min

Pervious CN Calc

Description	SubArea	Sub cn
LAWN AND LANDSCAPING	0.10 ac	68.00
Pervious Composited CN (AMC 2)		68.00

Pervious TC Calc

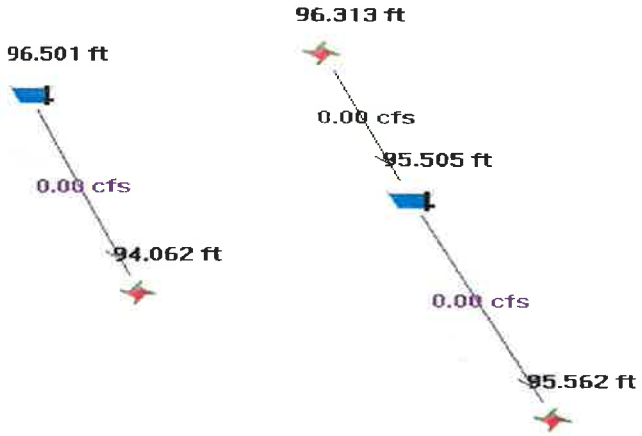
Type	Description	Length	Slope	Coeff	Misc	TT
Sheet	Short prairie grass and lawns.: 0.15	24.00 ft	1.00%	0.1500	1.80 in	5.50 min
Pervious TC						5.50 min

Directly Connected CN Calc

Description	SubArea	Sub cn
BUILDING AND DRIVEWAY	0.05 ac	98.00
DC Composited CN (AMC 2)		98.00

Directly Connected TC Calc

Type	Description	Length	Slope	Coeff	Misc	TT
Sheet	ACROSS BUILDING ROOF	33.00 ft	1.00%	0.0110	1.80 in	0.88 min
Directly Connected TC						0.88min



ROUTEHYD THRU LOT USING TYPE1A AND 6 mo

Routing split hyd 6 mo - L-OVERFLOW V ORIFICE through L-OF 2 TRENCH

Reach ID	Area (ac)	Flow (cfs)	Full Q (cfs)	Full ratio	nDepth (ft)	Size	nVel (ft/s)	fVel (ft/s)	CBasin / Hyd
L-OF 2 TRENCH	0.0000	0.0018	6.0950	0.00	0.0068	6" Diam	3.3575	31.0417	

LPOOLCOMPUTE L-OF-TRENCH SUMMARY

Event	Match Q (cfs)	Peak Q (cfs)	Peak Stg (ft)	Vol (cf)	Vol (acft)	Time to Empty
6 mo	0.0018	0.0011	95.5054	0.20	0.0000	33.00

L-OF-TR 2 GRND	0.0000	0.0011	1560.32	0.00	0.0034	48" Diam	2.1222	124.1667	

LPOOLCOMPUTE L-WQ-TRENCH SUMMARY

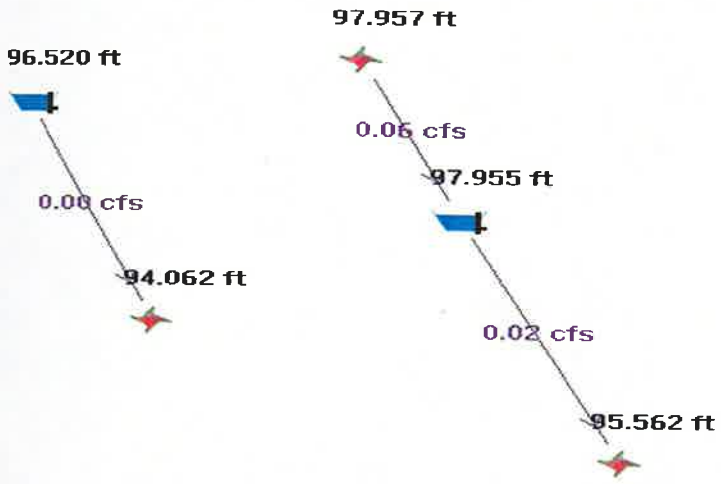
Event	Match Q (cfs)	Peak Q (cfs)	Peak Stg (ft)	Vol (cf)	Vol (acft)	Time to Empty
6 mo	0.0132	0.0033	96.5006	55.01	0.0013	33.00

Routing split hyd 6 mo - L-WQ-LOAMY SAND through L-WQ-TR 2 GRND

L-WQ-TR 2 GRND	0.0000	0.0015	1560.32	0.00	0.0039	48" Diam	2.3571	124.1667	LOT

From Node	To Node	Rch Loss (ft)	App (ft)	Bend (ft)	Junct Loss (ft)	HW Loss Elev (ft)	Max El (ft)
							95.5615
L-OF-TRENCH	L-OF-GROUND	93.5625	--na--	--na--	--na--	95.5054	98.0000
L-OVERFLOW	L-OF-TRENCH	96.3127	--na--	--na--	--na--	96.3127	100.0000
L-WQ-TRENCH	L-WQ-GROUND	92.0625	--na--	--na--	--na--	96.5006	97.0000

100-YEAR DRAINAGE CALCULATIONS



ROUTEHYD THRU LOT USING TYPE1A AND 100 yr

Routing split hyd 100 yr - L-OVERFLOW V ORIFICE through L-OF 2 TRENCH

Reach ID	Area (ac)	Flow (cfs)	Full Q (cfs)	Full ratio	nDepth (ft)	Size	nVel (ft/s)	fVel (ft/s)	CBasin /Hyd
L-OF 2 TRENCH	0.0000	0.0606	6.0950	0.01	0.0356	6" Diam	9.7650	31.0417	

LPOOLCOMPUTE L-OF-TRENCH

Event	Match Q (cfs)	Peak Q (cfs)	Peak Stg (ft)	Vol (cf)	Vol (acft)	Time to Empty
100 yr	0.0606	0.0208	97.9546	88.37	0.0020	33.17

L-OF-TR 2 GRND	0.0000	0.0208	1560.32	0.00	0.0132	48" Diam	5.1662	124.1667	

LPOOLCOMPUTE L-WQ-TRENCH SUMMARY

Event	Match Q (cfs)	Peak Q (cfs)	Peak Stg (ft)	Vol (cf)	Vol (acft)	Time to Empty
100 yr	0.0597	0.0621	96.5199	55.44	0.0013	33.17

Routing split hyd 100 yr - L-WQ-LOAMY SAND through L-WQ-TR 2 GRND

L-WQ-TR 2 GRND	0.0000	0.0015	1560.32	0.00	0.0039	48" Diam	2.3571	124.1667	LOT

From Node	To Node	Rch Loss (ft)	App (ft)	Bend (ft)	Junct Loss (ft)	HW Loss Elev (ft)	Max El (ft)
							95.5615
L-OF-TRENCH	L-OF-GROUND	93.5664	--na--	--na--	--na--	97.9547	98.0000
L-OVERFLOW	L-OF-TRENCH	97.9569	--na--	--na--	--na--	97.9569	100.0000
L-WQ-TRENCH	L-WQ-GROUND	92.0625	--na--	--na--	--na--	96.5200	97.0000