October 12, 2006

TO: WEST LINN PLANNING COMMISSION

FROM: GORDON HOWARD

SUBJECT: 2929 PARKER ROAD, 6-LOT SUBDIVISION (FILE SUB 06-03)

Staff has a minor change to one of the recommended conditions of approval, as follows (underlined and bold language is proposed to be added):

13. No retaining walls shall be constructed in public utility easements **unless approved by the City Engineer**.

While no buildings or structures are allowed to be built within utility easements in West Linn, the City Engineer has a process for individualized consideration of fences and retaining walls, and may approve them administratively if there will be no significant impact upon any existing or proposed utilities.

P/developmentreview/sub2006/sub 06-03 retaining wall change

ADDENDUM

APPROVAL CRITERIA AND FINDINGS
SUB 06-03

Staff recommends adoption of the findings for approval contained within the applicant's submittal, with the following exceptions and additions:

CHAPTER 30: WETLAND AND RIPARIAN AREAS

30.100 APPROVAL CRITERIA

C. Wetland and Riparian Transition Area. The size of the transition area necessary to protect each site will be identified and staked in the field with temporary wooden stakes clearly marked "Transition Area" and approved by the Planning Director prior to issuance of a permit. Once the location of these temporary stakes has been approved, markers shall be staked as described in Section 30.100(C)(2) below. A construction fence and/or erosion control silt fabric, as appropriate, shall be established along the perimeter of the transition area during all phases of construction.

Vegetative improvements to areas within the transition and resource areas may be required if the site is found to be in an unhealthy or disturbed state. "Unhealthy or disturbed" includes those sites that are heavily populated by exotic or non-indigenous species, areas overgrown with invasive plants, or areas that lack the proper balance of canopy trees, understory plants, and soil stabilizing groundcovers. "Vegetative improvements" consist of submitting a plan which calls for removal of non-indigenous, exotic, or invasive species which will be replaced by plant species in a manner to be approved by the City Parks Director and consistent with the purposes of Chapter 30. Once approved, the applicant is responsible for implementing the plan prior to final inspection.

FINDING NO. 1:

To ensure that the application fully complies with the approval criteria of Chapter 30, staff recommends several additional conditions of approval. A solidly anchored chain link fence must be in place during the construction phase of the project to ensure that no impact results to the wetlands to be protected on the site. The applicant must fully implement the revegetation and mitigation plan prior to final map platting for the property. And, once construction is complete, the applicant must place permanent markers indicating the presence of a wetland on the site.

Therefore, with the imposition of conditions of approval # 7, 8, and 9, the application satisfies this criterion.

CHAPTER 48: ACCESS

48.030 MINIMUM VEHICULAR REQUIREMENTS FOR RESIDENTIAL USES

D. Access to five or more single-family homes shall be by a street built to full construction code standards. All streets shall be public. This full street provision may only be waived by variance.

FINDING NO. 2:

The applicant's proposed redesign has a public street coming north from Parker Road. This street provides access to three of the lots. The remaining three lots will take access from a private easement road running northerly from the terminus of the public street. Therefore, with the imposition of Condition of Approval #1, the application satisfies this criterion.

CHAPTER 85: LAND DIVISIONS

85.200 Approval Criteria

A. Streets

2. Right-of-way and Roadway Widths. In order to accommodate larger tree lined boulevards and sidewalks, particularly in residential areas, the standard right-of-way widths for the different street classifications shall be within the range listed below. But, instead of filling in the right-of-way with pavement, they shall accommodate the amenities (e.g., boulevards, street trees, sidewalks). The exact width of the right-of-way shall be determined by the City Engineer or the approval authority. The following ranges will apply:

Street Classification	*Right-of-Way*
...	
Local street	*40-60*

...

4. The decision-making body shall consider the City Engineer's recommendations on the desired right-of-way width, pavement width and street geometry of the various street types within the subdivision after consideration by the City Engineer of the following criteria:

a. The type of road as set forth in the Transportation Master Plan.

b. The anticipated traffic generation.

c. On-street parking requirements.

d. Sidewalk and bikeway requirements.

e. Requirements for placement of utilities.

f. Street lighting.

g. Drainage and slope impacts.

h. Street trees.

i. Planting and landscape areas.

j. Existing and future driveway grades.

k. Street geometry.

l. Street furniture needs, hydrants.

FINDING NO. 3:

The applicant's revised subdivision plan proposes a public street. The City Engineer believes that the minimum right of way width of 40 feet is appropriate in this situation, where the street is dead-end, will only serve six lots, and the site is constrained by the location of wetlands. The City Engineer and Planning Director also believe that a 28-foot paved width, with two six foot sidewalks, and no planter strips, is appropriate within the constrained right of way, serving only six homes. Also, there is no need for a sidewalk around the proposed hammerhead turnaround at the end of the public street because of the lack of traffic and the existence of the pedestrian pathway beginning at the end of the sidewalk on the west side of the street. Therefore, with the imposition of condition of approval # 3, the application satisfies this criterion.

Additionally, the project has frontage along Parker Road. The City Engineer wishes to ensure that the design details for the Parker Road street frontage and improvements match those prepared by the Maxfield and Parker Crest subdivisions along the south side of the road. Therefore, with the imposition of condition of approval # 15, the application satisfies this criterion.

12. Street Names. No street names shall be used which will duplicate or be confused with the names of existing streets within the City. Street names that involve difficult or unusual spellings are discouraged. Street names shall be subject to the approval of the Planning Commission or Planning Director, as applicable. Continuations of existing streets shall have the name of the existing street. Streets, drives, avenues, ways, boulevards, lanes, shall describe through streets. Place and court shall describe cul-de-sacs. Crescent, terrace, and circle shall describe loop or arcing roads.

FINDING NO. 4:

The applicant has not provided a proposed street name for the new public street north of Parker Road serving the subdivision. The Planning Director has the ability to approve a proposed street name meeting the code requirements. Therefore, with the imposition of condition of approval # 5, the application satisfies this criterion.

22. Based upon the City Engineer's determination, the applicant shall construct or cause to be constructed, or contribute a proportionate share of the costs, for all necessary off-site improvements identified by the transportation analysis that are required to mitigate impacts from the proposed subdivision.

FINDING NO. 5:

This application is within the zone of projects that will have a significant impact upon the intersection of Rosemont Road and Salamo Road, in need of a signal light. Such a signal light was not contemplated at the time of the creation of the West Linn Transportation System Plan in 1999, so the city is collecting a fee per trip generated by new development to pay the proportionate costs of the signal. Therefore, with the imposition of condition of approval # 10, the application satisfies this criterion.

B. Blocks and Lots

7. Flag Lots. Flag lots can be created where it can be shown that no other reasonable street access is possible to achieve the requested land division. A single flag lot shall have a minimum street frontage of 15 feet for its accessway. Where two to four flag lots share a common accessway, the minimum street frontage and accessway shall be 8 feet in width per lot. Common accessways shall have mutual maintenance agreements and reciprocal access and utility easements.

...

c. The lot size shall be calculated exclusive of the accessway; the access strip may not be counted towards the area requirements.

...

f. If the use of a flag lot stem to access a lot is infeasible because of a lack of adequate existing road frontage, or location of existing structures, the proposed lot(s) may be accessed from the public street by an access easement of a minimum 15 foot width across intervening property.

FINDING NO. 6:

The applicant's resubmitted lot design shows three of the lots taking access from a private easement running north from the terminus of the public road. Because of the presence of the wetland and the irregular shape of the transition area, the use of property "flags" instead of an access easement is inappropriate. The access easement must be subtracted from the area of the lot to determine whether each lot meets the 10,000 square foot minimum requirement. The applicant may need to adjust the boundaries of the access easement and the lots to ensure compliance with this requirement – however, it is certain that the applicant can comply with the requirement, because the site contains more than enough lot area to accommodate six 10,000 square foot lots. Therefore, with the imposition of condition of approval #2

C. Pedestrian and Bicycle Trails

1. Trails or multi-use pathways shall be installed, consistent and compatible with federal ADA requirements and with the Oregon Transportation Planning Rule, between subdivisions, cul-de-sacs, and streets that would otherwise not be connected by streets due to excessive grades, significant tree(s), and other constraints natural or man-made. Trails shall also accommodate bicycle or pedestrian traffic between neighborhoods and activity areas such as schools, libraries, parks, or commercial districts. Trails shall also be required where designated by the Parks Master Plan.

FINDING NO. 7:

The applicant's proposed trail is in accordance with this criterion, as it connects the end of this subdivision's street with Gardner Lane, a proposed street in the Rosemont Pointe subdivision. Imposition of condition of approval # 4 will ensure that the trail is dedicated perpetually for public use into the future.

F. Water

1. *A plan for domestic water supply lines or related water service facilities shall be prepared consistent with the adopted Comprehensive Water System Plan, plan update, March 1987, and subsequent superseding revisions or updates.*

2. *Adequate location and sizing of the water lines.*

3. *Adequate looping system of water lines to enhance water quality.*

FINDING NO. 8:

The City Engineer finds that the public water line serving this subdivision must be looped between Parker Road and the public water lines being built as part of the Rosemont Pointe subdivision to the north. Therefore, with the imposition of condition of approval # 12, the application satisfies this criterion.

*I. **Utility Easements.** All subdivisions and partitions shall establish, at minimum, five-foot utility easements on front and rear lot lines. Easements may be wider and side yard easements established, as determined by the City Engineer to accommodate the particular service. The developer of the subdivision shall make accommodation for cable television wire in all utility trenches and easements so that cable can fully serve the subdivision*

FINDING NO. 9:

The applicant's tentative grading plan shows retaining walls within public easement areas. This is not allowed, because it would impair future access to the easement area as necessary. Minor modifications to the grading plan can eliminate these walls. Therefore, with the imposition of condition of approval # 13, the application satisfies this criterion.

J. Supplemental Provisions

9. Heritage Trees/Significant Tree and Tree Cluster Protection. All heritage trees, as defined in the Municipal Code, shall be saved. Diseased heritage trees, as determined by the City Arborist, may be removed at his/her direction. All non-heritage trees and clusters of trees (three or more trees with overlapping dripline; however, native oaks need not have an overlapping dripline) that are considered significant by virtue of their size, type, location, health, or numbers, shall be saved pursuant to CDC Section 55.100(B)(2). Trees are defined per the Municipal Code as having a trunk 6" in diameter or 19" in circumference at a point five feet above the mean ground level at the base of the trunk.

FINDING NO. 10

The applicant's proposed tree plan protects significant trees within the wetland area and also along the southeastern edge of the property. The City Arborist requires that trees to be protected be fenced during the construction phase of the project. Therefore, with the imposition of condition of approval # 6, the application satisfies this criterion.

CITY OF WEST LINN
PLANNING AND DEVELOPMENT

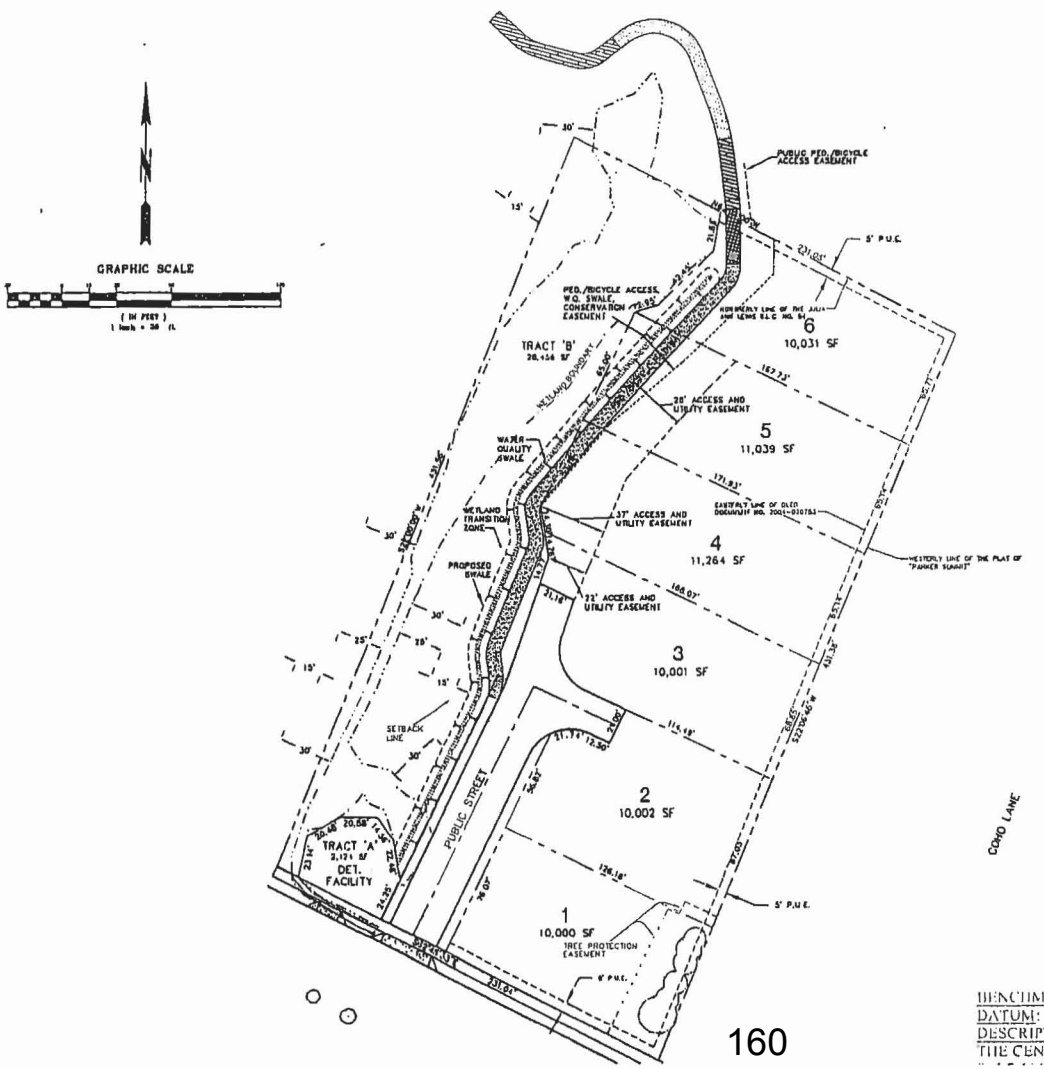
APPLICANT'S REVISED SUBMITTAL

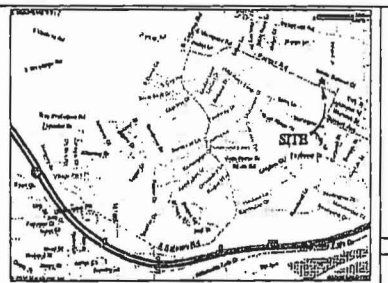
FILE NO. SUB 06-03

REQUEST: **SIX-LOT SUBDIVISION OF PROPERTY AT 2929 PARKER ROAD**

PARKER ROAD

A 6-LOT SUBDIVISION OF TAX MAP 21E25CD, TAX LOT 3900





VICINITY MAP
N.T.S.

APPLICANT:
RENAISSANCE HOMES, INC.
16771 BOONES FERRY ROAD
LAKE OSWEGO, OR 97035
PHONE: (503)636-5600 / FAX: (503)635-8400
CONTACT: JEFF SHROPE

PLANNING / ENGINEERING:
SFA DESIGN GROUP, LLC
9020 SW WASHINGTON SQUARE DR., SUITE 350
PORTLAND, OR 97223
PHONE: (503)641-8311 / FAX: (503)643-7905
CONTACTS: MATTHEW SPRAGUE

SURVEYOR:
G+L LAND SURVEYING, INC.
9255 SW NIMBUS AVE.
BEAVERTON, OR 97008
PHONE: (503)641-0308 / FAX: (503)671-0877
CONTACT: DARREN HARR

SITE INFORMATION:

SITE AREA:	2.28 ACRES
ZONING:	R-10
TAX MAP:	T2 R1E SEC 25CD
TAX LOTS:	3900
NUMBER OF LOTS:	6

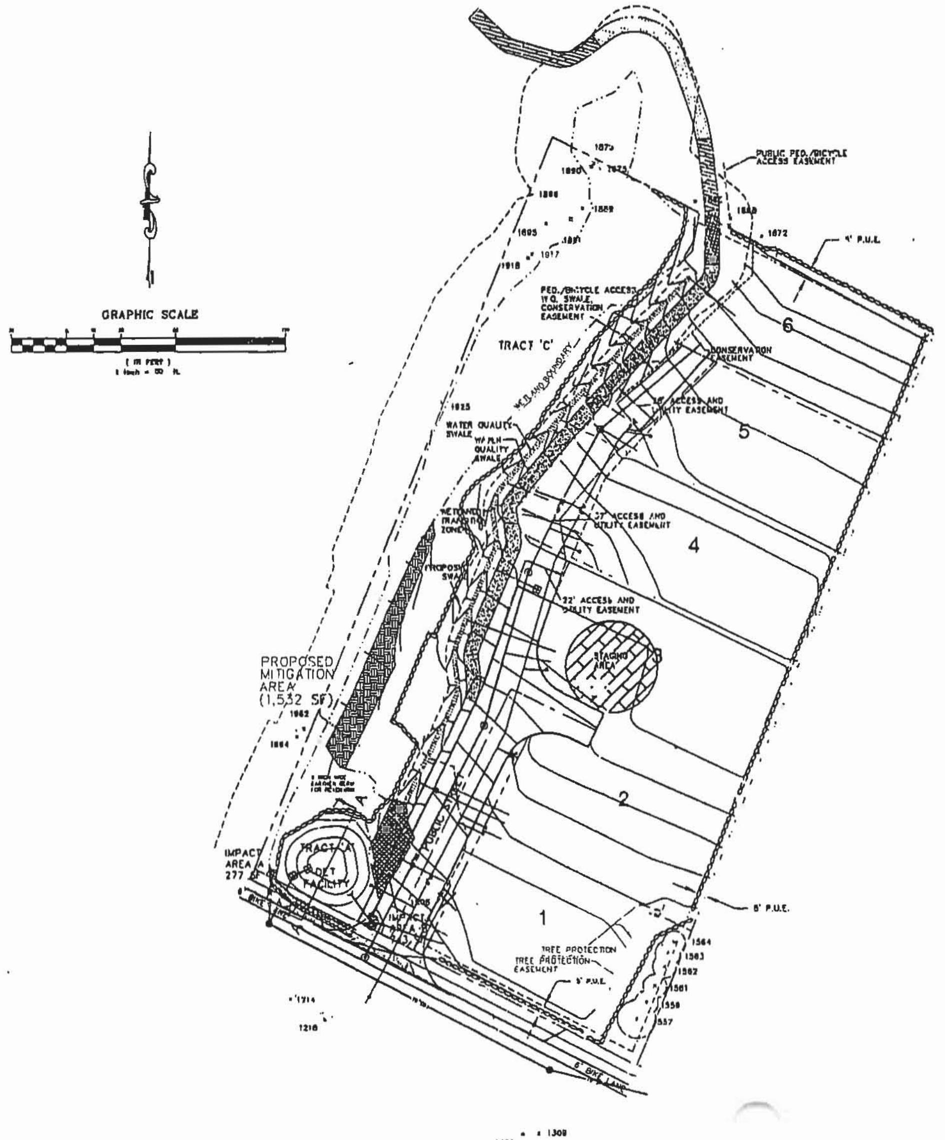
UTILITIES AND SERVICES:

WATER:	CITY OF WEST LINN
STORM:	CITY OF WEST LINN
SEWER:	CITY OF WEST LINN
POWER:	PGE
GAS:	NORTHWEST NATURAL
CABLE:	VERIZON
FIRE:	TVF&R
POLICE:	CITY OF WEST LINN
SCHOOL:	CITY OF WEST LINN
ROADS:	CITY OF WEST LINN
PARKS:	CITY OF WEST LINN

SHEET INDEX

BENCHMARK: SALAMO (NGS GEODETIC CONTROL MONUMENT)
DATUM: CITY OF WEST LINN (THIRD ORDER CLASS II VERTICAL NAVD 88)
DESCRIPTION: 2-1/2" BRONZE DISK IN CONCRETE INSIDE A MONUMENT BOX, LOCATED IN THE CENTERLINE OF SALAMO ROAD NEAR THE SOUTHEAST CORNER OF THE ROSEMONT

TENTATIVE PLAT
PARKER ROAD



LEGEND

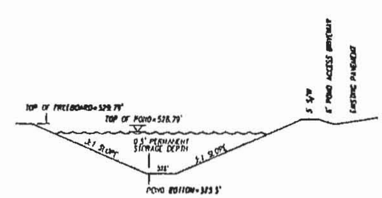
	EXISTING 1' CONTOUR
	EXISTING 5' CONTOUR
—219—	PROPOSED 1' CONTOUR
—220—	PROPOSED 5' CONTOUR
—12"SD—	PROPOSED STORM LINE
●	PROPOSED STORM MANHOLE
	PROPOSED RIPRAP PROTECTION
	PROPOSED EROSION CONTROL FENCE
12.2%	PROPOSED SLOPE
	PROPOSED CONSTRUCTION ENTRANCE
	PROPOSED ROCK RETAINING WALL
	TREE PROTECTIVE FENCING
○ ○	TREE TO BE SAVED
X X	TREE TO BE REMOVED

TREE CANOPY AREAS

- SIGNIFICANT EXISTING TREE CANOPY = 844 SQ FT / 0.02 AC
- SIGNIFICANT REMOVED TREE CANOPY = 0 SQ FT / 0.00 AC
- SIGNIFICANT PRESERVED TREE CANOPY = 844 SQ FT / 0.02 AC
- SIGNIFICANT PRESERVED TREE CANOPY IS 0.85% OF TOTAL SITE AREA.
- SIGNIFICANT EXISTING TREE CANOPY IS 0.85% OF TOTAL SITE AREA.

TREE TABLE:

(TAG#)	(TYPE)	(DBH)
1214	DEC.	8"
1218	DEC.	12" x 3
1308	DEC.	16" x 4
1309	DEC.	18"
1560	DEC.	12"
1557	CON.	19"
1559	CON.	10"
1561	CON.	18"
1562	CON.	10"
1563	CON.	18"
1564	CON.	10"
1885	DEC.	12"
1886	DEC.	13"
1871	DEC.	8" x 2
1872	DEC.	8"
1875	DEC.	12"
1878	DEC.	30" x 3
1889	DEC.	30"
1890	DEC.	18"
1891	DEC.	34"
1895	DEC.	22"
1898	DEC.	20"
1917	DEC.	22" x 3
1918	DEC.	14"
1925	DEC.	24"



SECTION A-A

TENTATIVE GRADING / STORM AND EROSION CONTROL PLAN

PARKER ROAD SUBDIVISION

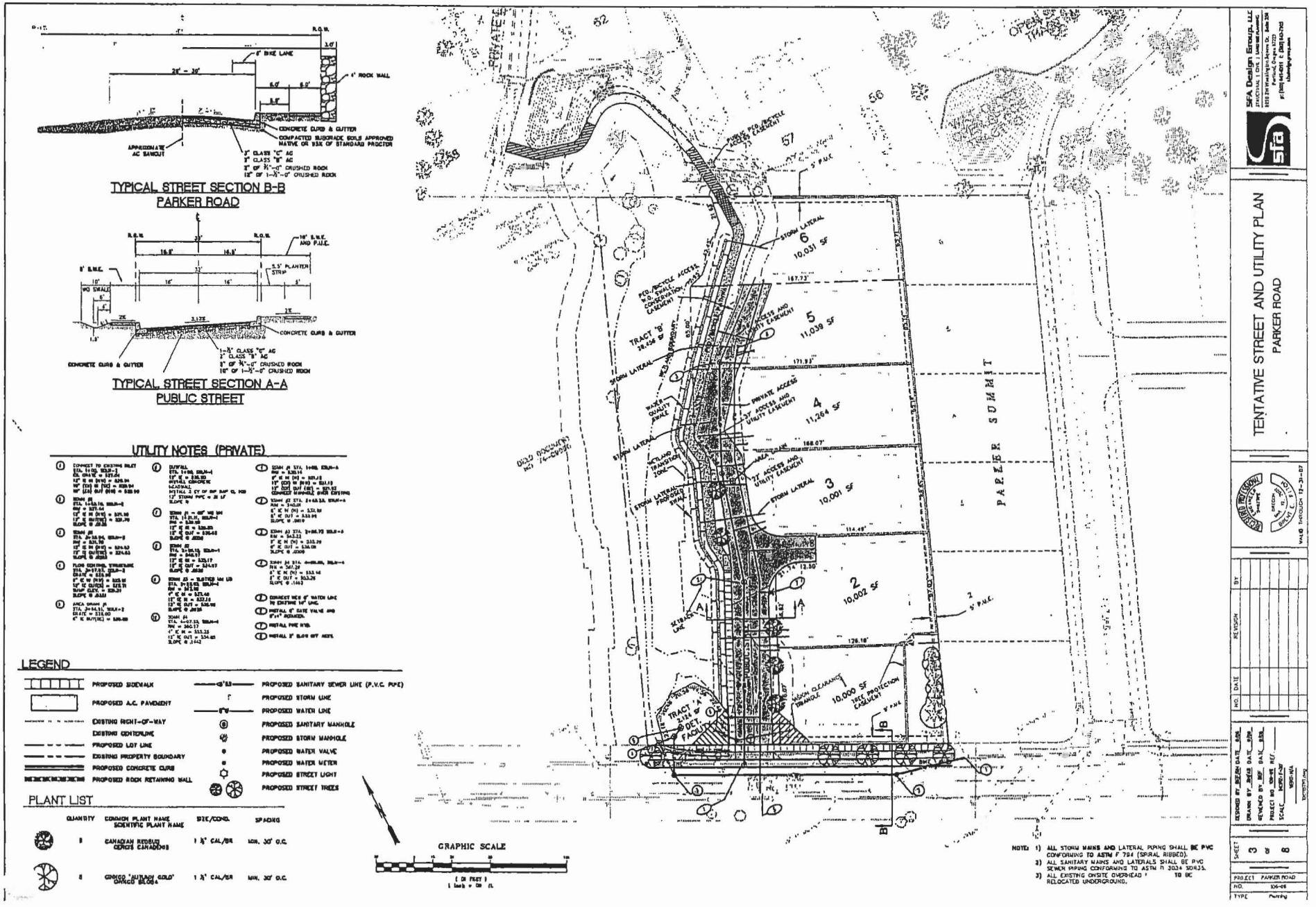
SFA Design Group, LLC

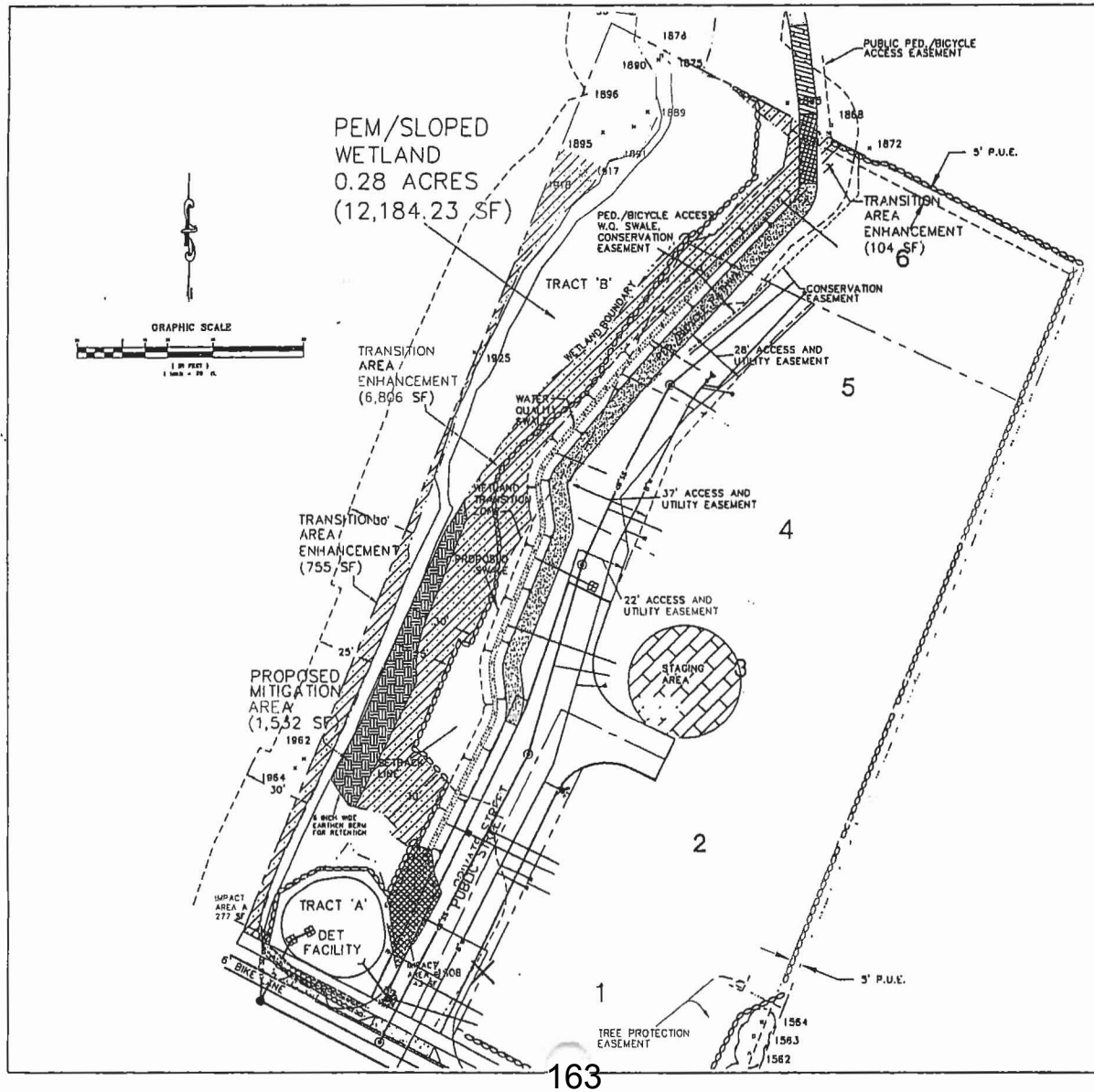
NO.	DATE	REVISION	BY

DESIGNED BY BEP DATE 4/05
DRAWN BY AB DATE 4/05
REVIEWED BY BEP DATE 4/05
PROJECT NO. 106-011 REF.
SCALE HORIZ 1"=50'
VERT N/A
10611GRAD.dwg

REGISTERED PROFESSIONAL ENGINEER OREGON BRENT C. FITCH
VALID THROUGH 12-31-07

SHEET 5 OF 8


TYPICAL STREET SECTION B-B
PARKER ROAD
TYPICAL STREET SECTION A-A
PUBLIC STREET
UTILITY NOTES (PRIVATE)
LEGEND
PROPOSED SIDEWALK
PROPOSED A.C. PAVEMENT
EXISTING RIGHT-OF-WAY
EXISTING CENTERLINE
PROPOSED LOT LINE
EXISTING PROPERTY BOUNDARY
PROPOSED CONCRETE CURB
PROPOSED ROCK RETAINING WALL
PROPOSED SANITARY SEWER LINE (P.V.C. PIPE)
PROPOSED STORM LINE
PROPOSED WATER LINE
PROPOSED SANITARY MANHOLE
PROPOSED STORM MANHOLE
PROPOSED WATER VALVE
PROPOSED WATER METER
PROPOSED STREET LIGHT
PROPOSED STREET TREES
PLANT LIST
QUANTITY
COMMON PLANT NAME
SCIENTIFIC PLANT NAME
SIZE/COND.
SPACING
CANADIAN REDBUD
CERCIS CANADENSIS
1 ½" CAL/BR
MIN. 30' O.C.
GINKGO 'AUTUMN GOLD'
GINKGO BILOBA
1 ½" CAL/BR
MIN. 30' O.C.
GRAPHIC SCALE
PARKER SUMMIT
TRACT 'A'
0.214 AC
DET. FACILITY
TRACT 'B'
28,636 SF
10,031 SF
11,039 SF
11,264 SF
10,001 SF
10,002 SF
10,000 SF
TREE PROTECTION EASEMENT
VISION CLEARANCE TRIANGLE
PRIVATE ACCESS AND UTILITY EASEMENT
PED./BICYCLE ACCESS & UTILITY EASEMENT
STORM LATERAL
WATER LINE
SANITARY LATERAL
WETLAND TRANSITION ZONE
WATER QUALITY SWALE
NOTES: 1) ALL STORM MAINS AND LATERAL PIPING SHALL BE PVC CONFORMING TO ASTM F 794 (SPIRAL RIBBED).
2) ALL SANITARY MAINS AND LATERALS SHALL BE PVC SEWER PIPING CONFORMING TO ASTM D 3034 SDR35.
3) ALL EXISTING ONSITE OVERHEAD UTILITIES TO BE RELOCATED UNDERGROUND.
SFA Design Group, LLC
TENTATIVE STREET AND UTILITY PLAN
PARKER ROAD
PROJECT PARKER ROAD
NO. 106-08
TYPE Survey
SHEET 3 OF 8



LEGEND

- EXISTING 5' CONTOUR
- PROPOSED BIOBAG PROTECTION
- PROPOSED EROSION CONTROL FENCE
- PROPOSED CONSTRUCTION ENTRANCE
- TREE PROTECTIVE FENCING
- TREE TO BE SAVED
- TREE TO BE REMOVED
- PROPOSED RETAINING WALL

MITIGATION PLAN SUMMARY

MITIGATION PLAN ALSO SUBMITTED TO DEPT. OF STATE LANDS AND U.S. ARMY CORP FOR JOINT WETLAND PERMIT.

MITIGATION PLAN INCLUDES CREATION OF 1,532 SF OF PEM/SLOPED WETLAND AND ENHANCEMENT OF 7,665 SF OF TRANSITION AREA.

CONDITION OF WETLAND MITIGATION AREA WILL BE MONITORED FOR FIVE YEARS WITH AN ANNUAL REPORT TO BE FILED WITH THE DEPT. OF STATE LANDS AND U.S. ARMY CORP.

NON-NATIVE VEGETATION REMOVAL TO OCCUR AS DESCRIBED IN WETLAND AND TRANSITION AREA MITIGATION PLAN PREPARED BY SCHOTT AND ASSOC.

NATIVE VEGETATION PLANTING TO OCCUR AS DESCRIBED IN WETLAND AND TRANSITION AREA MITIGATION PLAN PREPARED BY SCHOTT AND ASSOC.

SFA Design Group, LLC

TENTATIVE MITIGATION AND CONSTRUCTION MGMT PLAN

PARKER ROAD SUBDIVISION

SHEET 6 OF 8

PROJECT PARKER ROAD

NO. 99-08

TYPE Planning

SCHOTT & ASSOCIATES
Ecologists & Wetlands Specialists

21018 NE Hwy 99E • P.O. Box 589 • Aurora, OR 97002 • (503) 678-6007 • FAX: (503) 678-6011

S & A #: 1852
December 22, 2006

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279

Attn: Jevra Brown

Re: DSL Removal/Fill Permit Application No. 37244-RF/Modification

Dear Mrs. Brown:

This letter is a request for a permit modification to the existing DSL Removal/Fill Permit Application No. 37244-RF.

PROJECT MODIFICATION DESCRIPTION

In the original permit application, the applicant proposed to subdivide 2.28 acres into six lots, one open space tract, one private street, and a stormwater facility. The proposed lots range in size from 10,001 to 10,330 square feet, with an average lot size of approximately 10,110 square feet. The lots will all be developed with single-family detached homes.

The applicant wishes to modify the permit application although the preferred site plan will remain the same. The size of the wetland was reduced after an October 18, 2006 site visit made by Peter Ryan of DSL, which affects the impact area and cut/fill volumes originally presented in our application. The wetland was reduced from 0.28 acres (12,184.23 sf) to 0.26 (11,357.02 sf) after the wetland concurrence site visit. This change results in the reduction of wetland impacts from the proposed subdivision including reductions in cut/fill calculations.

The original application detailed disturbances in two impact locations; 277 sf of impact in the Parker Road ditch and 743 sf of impacts to the onsite wetland west of the existing house. The 227 sf of impacts to the road side ditch were the result of the street improvements to Parker Road required by the City of West Linn. The cut/fill volumes associated with the 277 sf impact area were proposed to be 21.04 CY of removal and 26.30 CY of fill.

The second impact area (743 sf) was proposed to be part of the water quality swale, pedestrian/bicycle pathway, and the private driveway. The 743 sf of wetland impacts would have included 1.01 CY of removal and 14.77 CY of fill.

In hindsight, we discovered the cut/fill volumes were reversed between the two impact areas. The cut/fill volumes have been corrected in this permit modification.

Description of Proposed Changes

Temporary Impacts

Temporary impacts may be unavoidable in order to complete the proposed development plan. To construct a coffer dam in the work area for the proposed street improvements fill must be imported upstream of the work area. The coffer dam will be removed after completion of the sanitary sewer line in the area of the stream. A coffer dam will occupy 0.33 CY inside the stream channel.

These calculations have been included as a precautionary measure if there is surface flow in the tributary to Tanner Creek during the days of construction. This temporary impact will not count towards the total impact numbers reported on the joint permit application.

Permanent Impacts

There will be no change to the 277 sf street improvement disturbance area however, the cut/fill volumes have changed. The 277 sf of impacts will include 14 CY's of wetland fill and 0.0 CY of wetland removal.

Under our proposed permit modification the 743 sf impact area will be eliminated due to the wetland delineation alteration. The subject area has been deemed upland therefore, there will be no wetland impacts.

Measures to Avoid & Minimize Effects of the Changes

The proposed wetland (Parker Road ditch) impacts result from the proposed street improvements required by the City of West Linn.

Depending on the time of year or weather on the day of construction, a coffer dam may need to be constructed upslope to dewater the project area during construction. Any water left in the project area will be pumped out, while upstream flow will be diverted around the project area and back into a downstream part of the creek channels by pumps and hoses. There is no need to screen the intake valve because there are no fish species present. Coffer dams shall be constructed of native materials and/or sandbags as necessary.

Silt curtains will also be constructed to help eliminate erosion and sedimentation in the project location, regardless if coffer dam is constructed in the tributary or not. After completion of the project, the water is then released from the dam slowly, feeding the dry ditch. This reduces the amount of erosion in the project area and sedimentation downstream.

All work in stream channels will be done during the appropriate "in stream work window" and periods of minimal flow. The in water work window for Tanner Creek tributaries begins on July 15th.

Restoration of the Project Area

After construction ends the channel of the ditch will be restored by matching the contours of the existing upstream and down stream channels. Traditional construction equipment will be utilized for proposed work within jurisdictional waters. The equipment shall be situated outside of the wetland and ditch whenever possible. The channel will be lined with 3-inch minus river cobble to prevent further erosion and the side slopes seeded riparian seed mixture. Exposed areas on the stream bank will be jute staked to prevent additional sediment from entering the tributary.

Sincerely,

Dale R. Gulliford, Jr.

cc: Jan Stuart (COE)

Attached: Revised Joint Permit Application (Front page)
Alternative A - Preferred Site Plan (Sheet 1 of 5)
Alternative A - Preferred Site Plan (Sheet 2 of 5)
Alternative A – Grading Plan (Sheet 3 of 5)
Alternative A – Grading Plan (Sheet 4 of 5)
Alternative A – Cross Sections (Sheet 5 of 5)

Joint Permit Application Form

US Army Corps of Engineers (Portland District)

DATE STAMP

AGENCIES WILL ASSIGN NUMBERS

Corps Action ID Number [Click & Type] Oregon Department of State Lands No [Click & Type]

SEND ONE SIGNED COPY OF YOUR APPLICATION TO EACH AGENCY

District Engineer
ATTN: CENWP-OD-GP
PO Box 2946
Portland, OR 97208-2946
503-808-4373

AND

West of the Cascades:
State of Oregon
Department of State Lands
PO Box 4395, Unit 18
Portland, OR 97208-4395
503-378-3805

OR

East of the Cascades:
State of Oregon
Department of State Lands
1645 NE Forbes Road, Suite 112
Bend, Oregon 97701
541-388-6112

(1) Applicant Name and Address	Renaissance Homes, Inc. 16771 Boones Ferry Rd. Lake Oswego, OR 97035 Attn: Jeff Shrope	Business Phone # (503) 496-0594 Home Phone# FAX # (503) 496-0608 E-mail:
Authorized Agent Name and Address (Signature required in Block 9) [X] Consultant [--] Contractor	Schott and Associates P.O. Box 589 Aurora, OR. 97002 Attn: Dale R. Gulliford, Jr.	Business Phone # 503.678.6007 Home Phone# FAX # 503.678.6011 E-mail:
Property Owner Name and Address (If different than applicant)[1]	Same as Applicant	Business Phone # Same Home Phone# FAX # E-mail:

(2) PROJECT LOCATION

Street, Road or other descriptive location	Legal Description *(attach tax lot map*)*			
2929 South Parker Road	Quarter/Quarter **CD**	Section **25**	Township **2S**	Range **1E**

In or Near (City or Town)	County	Tax Map #	Tax Lot #[2]
West Linn	**Clackamas**	**2 1E 25CD**	**3900**

Wetland/Waterway Name (pick one)	River Mile (if known)	Latitude	Longitude
Unnamed	**1.2 miles from the Willamette River**	**45°21.791'N**	**122°38.102'W**

*Do you consent to allow Corps or Dept. of State Lands staff to enter into the above-described property?** [x] *Yes* [--] *No*

(3) PROPOSED PROJECT INFORMATION

Type: [x] Fill [x] Excavation (removal) [--] In-Water Structure [--] Maintain/Repair an Existing Structure

Brief Description: 0.02 acres of wetland impact (Private street, detention facility, water quality swale, and sidewalk.

Fill

[--] Riprap [x] Rock [x] Gravel [x] Sand [x] Silt [x] Clay [--] Organics [--] Other: [Click & Type]

Wetlands	Total Fill (cy)	14	Permanent (cy)	14	Temporary (cy)	0					
	Impact Area in Acres	0.006		Dimensions (feet)	L'	Varies	W'	Varies	H'	varies
Waters below OHW	Total Fill (cy)	None	Permanent (cy)	None	Temporary (cy)	None					
	Impact Area in Acres	None		Dimensions (feet)	L'	Na	W'	Na	H'	na

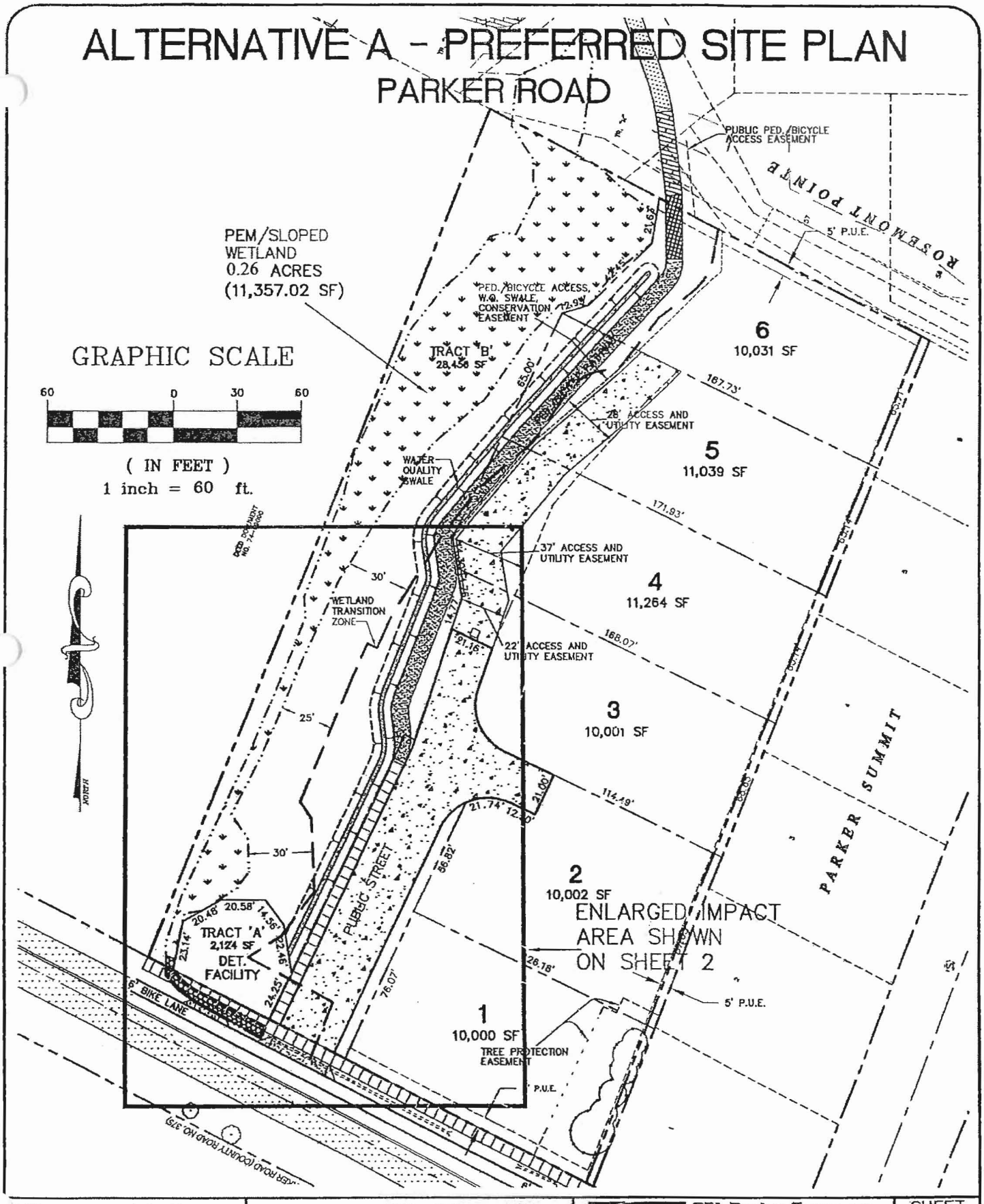
Removal

[--] Riprap [x] Rock [x] Gravel [x] Sand [x] Silt [--] Clay [--] Organics [--] Other: [Click & Type]

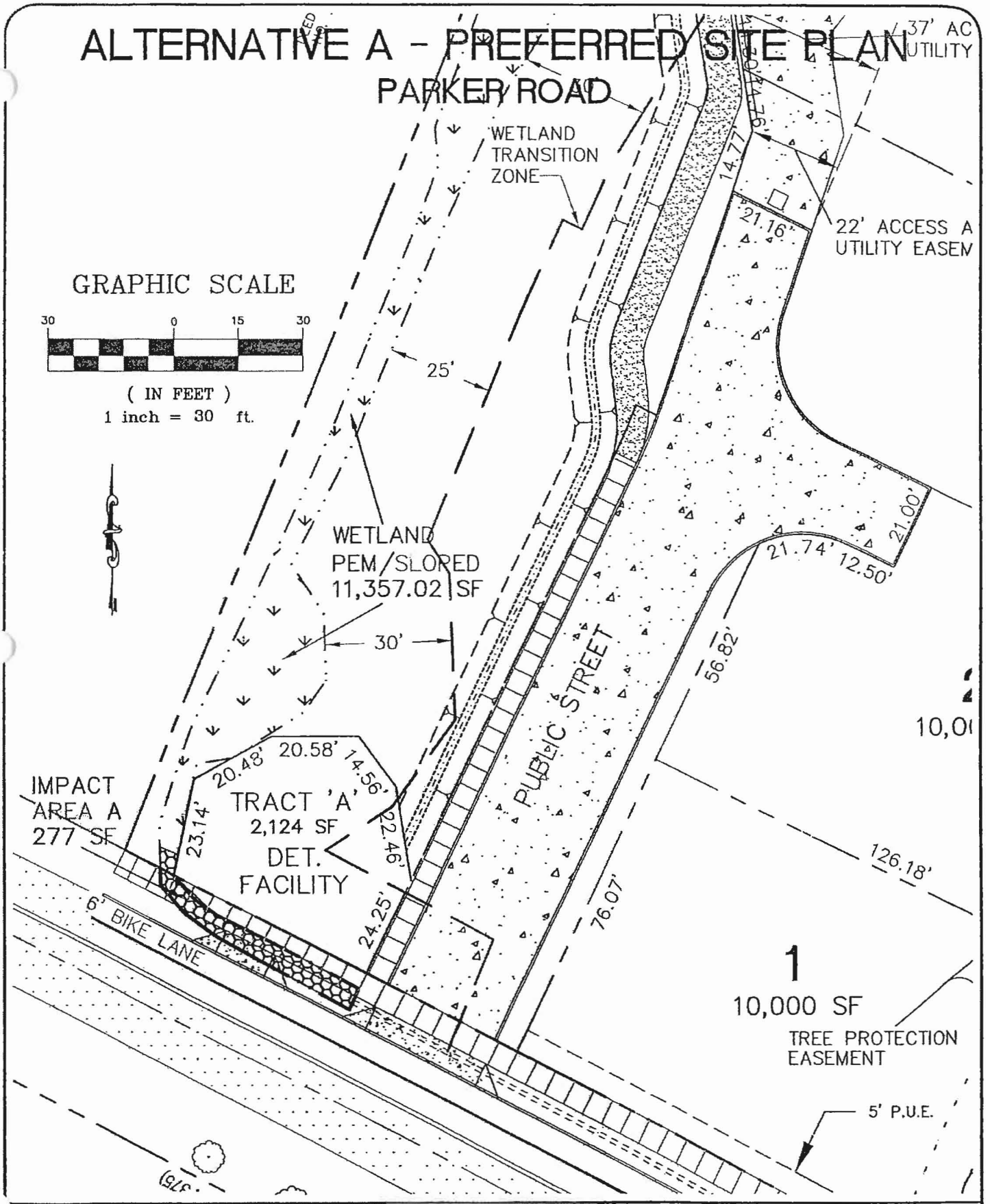
Wetlands	Total Fill (cy)	None	Permanent (cy)	None	Temporary (cy)	0					
	Impact Area in Acres	None		Dimensions (feet)	L'	None	W'	None	H'	None
Waters below OHW	Total Fill (cy)	None	Permanent (cy)	None	Temporary (cy)	None					
	Impact Area in Acres	None		Dimensions (feet)	L'	None	W'	None	H'	none

[1] **If applicant is not the property owner, permission to conduct the work must be attached.**
[2] **Attach a copy of all tax maps with the project area highlighted.**
* ***Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***

ALTERNATIVE A - PREFERRED SITE PLAN

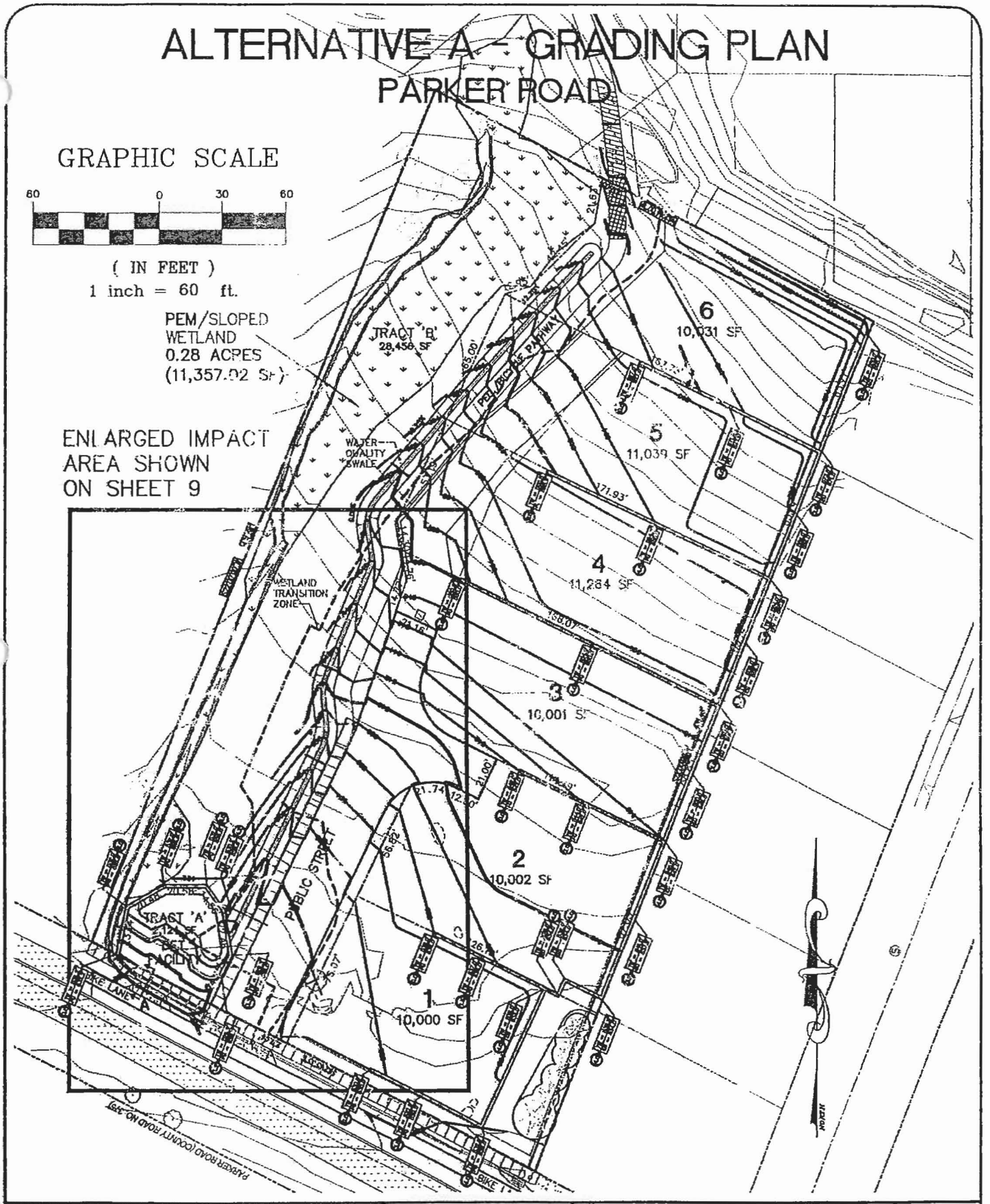


NO. 106-011	DESIGNED BY PTS DATE 4/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 1 OF 5
TYPE	PROJECT NO. 106-011 REF.		
W-106IIALTA.DWG	SCALE 1" = 60' N/A		



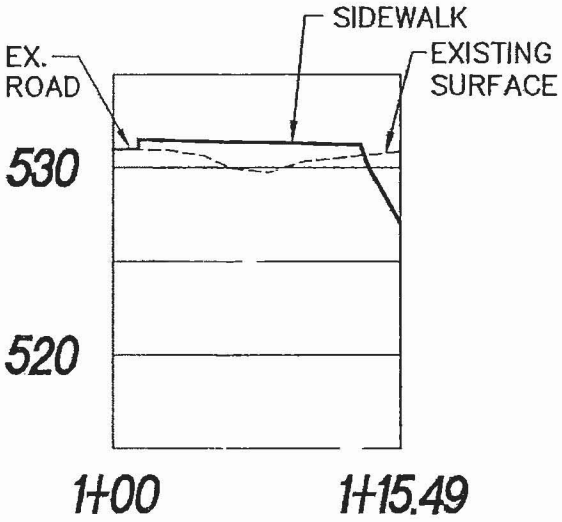
NO. 106-011	DESIGNED BY PTS	DATE 12/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 2 OF 5
TYPE PARKER ROAD	PROJECT NO. 106-011	REF.		
PREFERRED PLAN	SCALE 1"=30'	N/A		

ALTERNATIVE A - GRADING PLAN
PARKER ROAD



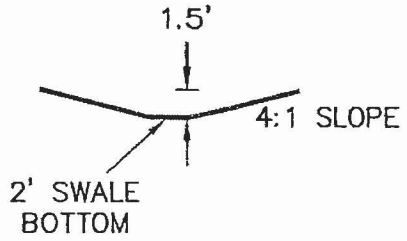
NO.	106-011	DESIGNED BY PS	DATE 12/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 3 OF 5
TYPE	PLANNING	PROJECT NO. 106-011	REF.		
	W-10611GRAD.dwg	SCALE 1"=60'	N/A		

ALTERNATIVE A - CROSS SECTIONS
PARKER ROAD



SECTION A

SCALE: 1"=10'



WQ SWALE DETAILS

SCALE: 1"=10'

CUT AND FILL VOLUMES

IMPACT AREA	CUT/FILL	TOTAL
AREA A	0 / 14 CY	14 CY

NO. 106-011	DESIGNED BY PTS DATE 04/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 5 OF 5
TYPE	PROJECT NO. 106-011 REF.		
W-1061IGRAD.DWG	SCALE 1"=10'		

SCHOTT & ASSOCIATES
Ecologists & Wetlands Specialists
21018 NE Hwy 99E • P.O. Box 589 • Aurora, OR 97002 • (503) 678-6007 • FAX: (503) 678-6011

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FOR
2929 SOUTH PARKER RD. SUBDIVISION
WETLAND FILL PERMIT APPLICATION
9/8/06

LIST OF FIGURES:

2S1E25CC00100
NOELL & CAROL PRICE
3015 S. PARKER RD.
WEST LINN, OR 97068

2S1E25CD03828
PETER CHUN
4750 COHO LN
WEST LINN, OR 97068

2S1E25CD03829
SCOTT & SUZAN SUPPERSTEIN
4740 COHO LN.
WEST LINN, OR 97068

2S1E25CD03830
ANTHONY MANN
4730 COHO LN.
WEST LINN, OR 97068

2S1E25CD03831
JOSEPH NIETUPSKI & MARY VALE
4720 COHO LN.
WEST LINN, OR 97068

2S1E25CD03832
SAN LAO & LY CHHEAU
P.O. BOX 483
LAKE OSWEGO, OR 97034

2S1E25CD03833
DONALD & ANNE FRANK
4700 COHO LN.
WEST LINN, OR 97068

2S1E3600100
DR HORTON, INC.
4386 SW MACADAM AVE.,
STE.102
PORTLAND, OR 97239

Joint Permit Application Form

US Army Corps of Engineers (Portland District)

DATE STAMP

AGENCIES WILL ASSIGN NUMBERS

Corps Action ID Number [Click & Type] Oregon Department of State Lands No [Click & Type]

SEND ONE SIGNED COPY OF YOUR APPLICATION TO EACH AGENCY

District Engineer
ATTN: CENWP-OD-GP
PO Box 2946
Portland, OR 97208-2946
503-808-4373

AND

West of the Cascades:
State of Oregon
Department of State Lands
PO Box 4395, Unit 18
Portland, OR 97208-4395
503-378-3805

OR

East of the Cascades:
State of Oregon
Department of State Lands
1645 NE Forbes Road, Suite 112
Bend, Oregon 97701
541-388-6112

(1) Applicant Name and Address	Renaissance Homes, Inc. 16771 Boones Ferry Rd. Lake Oswego, OR 97035 Attn: Jeff Shrope	Business Phone # (503) 496-0594 Home Phone# FAX # (503) 496-0608 E-mail:
Authorized Agent Name and Address (Signature required in Block 9) [x] Consultant [ ] Contractor	Schott and Associates P.O. Box 589 Aurora, OR. 97002 Attn: Dale R. Gulliford, Jr.	Business Phone # 503.678.6007 Home Phone# FAX # 503.678.6011 E-mail:
Property Owner Name and Address (If different than applicant)[1]	Same as Applicant	Business Phone # Same Home Phone# FAX # E-mail:

(2) PROJECT LOCATION

Street, Road or other descriptive location		Legal Description *(attach tax lot map*)*			
2929 South Parker Road		Quarter/Quarter **CD**	Section **25**	Township **2S**	Range **1E**
In or Near (City or Town) **West Linn**	County **Clackamas**	Tax Map # **2 1E 25CD**		Tax Lot #[2] **3900**	
Wetland/Waterway Name (pick one) **Unnamed**	River Mile (if known) **1.2 miles from the Willamette River**	Latitude **45°21.791'N**		Longitude **122°38.102'W**	

*Do you consent to allow Corps or Dept. of State Lands staff to enter into the above-described property?** [x] *Yes* [ ] *No*

(3) PROPOSED PROJECT INFORMATION

Type: [x] Fill [x] Excavation (removal) [ ] In-Water Structure [ ] Maintain/Repair an Existing Structure

Brief Description: 0.02 acres of wetland impact (Private street, detention facility, water quality swale, and sidewalk.

Fill

[ ] Riprap [x] Rock [x] Gravel [x] Sand [x] Silt [x] Clay [ ] Organics [ ] Other: [Click & Type]

Wetlands	Total Fill (cy)	41.07		Permanent (cy)	41.07	Temporary (cy)		0			
	Impact Area in Acres	0.02		Dimensions (feet)	L'	Varies	W'	Varies	H'	varies	
Waters below OHW	Total Fill (cy)	None		Permanent (cy)	None	Temporary (cy)		None			
	Impact Area in Acres	None		Dimensions (feet)	L'	Na	W'	Na	H'	na	

Removal

[ ] Riprap [x] Rock [x] Gravel [x] Sand [x] Silt [ ] Clay [ ] Organics [ ] Other: [Click & Type]

Wetlands	Total Fill (cy)	22.05		Permanent (cy)	22.05	Temporary (cy)		0			
	Impact Area in Acres	0.02		Dimensions (feet)	L'	Varies	W'	Varies	H'	Varies	
Waters below OHW	Total Fill (cy)	None		Permanent (cy)	None	Temporary (cy)		None			
	Impact Area in Acres	None		Dimensions (feet)	L'	None	W'	None	H'	none	

[1] **If applicant is not the property owner, permission to conduct the work must be attached.**
[2] **Attach a copy of all tax maps with the project area highlighted.**
* ***Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***

1A

Is the disposal area upland? ☒ Yes ☐ No	Impervious surface created? ☒ <1 acre? ☐ >1 acre?		
Are you aware of any state or federal Endangered Species on the project site?	☐ Yes	☒ No	If yes, please explain in the project description (in block 4)
Are you aware of any Cultural/Historic Resources on the project site?	☐ Yes	☒ No	
Is the project site within a national Wild & Scenic River?	☐ *Yes*	☒ *No*	
*Is the project site within a state Scenic Waterway?**			

(4) PROPOSED PROJECT PURPOSE & DESCRIPTION

Project Purpose and Need:

*Provide a description of the public, social or economic benefits of the project along with any supporting formal actions of a public body (e.g. city council, special district board), as appropriate.**

The project purpose for this application is to construct a 6-lot subdivision. The primary objective of this development is to satisfy an existing demand for housing in the area. The lots are designed to accommodate single-family residences. (Cont. in attachment Page 1)

Project Description: Include the following information:

☐ Volumes and acreages of all fill and removal activities in waterway or wetland separately

☐ Permanent and temporary impacts

☐ Types of materials (e.g., gravel, silt, clay, etc.)

☐ How the project will be accomplished (i.e., describe construction methods)

☐ For work in waterways where fish are likely to be present, complete and attach a plan to isolate the work area from the flowing water. (See the Section A of the Resource Plan Guidance Document.)

☐ If native migratory fish are present (or were historically present) and you are installing, replacing or abandoning a culvert or other potential obstruction to fish passage, complete and attach a statement of how the Fish Passage Requirements, set by the Oregon Department of Fish and Wildlife will be met. (See Section B of the Resource Plan Guidance Document.)

☐ For fish habitat or wetland restoration or enhancement activities, complete the supplemental Fish Habitat or Wetland Restoration and Enhancement form

The applicant proposes to subdivide 2.28 acres into six lots, one open space tract, one private street, and a stormwater facility. The proposed lots range in size from 10,001 to 13,330 square feet, with an average lot size of approximately 10,110 square feet. (Cont. on page 1 of attachment)

Project Drawings:

State the number of project drawing sheets included with this application: [Click & Type]

A complete application must include a location map, site plan, cross-section drawings and recent aerial photo as follows and as applicable to the project:

- ☐ **Location map** (must be legible with street names)
- ☐ **Site plan** including
  - ☐ Entire project site and activity areas
  - ☐ Existing and proposed contours
  - ☐ Location of ordinary high water, wetland boundaries or other jurisdictional boundaries
  - ☐ Identification of temporary and permanent impact areas within waterways or wetlands
  - ☐ Location of staging areas
  - ☐ Location of construction access
  - ☐ Location of cross section(s), as applicable
  - ☐ Location of mitigation area, if applicable
- ☐ **Cross section drawing(s)** including
  - ☐ Existing and proposed elevations
  - ☐ Ordinary high water and/or wetland boundary or other jurisdictional boundaries
- ☐ **Recent Aerial photo** (1:200, or if not available for your site, the highest resolution available)

Will any construction debris, runoff, etc., enter a wetland or waterway? ☐ Yes ☒ No

If yes, describe the type of discharge and show the discharge location on the site plan.

Estimated Project Start Date: July 2007 Estimated Project Completion Date: Sept 2007

** Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.*

(5) PROJECT IMPACTS AND ALTERNATIVES

Describe alternative sites and project designs that were considered to avoid impacts to the waterway or wetland. *(Include alternative design(s) with less impact and reasons why the alternative(s) were not chosen.*)* Describe what measures you will use (before and after construction) to minimize impacts to the waterway or wetland.

(See page 4 of the attachment)

Impact area is: ☐ Ocean ☐ Estuary ☐ River ☐ Lake ☐ Stream ☒ Freshwater Wetland

Describe the existing **physical and biological characteristics** of the wetland/waterway site by area and type of resource (Use separate sheets and photos, if necessary).

The approximate 2.3-acre subject property is located north of Parker Road in West Linn, Clackamas County, Oregon (SE ¼ quarter or the SW ¼ of T2S, R1E, Sec. 25, Tax lot 3900). The rectangular subject property is situated close to a 45-degree angle. (See page 4 of the attachment)

For wetlands, include

- ☐ *Cowardin and Hydrogeomorphic(HGM) wetland class(s)**
- ☐ *Dominant plant species by layer (herb, shrub, tree)**
- ☐ Whether the wetland is freshwater or tidal
- ☐ *Assessment of the functional attributes of the wetland**
- ☐ Identify any vernal pools, bogs, fens, mature forested wetland, seasonal mudflats, or native wet prairies in or near the project area. Do any of these wetlands qualify as Special Areas of Concern (SAC)? (Refer to ORNHIC protocol dated May 4, 2005, http://www.oregon.gov/DCBS/RSL/docs/streamlining_water/SPGP_docs/ORNHIC_protocal_5_05.pdf)

For waterways, include a description of, as appropriate:

- ☐ *Condition of bank slopes (eroded, slope, etc.)**
- ☐ *Type and condition of riparian vegetation**
- ☐ *Channel morphology (i.e., structure and shape)**
- ☐ *Stream substrate**
- ☐ *History of prior disturbance**
- ☐ *Cause of erosion**
- ☐ Fish and wildlife (type, abundance, period of use, significance of site)
- ☐ *General hydrological conditions (e.g. stream flow, seasonal fluctuations)**

*Describe the existing **navigation, fishing and recreational** use of the waterway or wetland.**
The onsite wetland provides no navigation, fishing, or recreational uses.

Resource Plan Requirements

- ☐ Describe the water quality conditions of the site and the expected effect of the project on these conditions.
- ☐ *Describe the reasonably expected adverse effects of the development of this project and how the effects will be mitigated.**
- ☐ *For temporary disturbance of soils and/or vegetation in waterways, wetlands or riparian areas, complete and attach a Site Restoration Plan to restore the site after construction. See section E of the Resource Plan Guidance Document for plan requirements.**
- ☐ *For permanent impact to wetlands, complete and attach a Compensatory Wetland Mitigation (CWM) Plan. (See Section F in the Resource Plan Guidance Document for CWM plan requirements)**
- ☐ *For permanent impact to waterways or riparian areas, complete and attach a Compensatory Mitigation (CM) plan. (See Section G in the Resource Plan Guidance Document for CM plan requirements)**
- ☐ *For permanent impact to estuarine wetlands, you must submit an Estuarine Resource Replacement Plan. (See OAR 141-085-240 to OAR 141-085-257 for plan requirements)**

In addition to any construction measures, complete and attach:

- ☐ *A Sediment and Erosion Control Plan (See DEQ's Oregon Sediment and Erosion Control Manual at*

* ***Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***

http://www.deq.state.or.us/wq/wqpermit/ESCManual.htm (Section C of the Resource Plan Guidance Document) *

☐ For a project with impervious surface (new or associated), complete and attach a post-construction stormwater management plan. (See Section D of the Resource Plan Guidance Document)

(6) ADDITIONAL INFORMATION

Joining Property Owners and Their Address and Phone Numbers *(if more than 5, attach printed labels*)*
[Click & Type]

Has the proposed activity or any related activity received the attention of the Corps of Engineers or the Department of State Lands in the past, e.g., wetland delineation, violation, permit, lease request, etc.? ☒ Yes ☐ No

If yes, what identification number(s) were assigned by the respective agencies:
Corps # [Click & Type] NA_____ State of Oregon # [Click & Type] WD# 06-0204_____

Has a wetland delineation been completed for this site? ☒ *Yes* ☐ *No*
If yes, by whom:* [Click & Type] Schott & Associates_____
Has the wetland delineation been approved by DSL or the COE? ☐ *Yes* ☒ *No*
*(If yes, attach concurrence letter.)**

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4A

(7) CITY/COUNTY PLANNING DEPARTMENT AFFIDAVIT *(to be completed by local planning official)* *

I have reviewed the project outlined in this application and have determined that:

- ☐ This project is not regulated by the comprehensive plan and land use regulations.
- ☐ This project is consistent with the comprehensive plan and land use regulations.
- ☒ This project will be consistent with the comprehensive plan and land use regulations when the following local approval(s) are obtained.
  - ☐ Conditional Use Approval ☒ Development Permit ☒ Other [Click & Type] Subdivision Approval
- ☐ This project is not consistent with the comprehensive plan. Consistency requires a
  - ☐ Plan Amendment ☐ Zone Change ☐ Other [Click & Type]_____

An application ☒ has ☐ has not been filed for local approvals checked above.

[Click & Type] Gordon Howard	Gordon Howard	[Click & Type] Sr. Planner	[C&T] West Linn	9/5/06
Local planning official name (print)	Signature	Title	City / County	Date

Comments:

(8) COASTAL ZONE CERTIFICATION *

If the proposed activity described in your permit application is within the Oregon coastal zone, the following certification is required before your application can be processed. A public notice will be issued with the certification statement, which will be forwarded to the Oregon Department of Land Conservation and Development for its concurrence or objection. For additional information on the Oregon Coastal Zone Management Program, contact the department at 635 Capitol Street NE, Suite 150, Salem, Oregon 97301 or call 503-373-0050.

CERTIFICATION STATEMENT

I certify that, to the best of my knowledge and belief, the proposed activity described in this application complies with the approved Oregon Coastal Zone Management Program and will be completed in a manner consistent with the program.

[Click & Type] N/A	[Click & Type] N/A
Print /Type Name	Title
N/A	[Click & Type] N/A
Applicant Signature	Date

(9) SIGNATURE FOR JOINT APPLICATION

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. *I understand that payment of the required state processing fee does not guarantee permit issuance. The fee for the state application must accompany the application for completeness.* *Amount enclosed* $375.00 *

Jeff Shrope, Renaissance Homes	Director of A&D
Print /Type Name	Title
Jeff Shrope	8/29/06
Applicant Signature	Date

I certify that I may act as the duly authorized agent of the applicant.

Martin Schott	Owner Schott and Associates
Print /Type Name	Title
	8/28/06
Authorized Agent Signature	Date

I certify that the applicant has my permission to conduct the project on my property. *

[Click & Type] Randal Sebastian	owner
Print /Type Name	*Title*
	8/29/06
Property Owner Signature	*Date*

---

[3] If the project is on a state-owned waterway, you must contact the Land Management Division of the Department of State Lands for approval to proceed with this application. See www.oregon.gov/DSL/ for a list of state-owned waterways.

* Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.

SA

*Supplement: Fish Habitat and Wetland Restoration and Enhancement Activity Plan**

This information is required for all fish habitat and wetland restoration and enhancement projects that are eligible for the SPGP.

This project involves activities that will provide

- ☐ **Fish Habitat Enhancement**
- ☐ **Wetland Restoration and Enhancement**
- ☐ **Both Fish Habitat and Wetland Restoration and Enhancement**

1. ACTIVITIES (complete applicable sections)

FISH ENHANCEMENT ACTIVITIES [4]	QUANTITY	CUBIC YARDS EACH		TOTAL CUBIC YARDS	
		Removal	Fill	Removal	Fill
Fish Rocks	None				
Deflectors	None				
Rock or Log Weirs	None				
Gravel Placement	None				
Pool/Pond Construction	None				
Back/Side Channel Construction	None				
Channel Construction	None				
Barrier Removal	None				
Woody Material	None				

WETLAND RESTORATION AND ENHANCEMENT ACTIVITIES [4]	QUANTITY	CUBIC YARDS EACH		TOTAL CUBIC YARDS	
		Removal	Fill	Removal	Fill
Ditch Plugging	None				
Water Diversion	None				
Drain Tile Removal or Destruction	None				
Dike Construction/Relocation	None				
Water Impoundment Structure	None				
Bank Excavation/Contouring	None				
Dike Removal/Breaching	None				
Surface Grading	None				
Other (describe)	None				

2. FILL AND REMOVAL VOLUMES AND ACREAGE AFFECTED

41.07 total cubic yards of fill below ordinary high water or within wetlands

22.05 total cubic yards of removal below ordinary high water or within wetlands

- ☐ Restore None acres of former (drained or diked) wetland
- ☐ Create 0.035 acres of new wetland
- ☐ Enhance None acres of existing wetland
- ☐ Convert None acres of wetland to upland

[4] **Below ordinary high water line or within wetlands**

* ***Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***

3. **REQUIRED ATTACHMENTS** (on 8.5 x 11 or 8.5 X 14 paper)

For projects that involve Wetland Restoration and Enhancement activities

- ☐ Project site located on National Wetlands Inventory map
- ☐ Aerial photograph showing project boundaries
- ☐ Project Site located on soil survey map (if available)
- ☐ Location of all proposed construction, including dikes, water control structures, spoils placement, etc.
- ☐ Location & approximate boundaries of existing wetlands and wetlands to be restored and/or enhanced

4. **ODFW REVIEW: I have evaluated the above project and find it will be constructed in a way that minimizes impact to aquatic resource values. The recommended in-water work period is**

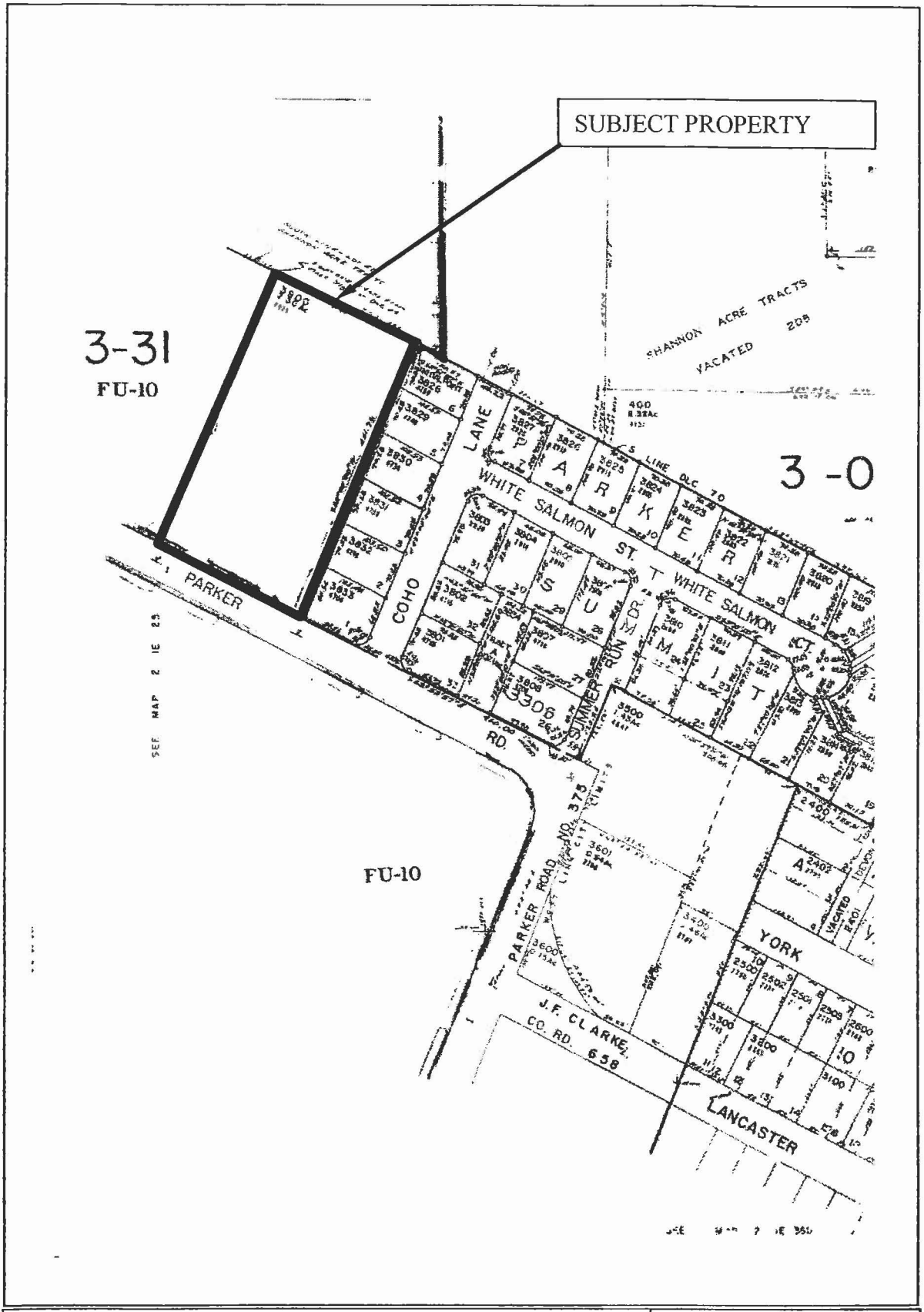
_____ **to** _____ _____ _____

ODFW Biologist Signature **Date**

5. **By signing the removal-fill application the applicant certifies that they will complete the project according to the General Authorization for Fish Habitat Enhancement Rules (OAR 141-089-0100 through –0130) and General Authorization for Wetland Restoration and Enhancement Rules (OAR 141-089-0205 through –0240) and the attached plan and drawings.**

http://oregon.gov/DSL/PERMITS/docs/joint_permit_app_v2.1_Formfill.doc

* ***Italicized areas are not required by the Corps for a complete application, but may be necessary prior to final permit decision by the Corps.***



TAX MAP 2S 1E 25CD, Tax Lot 3900
PARKER ROAD PROPERTY, WEST LINN, OR.
S&A #1852

Schott & Associates
11977 S Toliver Rd.
Molalla, Oregon 97038
503-829-6318

8A

PARKER ROAD SUBDIVISIOIN
CLACKAMAS COUNTY, OREGON

ATTACHMENT TO`
JOINT PERMIT APPLICATION
(BLOCKS 4 & 5)

Table Of Contents

PROJECT DETAILS (BLOCK 4)

Purpose and Need

The project purpose for this application is to construct a 6-lot subdivision. The primary objective of this development is to satisfy an existing demand for housing in the area. The lots are designed to accommodate single-family residences. There is a growing demand in the West Linn area for housing. The intent is to leave enough available developable space to accommodate all of the functions necessary to meet the project purpose and need.

To comply with zoning ordinances, a certain density must be maintained with minimum lot sizes. A sizeable portion of the site is un-buildable due to existing wetlands, drainage way, and wetland transition area. An effort was made to avoid the onsite wetland in the southwest corner of the site. To meet zoning requirements a portion of the existing wetland will need to be filled to meet the minimum lot density and provide room for onsite water resources and the wetland transition area.

Project Description

The applicant proposes to subdivide 2.28 acres into six lots, one open space tract, one private street, and a stormwater facility. The proposed lots range in size from 10,001 to 10,330 square feet, with an average lot size of approximately 10,110 square feet. The lots will all be developed with single-family detached homes.

A variety of features will provide access to the proposed subdivision. Primary access will be provided via a private street with 33 feet of right-of-way width which includes 32 feet of travel lane width and curbs with a width of ½ foot along both sides of the street. This private street will provide access to four of the lots (1, 2, 3, and 4) within a private street tract (Tract A) extending north from S. Parker Rd. The private street will provide direct access to lots #1 and 2, while lots #3 and 4 are designed to take access off a 28-foot wide access easement that extends north from the end of the private street. Access to the remaining two lots (5 and 6) is proposed via an 18-foot wide access easement extending south from an access easement in the Rosemont Pointe subdivision. The applicant will improve the site's southern boundary along Parker Rd. with six foot wide sidewalk, five and one-half a foot wide planter strip, and six foot wide bicycle lane.

Pedestrian circulation will be provided onto the site by the six foot wide sidewalk proposed along the site's Parker Rd. frontage. This sidewalk will then extend onto the site in easements along both sides of the private street. In addition, the sidewalk along the west side of the private street will be extended as a six foot wide pedestrian path beyond the end of the private drive, all the way through the site, to the northern project boundary. This pedestrian path will then extend to Private Drive 'L' in the Rosemont Pointe subdivision, providing a connection between both neighborhoods.

The existing 16-inch ductile iron line in Parker Road will provide water service to the site and to each lot. City Staff determined that this line has adequate capacity to service the site during the pre-application conference (see Pre-application Conference Summary in this application packet).

The existing eight-inch sanitary sewer line in Parker Road will provide service to the proposed lots. City Staff determined that this line has adequate capacity to service the site during the pre-application conference.

Storm water will be collected by a system pipes and catch basins. The storm water will be conveyed

to the new stormwater facility located in the southern portion of the site (Tract B), directly adjacent to the private street. The facility has been sized appropriately to handle development on the subject site as demonstrated in the Storm Drainage Report section of this application packet.

The site contains 0.28 acres (12,184 square feet) of PEM/Sloped wetland habitat and a man-made drainageway (see Wetland Delineation Report section of this application packet). The entire drainageway and majority of the wetland and transition areas will be preserved within an open space tract (Tract C). A small portion of the wetland will be impacted for construction of the private street and sidewalk. The applicant proposes to provide all compensatory mitigation on the subject site.

The site contains some deciduous and coniferous trees located mainly in the northwestern and southeastern corners. The trees have all been inventoried and are shown on the existing conditions plan. The City Arborist reviewed the trees on the site and determined that six of the existing trees are significant and ten additional trees are not significant but should still be preserved. These sixteen trees will all be preserved as identified by the City Arborist.

The project impacts will include 0.02 acres (1,020 sf) of wetland impacts including a total of 41.07 CY of fill material and 22.05 CY of removal.

Construction Methods

Approximately 0.02 acres of the onsite wetland will be filled. Grading will be accomplished the most effective way as determined by the contractor. The types of equipment that will be used will range from track hoes, bulldozers, to scrapers. Existing grade will be filled/cut per the Grading Plan specifications for the proposed development.

Construction Access

A temporary staging/stockpile area will be located in the middle of the property. Access to the construction site will be from the middle of the southwestern property boundary where the proposed access road will be built from Parker Road to the northeast.

Hydrological Characteristics

The existing wetlands at the project site are classified according to the hydrogeomorphic settings in the *Key to Level-1 Hydrogeomorphic (HGM) Classification of Willamette Valley Wetland/Riparian Systems*. This key is provided by the Oregon Department of State Lands to categorized wetlands. A wetland delineation conducted in March 2006 identified one wetland was found onsite. The onsite wetland is part of the Tanner Creek/Willamette River watershed. The wetland is classified as Sloped wetland. Below are applicable excerpt from the classification key.

Slope Class

DSL HGM Key Definition (applicable excerpts): Located on or near base of a slope. Inlet channel absent or very short. Outlet channel frequently present. Shallow sheet flow may be visible at land surface, especially during wet months. Fed by runoff and precipitation, but with a proportionally large component of lateral subsurface flow or discharging groundwater.

Water source at project site

There is a 0.28-acre wetland on the subject property. The onsite wetland is a sloped ditched wetland that flows along the northwest side of the property. Water sources for the wetland are limited to onsite runoff and offsite run-on from surrounding upland areas, direct precipitation, and shallow ground water that daylights during storm events. Offsite run-on is the biggest contributor to onsite hydrology in the wetland. A 12-inch corrugated plastic culvert extends onto the subject property conveying storm water flow from a wetland located directly adjacent on the neighboring property to the northeast.

The project is not anticipated to make any change to the hydrologic characteristics in the onsite wetland. Runoff from newly created impervious surfaces will add overall flow volumes to the site and increase peak flows however; the proposed water quality swale and detention facility will handle the additional runoff. The proposed wetland mitigation area will receive hydrology from the onsite ditch located to the northeast.

Description of Proposed Changes

Approximately 0.02 acre of onsite wetland will be impacted to construct a 6-lot subdivision, intended to satisfy the need for quality housing in the West Linn area. For the most part, the project will be constructed in the southeast one half of the property because the existing water resource area essentially extends across the northwest portion of the property.

The applicant proposes to create a 1,532 sf wetland directly adjacent to the onsite drainage way. The construction of the wetland mitigation area is necessary in order to provide space to build the Preferred Site Plan.

The remaining upland area not slated for development or wetland creation on the northwest side of the property will be designated as a "Wetland Transition Zone". Once the soil has been prepared native plantings will be installed to create a mixed forest, shrub, herbaceous, and grass plant community.

Temporary Impacts

There will be no temporary impacts associated with this project.

Permanent Impacts

Changes to the onsite wetland area will include the 743 sf of impact on the southeastern most part of the wetland, and 277 sf of impact to the Parker Road drainage ditch. The combined impacts will involve a total of 22.05 CY of removal and 41.07 CY of fill.

Impacts to the Parker Road ditch are unavoidable because the City of West Linn requires the applicant to do street improvements to Parker Road, including a sidewalk (Impact Area A). The proposed sidewalk will impact 277 sf of the ditch including 21.04 CY of removal and 26.30 CY of fill.

The impact to the southeastern most part of the wetland is a result of the proposed water quality swale, pedestrian/bicycle pathway, and to a much lesser extent the private driveway (Impact area B). This part of the wetland must be impacted to accommodate the building plan,

the existing wetland and wetland transition zone, and the proposed created wetland. The aforementioned development will require 1.01 CY of removal and 14.77 CY of fill from onsite wetlands.

The total permanent wetland impacts for the two action areas total 63.12 CY.

Table 1: Permanent Impacts

PERM IMPACTS TO	AREA SF	REMOVAL CY	FILL CY	TOTAL FILL/CUT
Area "A"	277.00	21.04	26.30	
Area "B"	743.00	1.01	14.77	
TOTALS	**1020.00**	**22.05**	**41.07**	**63.12 CY**

Measures to Avoid & Minimize Effects of the Changes

The impacts are due to providing the necessary space to construct the six-lot subdivision, private street, water detention facility, pedestrian/bicycle pathway, water quality swale, and sidewalks. By not filling any of the wetlands, the remaining buildable area is inadequate to meet the building program due to the size and layout of the existing wetland. Due to the existing wetland there is insufficient room to meet the minimum lot density required by the City of West Linn.

The chosen development plan has been designed in a way to meet the minimum housing and layout requirements while impacting the least amount of wetland as possible. The development is laid out in a way to maximize the upland area in the southeastern one-half of the property while minimizing the impact to the northwest side of the property where much of the water resource is located.

Silt fencing shall be erected to prevent erosion and sedimentation in the existing and created wetland areas. See Erosion Control Plan (Attached). Exposed areas adjacent to the mitigation areas should be covered in straw to prevent erosion and sedimentation.

PROJECT IMPACTS AND ALTERNATIVES (BLOCK 5)

Project Impacts

The proposed wetland impacts are necessary to facilitate development of the six-lot subdivision, private street, water detention facility, pedestrian/bicycle pathway, water quality swale, and sidewalks. The water detention facility, side walk, water quality swale, and pedestrian/bicycle trail impacts will occur within the onsite wetland including 0.02 acres of wetland cut/fill activity. The immediate impacts to the existing wetland include the loss of 0.02 acres of wildlife habitat, primary production, water storage and delay, and water quality functions.

Because of the location of the proposed development crucial hydrologic inputs will not be affected because the site receives most of the hydrology from offsite run-on from the northeast. A culvert located on the neighboring property dumps stormwater flow originating from an up-gradient pond into a wetland, which flows onto the subject property. The offsite run-on is well contained within onsite wetlands and drainage-ways. Conversely, stormwater flow generated within the developed areas will

be captured within the development and routed through a northeast to southwest flowing water quality swale and then directed to the water detention facility.

Existing wildlife habitat and primary production functions will be lost at face value but will be mitigated at a 1.5:1 ratio with the creation of 1,532 sf wetland. Currently the proposed impact area contains low-level vegetation such as non-native grasses and forbs. There are no trees or shrubs in the proposed project area.

Project Alternatives

The applicant investigated alternative site plans and alternative sites, as follows:

Alternative A – Preferred Site Plan

The applicant proposes to subdivide 2.28 acres into six lots for single-family detached homes, one open space tract, one private street, and a stormwater facility. The proposed lots range in size from 10,001 to 10,330 square feet, with an average lot size of approximately 10,110 square feet.

The project site contains 0.28 acres (12,184 square feet) of PEM/Sloped wetland habitat. The majority of the wetland will be preserved in this alternative within an open space tract (Tract C). However, a portion of the wetland will be impacted for construction of the private street, sidewalk, and stormwater facility. Alternative designs were explored (see Alternatives B-D), but each resulted in greater impacts to the wetland habitat. The applicant also explored offsite areas for the development (see Alternative B); however, these properties remain unavailable. The applicant proposes to provide all compensatory mitigation for the impacts on the subject site.

A variety of features will provide access to the proposed subdivision. Primary access will be provided via a private street with 33 feet of right-of-way width. This private street will provide access to four of the lots (1, 2, 3, and 4) within a private street tract (Tract A) extending north from S. Parker Rd. The private street will provide direct access to lots #1 and 2, while lots #3 and 4 are designed to take access off a 28-foot wide access easement that extends north from the end of the private street. Access to the remaining two lots (5 and 6) is proposed via an 18-foot wide access easement extending south from an access easement in the Rosemont Pointe subdivision. The applicant will improve the site's southern boundary along Parker Rd. with sidewalk, planter strip, and bicycle lane.

Pedestrian circulation will be provided onto the site by the six foot wide sidewalk proposed along the site's Parker Rd. frontage. This sidewalk will then extend onto the site in easements along both sides of the private street. In addition, the sidewalk along the west side of the private street will be extended as a pedestrian path beyond the end of the private drive, all the way through the site, into the Rosemont Pointe subdivision to the north.

Storm water will be collected by a system pipes and catch basins. The storm water will be conveyed to the new stormwater facility located in the southern portion of the site (Tract B), directly adjacent to the private street.

Alternative Site – Offsite Project Area

The applicant examined the purchase and development of separate property located further west on Parker Rd. as shown on the attached plan "Alternative A". The two properties examined include the 3.42 acres on tax lot 3500 and 1.98 acres on tax lot 3600, both on tax map 21E25CB. However, the property owners sold these parcels to another buyer. In addition, the Alternative A site is located in

Clackamas County, outside the West Linn city limits. Thus, annexation approval is required for developing these properties at densities allowed by West Linn. The property for the current proposal is already within the City of West Linn with a zoning designation that allows for the proposed number of lots.

Alternative B – Planned Unit Development with Private Street

The applicant explored the possibility of a planned unit development (PUD) on the subject site (see attached "Alternative B") which permits a greater number of lots than the six proposed with the current subdivision design. The larger number of lots would both directly and indirectly impact the wetland habitat more than the current subdivision. Portions of lots 1, 2, 3, and 7 in Alternative B would be within the existing wetland posing direct impacts to these areas of the habitat and the two additional lots would result in more impervious surfaces creating a greater impact on the wetland hydrology.

The design of this alternative also would require a stormwater quality facility located directly over the wetland habitat in the southwest corner of the site. The applicant's current design includes a stormwater quality facility outside the delineated boundary of the wetland in the southwest corner.

Other issues related to the alignment of the private street along the east property line in Alternative B include: (1) Parker Rd. is classified as an arterial with a recommended separation of 500 feet between intersecting streets (see West Linn Development Code Subsection 85.200.B.2). The private street in the Alternative B design is located within 500 feet and closer to Coho Lane (the existing public street to the east) than the private street proposed with the current design; and (2) The location of the private street along the east property line requires the removal of six conifers. The City Arborist recommended the preservation of these conifers which can be accomplished utilizing the current design.

Alternative C – Planned Unit Development with Public Street Hammerhead

The applicant examined another planned unit development (PUD) layout with a public street alignment as shown on the attached "Alternative C." Alternative C shows a public street hammerhead design which stubs to the west property line. The stub street will extend to the west with future development of that property. The stub along the west property line proposed with Alternative C requires a crossing of the wetland and man-made drainage not proposed with the applicant's current design.

The Alternative C design also generates other direct impacts to the wetland habitat that will not occur with the applicant's current design. Lot 1 of the Alternative C design is proposed directly over the wetland in the southwest corner of the subject site requiring a larger amount of wetland fill. In addition, the Alternative C design also includes the construction of the stormwater quality facility along the west property line over the wetland in this location.

The West Linn PUD requirements allow for additional lots beyond the applicant's current design which results in an increase in impervious surfaces, creating a greater impact on the wetland hydrology.

In addition, it is not known when the property to the west will be available for development and in the meantime, the applicant would utilize an interim access easement for six of the lots from Parker Rd. This easement accommodates an access drive with a maximum width of 20 feet to service six lots. However, the West Linn Development Code states that access to five or more lots requires a public

street connection with a minimum width of 40 feet. Thus, the private street design with the applicant's current proposal is more consistent with the Development Code, providing four lots with direct access to an existing street.

Parker Road is classified as an arterial with a recommended minimum separation of 500 feet between intersecting streets (see West Linn Development Code Subsection 85.200.B.2). The interim access easement within the Alternative C PUD design is located within 500 feet and closer to Coho Lane to the east than the private street proposed with the current design. Thus, the applicant's current design is more consistent with the West Linn Development Code.

a. The public street in the Alterative C design is not consistent with the West Linn street width requirement for local streets (see West Linn Development Code Subsection 85.200.A.2). The West Linn code requires at least 40 feet of right-of-way width for local streets. However, the maximum width available for the public street in this alternative is 33 feet since the applicant must maintain a minimum lot size of 10,000 square feet while also minimizing impacts to the wetland. Thus, the proposed private street in the current plan provides a better design.

Alternative D – Standard Subdivision with Public Street from Parker Road

The applicant examined other standard subdivision layouts for the subject site including the use of a public street extending from Parker Rd as shown on the attached "Alternative D". The Alternative D design negatively impacts the wetland habitat which will not occur with the design of the applicant's current proposal. The public street in Alternative D is aligned within a larger portion of the wetland habitat, thus, creating a greater direct impact. In addition, the public street design extends further into the site generating additional impervious impact, not created with the private street design in the applicant's current design. The stormwater quality facility therefore would need to be larger than the facility in the current design to accommodate this larger street surface. The construction of a larger stormwater quality facility generates a greater impact to the existing wetland.

In summary, there are no alternative sites on which the proposed project could be feasibly constructed, nor are there any alternative site plans which could both meet the project goals and avoid the onsite water resources. The site plan as proposed represents a compromise that best meets both the city's code requirements and the owner's project goals.

EXISTING BIOLOGICAL AND PHYSICAL CHARACTERISTICS

The approximate 2.3-acre subject property is located north of Parker Road in West Linn, Clackamas County, Oregon (SE ¼ quarter or the SW ¼ of T2S, R1E, Sec. 25, Tax lot 3900). The rectangular subject property is situated close to a 45-degree angle. Currently, there is one existing single-family residence onsite. The subject property is surrounded by residential development to the northwest, northeast, and southeast. Parker Road borders the property to the east.

The existing house was located in the southeastern corner of the subject property. A circular gravel driveway extends from Parker Road around the backside of the existing house back to Parker Road. The remainder of the property is covered by low level grasses and forbs with the exception of the northwestern property boundary, which contains trees and shrubs. An abandoned building pad is located in the middle of the southeastern property boundary.

The property generally slopes in a southwesterly direction. A ditch runs south along the western property boundary, turning east to run along the southern property boundary adjacent to Parker Road.

The ditch emanates from an outfall on the property to the northeast where it is channelized for a short distance before it fans out into a small wetland (0.32 acres), which extends onto the subject property. The onsite portion of the wetland (0.28 acres) tapers on the southeast boundary until it finally narrows back into a defined ditch again that flows to the road side ditch on the northeast side of the Parker Road.

A swale extended from the onsite ditch to the driveway in the southwest corner of the property. The swale is arch shaped and routes stormwater flow towards the driveway where it infiltrates or sheet flows to the roadside ditch.

The subject property was mainly vegetated by grasses and forbs however, trees, shrubs, and vine species were found along the northwest property boundary.

The majority of the property was vegetated by a variety of forbs, grasses and shrubs such as perennial ryegrass (*Lolium perenne*), common velvet grass (*Holcus lanatus*), tall fescue (*Festuca arundinacea*), Himlayan blackberry (*Rubus discolor*) and English hawthorn (*Crataegus monogyna*). Along the west edge of the property vegetation was dominated by common velvet grass, reed canary grass (*Phalaris arundinacea*), soft rush (*Juncus effusus*) and, in the overstory, cottonwood (*Populous balsamifera*) and red alder (*Alnus rubra*).

The Clackamas County Soil Survey indicated Cornelius silt loam on 8 to 15 percent slopes and Delena silt loam on 3 to 12 percent slopes (Figure 2). Delena is listed as a hydric series

The Cornelius series consists of moderately well drained soils that formed in silty material over old, silty alluvium on rolling uplands. It is classified as an Ultic Haploxeralf, which is a reddish or brownish Alfisol with a xeric moisture regime and a lower saturation in the upper soil. The A horizon is silt loam 9 inches thick, with a matrix color of 10YR 3/2. The subsoil is deep with the upper 7 inches 10YR 4/3 silt loam. Included in this series are areas of Kinton, Delena, Cascade and Laurelwood soils. The capability subclass is IIe, which indicates moderate limitations due to erosion.

The Delena soil series consists of deep poorly drained soils (resulting from a hardpan) formed in mixed silty alluvium on high terraces and rolling uplands. These soils are classified as Humic Fragiaquepts, which are wet Inceptisols with a fragipan, but without an ochric epipedon. The horizons above the pan are grey and saturated for several months in most years. The A horizon in Delena soils is silt loam, 12 inches deep, with a matrix color of 10YR 3/2 and mottles of 10YR 5/6 below 8 inches. The B horizon is silty clay loam, 12 to 25 inches, with a matrix color of 10YR 4/2 with 10YR 5/2 mottles.

The combined wetland area at the site is 0.28 acres, which 12.2% of the site.

PROJECT SITE RESOURCE DESCRIPTION

Navigation, Fishing, and Recreational Use

NA

Known ESA and Archeological Information

There are no known endangered species in the area.
There is no known archeological information for the site.

WETLAND RESOURCE INFORMATION

Wetland Delineation

A wetland delineation was completed for the subject property (Tax Lot 3900) in March 2006. Delineation reports are on file at DSL (DSL WD# 06-0204) and copies of the reports are attached for the Corps.

Concurrence

Neither the Army Corps of Engineers nor the Department of State Lands has issued a wetland concurrence letter.

Functions and Values Assessment

DSL provides the following guidebook to assess functions and values of wetlands: *The Guidebook for Hydrogeomorphic (HGM) – based Assessment of Oregon Wetland and Riparian Sites, I Willamette Valley Ecoregion Riverine Impounding and Slope/Flats Subclasses.* This conclusion is based on the criteria that are presented for the evaluation of other classes of wetlands in the DSL guidebook.

Table 2. Function Capacity of Existing Wetland (Sloped Wetland)*

FUNCTIONS	COMMENTS	
Water Storage & Delay	0.10	The sections of the existing wetland area are relatively narrow and narrow in the roadside ditch. The contributing watershed is covered by grasses and forbs. The runoff that reaches the existing wetlands has been redirected from upslope areas into a pond then hard-piped to the neighboring property to the north where it is released and then flows onto the property. The contributing watershed is somewhat narrow from ridgeline to ridgeline. The contributing watershed consists of the area north and areas upgradient to the existing wetlands onsite to the east. Erosion in downslope channels is somewhat greater than what occurred historically. Other factors suggest that storage or delay of water by this site is not atypically important to biological resources located onsite or downslope. Sites of this subclass and size that store or delay water to this degree are abundant in this watershed both locally and regionally.
Sediment Stabilization & Phosphorus Retention	0.50	Water storage and delay is low. Texture of the predominant substrate in the upper 12 inches of the seasonal zone is mostly a silty clay loam or silt loam. The seasonally saturated zone is vegetated by pasture grasses and forbs. Very shallow pools are sometimes present seasonally. Substrates in the wetland have not been subject to erosion and scour however, the roadside ditch has been exposed to erosion and scour.
Nitrogen Removal	0.30	Water storage and delay is low. The wetlands have little potential for seasonal flooding. There is no dead wood, thick soil organic layer, or large diameter trees in the wetlands. Substrate in the drainage has been subject to some erosion and scour.
Primary Production	0.40	The wetland is covered by pasture grasses and herbaceous vegetation. The wetland remains saturated through the winter months and into the beginning of the growing season. The wetland substrate is not subject to scour. The site's contributing watershed is mostly vegetated.
Invertebrate Habitat Support	0.24	Wetland is rarely inundated. Cover that could support algae and provide shelter from currents and predators is lacking. Plant species richness is very low. Pools are lacking. Water not likely to experience pulses of contamination and pollutants. Erosion is minimal. Surrounding landscape contains no water features. *Invertebrate habitat is limited to those species that do not require standing water to complete their life-cycle. Invertebrates may reside in the onsite wetland but they are limited in diversity and numbers. We recommend lowering the score to 0.10.*
Amphibian & Turtle Habitat	0.29	There is rarely seasonal inundation. There are no bullfrogs located within the subject wetlands. There is no woody debris and no pools. There are no basking sites for turtles or calling sites for frogs. Land cover in adjoining uplands contains grasses and herbs. These areas have not been cleared of vegetation. Parker Road is near the wetland. There are no wetlands in the vicinity of the subject wetland. *The score for this function is too high. There is little to no inundation on the site, and there are no calling sites for turtles or basking sites for frogs. We recommend a much lower score (0.10).*
Breeding Waterbird Support	0.00	There are no vernal pools/shorebird scrapes in the existing wetlands.

FUNCTIONS	COMMENTS	
Wintering & Migratory Waterbird Support	0.28	Wetland has little to no inundation and only present in small localized puddles during the wettest part of the season due to the slope. Substrate has microtopograpic variation. Water quality is moderate. Vegetation consists of two or three grass species and a few non-native forbs. *This score should be much lower (0.10) due to lack of inundation, high presence of non-native species, and surrounding development.*
Songbird Habitat Support	0.14	Wetlands are vegetated mainly by a mix of native and non-native grass species and non-native herbaceous species.
Support of Characteristic Vegetation	0.27	Site is vegetated mainly by a mix of native and non-native grass species and various herbaceous species.

COMPENSATORY MITIGATION

Compensatory Mitigation Plan (non-wetland impacts)

Not applicable.

Rehabilitation Plan (temporary impacts)

Not applicable.

PTP

Not applicable

Mitigation Bank

Not applicable.

Conservation in Lieu

Not applicable.

Compensatory Wetland Mitigation Plan

To mitigate the loss of 0.02 acres of wetlands, the following onsite mitigation plan is proposed:

Wetland Creation (1:1.5 ratio)
A 0.035 acres
0.035 acres /1.5 = 0.02 acres mitigated

0.035 acres total mitigation area (equivalent to 0.02-acre mitigation credit for 0.02-acre impacts).

See Table 3. Wetland impact and mitigation areas.

Proposed mitigation credit ratios for onsite wetland creation are 1.5:1.

Rationale for the Mitigation Area Site Selection

The onsite wetland creation area is located southeast of the onsite drainage way. The wetland creation area currently provides minimal habitat features that include non-native grasses and forbs. The area southeast of the drainage way is comprised of grasses such as tall fescue, velvet grass, and perennial ryegrass. The wetland creation area was selected because it is onsite, an extension of the existing drainage way, and provides adequate space to compensate for the wetland area lost by creating additional wetland at a 1.5:1 ratio.

The increased size and re-grading of the mitigated wetland will increase stormwater retention capacity. Runoff from the existing drainage way and up-slope wetland will disperse into the newly created wetland.

Wildlife habitat will be increased in the mitigated wetland with the installation of the proposed plant species. A multi-layered plant community provides increased foraging, nesting, shelter, and rearing functions over the existing single-layer habitat for local wildlife.

The controller of the compensatory mitigation site will be Schott & Associates, P.O. Box 589, Aurora, OR 97002, (503) 678-6007.

A small tributary to Tanner Creek flows from northeast to southwest on the neighboring property to the southeast.

Justification for Mitigation Consisting of PSS and PFO Wetlands

The impacted wetlands were historically PSS and PFO wetlands. The site has been disturbed over the years preventing the establishment of shrub and tree species. The neighboring property to the northwest is covered by a thick stand of trees and shrubs. The tree/shrub line abruptly ends at the northwestern property line suggesting the subject property was historically forested.

The Clackamas County Soil Survey lists Cornelius silt loam on 8 to 15 percent slopes and Delena silt loam on 3 to 12 percent slopes to be found onsite. The soil survey states that Douglas-fir, bigleaf maple, western red cedar, western hazel, shrubs, and grasses to be found within the Cornelius series, while the Delena series is known to contain Douglas-fir, western red cedar, ash, snowberry, rose, trailing blackberry, sedges, and grasses. This evidence supports the decision to create a PFO-PSS wetland for mitigation purposes.

Hydrology

The hydrology of the wetland and the wetland mitigation areas will be maintained by existing runoff routed through the existing drainage way and into the created wetland. Existing shallow ground water will also provide a small amount of wetland hydrology. Existing stormwater runoff will not be cutoff in any way from the wetland area because none of the proposed development will impact any of the water resource up-gradient of the wetland creation area.

The grading proposed in the created wetland area will enhance water storage and delay functions by creating a larger basin, thus a greater capacity to retain hydrology.

Construction Methods

The wetland grading will be done the most efficient way for the contractor using standard machinery and construction techniques. The equipment they might use, but are not limited to, could range from track hoes to scrapers to bull dozers to rollers. Final grade in the mitigation area will be created using a combination of a track-hoe and bulldozer. Micro-topography will be made using a sheep's foot or intentionally leaving rough areas after grading. The areas not proposed for grading will be fenced with either silt, or construction fencing, to prevent accidental encroachment into these areas. Silt fences will be installed down slope of all construction areas.

The mitigation plan includes creating 0.035 acres of wetland. The created wetland areas will be planted to a deciduous forest, scrub-shrub, and emergent community. See Mitigation Plan and attached **Wetland Mitigation Plan Installment Methods.**

The created wetland will receive hydrology from the existing up-gradient wetland and drainage way. The remaining hydrology will come from shallow ground water and to a lesser extent, precipitation. The wetland creation area will be graded from 0 to 24 inches deep. The topsoil will be stockpiled, and once the grading has been completed, the topsoil will be spread over the mitigation area. Six inches of topsoil will be spread over the subsoil. The area will be seeded and planted.

Planting Schedule and Construction Sequence

The grading of the mitigation areas will start when the initial construction begins. It will be completed when the site grading is completed. Excavating material from the mitigation area will be used as backfill in the created wetland to provide suitable soil. Spreading the topsoil will be one of the final grading activities. The mitigation area will be hydro seeded by the start of the first fall following start of construction. Planting trees, shrubs, and rhizomes will occur during the first winter upon completion of the site grading.

The mitigation area will be graded during late summer of 2007 (August/September). The seeding will occur by the end of September 2007. The shrubs and trees will be planted during the fall of 2007 or winter of 2007/2008.

Mitigation Site Constraints

If during grading, the elevation is reduced through the clay sub-soil and into some underlying gravels, the mitigation area will have the potential to drain too quickly and not have wetland hydrology. If the gravel layer is intercepted, prior to reaching final grade, the elevation will be reduced by an additional foot, and the clay subsoil excavated from the area will be replaced and compacted until it is one foot thick. Topsoil will then be replaced over the compacted subsoil. This should insure that wetland hydrology will be met.

Hydrology in the wetland creation area could be lacking if the flow from the wetland/drainage way does not reach the mitigation area or did not receive adequate amounts. In cases such as this, a contingency plan must be implemented to remedy the situation.

Buffer Zones

The vegetated community found on the neighboring property to the west will be used as a model for the transition area enhancement, sans the Himalayan blackberry and English hawthorn. This vegetated community west of the drainage partially extends onto the subject property. Any native shrub species found onsite will be marked and left untouched during the removal of Himalayan blackberry in the transition area. There are no existing mature trees in the proposed transition areas to be enhanced.

Twenty-five Douglas firs and twenty big-leaf maples are proposed in the transition area east of the water resource, which receives sunlight throughout most of the day. Twenty-five red alders will comprise the remaining trees east and west of the water resource. Red alders can tolerate partial shade as well as areas with direct sunlight.

Currently, the area west of the water resource is lined with trees and shrubs however, many of these are located offsite. Shrub species include hazelnut, snowberry, Himalayan blackberry, and English Hawthorn tightly bunched amongst red alder trees. The area west of the ditch and wetlands contains no shrubs or trees. The majority of the hazelnut shrubs (50) and snowberry shrubs (140) should be planted east of the resource. The snowberry will be planted in clusters of 15 plants at a density of four foot on center. Twenty-four Indian plums will be scattered through out the western transition area. The Indian plum and hazelnut will be planted individually and eight foot on center. Finally, 215 salal will be planted in the partial shade areas west of the resource.

The ground cover in the transitions areas will consist of a native seed mix including; native California brome (55%), blue wildrye (25%), lupine (15%), and western yarrow (5%).

The invasive species should be controlled prior to any plantings. All the plantings should occur during the winter of 2007 – 2008.

The 755 sf of transition area to be enhanced west of the resource area is very narrow but connected to existing scrub-shrub areas offsite. The offsite transition area to the west is a mix of native and non-native species however, it is mature and densely populated providing sufficient protection of the resource's functions and values.

The width of the transition area east of the resource ranges from 10 to 30 feet. Although 10 feet is quite narrow for a water resource buffer the western one-half of the subject property has been set aside for the water resource area and associated transition zones creating a confined and undisturbed native habitat area. We recommend a fence with appropriate signage be installed at the edge of the transition area, west of the development.

Goals

The goal of the mitigation project is to establish 0.035 acres of wetland creation that produces diverse wetland habitat. It is also a goal to replace low to moderate quality wetlands such as the existing onsite wetland, with a wetland that provides high function capacity and values of functions.

Objectives

The objective is to replace a low quality wetland with high value and function wetland. The wetland will be created to provide wildlife habitat and water quality functions. The established mitigation

wetland will be deciduous forest, scrub-shrub and emergent communities surrounded by a mixed forested upland community. The wetlands will experience inundated soils during the winter and spring months, and seasonally saturated conditions.

Success Criteria

The success criteria for ground cover will be based on a graduated scale. A survivorship of 50% will be required for the first year, 70% by the third, and 90% by the fifth and final monitoring year. This is a reasonable method to determine survivorship because the proposed rush and sedge species, which will be planted as a seed mix, will take more than one season to germinate and spread.

A survivorship of 80% is proposed for the tree and shrub plantings after five years, which has been the standard for woody species success criteria.

The created wetland area will meet the hydrology criteria for the wetland as described in the *1987 Corps of Engineers Wetland Delineation Manual* by the end of the five year period. Signs will be posted to inform others to not trespass onto the mitigation site.

Mitigation of Wetland Functions and Values

The proposed project replaces all the wetland functions and values impacted by the project. The onsite wetland is classified as sloped. The compensatory mitigation wetland will be classified as sloped wetland as well. The existing wetland's functions and values are low. The proposed mitigation replaces and improves on wetland area, functions, and values.

The function and value of the existing and proposed mitigation wetlands were assessed using the Guidebook for Hydrogeomorphic (HGM). The Judgmental Method was used.

See Functions and Values Analysis in Tables 4 and 5.

Compensatory Mitigation Form

See attached compensatory mitigation form.

Table 3: Wetland Impacts and Mitigation Areas

	FILLED AND CUT WETLANDS AT PROJECT SITE	MITIGATED WETLANDS
AREA	0.02-acre sloped wetland (PEM)	0.035 Wetland (PFO-PSS/Sloped)
WETLAND TYPE HGM AND COWARDIN CLASS	0.02-acre sloped wetland (PEM)	0.035 acres of created (PFO-PSS), Sloped wetland.
PROPOSED MITIGATION CREDIT RATIO		0.02 mitigation credit is proposed for 0.02 acres of impacts.

See the following mitigation area drawings:

Grading Plan
Mitigation Plan

TABLE 4. FUNCTION CAPACITY OF PROPOSED SLOPED MITIGATION WETLAND

FUNCTIONS	MITIGATION WETLAND
Water Storage & Delay	The proportion of the site that is inundated only seasonally is small. The vast majority of the contributing watershed will consist of up-gradient channelized flow, shallow groundwater, and direct precipitation. The contributing watershed is narrow from ridgeline to ridgeline.
Sediment Stabilization & Phosphorus Retention	Due to the high coverage of vegetation in the wetland, the type of roots, and depth of root penetration, the soils in the wetland will be very stable. Shallow pools will be limited during the winter and spring. The wetland will receive a minimal amount of suspended solids. Initially, we anticipate minimal microtopography but anticipate hummocky soils when grass and forb communities mature.
Nitrogen Removal	Water storage and delay is low. Seasonal flooding is expected however, we anticipate there to be a high frequency but a short duration time. We anticipate there to be dead wood, organic soil, and some large diameter trees when the wetland matures. Substrate in the channels up gradient and down gradient of the created wetland have been subject to some erosion and scour. We expect small amounts of sedimentation and erosion in the inlet of the wetland.
Thermoregulation	NA
Primary Production	The majority of the mitigation wetland will have vascular plants and/or water with algae. A variety of plant forms will be present. The wetland will have small areas of surface water in the winter months. Substrate will be recontoured upon completion of grading in the wetland creation/enhancement areas.
Resident Fish Habitat Support	None present
Anadromous Fish Habitat Support	None present.
Invertebrate Habitat Support	Surface water duration will limited and in certain areas. Cover will be provided by woody species. Plant species diversity will be high. Water quality will be high. There will be recent recontouring of substrate.
Amphibian & Turtle Habitat	Shallow surface water will contain some partly submerged fine-stemmed herbs. Water will recede quickly. There will be no woody debris in the seasonal zone at first, but will collect over the years. Vegetation and pools are interspersed. Microtopography is minimal but will develop over time. Soils and submerged sediments contain no organic layer.
Breeding Waterbird Support	Site does not contain appropriate habitat.
Wintering & Migratory Waterbird Support	The site will contain surface water intermittently over the winter months. Water depth during these times will be less than 24 inches. Microtopography will be minimumal at first but will develop over time. Water quality will be good. The wetland and upland buffer areas will be vegetated with native trees, shrubs, forbs, and grasses.
Songbird Habitat Support	Surface water will be present throughout much of the winter months. There will be an adequate amount of scrub-shrub and trees in the mitigated wetland. The area surrounding the site will include native trees, shrubs, forbs, and grasses. Site may be visited by humans and domestic pets.
Support of Characteristic Vegetation	Deciduous trees, shrubs and herbs will all be present, and will be well-interspersed and native. Microtopography will be minimal at first and develop with the maturation of the ground cover. Springtime water levels will drop quickly. The site will likely be visited by humans and domestic animals. Land cover in contributing watershed is a combination of natural and man-made. Surrounding buffer zone will be a mix of scrub-shrub and forested communities.

TABLE 5: SCORES FOR FUNCTION CAPACITY FOR EXISTING WETLAND AND PROPOSED MITIGATION WETLAND

FUNCTIONS		FUNCTION CAPACITY OF EXISTING WETLAND	FUNCTION CAPACITY OF MITIGATED WETLAND	VALUE OF EXISTING WETLAND	PREDICTED VALUE OF MITIGATION WETLAND
Water Storage & Delay		0.10	0.45	0.10	0.40
Sediment Stabilization & Phosphorus Retention		0.50	0.59	0.40	0.60
Nitrogen Removal		0.30	0.33	0.30	0.45
Primary Production		0.40	0.54	0.25	0.60
Resident Fish Habitat Support		0.0	0.0	0.0	0.0
Invertebrate Habitat Support		0.24	0.46	0.10	0.35
Amphibian & Turtle Habitat		0.29	0.38	0.10	0.25
Breeding Waterbird Support		0.0	0.0	0.0	0.0
Wintering & Migratory Waterbird Support		0.28	0.39	0.10	0.39
Songbird Habitat Support		0.14	0.34	0.15	0.50
Support of Characteristic Vegetation		0.27	0.53	0.20	0.65

Reference Wetland

Location

The reference wetland for the mitigation areas is located south of Parker Road, on a 32.55 acre lot approximately 0.10 miles northwest of the project area. It is located within the southwest one-quarter of the southeast one-quarter of Sections 25 and 26, Township 2 South, Range 1 East, Clackamas County, Oregon (Reference Wetland Location).

Description

The reference wetland is classified as a palustrine, forested/scrub-shrub wetland. Dominant tree species include Oregon ash (*Fraxinus latifolia*) and red alder (*Alnus rubra*). Dominant shrub species include willow (*Salix sp.*) and red-osier dogwood (*Cornus stolonifera*). Common herbaceous species in the ground layer consisted of slough sedge (*Carex obnupta*), spreading rush (*Juncus patens*), and cut-rice grass (*Leersia oryzoides*). Upland buffer areas include Oregon white oak (*Quercus garryanna*), English hawthorn (*Crataegus monogyna*), trailing black berry (*Rubus ursinus*), and Indian plum (*Oemleria cerasiformis*).

Comparison With Goals

The reference wetland can be described as a mix of native scrub-shrub and deciduous trees, from which the mitigation plan will incorporate similarities. The created wetland is designed to provide a multi-level habitat structure and a complete areal coverage of vegetation. The created wetland will also increase water storage and delay, provide sediment stabilization, phosphorus retention, and nitrogen removal in the existing drainage. We anticipate the created wetland to function similarly to the reference wetland in terms of structure, wildlife habitat, and sediment stabilization on a smaller scale. Water storage and delay functions in the created wetland will function differently than the reference wetland. The created wetland will be constructed on a northeast to southwest slope while the reference wetland is located on much gentler slopes, which provides greater water storage and delay functions.

We chose the reference wetland because we believe the constructed wetland will similarly match the historical conditions found onsite. Historical vegetation conditions in the West Linn area consisted of forested and scrub-shrub communities. Although an emergent wetland (PEM) would seem to be the appropriate class to mitigate the loss of the existing PEM according to DSL regulations, a forested/scrub-shrub wetland would provide increased species diversity and habitat, and resemble historical conditions found onsite

Table 6 compares function capacity and values of functions of the reference wetland and the mitigation wetland.

TABLE 6: SCORES FOR FUNCTION CAPACITY AND VALUE OF FUNCTIONS FOR REFERENCE WETLAND AND PROPOSED MITIGATION

FUNCTIONS	FUNCTION CAPACITY OF REFERENCE WETLANDS	PREDICTED FUNCTION CAPACITY OF MITIGATION WETLANDS	VALUE OF REFERENCE WETLAND	PREDICTED VALUE OF MITIGATION WETLANDS
Water Storage & Delay	0.50	0.45	0.60	0.40
Sediment Stabilization & Phosphorus Retention	0.67	0.59	0.75	0.60
Nitrogen Removal	0.53	0.33	0.60	0.45
Primary Production	0.72	0.54	0.75	0.60
Invertebrate Habitat Support	0.66	0.46	0.35	0.35
Amphibian & Turtle Habitat	0.67	0.38	0.45	0.25
Breeding Waterbird Support	0.00	0.0	0.0	0.0
Wintering & Migratory Waterbird Support	0.63	0.39	0.45	0.39
Songbird Habitat Support	0.50	0.34	0.75	0.50
Support of Characteristic Vegetation	0.61	0.53	0.70	0.65

Mitigation Monitoring

A five-year monitoring effort of the mitigation area is proposed. The monitoring biologist will complete a field investigation of the site and submit an annual written report to the Department of State Lands and the U.S. Army Corp of Engineers between the beginning of November to the early weeks of December.

The following explains the timing of the monitoring, the photograph documentation, and the vegetation assessment.

Timing

Hydrology of the mitigation areas will be monitored during mid-March to mid-April of the first growing season (2007 or 2008). The monitoring methods will involve a yearly site visit from the monitoring biologist to inspect the sites and do a stem count and species inventory. This should be at the middle of the growing season (near the end of August). If the plants of the mitigation sites appear to be stressed, the monitoring biologist may suggest irrigation during the summer months.

Photographs

Two permanent photo stations will be established at the mitigation sites. Stakes with identifying numbers will be placed at each permanent photo station for annual identification of the photo point. These photo points will be placed in such a way as to give an overview of the general condition of the site. These photo points will be shown on the mitigation plan.

Vegetation Assessment

Percent survivorship of woody species will be estimated by counting the dead of each species, then subtracting that number from the number planted. This number will be divided by the number planted, then multiplied by 100 to obtain the % of survivorship.

Canopy cover or herbaceous species (Quadrate sampling) will be estimated by the monitoring biologist using five 1 sq. micro-plots. This level of sampling is more than adequate, since the entire wetland area will be seeded to the same seed-mix and there will be only two isolated areas that will be planted with other emergent vegetation. These two other areas will be planted to sedge and rush species and seeded with the same wetland seed-mix. Since the proposed mitigation does not consist of diverse emergent communities, the need for more sampling is not appropriate.

Hydrology Assessment

Soil saturation determination (test holes) will be performed by the monitoring biologist to determine if wetland hydrology meets the performance standards. Success criteria will be based on the 1987 Corps of Engineers Wetland Delineation Manual criteria for wetland hydrology. Hydrology monitoring will be completed between mid-March to mid-April

which is the beginning of the growing season.

Table 7: Performance Standards, Monitoring Methods, Contingencies

Performance Standard	Monitoring Methods	Contingency
Wetland Hydrology	Soil inundation/saturation determination (test holes) or monitoring wells	Modify water inlet/outlet controls, supplement surface water inputs, decrease soil permeability
Survival of planted species	Stem Counts Species inventory	Plant additional vegetation, weed control, substrate amendment, modify water inlet/outlet controls, herbivore control
Herbaceous cover	Arial cover (quadrant sampling)	Plant additional vegetation, weed control, substrate amendment, modify water inlet/outlet controls, herbivore
Woody cover	Arial cover (line intercept sampling) Arial cover (belt-transect or large area plot sampling	Plant additional vegetation, weed control substrate amendment, modify water inlet/outlet controls, herbivore control

Contingency Plan

There are numerous problems that can prevent a mitigation area from developing as proposed. Contingency measures will be designed and implemented once the problems have been identified. Possible corrections include animal disturbances, lack of hydrology, or incorrect species for the local conditions. The vegetation will be monitored by the project biologist. If, during the monitoring process problems are identified corrective measures will be determined and implemented. If survival of planted individuals proves to be inadequate then additional vegetation and /or weed control will be needed to insure the survival criteria is met at the end of the five years. Substrate amendment, modified water inlet/outlet controls, and herbivore control may also be needed.

Planted Species

Plant mortality may come from many causes. The main causes are weak nursery stock and water stress. If survivorship of any planted species falls below the target percentage, the cause of the mortality will be assessed. If the mortality is due to inappropriate placement of the plant in relation to the hydrology of the site, adjustments to the replanting site will be recommended by the monitoring biologist. In the event of weak nursery stock, the mortality should be immediately evident (within a few days) and should be detected in the review of the planting.

The contingency measures for herbivory and plant mortality (often linked) are to replant the affected plants and protect them. Plantings can be surrounded by plant cages formed by 3' chicken wire to protect them from damage from beavers and nutria. If the individual plant

cages are not sufficient to deter the beavers, fencing the entire area with 3' chicken wire may be needed to ensure success of the site. If small rodent girdling of the plantings is the problem, the base of the tree may need to be protected with a rodent guard.

Invasive species will be controlled before planting takes place. If cover of invasive species becomes greater than 20%, more dramatic control measures will need to take place. These include cutting the canes of Himalayan blackberry in summer and applying, by painting or daubing (not spraying) new sprouts with an herbicide approved for use near water and in wetlands. This application should be done in 2 months after cutting and again in late summer or early fall (if needed). Reed canary grass will be sprayed with Rodeo prior to any excavation. Areas not graded will also be sprayed. Follow-up treatments will occur on an as-needed basis.

Dense native herbaceous vegetation and the development of a healthy tree and shrub layer will help control establishment of reed canary grass, however, if stands do establish, immediate measures should be taken to ensure control of this species. Close mowing of the grass and direct application of approved herbicide should keep the grass from overtaking the mitigation area.

Hydrology

If up-gradient hydrology were to be cut-off or insufficient to maintain adequate levels a contingency plan would be implemented. If any areas of the mitigation area do not meet the hydrological requirements set forth by the 1987 Corps of Engineers Wetland Delineation Manual, the proposed water quality swale will be partially diverted via hard-pipe. Currently, the water quality swale is designed to collect stormwater runoff from the proposed development including roofs, street, and driveways. The runoff would then be treated as it flowed through the swale before reaching the detention facility. A portion of this runoff could be re-routed to the southwest and into the created wetland to supplement the existing hydrology.

In the event of an extended drought, irrigation may be necessary to ensure establishment of the plantings. If mortality is due to water stress, watering of the site will be done up to 7 times during the period from July 1 to August 31.

Soil

The topsoil from both the creation and enhancement area will be stockpiled, vegetation side down and covered by a tarp. The subsoil will be cut to grade followed by spreading 12 inches of the stockpiled topsoil over the entire mitigation area.

If onsite soils are acidic, lime may be required to be added as substrate amendment in the mitigation area to neutralize the pH of the soil.

Organic matter may also be used as a supplement to soils that have a high mineral content although, we do not anticipate this to be a problem. The onsite soil contains adequate organic content.

The responsible party for the maintenance of this site is:

Schott & Associates
P.O. Box 589
Aurora, OR 97002

503-678-6007 Phone
503-678-6011 Fax

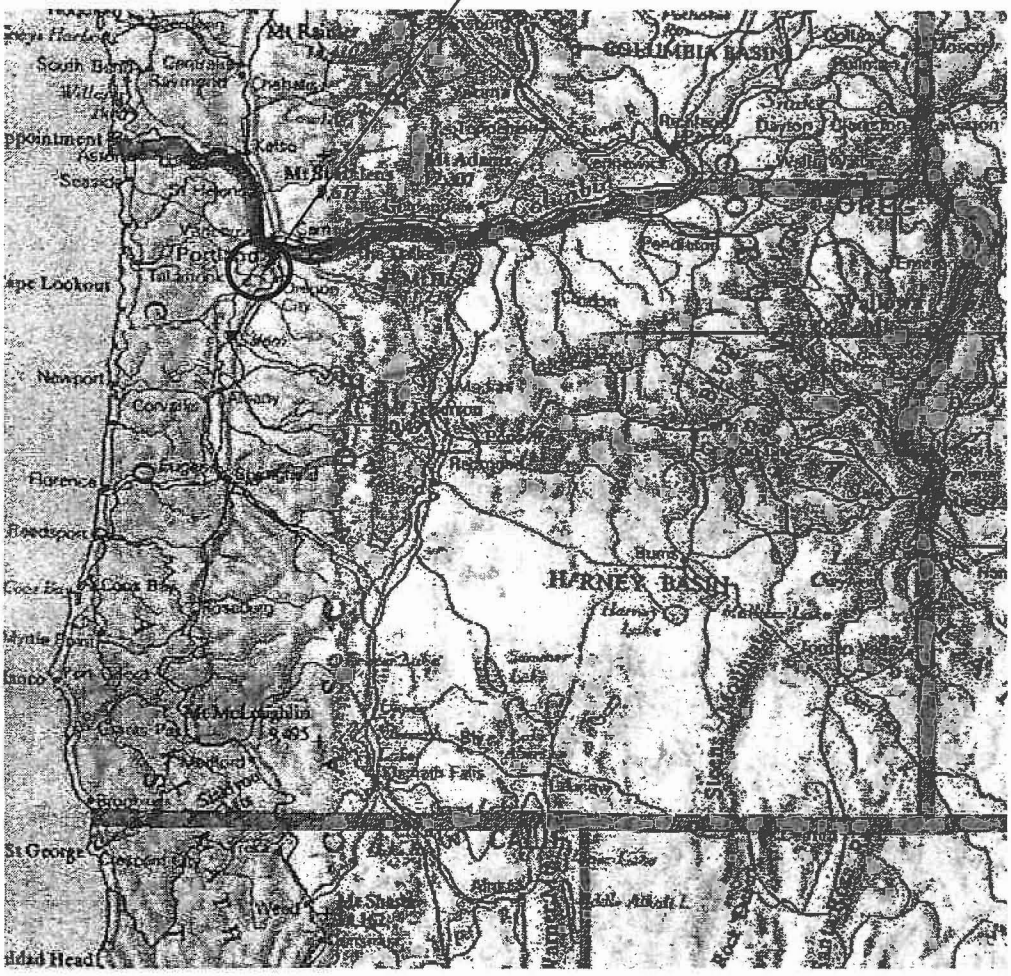
Deed Restriction

See enclosed for draft.

Construction Bond

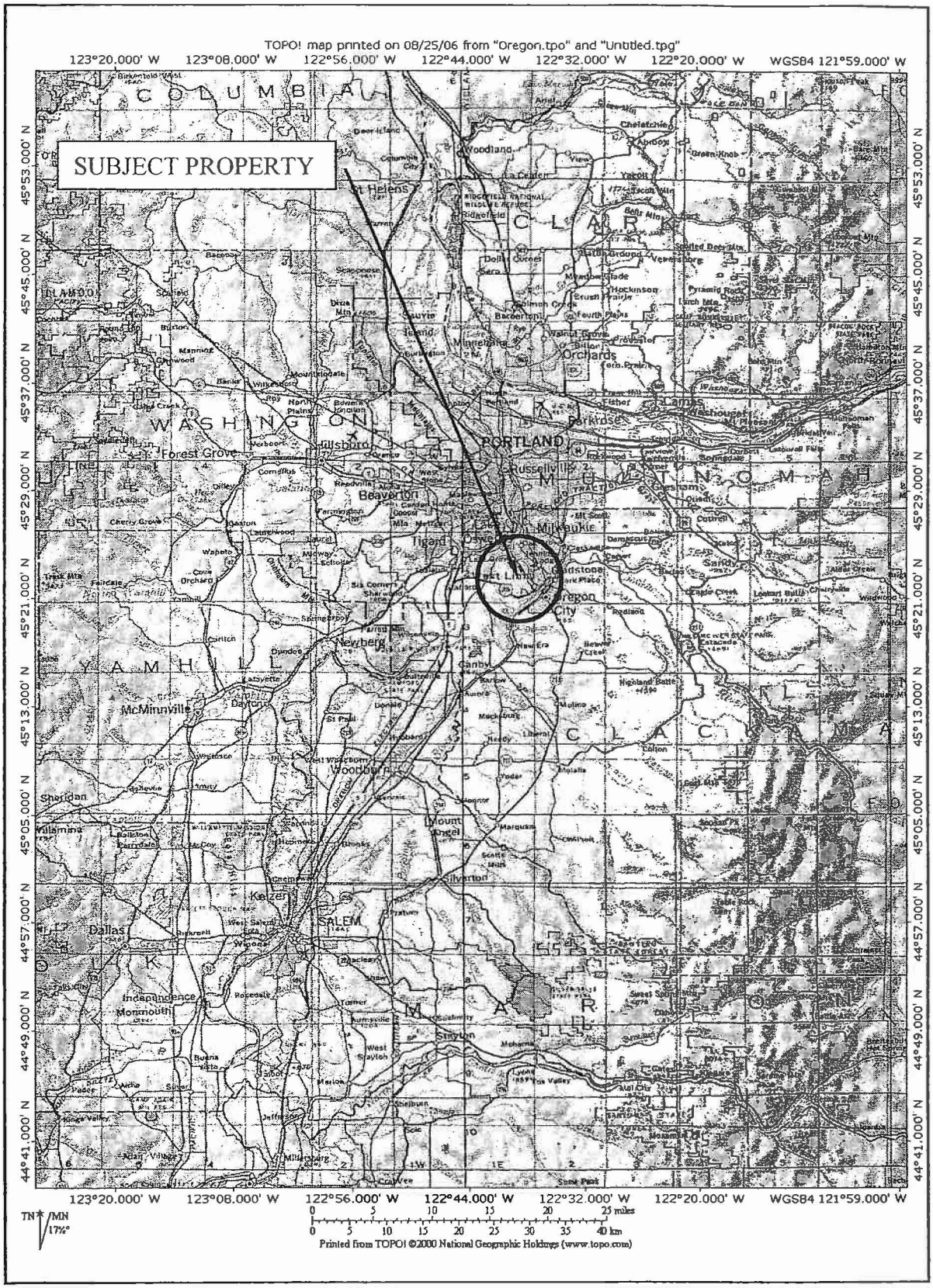
The estimated cost of implementing the mitigation is approximately $50,000/acre. The mitigation/enhancement areas and the buffer are approximately 0.035 acres. The estimated construction cost is $1,750. Maintenance is estimated to be 10% of the construction cost, or $175.00. The monitoring for a five-year period would be $8,000. The total estimated cost is $11,925.00. A bond or other form of security for $11,925.00 will be obtained once the permits have been issued. The bond will be phased according to completion. Once the mitigation has been completed, Renaissance Homes (c/o Jeff Shrope) will reclaim the proportion of the bond, based on cost of construction. The maintenance cost will be claimed at the end of the monitoring period. The monitoring proportion of the bond will be reduced by $2,981 after the first year if the mitigation area meets the hydrology success criteria. In addition it will be reduced an additional $2,981.00 if it meets the vegetation success criteria at the end of the third monitoring year.

SUBJECT PROPERTY



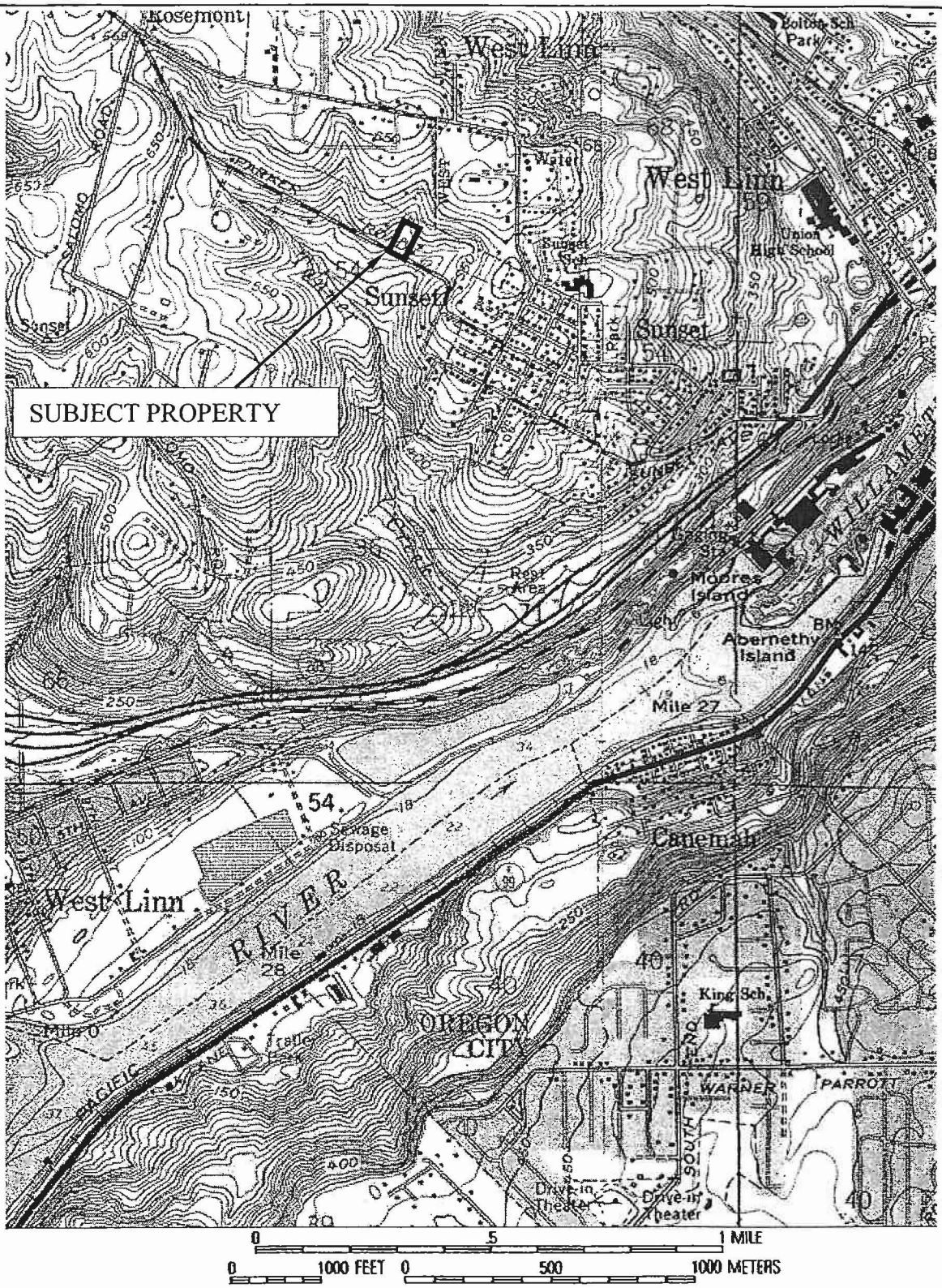
SITE VICINITY MAP 1 – Oregon State
PARKER ROAD PROPERTY, WEST LINN, OR

Schott & Associates
11977 S Toliver Rd.
Molalla, Oregon 97038
503-829-6318



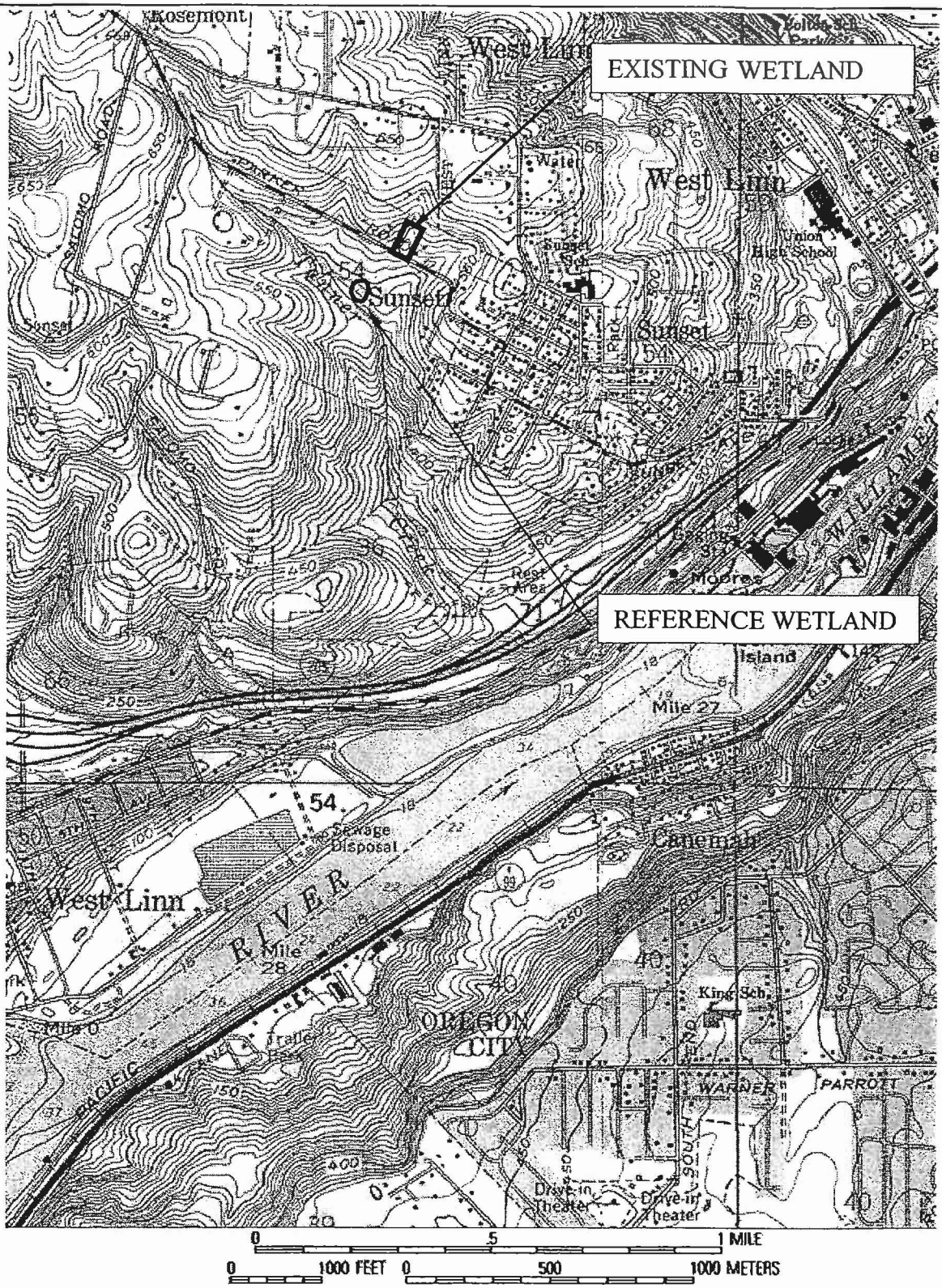
SITE VICINITY MAP 2 – Portland Area
PARKER ROAD PROPERTY, WEST LINN, OR

Schott & Associates
11977 S Toliver Rd.
Molalla, Oregon 97038
503-829-6318



Map created with TOPO!® ©2001 National Geographic (www.nationalgeographic.com/topo)

SITE VICINITY MAP 3 – West Linn PARKER ROAD PROPERTY, WEST LINN, OR	Schott & Associates 11977 S Toliver Rd. Molalla, Oregon 97038 503-829-6318



Map created with TOPO!® ©2001 National Geographic (www.nationalgeographic.com/topo)

REFERENCE WETLAND LOCATION PARKER ROAD PROPERTY, WEST LINN, OR	Schott & Associates 11977 S Toliver Rd. Molalla, Oregon 97038 503-829-6318

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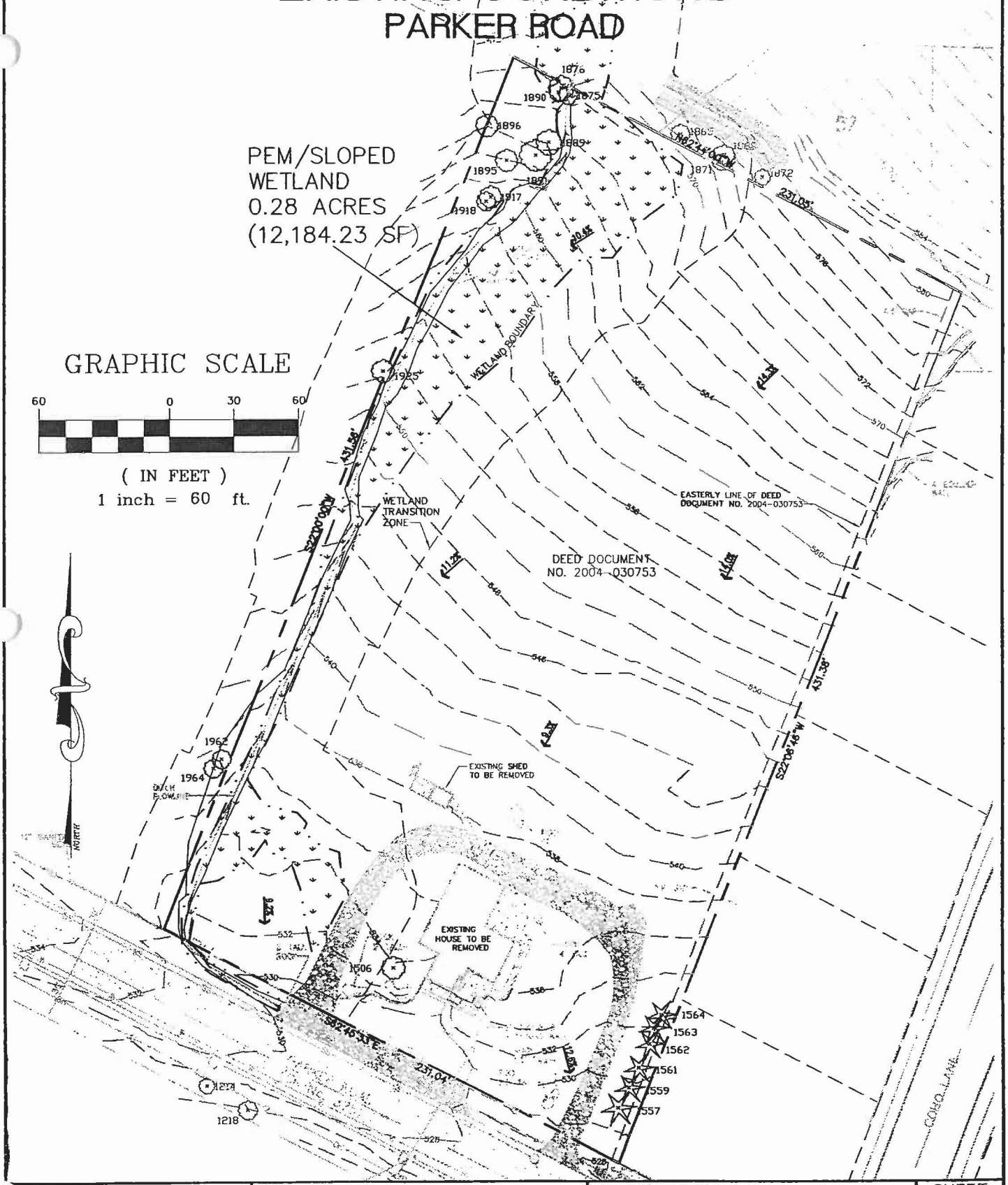
EXISTING CONDITIONS
PARKER ROAD

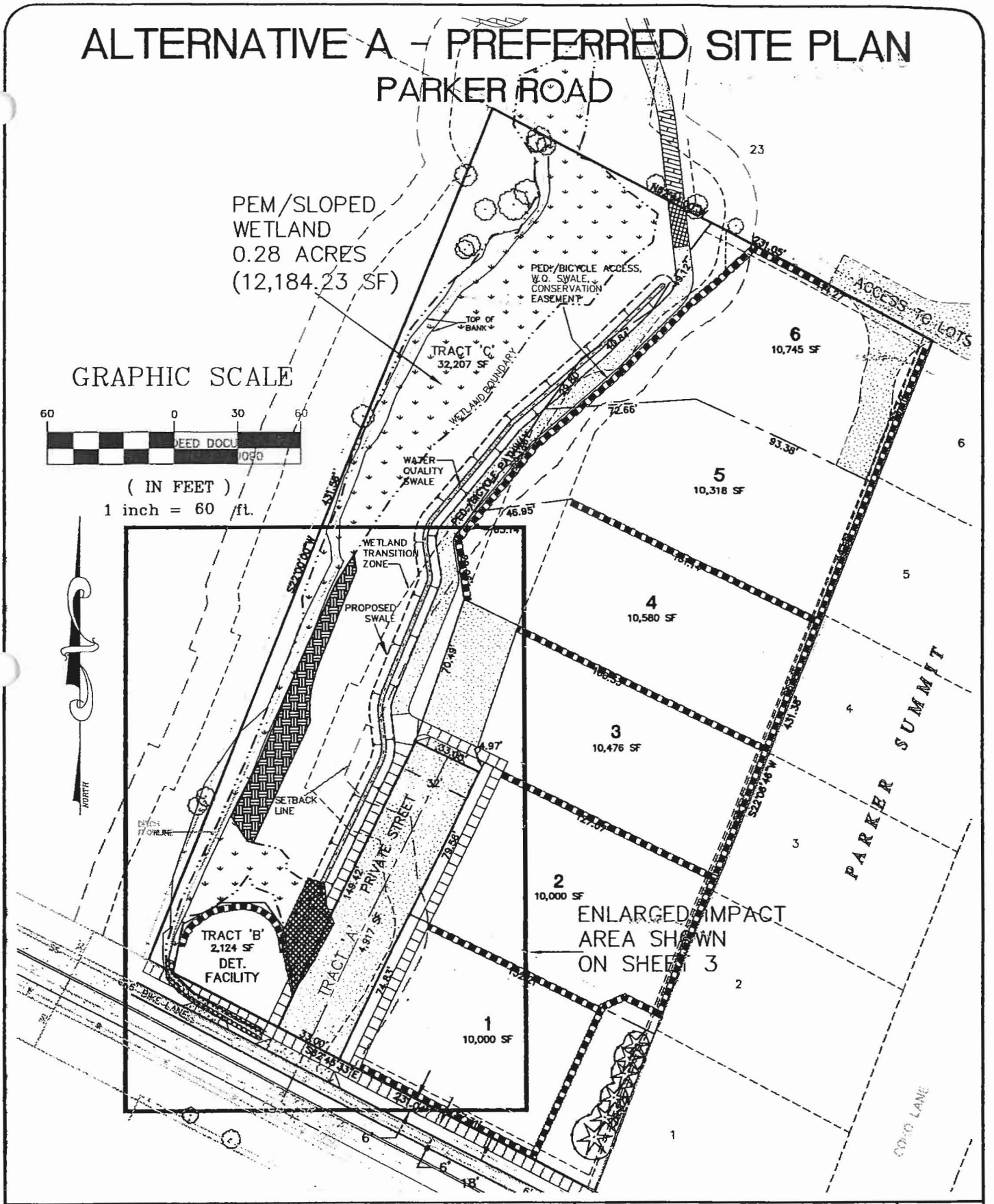


NO. 106-011	DESIGNED BY PTS DATE 4/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 1 OF 10
TYPE PLANNING	PROJECT NO. 106-011 REF.		
W-1061IEXCOND.DWG	SCALE 1" = 60' N/A		

NO. 106-011	DESIGNED BY PTS	DATE 4/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 1 OF 10
TYPE PLANNING	PROJECT NO. 106-011	REF.		
W-10611EXCOND.DWG	SCALE 1" = 60'	N/A		

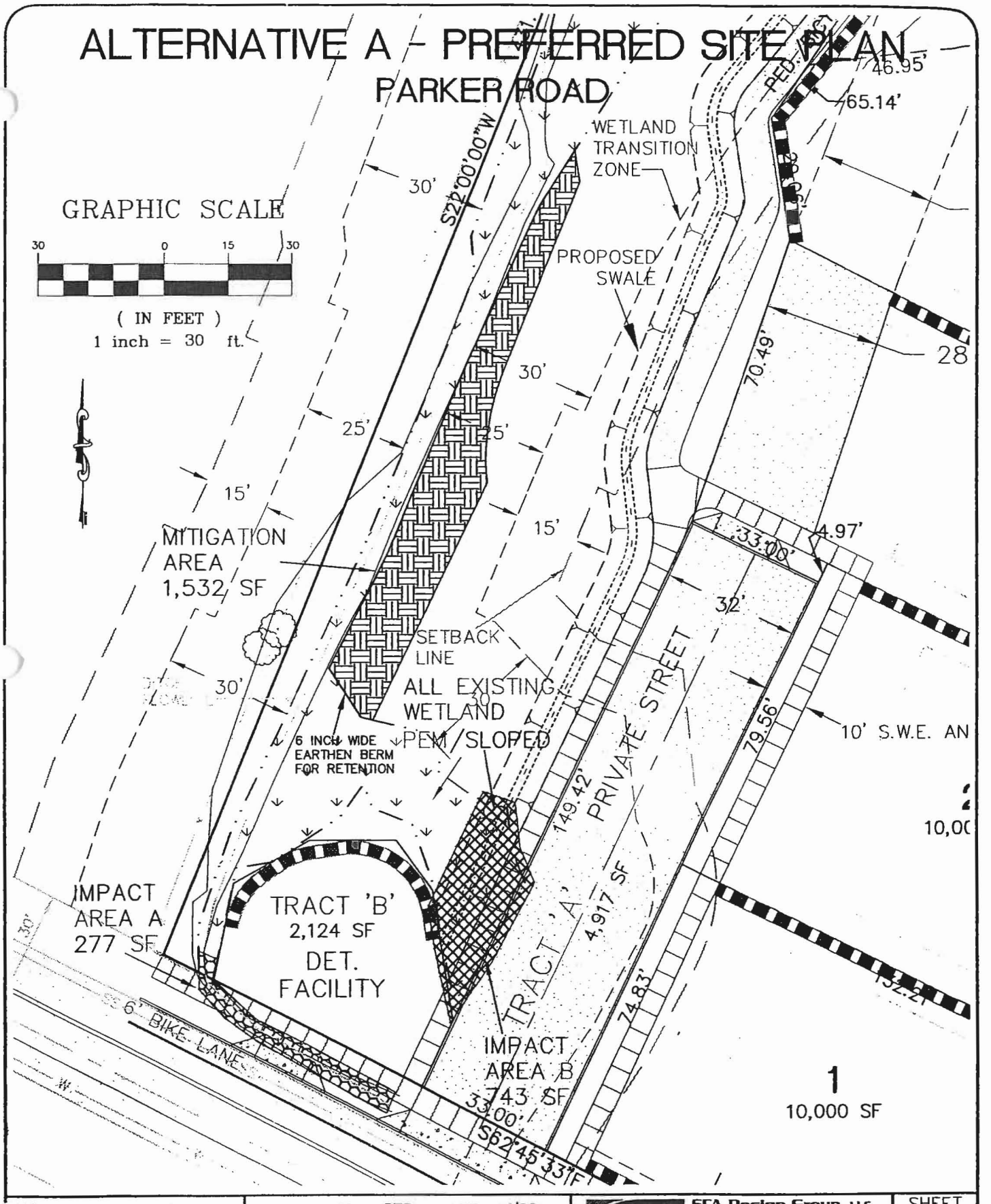
ALTERNATIVE A - PREFERRED SITE PLAN

PARKER ROAD



NO. 106-011	DESIGNED BY PTS DATE 4/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 2 OF 10
TYPE	PROJECT NO. 106-011 REF.		
W-10611ALTA.DWG	SCALE 1" = 60' N/A		

ALTERNATIVE A - PREFERRED SITE PLAN



NO. 106-011	DESIGNED BY PTS	DATE 4/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 3 OF 10
TYPE	PROJECT NO. 106-011	REF.		
W-10611ALTA.DWG	SCALE 1"=30'	N/A		

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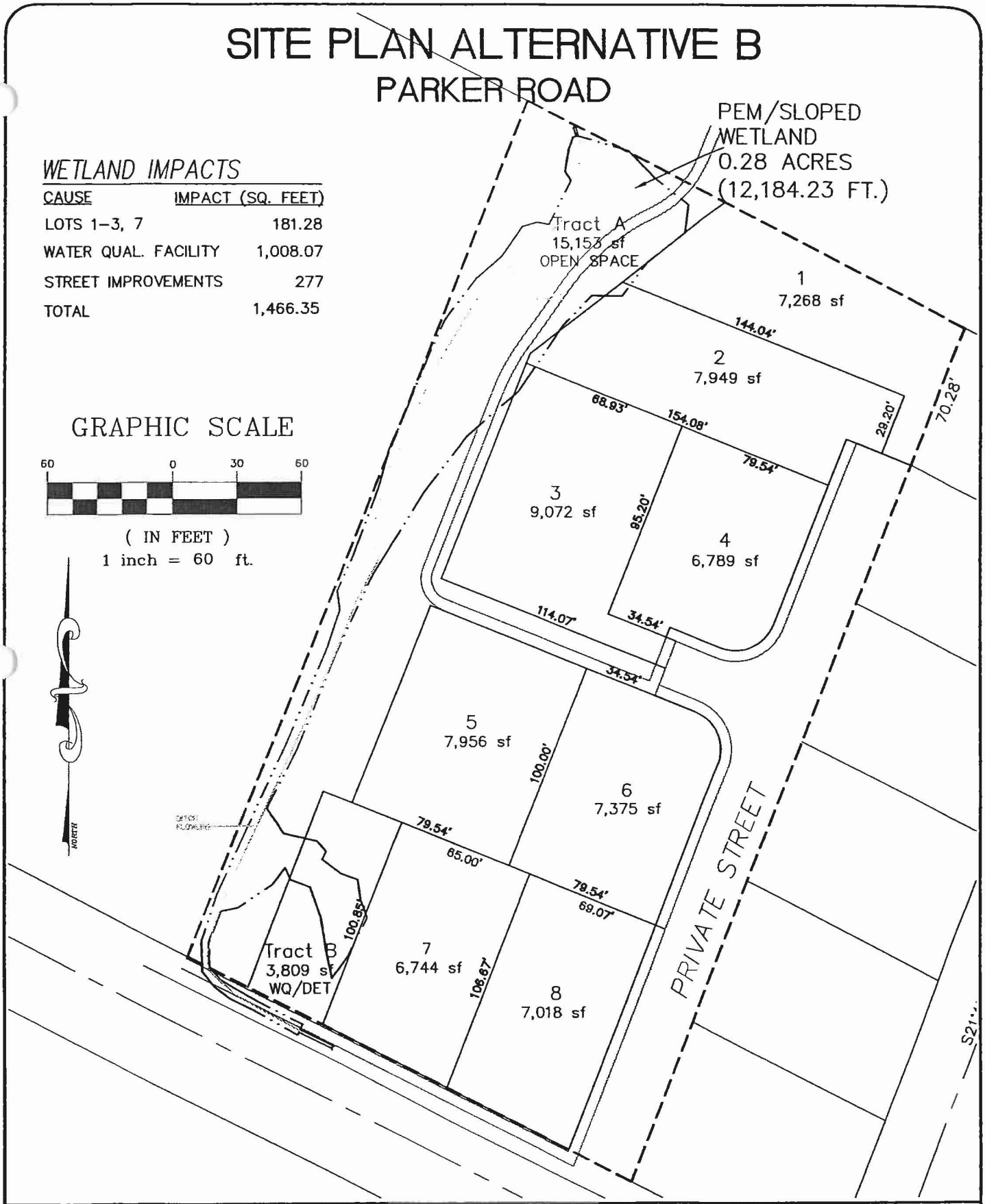
SITE PLAN ALTERNATIVE B

PARKER ROAD



WETLAND IMPACTS

CAUSE	IMPACT (SQ. FEET)
LOTS 1–3, 7	181.28
WATER QUAL. FACILITY	1,008.07
STREET IMPROVEMENTS	277
TOTAL	1,466.35

GRAPHIC SCALE

60 0 30 60

(IN FEET)

1 inch = 60 ft.

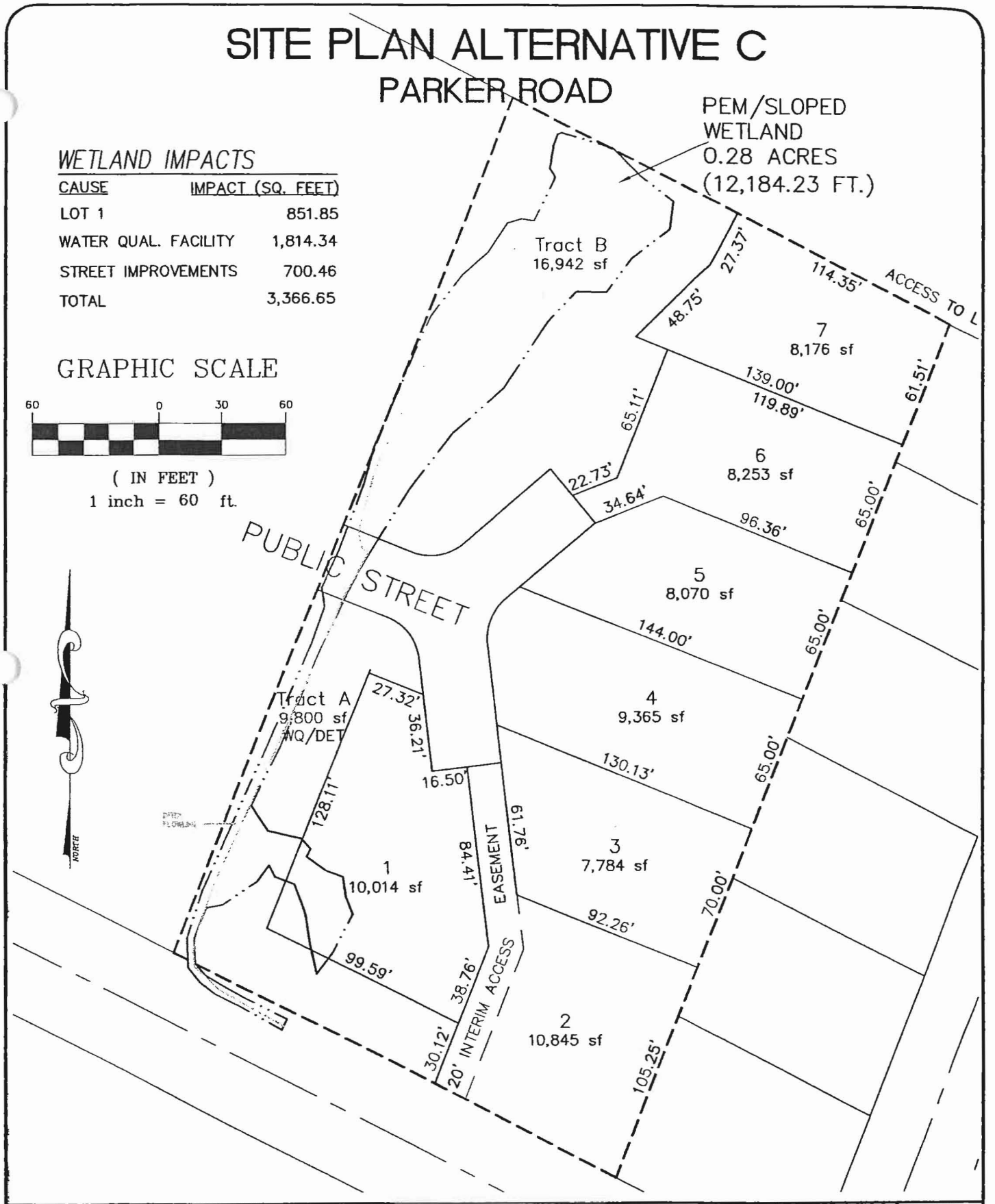
NORTH

NO. 106-011	DESIGNED BY PTS	DATE 4/06	SHEET 4 OF 10
TYPE	PROJECT NO. 106-011	REF.	
W-10611ALTB.DWG	SCALE 1" = 60'	N/A	

SFA Design Group, LLC
3020 SW Washington Square Dr Suite 350
Portland, Oregon 97223
ph (503) 641-8611 fx (503) 603-7005
sfadesign.com

SITE PLAN ALTERNATIVE C

PARKER ROAD



WETLAND IMPACTS

CAUSE	IMPACT (SQ. FEET)
LOT 1	851.85
WATER QUAL. FACILITY	1,814.34
STREET IMPROVEMENTS	700.46
TOTAL	3,366.65

GRAPHIC SCALE

60 0 30 60

(IN FEET)
1 inch = 60 ft.

NO. 106-011	DESIGNED BY PTS	DATE 4/06	SHEET 5 OF 10
TYPE	PROJECT NO. 106-011	REF.	
W-10611ALTC.DWG	SCALE 1" = 60'	N/A	

SFA Design Group, LLC
9020 SW Washington Square Dr. Suite 350
Portland, Oregon 97223
ph: (503) 641-8111 fx: (503) 643-7995

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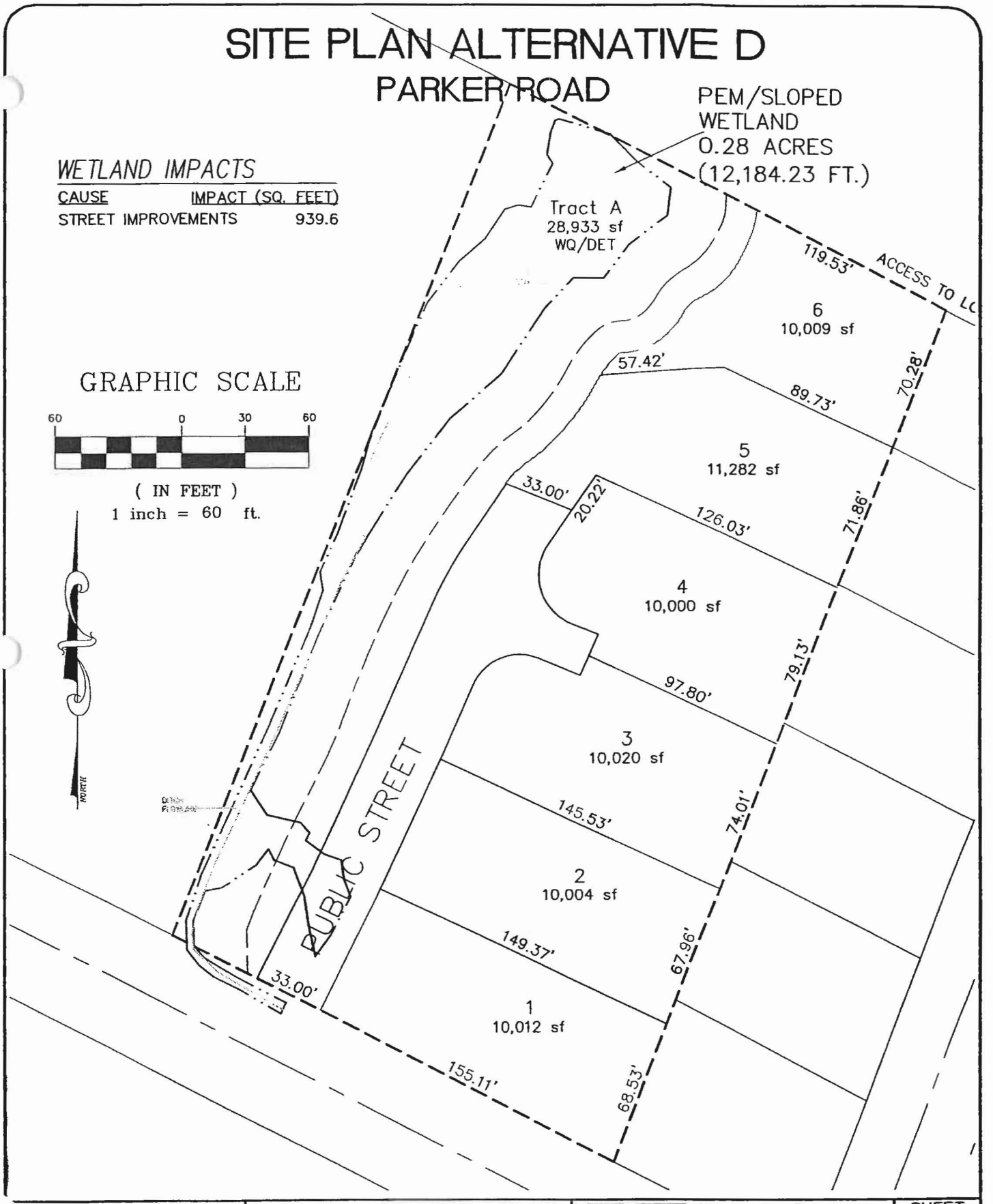
SITE PLAN ALTERNATIVE D



WETLAND IMPACTS

CAUSE	IMPACT (SQ. FEET)
STREET IMPROVEMENTS	939.6

GRAPHIC SCALE

60 0 30 60

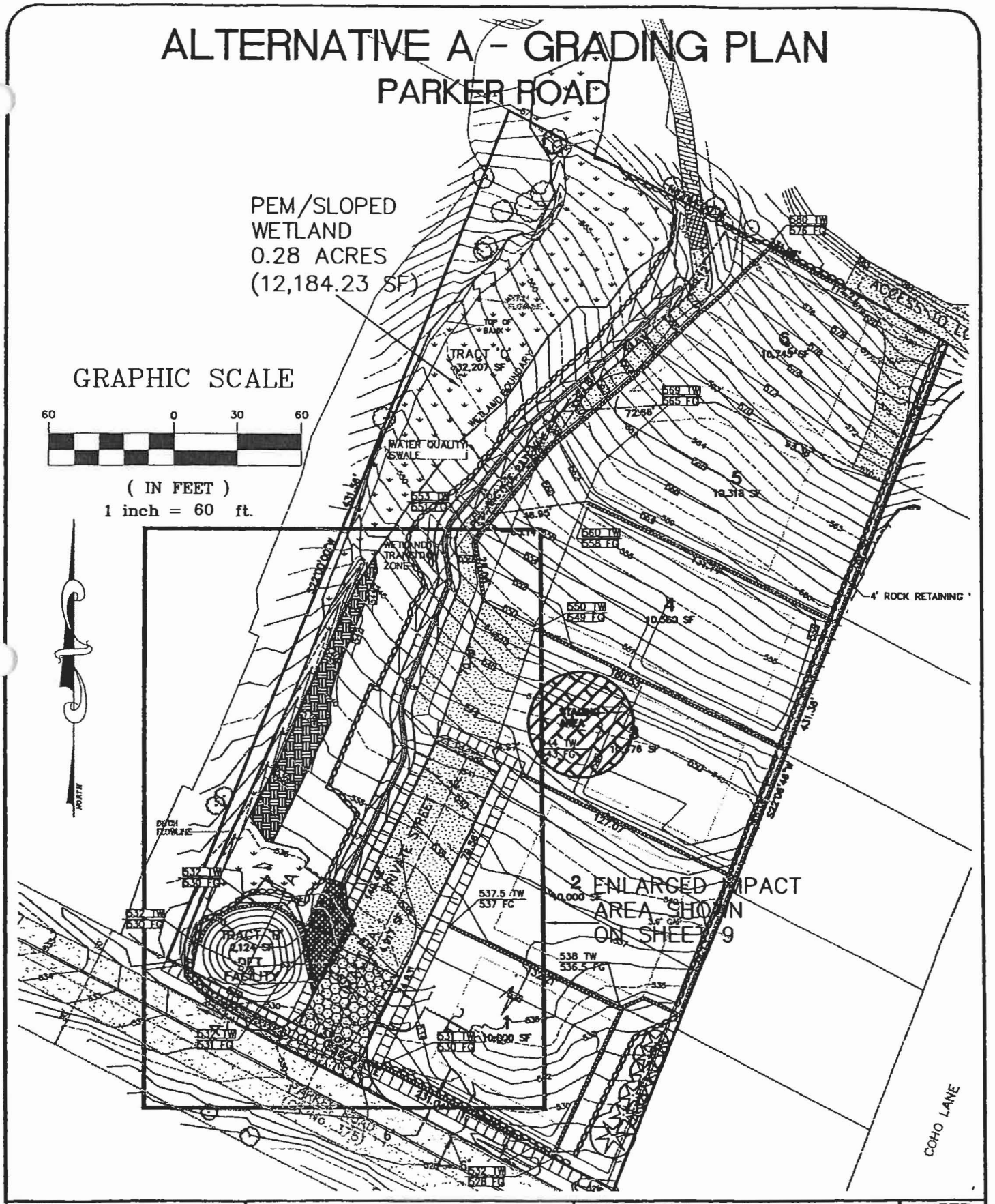
(IN FEET)
1 inch = 60 ft.

NO. 106-011	DESIGNED BY PTS	DATE 4/06	SHEET 6 OF 10
TYPE	PROJECT NO. 106-011	REF.	
W-10611ALTD.DWG	SCALE 1" = 60'	N/A	

SFA Design Group, LLC
5020 SW Washington Square Dr. Suite 350
Portland, Oregon 97223
p: (503) 641-8311 f: (503) 643-7965
sfadesigngroup.com

ALTERNATIVE A - GRADING PLAN

PARKER ROAD



NO. 106-011	DESIGNED BY PTS DATE 4/06	SFA Design Group, LLC STRUCTURAL / CIVIL / LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 8 OF 10
TYPE	PROJECT NO. 106-011 REF.		
W-1061GRAD.DWG	SCALE 1" = 60' N/A		

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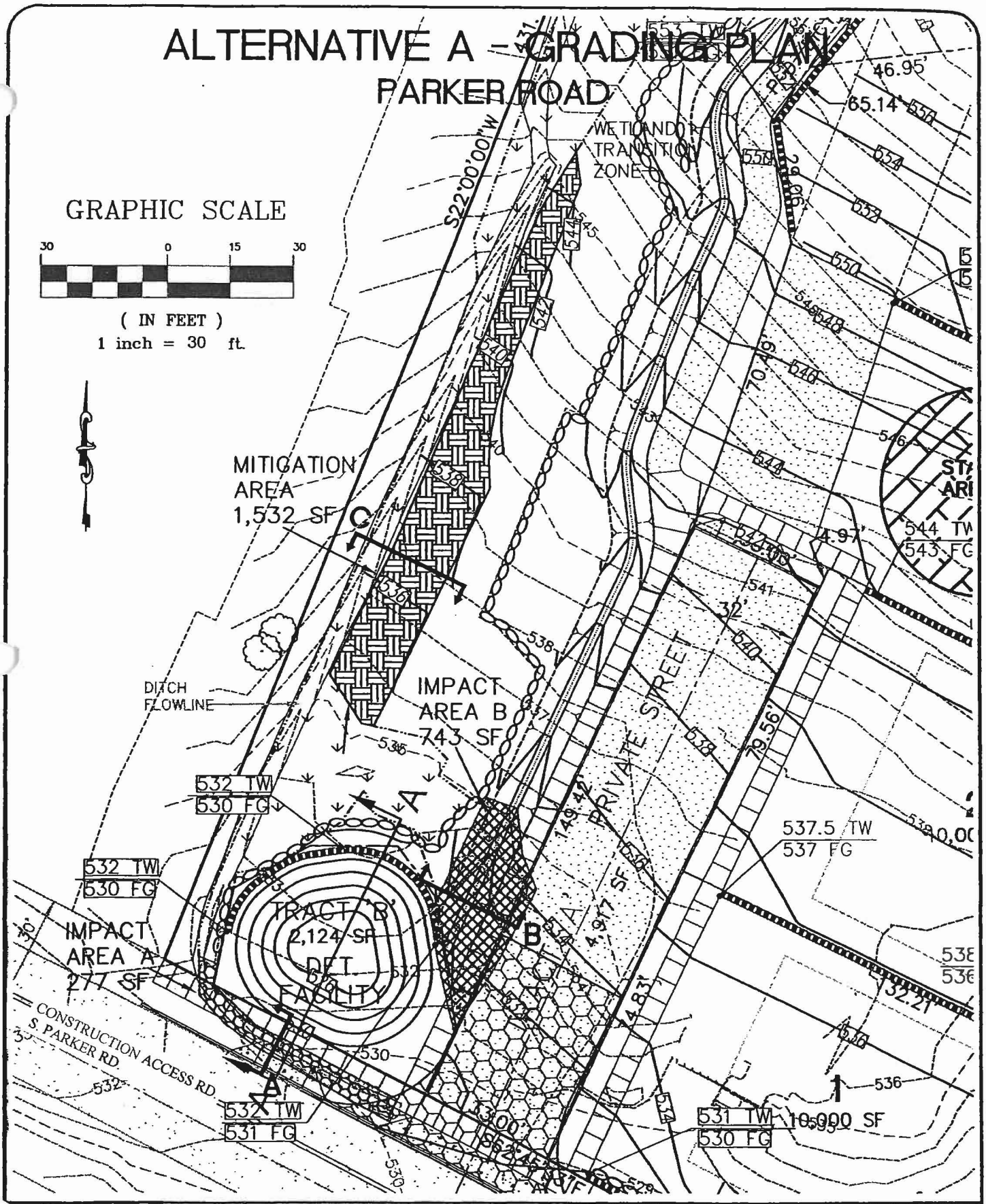

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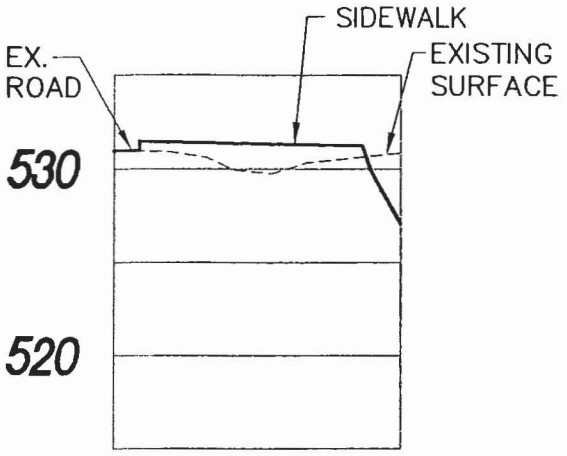
TYPE	PROJECT NO. 106-011 REF.		
W-10611GRAD.DWG	SCALE 1"=30' N/A		

CROSS SECTIONS
PARKER ROAD



SECTION A

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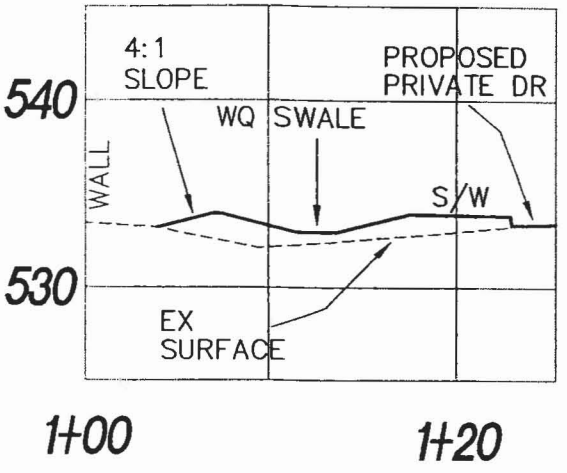
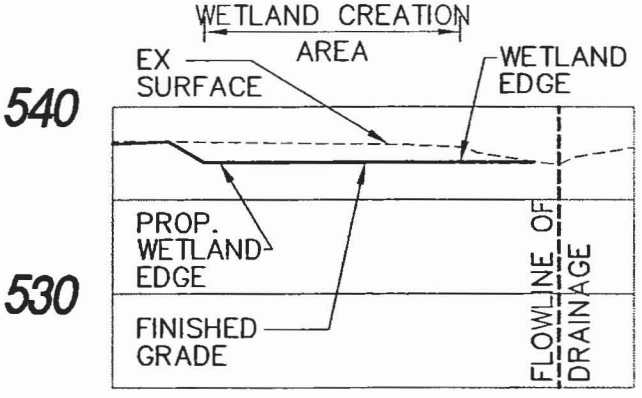


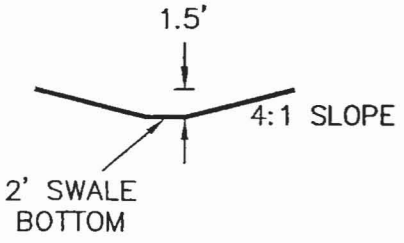
SECTION B

SCALE: 1"=10'



SECTION C

SCALE: 1"=10'



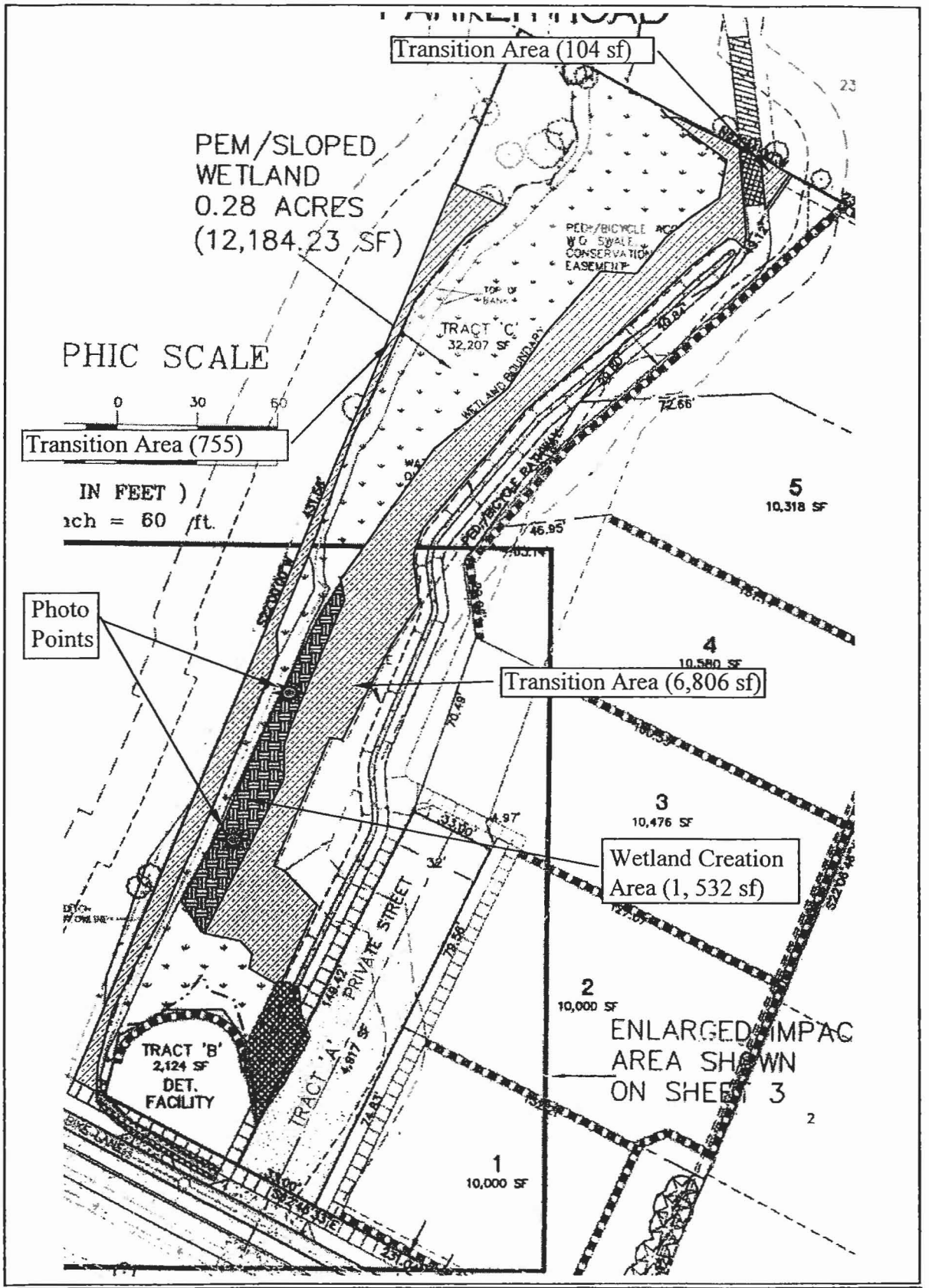
WQ SWALE DETAILS

SCALE: 1"=10'

CUT AND FILL VOLUMES

IMPACT AREA	CUT/FILL	TOTAL
AREA A	21.04 / 26.30 CY	47.34 CY
AREA B	1.01 / 14.77 CY	15.78 CY

NO. 106-011	DESIGNED BY PTS DATE 04/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 10 OF 10
TYPE	PROJECT NO. 106-011 REF.		
W-10611GRAD.DWG	SCALE 1"=10'		



Wetland and Transition Zone Mitigation Plan
Parker Road Development

Schott & Associates
11977 S Toliver Rd.
Molalla, Oregon 97038
503-829-6318

PLANTING LEGEND
FOR PARKER ROAD DEVELOPMENT
WETLAND CREATION AREA
1,532 SF (0.035 ACRES)

Plant Communities	Plant Category	Water Requirements	Light Requirements	Minimum Rooting Size	Minimum Plant Height	On Center/ Seeding rate	Spacing Format	Qty.
TREES								
Oregon ash (fraxinus latifolia)	Tree	Moist	Part	2 gal.	3'	12'	Single	8
Red alder (Alnus rubra)	Tree	Moist	Sun	2 gal.	2'	12'	Single	5
SHRUBS								
Pacific willow (Salix lasiandra)	Shrub	Wet	Sun	1 gal.	3'	10'	Single	3
Clustered rose (Rosa pisocarpa)	Shrub	Wet	Part	1 gal.	1.5'	5'	Cluster	21
Red-osier dogwood (Cornus stoloniferia)	Shrub	Wet	Sun	1 gal.	1.5'	5'	Cluster	21
SEED MIXTURE								
American sloughgrass (Beckmannia syzigachne)	Grass	Wet	Part	Seeds	NA	15-30 lbs/acre	Mass	NA
Beaked sedge (Carex rostrata)	Emergent	Wet	Sun	Seeds	NA	15-30 lbs/acre	Mass	NA
Juncus tenuis (Slender rush)	Emergent	Wet	Part	Seed	NA	15-30 lbs/acre	Mass	NA
Mannagrass (Glyceria occidentalis)	Grass	Wet	Sun-Part	Seed	NA	15-30 lbs/acre	mass	NA

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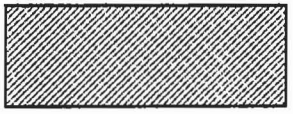
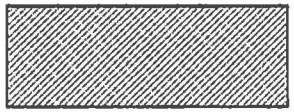
PLANTING LEGEND
FOR PARKER ROAD
TRANSITION AREA
7,665 sf (0.18 acres)



Plant Communities	Plant Category	Water Requirements	Light Requirements	Minimum Rooting Size	Minimum Plant Height	On Center/ Seeding rate	Spacing Format	Qty.
Riparian Forest (RF)								
Douglas fir (Pseudotsuga menziesii)	Tree	Dry	Sun	2 gal.	3'	12'	Single	25
Red alder (Alnus rubra)	Tree	Moist	Sun	2 gal.	2'	12'	Single	25
Big-leaf maple (Acer macrophyllum)	Tree	Dry	Sun	2 gal.	3'	12'	Single	20
Hazelnut (Corylus cornuta)	Shrub	Dry	Part	1 gal.	2"	8'	Cluster	50
Snowberry (Symphoricarpos albus)	Shrub	Dry	Part	1 gal.	1.5'	4'	Clusters of 15	140
Indian plum (Oemleris cerasiformis)	Shrub	Moist	Shade	2 gal.	2'	8'	Single	24
Salal (Gaultheria shallon)	Herb	Moist	Part	1 gal.	4"	Variable	Clusters of 5	215



PLANTING LEGEND
FOR PARKER ROAD
TRANSITION AREA
7,665 sf (0.18 acres)

Plant Communities	Plant Category	Water Requirements	Light Requirements	Minimum Rooting Size	Minimum Plant Height	On Center/ Seeding rate	Spacing Format	Qty.
Riparian Forest (RF)								
Native California brome (*Bromus carinatus*)	Grass	Dry	Sun	Seed	NA	15-30 lbs/acre	Mass	NA
Blue wildrye (*Elymus glaucus*)	Grass	Dry	Part	Seed	NA	15-30 lbs/acre	Mass	NA
Lupine (*Lupinus albicaulus*)	Herb	Dry	Sun	Seed	NA	15-30 lbs/acre	Mass	NA
Western yarrow (*Achillea millefolium*)	Herb	Dry to moist	Part	Seed	NA	15-30 lbs/acre	Mass	NA

Mitigation Data Form

App#	App Name: Renaissance Homes	Resource Coord:	Date:

Authorized Impact, Mitigation Type	Acreage						HGM Class						Cowardin Class					
Auth. Fill	0.02	1		2		3	Sloped	1		2		3	PEM	1		2		3
Auth. Removal	0.02	1		2		3	Sloped	1		2		3	PEM	1		2		3
Mit. Creation	0.035	1		2		3	Sloped	1		2		3	PFO/PSS	1		2		3
Mit. Enhancement		1		2		3		1		2		3		1		2		3
Mit. Restoration		1		2		3		1		2		3		1		2		3
Mit. Bank Credits		PTP credits*					Bank Name											

Note: Be sure that acreage, HGM, and Cowardin class boxes correspond, i.e., if acreage is 0.5[2], then you are reporting that this relates to RFT [2] in the HGM class, and PFO [2] in Cowardin class. If you have more than 3 of any impact or mitigation type, use the back of this sheet and write **OVER** on this side.

Protection Type
- ☐ None
- ☐ Conservation Easement
- ☐ Restrictive Covenant in Deed
- ☒ Deed Restriction

Bonding Type
- ☐ None Required
- ☒ Surety Bond
- ☐ Letter of Credit
- ☐ Assignment of CD
- ☐ Other:

Bond Amount
$ 11,925.00

Ave. Buffer Width
15 ft

Monitoring

Years (3 or 5): 5

Report Due: Dec. 15

As-Built Due: w/in 30-60 days of fill

Mitigation Site Location (Only if different from impact site. Add pages for additional sites.)

Site Number (if applicable):	
Name (if applicable):	
Waterbody (on or adjacent):	
City (if in city limits):	
County (required):	
Tax Lot (if applicable):	
TRSQQ:	

Mitigation Project Number *(For Data Entry Only)*: _____

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4/2/04

WETLAND MITIGATION PLAN INSTALLATION METHODS

PART 1 GENERAL

1.01 DESCRIPTION: Furnish all materials, equipment, and labor necessary for the completion of planting as indicated on drawings and specified hereinafter. Work includes, but is not limited to site preparation, planting and seeding, fertilizing, mulching, maintenance and guarantee of planted areas.

1.02 QUALITY ASSURANCE/GUARANTEE: All plant material and planting locations are to be approved by a wetland biologist or mitigation specialist from Schott & Associates (hereinafter referred to as Schott) prior to planting. During planting, Schott is to be on-site.

Plant substitution is not permitted. The seed mix specified in the plant schedule is to be adhered to and used for all areas designated.

All plant material is to be guaranteed for a full year from the date of planting. Any planted material (woody, herbaceous, or seeded) which proves to be other then specified or is not in vigorous condition within a period of one year from acceptance of the work will be replaced by the Contractor without cost to the Owner. An 80% minimum survival rate is expected after five years.

Furnish certificate of compliance with indicated seed mixture and any certificates of inspection and compliance as required by Federal and State laws and regulation for plant and soil additives.

1.03 SITE CONDITIONS/DAMAGE/CLEANUP: A filter fabric fence is also to be placed between the existing wetlands and construction areas. The fence will remain in place until planted vegetation is established as determined by Schott and/or the permitting agency. Once the vegetation is established the filter fabric fence shall be removed.

Locate all underground utilities prior to digging or driving stakes.

Any existing buildings, equipment, underground utilities, walks, roads, and/or forms damaged by the Contractor are to be replaced and/or repaired at the Contractor's expense, in a manner satisfactory to the Owner's Representative before final payment is made.

The Contractor is to be responsible for keeping planted areas free of debris, rock, and sand throughout the course of the work. Upon completion of the contract, the Contractor's to remove all surplus material, equipment, and debris from the site. All planted areas are to be rake-clean.

1.04 MAINTENANCE: Maintenance is to include regular visits at least monthly to the project site for the purpose of weeding, supplemental watering, and other items necessary to maintain planted areas in a healthy condition. Weeding is to consist only of cleared and mulched

areas maintained around each woody plant, and removal of exotic species such as blackberries, Scot's Broom, or others as determined from the resorted or created wetland areas. No spraying of herbicides or other chemicals, or application of fertilizer (other than noted on the plan), is to occur within the mitigation wetland areas without specific direction from Schott. No pruning is to occur unless authorized by Schott and/or the permitting agency. The maintenance period shall be for two years following the completion date of planting as determined by Schott and/or the permitting agency.

1.05: Irrigation shall be done on an as needed basis. Any temporary irrigation system will be removed following the second growing season.

1.06 SCHEDULE: Any earthwork must be approved by the project representative prior to commencement of such work. At that time, it will be determined what extra measures, if any, should be taken to prevent damage due to earthwork in saturated soils.

Planting is to occur during the cool season months (November to March) to take advantage of seasonal rains and the greater availability of plant material. Other planting time, if authorized, may require plant substitutions and supplemental irrigation.

1.06 EXISTING VEGETATION: Protect all existing vegetation designated to remain. Any existing vegetation damaged by Contractor will be replaced with plants of equal or better size and condition at contractor's expense.

PART 2 PRODUCTS

2.01 PLANT MATERIALS: Plant materials are to conform to Standards and Regulations as specified. Rooted plants are to be first quality, well-foliated, with well-developed root systems, and normal well-shaped trunks, limbs, stems, and heads. Schott will approve for quality conformance. All rooted plant material is to be labeled by genus, species and variety. Plants deemed unsuitable may be rejected before or after delivery. All plant material is to be free from damage, disease, insects, insect eggs and larvae.

2.02 WILLOW CUTTINGS: Willow cuttings are to be only native species (i.e. Salix fluvictillis or S. lasiandra) and not weeping willow, corkscrew willow or other horticultural species or cultivars.

2.02 SOIL AMENDMENTS: Soil amendment is to consist of screened mill-run fir and/or hemlock sawdust blended with composted manure or air digested sewage sludge. The blended ingredients are to be composted to a minimum of one year. Bassett Western Fertil - Mulch or approved equal.

Mulch is to consist of shredded wood and/or bark.

Fertilizer for tree and shrub plantings is to be in 21 - gram tablet form and contain 20% nitrogen, 10% phosphoric acid and 5% potash.

2.03 SEEDING MATERIALS: If hydroseeding, use seed mix as indicated in specifications, wood cellulose fiber from Douglas Fir or Western hemlock dyed to facilitate placement, and non-toxic, biodegradable J-TAC or approved equal.

If broadcast seeding, use seed mix as directed.

PART 3 EXECUTION

3.01 PREPARATION FOR PLANTING: Remove topsoil to 12-inch depth from upland and wetland areas to be disturbed to wetland mitigation. Stockpile the topsoil, which does not have reed canary grass, and remove the reed canary grass contaminated topsoil from the wetland area.

3.02 EARTHWORK: Perform earthwork as necessary to achieve elevations as described, with sufficient excavation to allow placement of 12 inches of stockpiles topsoil.

Following major earthwork, confirm with Schott the subgrades are approved before redistributing stockpiled soils over the restored wetland area.

Rototill or use other approved means, thoroughly blending topsoil and subsoil to reduce interface, to a minimum depth of six inches into subgrade. Compact soils to 75-85% density. Remove all surface rocks over 6 inches in any dimension. Grades must be even and smooth, and relate to adjacent surfaces as indicated.

3.03 PLANT INSTALLATION: Plant per specified scheduling and after all major construction is complete. Orient plants as directed for best appearance. Plant as shown on detail drawings.

3.04 SCALPING: A 30 inch diameter circle will be scalped for each woody plant. The plant will be installed in the middle of the circle. For non-root sprouting species some form of weed barrier will be installed around each plant. 2-4 inches of mulch will be placed on top of the weed barrier. For the root sprouting species the weed barrier shall not be installed, but the mulch layer is required.

3.05 STAKING: Since the survivorship of each woody species needs to be determined, a color coded stake shall be placed adjacent to each plant, or planting group. The number of plants per grouping shall be noted and provided to Schott. In addition, the color codes shall be provided to Schott to assist with the monitoring efforts. The larger trees will be staked to provide support.

3.06 WILLOW INSTALLATION: Rooted willow cuttings will be used if available. However, if rooted material is not available, unrooted cuttings of willow are to be placed in damp to wet soil in the early spring while the plants are still dormant (leafless). The end of the cutting placed in the soil (the lowest portion of the cutting as it grew on the parent tree or shrub) is to be dipped into a rooting hormone (i.e. "Rootone" TM) prior to placement into the soil. For each designated willow location on the planting plan, three rooted plant or five unrooted cuttings will be planted in a clumped group. The rooted willows will be spaced of three foot centers, and the unrooted

cutting will be spaced at 18 - inch centers.

3.07 SEEDING: For hydroseeding or broadcast seeding of the wetland mitigation and buffer areas, use the rate specified on the mitigation plans of the seed mix per acre.

3.08 IRRIGATION: The woody plants within the mitigation area shall be irrigated for the first growing season following planting. The irrigation can be by hand, drip or sprinklers.

3.09 FINAL ACCEPTANCE AND INSPECTION: Following completion of all the above items and with Schott's approval, a pre-warranty acceptance of the project will be granted. From this date forward, for a period of one year, the landscape planting warranty will be in effect. All maintenance as indicated of seeded and planted areas during the guarantee period will be by the contractor and will include items as indicated to fully establish all seeded and planted areas to a healthy vigorous state.

DRAFT

DECLARATION OF COVENANTS AND RESTRICTIONS FOR THE Renaissance Homes, Inc. Parker Rd. Project

THIS DECLARATION made this _____ day of _____, 2006, by Renaissance Homes, Inc. ("Declarant").

RECITALS

1. WHEREAS, Declarant is the owner of the real property described in Exhibit "A" attached hereto and by this reference incorporated herein as the "Property", and desires to {create restore or enhance} thereon wetlands to be maintained in accordance with the Permit Number approved by the Oregon Department of State Lands ("Department");

2. WHEREAS, Declarant desires to provide for the preservation and enhancement of the wetland values of the Property and for the maintenance and management of the Property and improvements thereon, and to this end desires to subject the Property to the covenants, restrictions, easements and other encumbrances hereinafter set forth, each and all of which is and are for the benefit of the Property.

NOW, THEREFORE, the Declarant declares that the Property shall be held, transferred, sold, conveyed and occupied subject to the covenants, restrictions, easements and other encumbrances hereinafter set forth in this Declaration.

ARTICLE 1
DEFINITIONS

1.1 "Declaration" shall mean the covenants, restrictions, and all other provisions set forth in the Declaration of Covenants and Restrictions.

1.2 "Declarant" shall mean and refer to Renaissance Homes, Inc., its successors or assigns.

1.3 "Removal fill permit" shall mean the final document approved by the Department that formally establishes the wetland mitigation and stipulates the terms and conditions of its construction, operation and long-term management.

1.4 "Property" shall mean and refer to all real property subject to this Declaration, as more particularly set forth in Exhibit "A".(an exhibit of conservation area must be attached}

ARTICLE 2
PROPERTY SUBJECT TO THIS DECLARATION

The real property which is and shall be held, transferred, sold, conveyed and occupied subject to this Declaration is located in Clackamas County, Oregon and is more particularly described in Exhibit "A". (*Exhibit "A" should be a survey and legal description.)

ARTICLE 3
GENERAL PLAN OF DEVELOPMENT

Declarant currently manages the site for the purpose of wetland mitigation. Current management is in accordance with Permit Number _____.

ARTICLE 4
USE RESTRICTIONS AND MANAGEMENT RESPONSIBILITIES

The Property shall be used and managed for wetland mitigation purposes in accordance with Permit Number _____. Declarant and all users of the Property are subject to any and all easements, covenants and restrictions of record affecting the Property.

* *(Insert Covenants here. List, by number, all of the reserved rights and things not allowed in the conservation area. See following examples)*

1. There shall be no removal, destruction, cutting, trimming, mowing, alteration or spraying with biocides of any vegetation in the Property, nor any disturbance or change in the natural habitat of the Property.
2. There shall be no agricultural, commercial, or industrial activity undertaken or allowed in the Property; nor shall any right of passage across or upon the Property be allowed or granted if that right of passage is used in conjunction with agricultural, commercial or industrial activity.
3. No domestic animals shall be allowed on the Property.
4. There shall be no filling, excavating, dredging, mining or drilling; no removal of topsoil, sand, gravel, rock minerals or other materials, nor any dumping of ashes, trash, garbage, or of any other material, and no changing of the topography of the land of the Property in any manner.
5. There shall be no construction or placing of buildings, mobile homes, advertising signs, billboards, or other advertising material, or other structures on the Property.

ARTICLE 5

RESOLUTION OF DOCUMENT CONFLICTS

In the event of any conflict between this Declaration and Permit Number _____, the permit shall control.

IN WITNESS WHEREOF, the undersigned being Declarant herein, has executed this instrument this _____ day of _____, 2006.

Renaissance Homes, Inc.
Clackamas County, Oregon

By: _____

Title: _____

STATE OF OREGON)
) ss:
County of Clackamas)

This instrument was acknowledged before me on _____(*date*) by _____(*name of person*) as _____(*title*) of Your firms name of Clackamas County, Oregon.

_____
Signature of Notarial Officer

My Commission Expires: _____

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SAMPLE

SURETY BOND
OREGON DEPARTMENT OF STATE LANDS

For (Removal-Fill Permit / Enforcement File) No. _____ Bond No. _____
Site Location: Township ____ , Range ____, Section ____ , Tax Lot(s) _____ , County_____

KNOW ALL MEN BY THESE PRESENTS:

That _____(name of permittee), as principal,

and _____, a corporation duly licensed to do business in the State of Oregon, as surety are held and firmly bound unto the State of Oregon, acting by and through the Oregon Department of State Lands (Department) in the sum of _____dollars ($_____) lawful money of the United States for payment of which will and truly to be made we bind ourselves and our legal representatives jointly and severally by these presents.

Dated this _____ day of _____ , 20 _____ .

The condition of the above obligation is such that whereas the above principal is required to perform compensatory mitigation in accordance with (Removal-Fill Permit No._____ / Enforcement File No._____) pursuant to ORS ORS 196.800 through 196.990.

It is understood and agreed that the Department may grant to principal extensions of time to complete his mitigation plan, which are based upon delays occasioned by causes beyond principal's control. Such extensions of time shall not cancel the bond, but continue it in full force and effect for the period of such extension of time.

NOW THEREFORE, if the said principal shall faithfully perform the requirements of the mitigation plan filed with the Department, the terms and conditions of his (Removal-Fill permit / Enforcement Order); and the provisions of ORS 196.800 through 196.990; and the rules of said Department adopted thereunder, then this obligation to be void, otherwise to remain in full force and effect provided that if the surety elects to cancel this bond as to subsequent liability, surety must give written notice to the principal(s) and to the Department at least thirty (30) days prior to the effective date of cancellation.

The Surety hereby agrees that prompt notice will be provided to the principal and the Director of the Department of any action filed alleging the insolvency or bankruptcy of said surety or action filed alleging any violations which would result in suspension or revocation of the surety's license or authorization to conduct business in the State of Oregon.

_____
(Name of Principal – *print or type*)

_____
(Signature of Principal & Date)

_____
(Name of Surety Company – *print or type*)

_____
(Name & Title of Attorney-in-Fact – *print or type*)

_____
(Signature & Date)

_____
(Address)

_____

_____
(Phone)

ORIGINAL TO EACH: PRINCIPAL / DEPARTMENT / SURETY

SFA Design Group, LLC
STRUCTURAL | CIVIL | LAND USE PLANNING

August 28, 2006

Oregon Department of State Lands
775 Summer St. NE
Salem, OR 97301

To Whom It May Concern:

This letter provides information on the stormwater quality and detention facilities designed for the Parker Road Subdivision. The purpose of this information is to support the application for a joint wetland permit.

The proposed Parker Road subdivision is located on tax lot 3900 of Clackamas County tax map 2S1E25CD and encompasses 2.32 acres. The proposed subdivision includes 6-lots to be developed with single family detached dwellings. The existing site includes one basin which directs surface water toward the southwest into the existing storm system on Parker Road. The subdivision will maintain this one basin by collecting surface water runoff in a water quality swale and through 12" pipes to a detention pond and again routed to the exiting system on Parker Road.

WATER QUALITY
The subdivision will treat its runoff by using a water quality swale which runs north to south for the entire length of the site before discharging into a detention pond. The swale will be constructed to include approximately 379 feet in length, while the length required to treat the new impervious area is only 138.36 feet.

DETENTION
The amount of impervious area increases as land is developed. This in turn creates a larger amount of runoff entering the storm sewer system. We propose a detention pond with a volume of 2,290 cubic feet to handle the increased stormwater created by the subdivision. We analyzed the proposed impervious areas, soil conditions, time of concentration and precipitation from different sized storm events to calculate the required size. It is sized to control the 2, 5, 10 and 25-year developed storm events at pre-developed levels. A summary of the stormwater detention results *with* and *without* the pond is included in Table 1 below.

Table 1. Summary of Stormwater Detention Results

Design Storm	Target Release Rate Pre-developed conditions (cubic feet/second)	Release Rate **Without** the Proposed Stormwater Detention Facilities Post-developed conditions (cubic feet/second)	Release Rate **With** the Proposed Stormwater Detention Facilities Post-developed conditions (cubic feet/second)
2-year	0.26	0.53	0.26
5-year	0.44	0.76	0.44
10-year	0.65	1.01	0.55
25-year	0.87	1.27	0.87

Source: Inteli-solve Hydraflow Hydrographs Program.

The design of the detention and water quality facilities meets all requirements associated with City of West Linn's Design Standards. Please do not hesitate to contact me with any further questions.

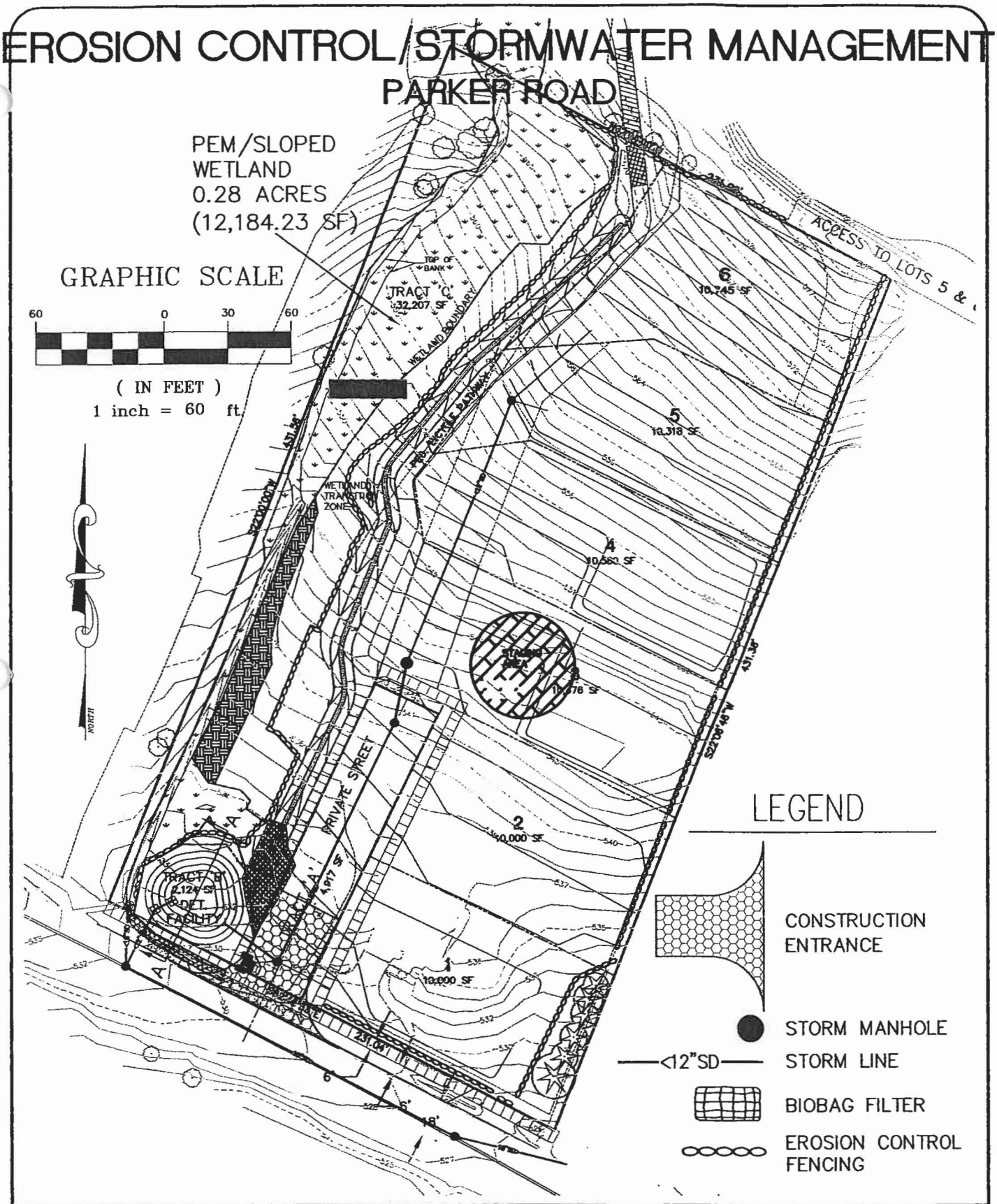
Sincerely,

Brent Fitch, PE
Civil Project Manager - Principal

9020 SW Washington Square Drive, Suite 350 • Portland, Oregon 97223 • 503-641-8311 • Fax 503-643-7905 • www.sfadesigngroup.com

EROSION CONTROL/STORMWATER MANAGEMENT

PARKER ROAD



NO. 106-011	DESIGNED BY PTS DATE 4/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET 11 OF 11
TYPE	PROJECT NO. 106-011 REF.		
W-1061ERST.DWG	SCALE 1" = 60' N/A		

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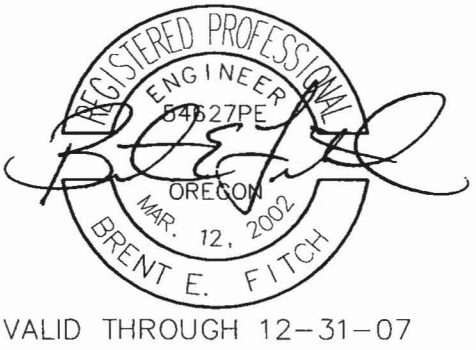
FINAL
STORMWATER MANAGEMENT REPORT

Parker Road Subdivision

West Linn, Oregon



VALID THROUGH 12-31-07

DATE: August 15, 2007

By: Brent Fitch, P.E.

Job No. 106-011

Applicant: Renaissance Homes, Inc.
Attn: Jeff Shrope
16771 Boones Ferry Rd.
Suite B
Lake Oswego, OR 97035
Tel. (503) 636-5600
Fax (503) 635-8400

Engineer: SFA Design Group, LLC
Attn: Brent Fitch, P.E.
9020 SW Washington Sq. Dr.
Suite 350
Portland, OR 97223
(503) 641-8311

TABLE OF CONTENTS

SFA Design Group, LLC
STRUCTURAL | CIVIL | LAND USE PLANNING

INTRODUCTION

This report represents the supportive calculations for the Conveyance, Water Quality, Detention and Downstream Analysis for Parker Road Subdivision. The purpose of this analysis is to comply with the City of West Linn and City of Portland's Design and Construction Standards.

SITE DESCRIPTION AND LOCATION

Parker Road development is located at 2929 S. Parker Rd., West Linn, on tax lot 3900 of Clackamas County Tax Map T2 R1E SEC 25CD. The proposed development is a 6-lot subdivision. The total area of the site is 2.32 acres. However, only 1.73 acres of the project will be developed. All of the proposed lots will be developed with single family detached dwellings. The existing home, driveway and shed will be removed.

HYDROLOGIC SOILS

From the attached Soil Survey Map, the Hydrologic Soil types are Cornelius Hydrologic Group C and Delena Hydrologic Group D.

CURVE NUMBERS (CN)

The composite CN for existing pervious area is calculated to be 76.55, due to meadow with continuous grass. The composite CN for developed pervious area is area is 78.75, due to good conditions of grass cover. The CN number for impervious areas of both existing and developed conditions is 98. Refer to *Runoff Curve Numbers.*

PROJECT BASIN

The site for existing and developed conditions has one basin. The existing basin directs surface water toward the southwest area of the site into the existing storm system on Parker Road *(See Existing Conditions Plan).*

HYDROLOGY/HYDRAULIC METHODOLOGY

WATER QUALITY

The site will be treating its runoff by using a water quality swale. The required water quality swale length to treat the new impervious area is 138.36 feet. The actual swale length is 375 feet. *See Water Quality Swale Calculations.*

DETENTION

As land is developed, the amount of impervious area is increased. This in turn creates a larger amount of runoff entering the storm sewer system. We are proposing to use a detention pond to handle the increased storm water created from the development. The site was analyzed for the 2, 5, 10, 25 and 100-Year Storm Events. We will be releasing the developed runoff at the pre-developed flow rates for the 2, 5, 10 and 25 year storm events, as required by the City of West Linn Design Standards, Section 2.0013-Storm Detention Facility.

The detention pond was analyzed using the Intelisolve Hydraflow Hydrographs. The required detention volume for a 2 foot deep pond detaining the 25 year event is 1,649 cubic feet. As designed, the detention pond will hold approximately 1,764 cubic feet of runoff. With one foot of freeboard, the pond's total storage is 2,955 cubic feet. Runoff will be released for the respective storm events at their pre-developed rates by means of a multi-orifice control structure. Refer to *Detention Pond Section* for calculations.

SUMMARY OF STORMWATER DETENTION RESULTS
BASED ON KING COUNTY HYDROGRAPH PROGRAM

Design Storm	Target Release Rate Pre-developed conditions	Release Rate **Without** the Proposed Stormwater Detention Facilities Post-developed conditions	Release Rate **With** the Proposed Stormwater Detention Facilities Post-developed conditions
2-year	0.21	0.47	0.21
5-year	0.36	0.66	0.36
10-year	0.53	0.86	0.48
25-year	0.71	1.05	0.71

CONVEYANCE

The conveyance system is designed to transport the water flowing from the runoff produced on site.

Surface water runoff is collected and routed on-site through 12" pipes into the detention pond. A pollution control manhole will be installed preceding the inlet to the pond structure, per City of West Linn's Standard Construction Specifications. The drainage at the pond is then conveyed through proposed 18" pipes on Parker Road and connected into the existing 18" storm line to the east. *Refer to Stormwater Conveyance Calculations.*

DOWNSTREAM

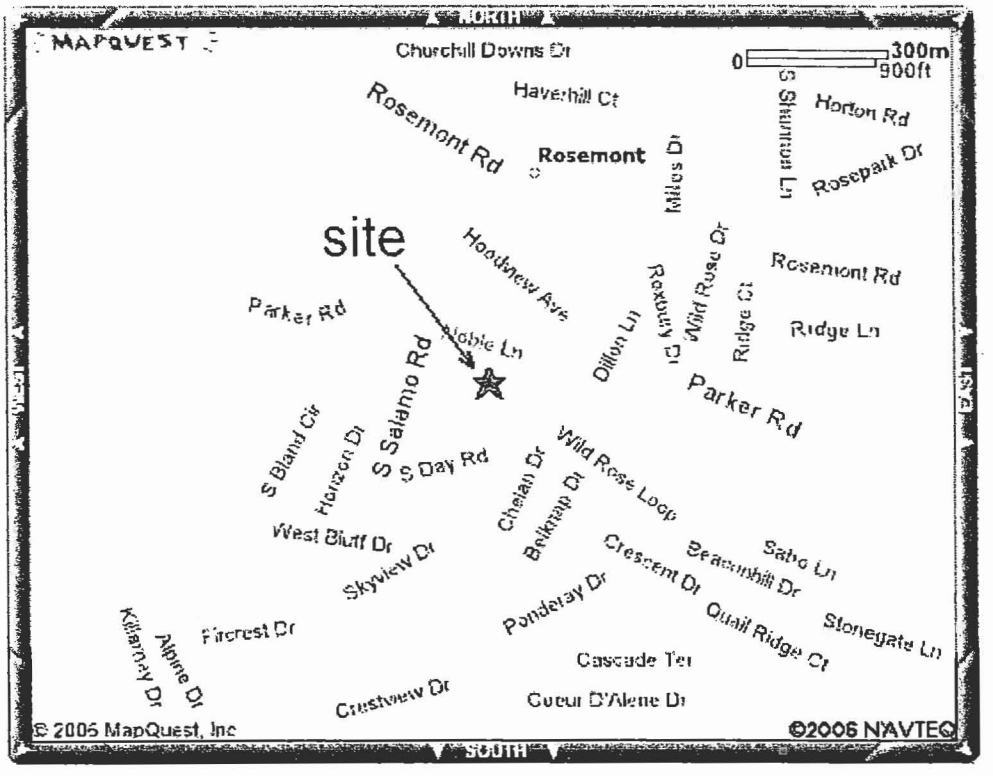
Downstream for Parker Road development was analyzed to ensure that the storm drain system on Parker Road is able to accommodate flows within the drainage basin. *Refer to Downstream analysis Section.*

Parker Road Subdivision locates within Basin A. Entire Basin A drains to a series of proposed 18" storm lines (STM-01) on Parker Road. The minimum slope to convey these proposed 18" lines is 1.17%. The proposed storm system is then connected to an existing 18" line to the east. At this point, the flow of Basin A combined with the flow of Basin B drain through a 24" pipe that runs across Parker Road. Downstream conveyance calculations show that these existing storm lines have adequate capacity to convey flows from upstream basins.

CONCLUSION

The development of Parker Road Subdivision will not adversely affect the drainage system in any off-site properties. We have provided treatment of the storm water for water quality. We also detain runoff with a detention pond by releasing the developed runoff to the restrictive flow requirements. Project site, basins and downstream were carefully evaluated to confirm sufficient flow. We have met all water quality and detention requirements associated with City of West Linn and City of Portland's Design Standards.

PARKER ROAD SUBDIVISION
(106-011)



VICINITY MAP
NTS

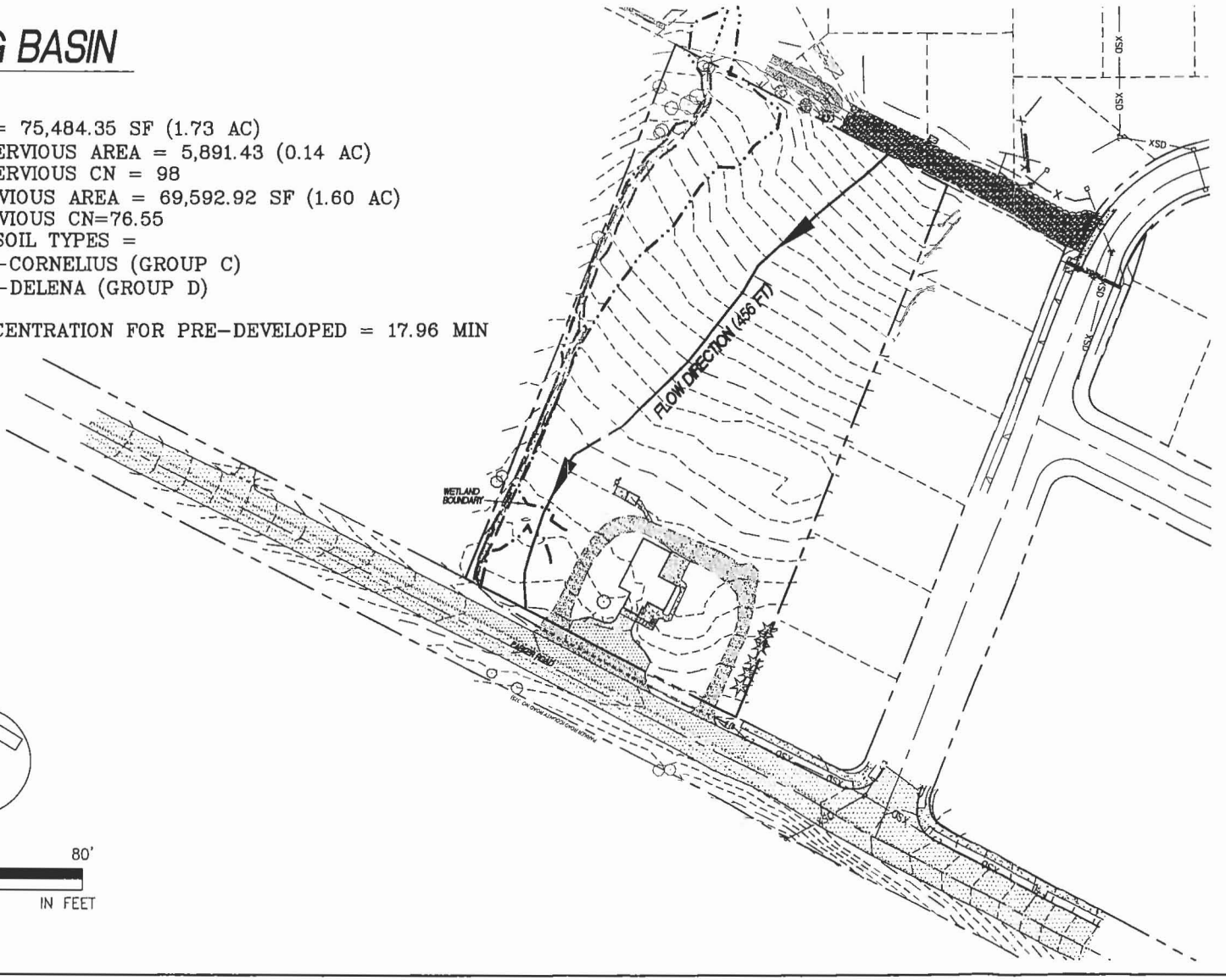
EXISTING CONDITIONS

PARKER ROAD SUBDIVISION

EXISTING BASIN

TOTAL AREA = 75,484.35 SF (1.73 AC)
EXISTING IMPERVIOUS AREA = 5,891.43 (0.14 AC)
EXISTING IMPERVIOUS CN = 98
EXISTING PERVIOUS AREA = 69,592.92 SF (1.60 AC)
EXISTING PERVIOUS CN=76.55
HYDROLOGIC SOIL TYPES =
23C–CORNELIUS (GROUP C)
37D–DELENA (GROUP D)

TIME OF CONCENTRATION FOR PRE–DEVELOPED = 17.96 MIN



0' 40' 80'
SCALE IN FEET

SFA Design Group, LLC
STRUCTURAL | CIVIL | LAND USE PLANNING
9020 SW Washington Square Dr. Suite 350
Portland, Oregon 97223
p: (503) 641-8311 f: (503) 643-7905
sfadesigngroup.com

DESIGNED BY BEF DATE 11/06
DRAWN BY TNT DATE 11/06
REVIEWED BY BEF DATE
PROJECT NO. 106-011 REF.
SCALE HORZ. 1"=80'
VERT. N/A
106\STORM-EXHIBIT-ENG.DWG

SHEET 1 OF 2

PROJECT PARKER ROAD
NO. 106-011
TYPE ENGINEERING

DEVELOPED CONDITIONS

PARKER ROAD SUBDIVISION

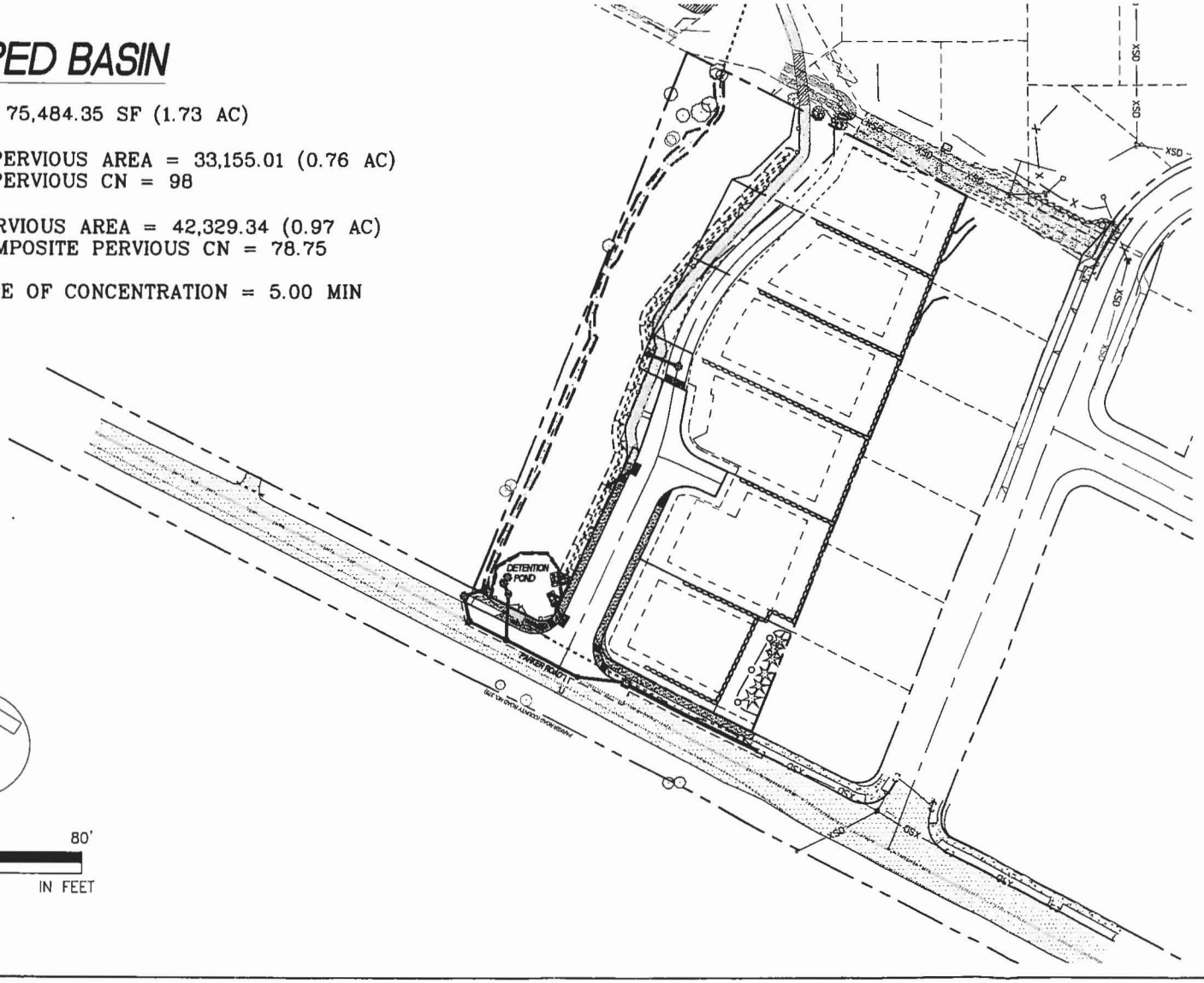
DEVELOPED BASIN

TOTAL AREA = 75,484.35 SF (1.73 AC)

DEVELOPED IMPERVIOUS AREA = 33,155.01 (0.76 AC)
DEVELOPED IMPERVIOUS CN = 98

DEVELOPED PERVIOUS AREA = 42,329.34 (0.97 AC)
DEVELOPED COMPOSITE PERVIOUS CN = 78.75

DEVELOPED TIME OF CONCENTRATION = 5.00 MIN



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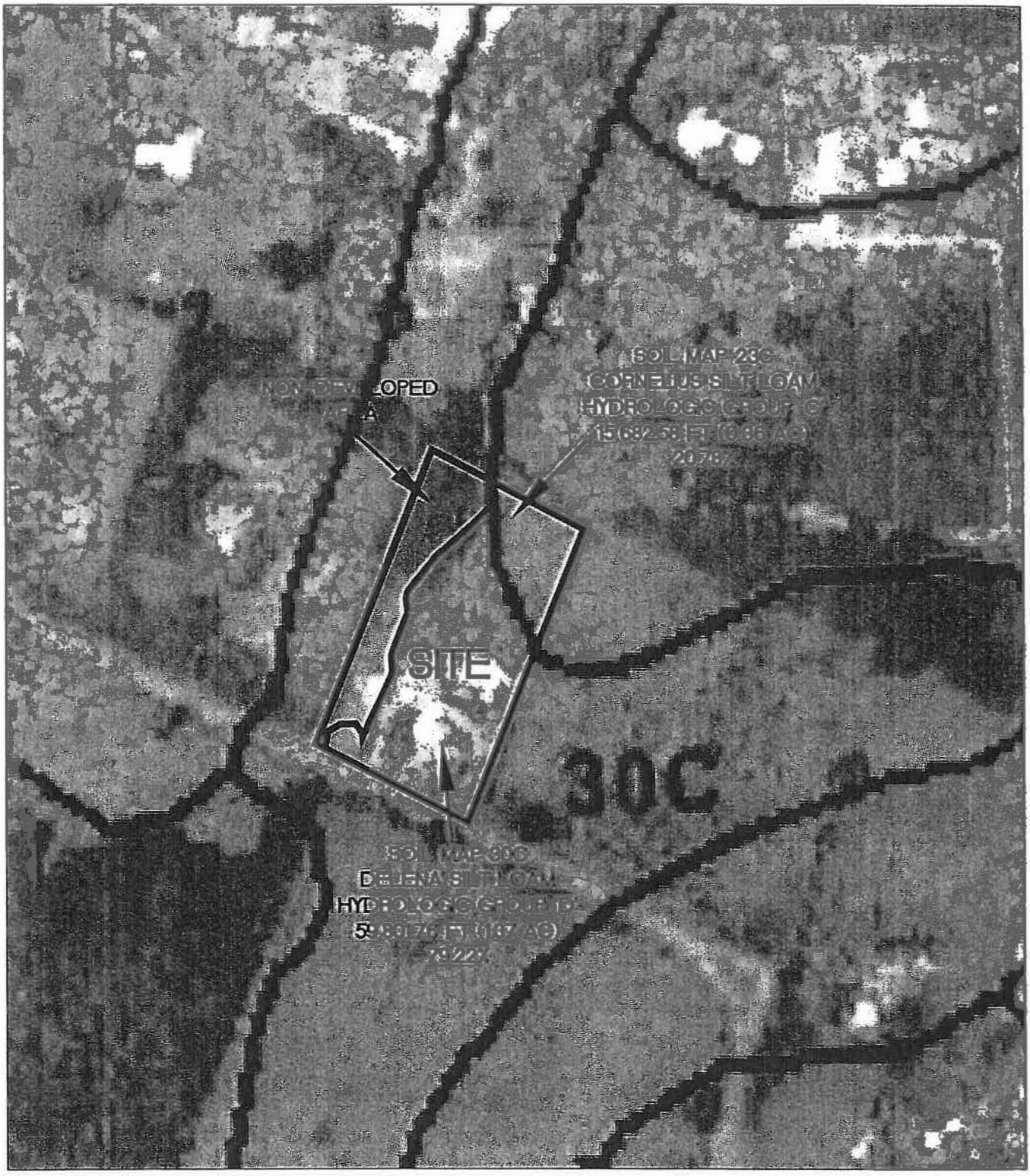
SHEET 2 OF 2

PROJECT PARKER ROAD
NO. 106-011
TYPE ENGINEERING

SOIL MAP
PARKER ROAD SUBDIVISION



NO. 106-011	DESIGNED BY TNT DATE 11/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET
TYPE ENGINEERING	PROJECT NO. 106-011 REF.		
10611-SOIL-MAP	SCALE 1"-200' N/A		OF

Water Features

Clackamas County Area, Oregon

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface depth	Duration	Frequency	Duration	Frequency
				Ft	*Ft*	*Ft*				
23C:										
Cornelius	C	---	January	2.5-4.0	2.5-4.0	---	---	None	---	None
			February	2.5-4.0	2.5-4.0	---	---	None	---	None
			March	2.5-4.0	2.5-4.0	---	---	None	---	None
			April	2.5-4.0	2.5-4.0	---	---	None	---	None
			December	2.5-4.0	2.5-4.0	---	---	None	---	None
30C:										
Delena	D	---	January	0.0-1.5	1.7-2.5	---	---	None	---	None
			February	0.0-1.5	1.7-2.5	---	---	None	---	None
			March	0.0-1.5	1.7-2.5	---	---	None	---	None
			April	0.0-1.5	1.7-2.5	---	---	None	---	None
			December	0.0-1.5	1.7-2.5	---	---	None	---	None

RUNOFF CURVE NUMBERS

PROJECT SITE ANALYSIS

Runoff curve numbers for urban areas*

Cover description		Curve numbers for hydrologic soil				
Cover type and hydrologic condition	Average percent impervious area	A	B	C	D	
Open space (lawns, parks, golf courses, cemeteries, etc.):						
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	DEV
		15,682.58 SF SOIL C- 20.78%				
		59,801.76 SF SOIL D- 79.22%				
		COMBINED CN= 78.75				
Impervious areas:						
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)						
Streets and roads:						
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98	IMP
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	
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	

Runoff curve numbers for other agricultural lands*

Cover description		Curve numbers for hydrologic soil			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range -- continuous forage for grazing					
<50% ground cover or heavily grazed with no mulch	Poor	68	79	86	89
50% to 75% ground cover and not heavily grazed	Fair	49	69	79	84
>75% ground over and lightly or only occasionally grazed	Good	39	61	74	80
Meadow -- continuous grass, protected from grazing and generally mowed for hay	--	30	58	71	78
		15,682.58 SF SOIL C- 20.78%			
		59,801.76 SF SOIL D- 79.22%			
		COMBINED CN= 76.55			
Brush – weed-grass mixture with brush as the major element					
<50% ground cover	Poor	48	67	77	83
50% to 75% ground cover	Fair	35	56	70	77
>75% ground cover	Good	30	48	65	73
Woods – grass combination (orchard or tree farm)	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79

PRE

Runoff curve numbers for other agricultural lands*

Cover description		Curve numbers for hydrologic soil			
Cover type	Hydrologic condition	A	B	C	D
Woods					
Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.	Poor	45	66	77	83
Woods are grazed but not burned, and some forest litter covers the soil.	Fair	36	60	73	79
Woods are protected from grazing, and litter and brush adequately cover the soil.	Good	30	55	70	77

Runoff curve numbers for Simplified Approaches**

Cover description		Curve numbers for hydrologic soil			
Simplified Approaches	Hydrologic condition	A	B	C	D
Eco-roof	Good	n/a	61	n/a	n/a
Roof Garden	Good	n/a	48	n/a	n/a
Contained Planter Box	Good	n/a	48	n/a	n/a
Infiltration & Flow-Through Planter Box	Good	n/a	48	n/a	n/a
Pervious Pavement	--	76	85	89	n/a
Trees	--				
New and/or Existing Evergreens	--	36	60	73	79
New and/or Existing Deciduous	--	36	60	73	79

n/a – Does not apply, as design criteria for the relevant mitigation measured do not include the use of this soil type.

* Soil Conservation Service, *Urban Hydrology for Small Watersheds*, Technical Release 55, pp. 2.5-2.9, June 1986.

** CNs of various cover types were assigned to the Proposed Simplified Approaches with similar cover types as follows:

Eco-roof – assumed grass in good condition with soil type B.

Roof Garden – assumed brush-weed-grass mixture with >75% ground cover and soil type B.

Contained Planter Box – assumed brush-weed-grass mixture with >75% ground cover and soil type B.

Infiltration & Flow-Through Planter Box – assumed brush-weed-grass mixture with >75% ground cover and soil type B.

Pervious Pavement – assumed gravel.

Trees – assumed woods with fair hydrologic conditions.

To determine hydrologic soil type, consult local USDA Soil Conservation Service Soil Survey.

NOTE: Data obtained from City of Portland Stormwater Management Manual Adopted July 1, 1999; revised September 1, 2004. Table C-2 Runoff Curve Numbers

MANNING'S "n" VALUES

PROJECT SITE ANALYSIS

SHEET FLOW EQUATION MANNING'S VALUES	n_s
Smooth Surfaces (concrete, asphault, gravel, or bare hand packed soil)	0.011
Fallow Fields or loose soil surface (no residue)	0.05
Cultivated soil with residue cover (≤ 20%)	0.06
Cultivated soil with residue cover (> 20%)	0.17
Short prairie grass and lawns	0.15
Dense grasses	0.24
Bermuda grasses	0.41
Range (natural)	0.13
Woods or forrest with light underbrush	0.40
Woods or forrest with dense underbrush	0.80

SHALLOW CONCENTRATED FLOW (after initial 300 ft of sheet flow, R = 0.1)	k_s
Forrest with heavy ground litter and meadows (n = 0.010)	3
Brushy ground with some trees (n = 0.060)	5
Fallow or minimum tillage cultivation (n = 0.040)	8
High grass (n = 0.035)	9
Short grass, pasture and lawns (n = 0.030)	11
Nearly bare ground (n = 0.25)	13
Paved and gravel areas (n = 0.012)	27

CHANNEL FLOW (Intermittent) (At the beginning of all visible channels, R = 0.2)	k_c
Forested swale with heavy ground cover (n = 0.10)	5
Forested drainage course/ravine with defined channel bed (n = 0.050)	10
Rock-lined waterway (n = 0.035)	15
Grassed waterway (n = 0.030)	17
Earth-lined waterway (n = 0.025)	20
CMP pipe (n = 0.024)	21
Concrete pipe (n = 0.012)	42
Other waterways and pipe 0.508/n	

CHANNEL FLOW (continuous stream, R = 0.4)	k_c
Meandering stream (n = 0.040)	20
Rock-lined stream (n = 0.035)	23
Grass-lined stream (n = 0.030)	27
Other streams, man-made channels and pipe (n = 0.807/n)	

IMPERVIOUS AREA CALCULATIONS
PROJECT SITE ANALYSIS

JOB NUMBER: 106-011
PROJECT: Parker Road
FILE: 10611hydr.xls

EXISTING IMPERVIOUS AREA

BUILDINGS	1603.07 ft^2	
SIDEWALKS	0.00 ft^2	
GRAVEL AT 60% IMPERVIOUS	2264.61 ft^2	
PAVEMENT	2023.75 ft^2	
EXISTING IMPERVIOUS TOTAL AREA	**5891.43 ft^2**	**0.14 ac**

NEW IMPERVIOUS AREA

ON-SITE		
6 LOTS AT 2,640-SF IMPERVIOUS AREA / LOT	15840.00 ft^2	
PAVEMENT	7863.68 ft^2	
SIDEWALKS OUTSIDE LOT LINES	896.78 ft^2	
PEDESTRIAN PATH	2331.55 ft^2	
	26932.01 ft^2	0.62 ac
OFF-SITE		
PAVEMENT	2998.00	
PEDESTRIAN PATH	1801.00	
SIDEWALKS	1424.00	
	6223.00 ft^2	0.14 ac
NEW IMPERVIOUS TOTAL AREA	**33155.01 ft^2**	**0.76 ac**

Shed Area	**101055.3 ft^2**	**2.32 ac**
Non-developed Area	**25570.95 ft^2**	**0.59 ac**
Developed Area	**75484.35 ft^2**	**1.73 ac**

Existing Impervious Area	**5891.43 ft^2**	**0.14 ac**
Existing % Impervious		**7.80 %**
Developed Impervious Area	**26932.01 ft^2**	**0.76 ac**
Developed % Impervious		**43.9 %**

PREDEVELOPED TIME OF CONCENTRATION

PROJECT SITE ANALYSIS

JOB NUMBER:	106-011		
PROJECT:	Parker Road		
FILE:	10611hydr.xls		
			Accum.
LAG ONE: SHEET FLOW (FIRST 300 FEET)			Tc
Tt = Travel time			
Manning's "n " =	0.15		
Flow Length, L =	300 ft	(300 ft. max.)	
P =	1.6 in		
Slope, S_0 =	0.108 ft/ft		
$T_T = \frac{(0.42)(n * L)^{0.8}}{(P)^{0.5}(S_0)^{0.4}}$	17.08 min.		17.08 min.
LAG TWO: SHALLOW CONCENTRATED FLOW (NEXT 156 FEET)			
Tc Velocity factor, k=	11		
Slope, S_0 =	0.073 ft/ft		
$V = k\sqrt{S_o}$	2.97 ft/s		
Flow Length, L =	156 ft		
$T = \frac{L}{(60)(V)}$	0.87 min.		17.96 min.

Total Flow Length= 456 ft.

TOTAL PREDEVELOPED TIME OF CONCENTRATIO... 17.96 min.

DEVELOPED TIME OF CONCENTRATION

PROJECT SITE ANALYSIS

JOB NUMBER: 106-011
PROJECT: Parker Road
FILE: 10611hydr.xls

Catchment Time	5	min.
Longest Run of Pipe	352	ft
Velocity of Flow	3	ft/s
Time in Pipe = (352 ft)/(3.00 ft/s) =	117.33	s
TOTAL DEVELOPED Tc =	**6.96**	**min.**

WATER QUALITY SWALE CALCULATIONS

PROJECT SITE ANALYSIS

JOB NUMBER: 106-011
PROJECT: Parker Road
FILE: 10611hydr.xls

REFERENCES:
1. City of Portland's Stormwater Management Manual, Sept. 2004
2. Discussions with City of Portland and City of West Linn

REQUIRED WATER QUALITY TREATMENT: 65% Phosphorus Removal.

PROPOSED TREATMENT METHODS:

1. Sumped Catch Basins		15%
2. Bio-Filtration Swale		50%
	total	65%

DESIGN STORM:

Precipitation:	0.83 inches
Storm Duration:	24 hours
Storm Return Period:	96 hours
Storm Window:	2 weeks

IMPERVIOUS AREA:

Watershed Area:	1.73 acres
Percent imp:	43.92 %
Impervious Area:	0.76 acres

Design Inflow = (0.76 ac)*(43560 ft^2/ac)*(0.83 in / 24.0 hrs) = **0.03 cfs**

BIOFILTRATION SWALE DESIGN CRITERIA:

Max Velocity:	0.9 ft/s
Side Slopes:	4 :1 (treatment area)
Base:	2 feet (2' min)
n Factor:	0.24 (plantings)

SWALE CHARACTERISTICS:

Q=	0.03	Design Storm Discharge (determined above)
N=	0.24	Plantings
B=	2 ft	Base width of channel
Z=	4 :1	Side slopes
SLOPE=	0.0975 ft/ft	Slope of channel (0.005 minimum)
ASS. Y=	0.5 ft	Assumed depth to begin analysis (0.5 ft maximum)

ITERATIVE SOLUTION OF MANNING'S EQUATION FOR NORMAL DEPTH:

ITERATION	Y (FT)	P (FT)	A(FT^2)	R	Q (CFS)	% ERROR	V (FPS)
1	0.50	6.12	2.00	0.33	1.84	6029.50	0.92
2	0.03	2.27	0.07	0.03	0.01	-57.07	0.19
3	0.06	2.47	0.13	0.05	0.03	11.84	0.27
4	0.05	2.43	0.12	0.05	0.03	-1.54	0.25
5	0.05	2.44	0.12	0.05	0.03	0.21	0.26
6	0.05	2.44	0.12	0.05	0.03	-0.03	0.26
7	0.05	2.44	0.12	0.05	0.03	0.00	0.26
8	0.05	2.44	0.12	0.05	0.03	0.00	0.26
9	0.05	2.44	0.12	0.05	0.03	0.00	0.26
10	0.05	2.44	0.12	0.05	0.03	0.00	0.26
11	0.05	2.44	0.12	0.05	0.03	0.00	0.26
12	0.05	2.44	0.12	0.05	0.03	0.00	0.26
13	0.05	2.44	0.12	0.05	0.03	0.00	0.26
14	0.05	2.44	0.12	0.05	0.03	0.00	0.26
15	0.05	2.44	0.12	0.05	0.03	0.00	0.26

NORMAL DEPTH = 0.05 ft
FLOW WIDTH = 2.42 ft
VELOCITY = 0.26 ft/s
TREATMENT TIME = 9.00 min
TREATMENT LENGTH = **138.36 ft**

STORMWATER CONVEYANCE CALCULATIONS

PROJECT SITE ANALYSIS

JOB: 106-011
PROJECT: Parker Road
FILE: 10611hydr.xls

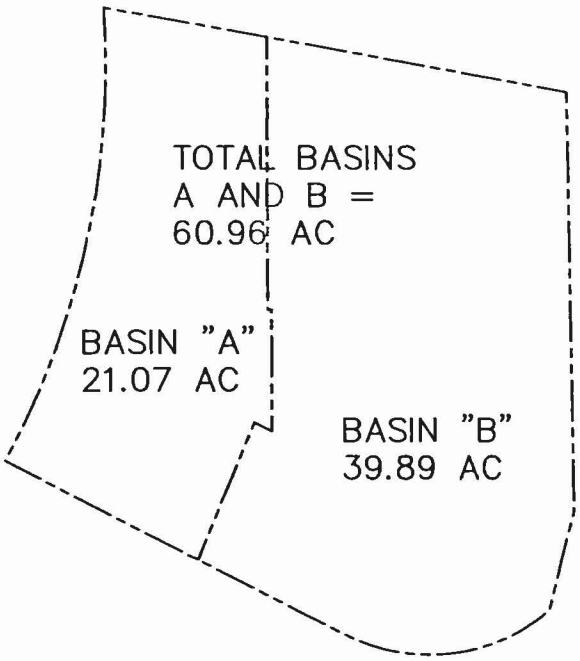
Design Storm: 25 YR
Storm Duration: 24 HRS
Precipitation: 3.9 IN
Manning's "n" 0.013

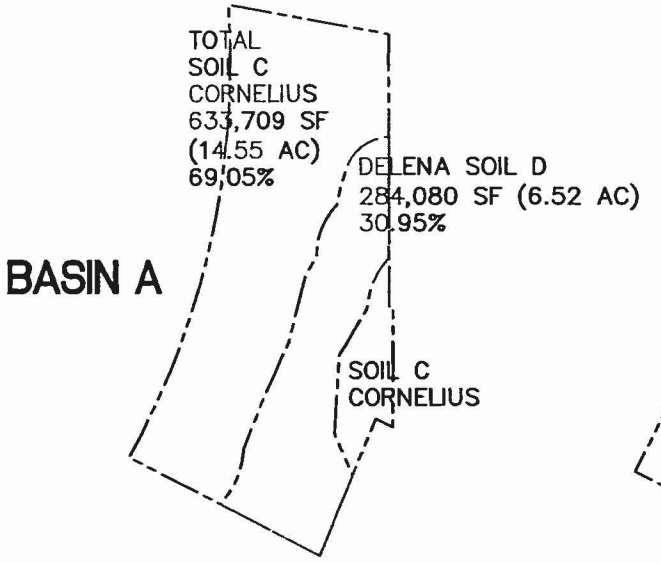
LINE	INC. AREA (AC)	AREA TOTAL (AC)	% IMP.	AREA PERV. (AC)	CN PER.	AREA IMP. (AC)	CN IMP.	TIME (MIN)	Q (CFS)	PIPE SIZE (IN)	SLOPE (FT/FT)	Qf (CFS)	Q/Qf (%)	Vf (FPS)	V/Vf (%)	ACTUAL V (FPS)
ENTIRE SHED	0.00	2.32	32.81	1.56	79.06	0.76	98	11.96	1.33	12	0.0055	2.65	0.50	3.37	0.70	2.37

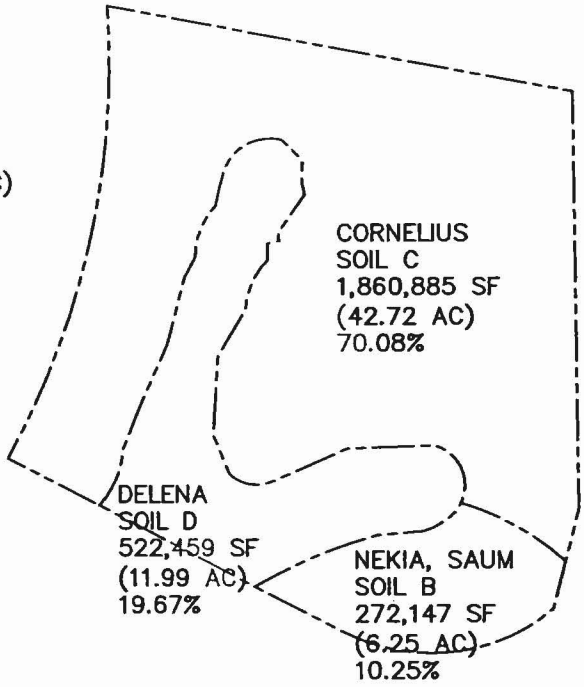
DOWNSTREAM ANALYSIS SECTION

PARKER ROAD SUBDIVISION
Job No. 106-011

DOWNSTREAM SOIL MAP
PARKER ROAD SUBDIVISION







0' 300' 600'

SCALE IN FEET

BASINS A AND B

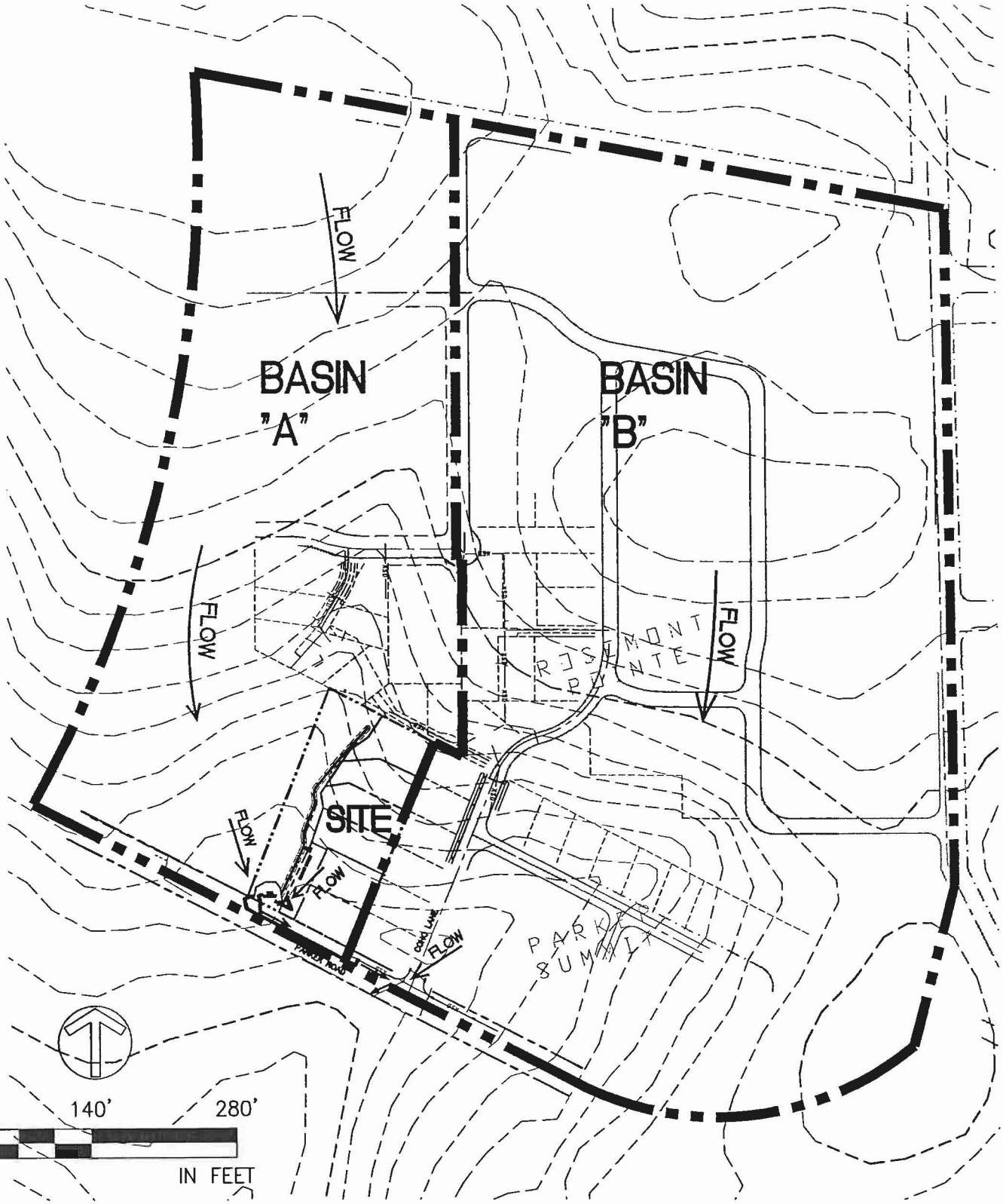
NO. 106-001	DESIGNED BY TNT DATE 11/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET
TYPE ENGINEERING	PROJECT NO. REF.		
10611-DS-BASIN-ENG	SCALE 1"=600' 259		OF

RUNOFF CURVE NUMBERS
DOWNSTREAM ANALYSIS

Runoff curve numbers for urban areas*

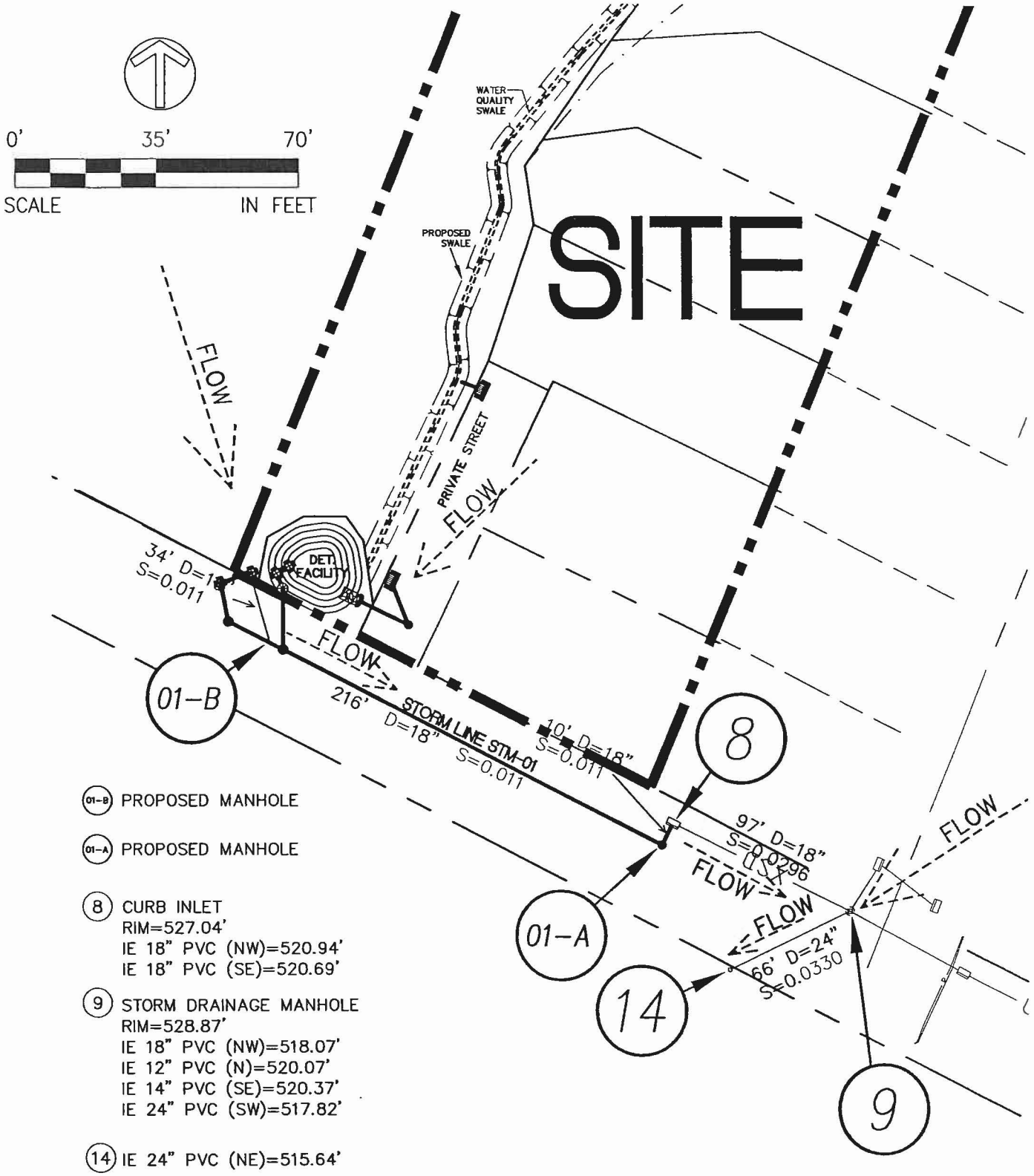
Cover description		Curve numbers for hydrologic soil				
Cover type and hydrologic condition	Average percent impervious area	A	B	C	D	
Open space (lawns, parks, golf courses, cemeteries, etc.):						
Poor condition (grass cover <50%)		68	79	86	89	
Fair condition (grass cover 50% to 75%)		49	69	79	84	
Good condition (grass cover >75%)		39	61	74	80	DEV
		BASIN A				
		633,709 SF SOIL C- 69.05%				
		284,080 SF SOIL D- 30.95%				
		COMPOSITE CN= 75.86				
		BASIN A & B				
		272,147 SF SOIL B- 10.25%				
		1,860,885 SF SOIL C- 70.08%				
		522,459 SF SOIL D- 19.67%				
		COMPOSITE CN= 73.85				
Impervious areas:						
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)						
Streets and roads:						
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98	IMP
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	
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	

DOWNSTREAM BASINS
PARKER ROAD



NO. 106-001	DESIGNED BY TNT	DATE 11/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET
TYPE PLANNING	PROJECT NO.	REF.		OF
10611-DS-BASIN-ENG	SCALE 1"=280'	261		

DOWNSTREAM CULVERTS
PARKER ROAD



(01-B) PROPOSED MANHOLE

(01-A) PROPOSED MANHOLE

(8) CURB INLET
RIM=527.04'
IE 18" PVC (NW)=520.94'
IE 18" PVC (SE)=520.69'

(9) STORM DRAINAGE MANHOLE
RIM=528.87'
IE 18" PVC (NW)=518.07'
IE 12" PVC (N)=520.07'
IE 14" PVC (SE)=520.37'
IE 24" PVC (SW)=517.82'

(14) IE 24" PVC (NE)=515.64'

NO. 106-001	DESIGNED BY TNT	DATE 11/06	SFA Design Group, LLC STRUCTURAL | CIVIL | LAND USE PLANNING 9020 SW Washington Square Dr. Suite 350 Portland, Oregon 97223 p: (503) 641-8311 f: (503) 643-7905 sfadesigngroup.com	SHEET
TYPE PLANNING	PROJECT NO.	REF.		OF
10611-DS-BASIN-ENG	SCALE 1"=70'	262		

IMPERVIOUS AREA CALCULATIONS
DOWNSTREAM ANALYSIS

JOB NUMBER: 106-011
PROJECT: Parker Road
FILE: 10611hydr-downstream.xls

BASIN A	**917789.00 ft²**	**21.07 ac**
Developed Impervious Area	**458894.50 ft²**	**10.53 ac**
Developed % Impervious		**50.0 %**
BASIN B	**1737702.00 ft²**	**39.89 ac**
Developed Impervious Area	**868851.00 ft²**	**19.95 ac**
Developed % Impervious		**50.0 %**
TOTAL BASINS	**2655491.00 ft²**	**60.96 ac**
Developed Impervious Area	**1327745.50 ft²**	**30.48 ac**
Developed % Impervious		**50.0 %**

DEVELOPED TIME OF CONCENTRATION
DOWN STREAM ANALYSIS

JOB NUMBER: 106-011
PROJECT: Parker Road
FILE: 10611hydr-downstream.xls

BASIN A

Catchment Time	10	min.
Longest Run of Pipe	1755	ft
Velocity of Flow	3	ft/s
Time in Pipe = (1755 ft)/(3.00 ft/s) =	585.00	s
TOTAL DEVELOPED Tc =	**19.75**	**min.**

BASINS A AND B

Catchment Time	10	min.
Longest Run of Pipe	2291	ft
Velocity of Flow	3	ft/s
Time in Pipe = (2291 ft)/(3.00 ft/s) =	763.67	s
TOTAL DEVELOPED Tc =	**22.73**	**min.**

SANTA BARBARA URBAN HYDROGRAPHS

DOWN STREAM ANALYSIS

JOB: 106-011
PROJECT: Parker Road
FILE: 10611hydr-downstream.xls

DESCRIPTION	DESIGN STORM (YR)	DURATION (HR)	PRECIP (IN)	AREA TOTAL (AC)	% IMP	AREA PERV. (AC)	CN PER.	AREA IMP. (AC)	CN IMP.	TIME (MIN)	Q (CFS)
BASIN A											
DEVELOPED 25-YEAR PEAK DISCHARGE	25	24	3.9	21.07	50	10.53	75.86	10.53	98	19.75	11.42
BASINS A & B											
DEVELOPED 25-YEAR PEAK DISCHARGE	25	24	3.9	60.96	50	30.48	73.85	30.48	98	22.73	30.38

STORMWATER CONVEYANCE CALCULATIONS

DOWN STREAM ANALYSIS

JOB: 106-011
PROJECT: Parker Road
FILE: 10611hydr-downstream.xls

Design Storm: 25 YR
Storm Duration: 24 HRS
Precipitation: 3.9 IN
Manning's "n" 0.013

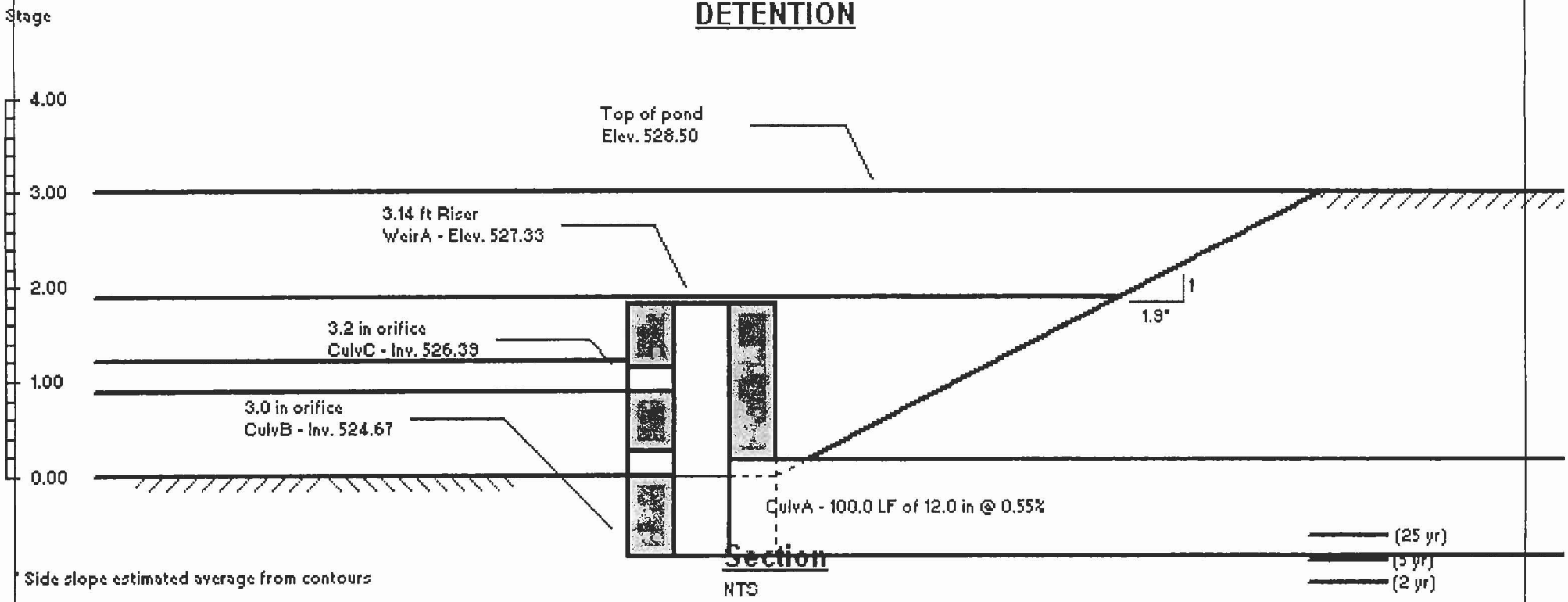
LINE	INC. AREA (AC)	AREA TOTAL (AC)	% IMP.	AREA PERV. (AC)	CN PER.	AREA IMP. (AC)	CN IMP.	TIME (MIN)	Q (CFS)	PIPE SIZE (IN)	SLOPE (FT/FT)	Qf (CFS)	Q/Qf (%)	Vf (FPS)	V/Vf (%)	ACTUAL V (FPS)
BASIN A TO PROPOSED STORM LINES (STM-01) ON PARKER ROAD (CONNECTS AT EXISTING MH#8)	0.00	21.07	50.00	10.53	75.86	10.53	98	19.75	11.42	18	**0.0117**	11.39	1.00	6.45	1.20	7.75
EXISTING MH#8 TO EXISTING MH#9	0.00	21.07	50.00	10.53	75.86	10.53	98	19.75	11.42	18	* **0.0296**	18.12	0.63	10.25	0.83	8.51
BASINS A & B TO EXISTING MH#14	0.00	60.96	50.00	30.48	73.85	30.48	98	22.73	30.38	24	* **0.0330**	41.21	0.74	13.12	0.94	12.29

* Denotes Existing Slope

DETENTION ANALYSIS SECTION

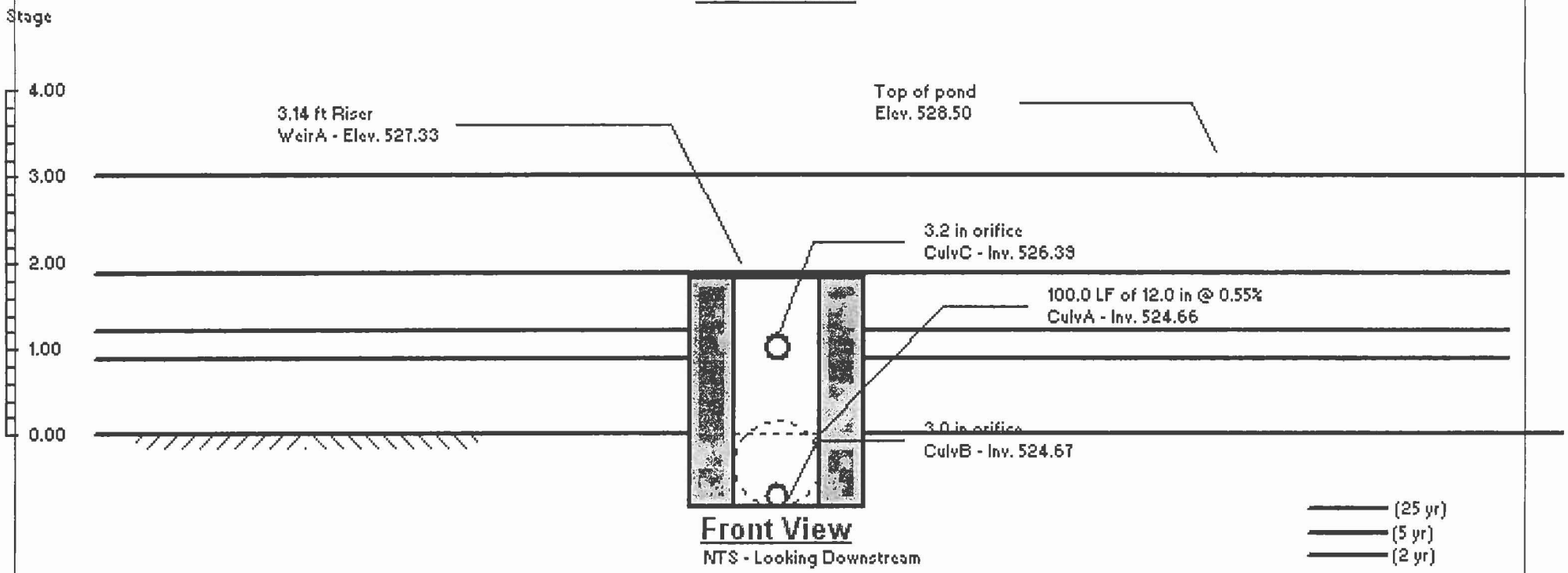
PARKER ROAD SUBDIVISION
Job No. 106-011

DETENTION



Schematic only. Not for construction.

DETENTION



Front View

NTS - Looking Downstream

Schematic only. Not for construction.

Table of Contents

Hydrograph Return Period Recap

No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)							Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-----	-----	0.21	-----	0.36	0.53	0.71	-----	0.89	Predeveloped
2	SCS Runoff	-----	-----	0.47	-----	0.66	0.86	1.05	-----	1.26	Developed
3	Reservoir	2	-----	0.21	-----	0.36	0.00	0.71	-----	0.00	Detention

Hydrograph Summary Report

Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1 SCS Runoff	0.21	3	486	4,715	---	------	----	Predeveloped
2 SCS Runoff	0.47	3	477	7,229	---	------	----	Developed
3 Reservoir	0.21	3	507	7,229	2	526.38	701	Detention

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

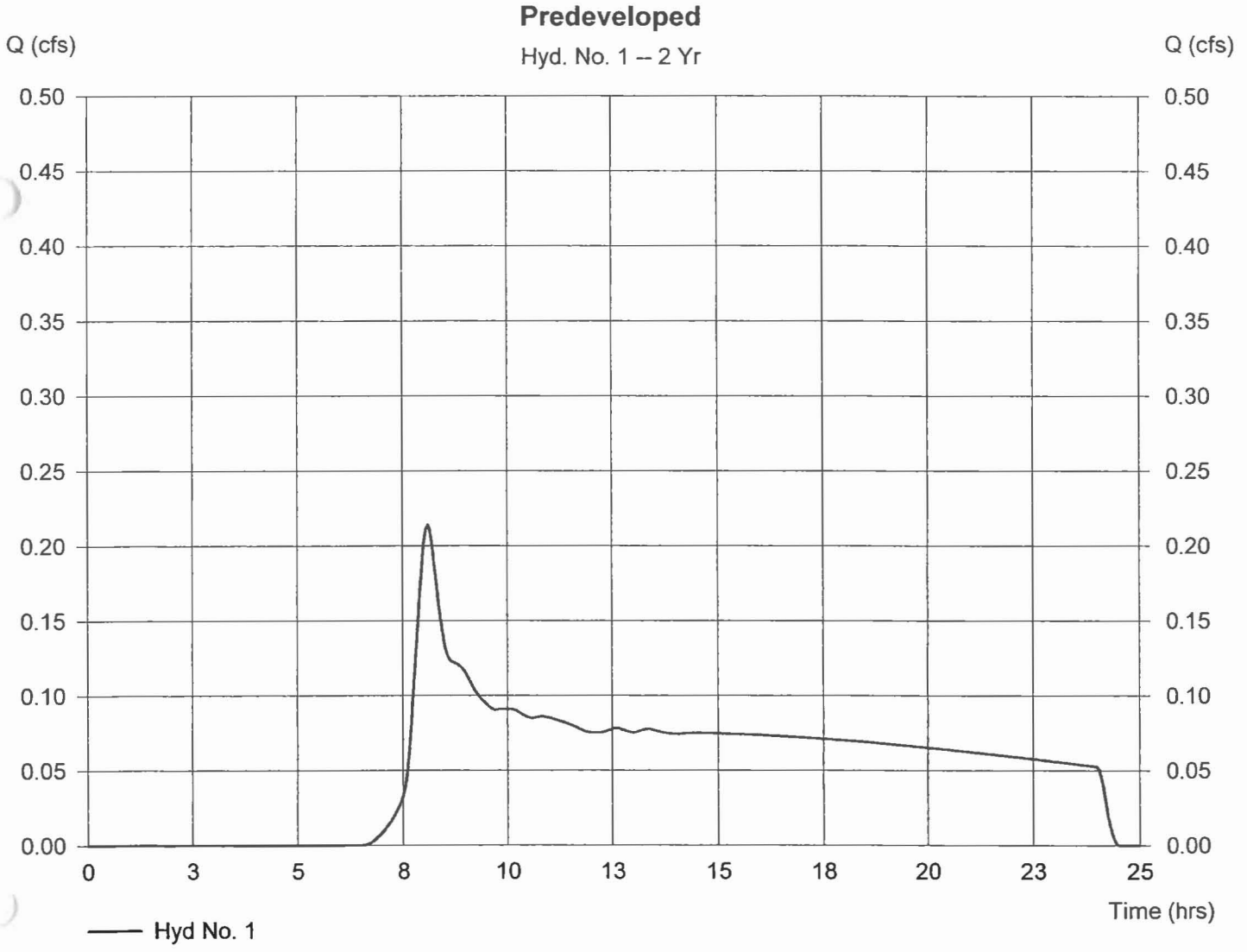
Wednesday, Aug 15 2007, 9:22 AM

Hyd. No. 1

Predeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 0.21 cfs
Storm frequency	= 2 yrs	Time interval	= 3 min
Drainage area	= 1.740 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 18.00 min
Total precip.	= 2.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 4,715 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Wednesday, Aug 15 2007, 9:22 AM

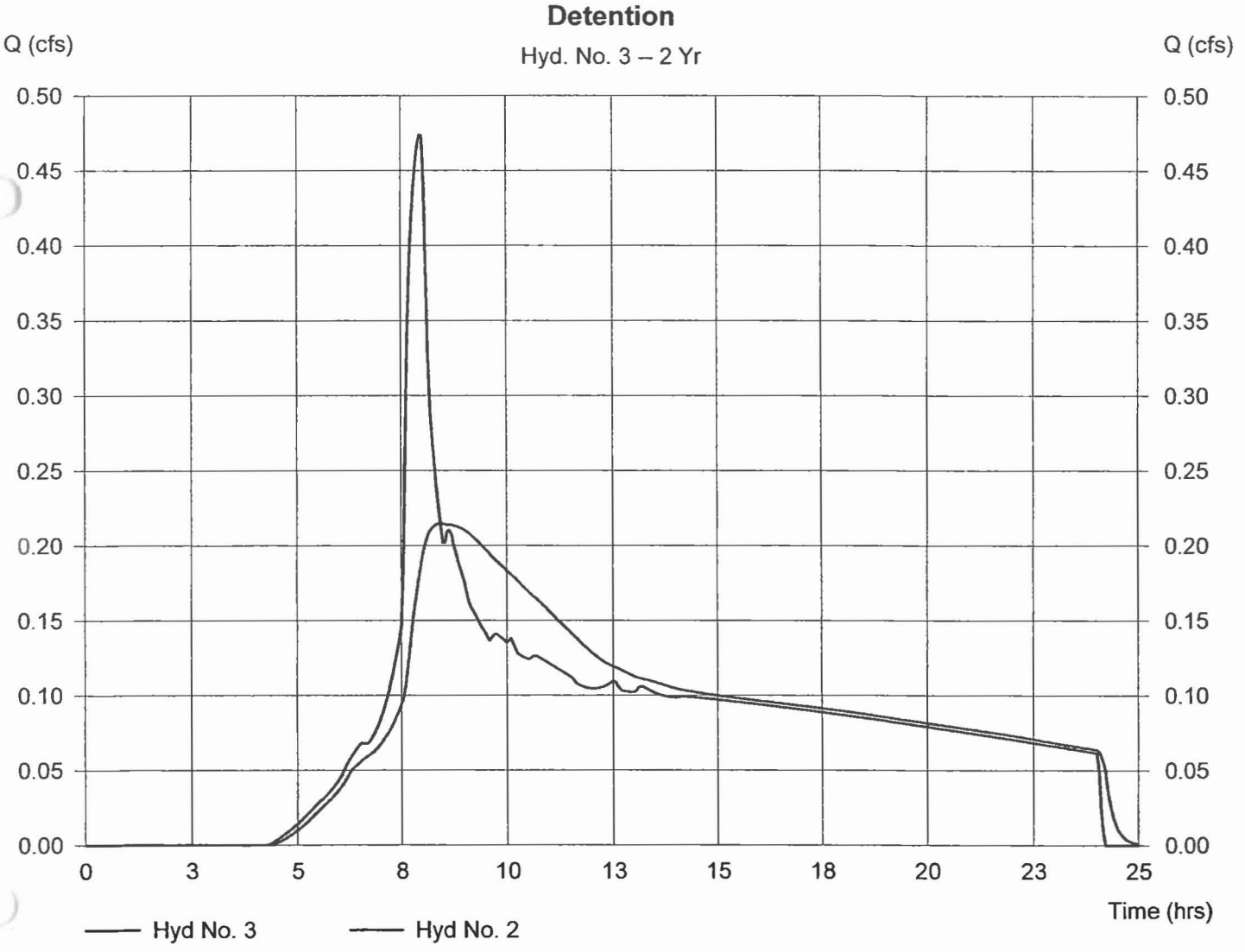
Hyd. No. 3

Detention

Hydrograph type	= Reservoir	Peak discharge	= 0.21 cfs
Storm frequency	= 2 yrs	Time interval	= 3 min
Inflow hyd. No.	= 2	Max. Elevation	= 526.38 ft
Reservoir name	= DETENTION	Max. Storage	= 701 cuft

Storage Indication method used.

Hydrograph Volume = 7,229 cuft



Pond Report

Pond No. 1 - DETENTION

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	525.50	635	0	0
0.50	526.00	807	361	361
1.50	527.00	980	894	1,254
2.00	527.50	1,060	510	1,764
3.00	528.50	1,322	1,191	2,955

Culvert / Orifice Structures

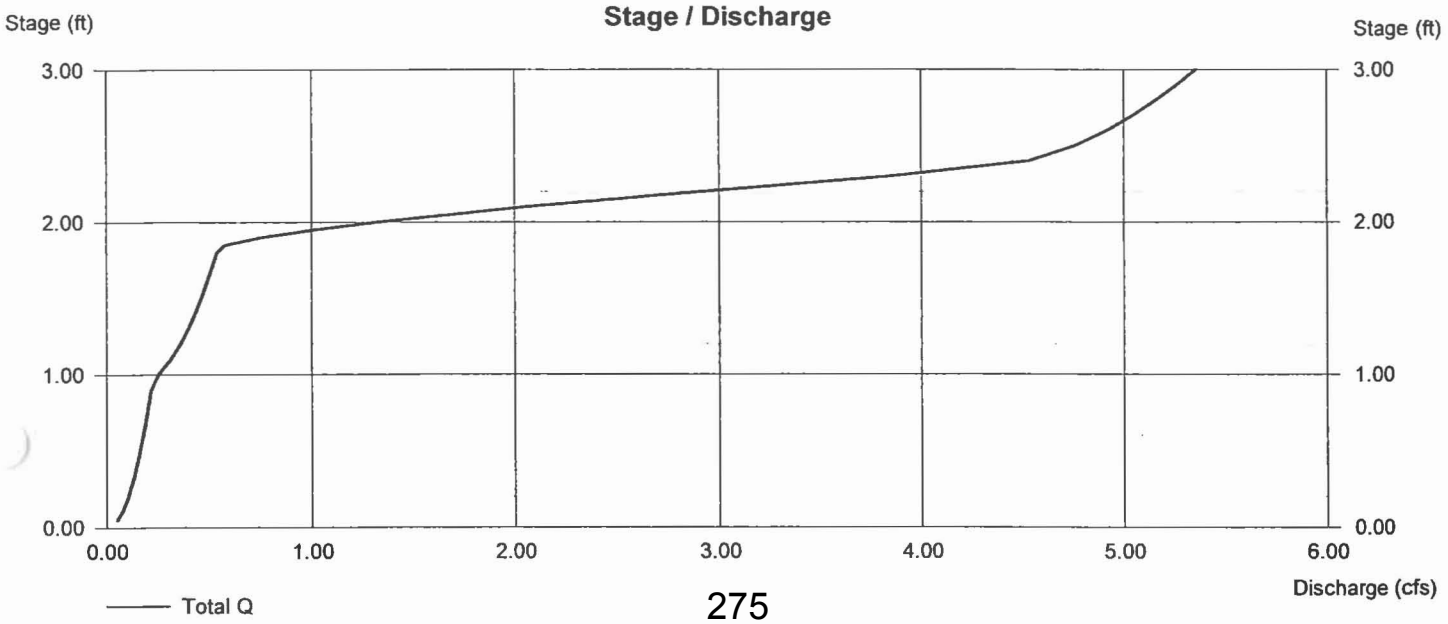
	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	2.95	3.15	0.00
Span (in)	= 12.00	2.95	3.15	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 524.66	524.67	526.39	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 0.55	0.00	0.00	0.00
N-Value	= .013	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 3.14	0.00	0.00	0.00
Crest El. (ft)	= 527.33	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Hydrograph Summary Report

No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	0.36	3	483	6,893	—	——	-----	Predeveloped
2	SCS Runoff	0.66	3	477	9,727	—	——	-----	Developed
3	Reservoir	0.36	3	495	9,726	2	526.71	996	Detention

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

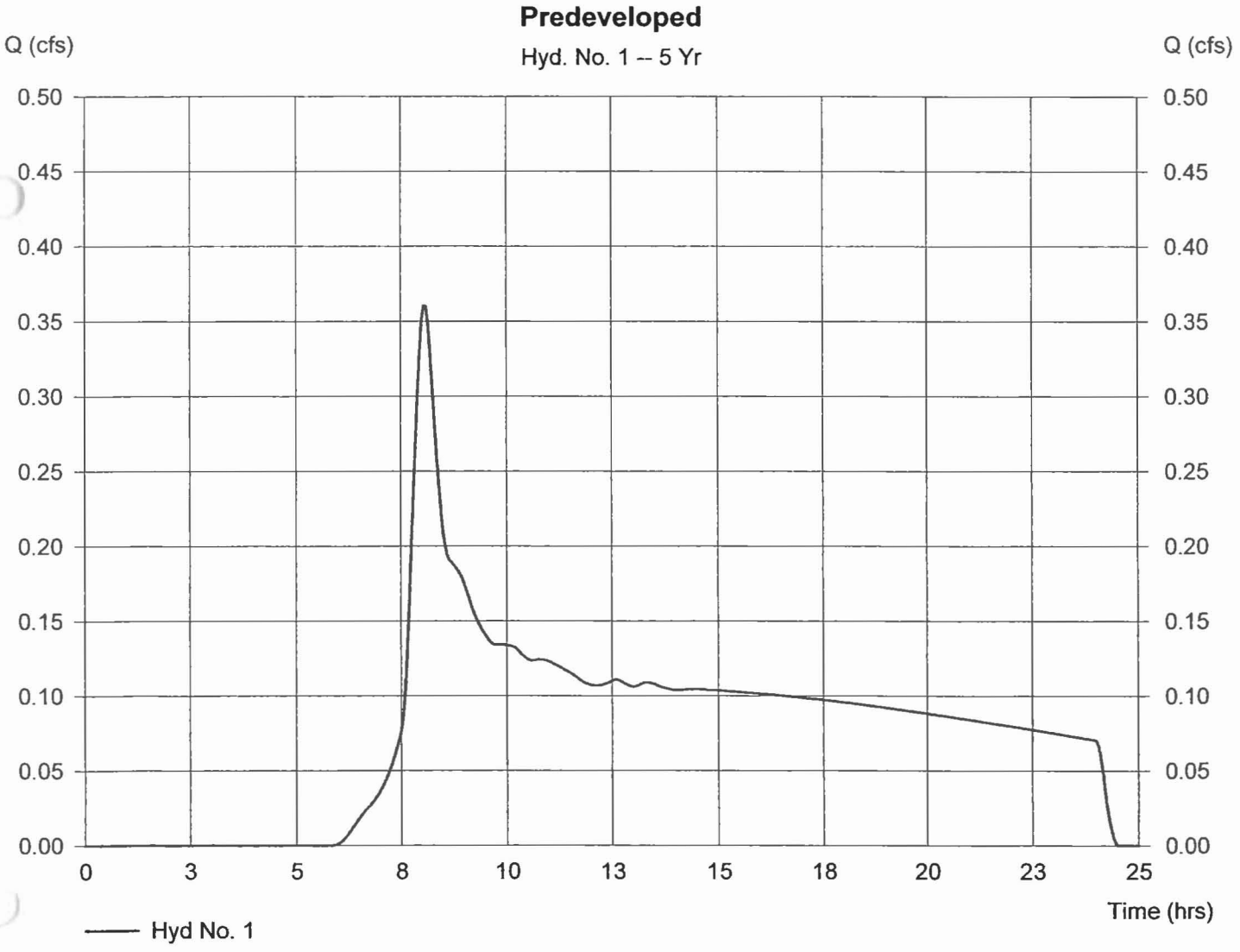
Wednesday, Aug 15 2007, 9:22 AM

Hyd. No. 1

Predeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 0.36 cfs
Storm frequency	= 5 yrs	Time interval	= 3 min
Drainage area	= 1.740 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 18.00 min
Total precip.	= 2.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 6,893 cuft



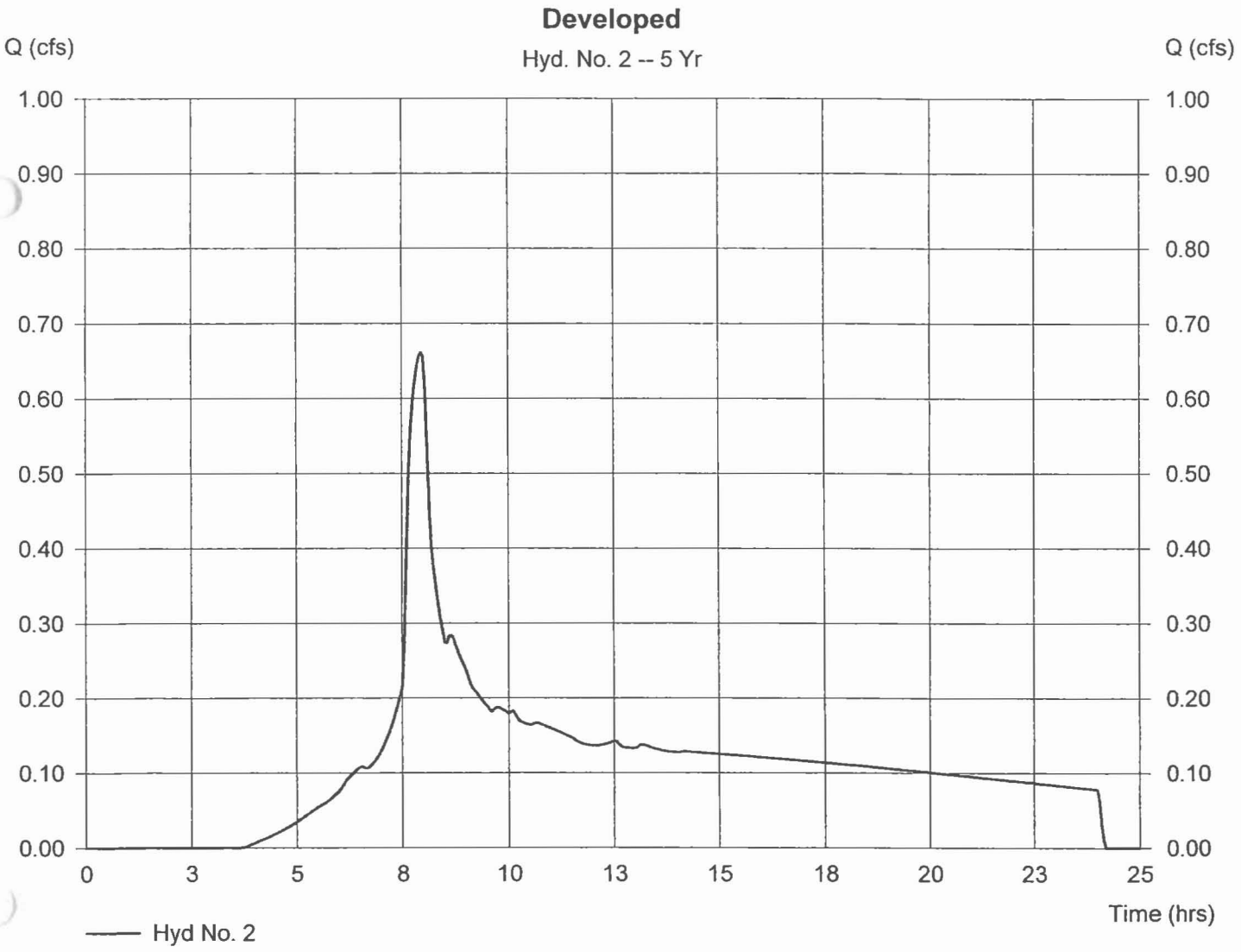
Hydrograph Plot

Hyd. No. 2

Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 0.66 cfs
Storm frequency	= 5 yrs	Time interval	= 3 min
Drainage area	= 1.730 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 9,727 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Wednesday, Aug 15 2007, 9:22 AM

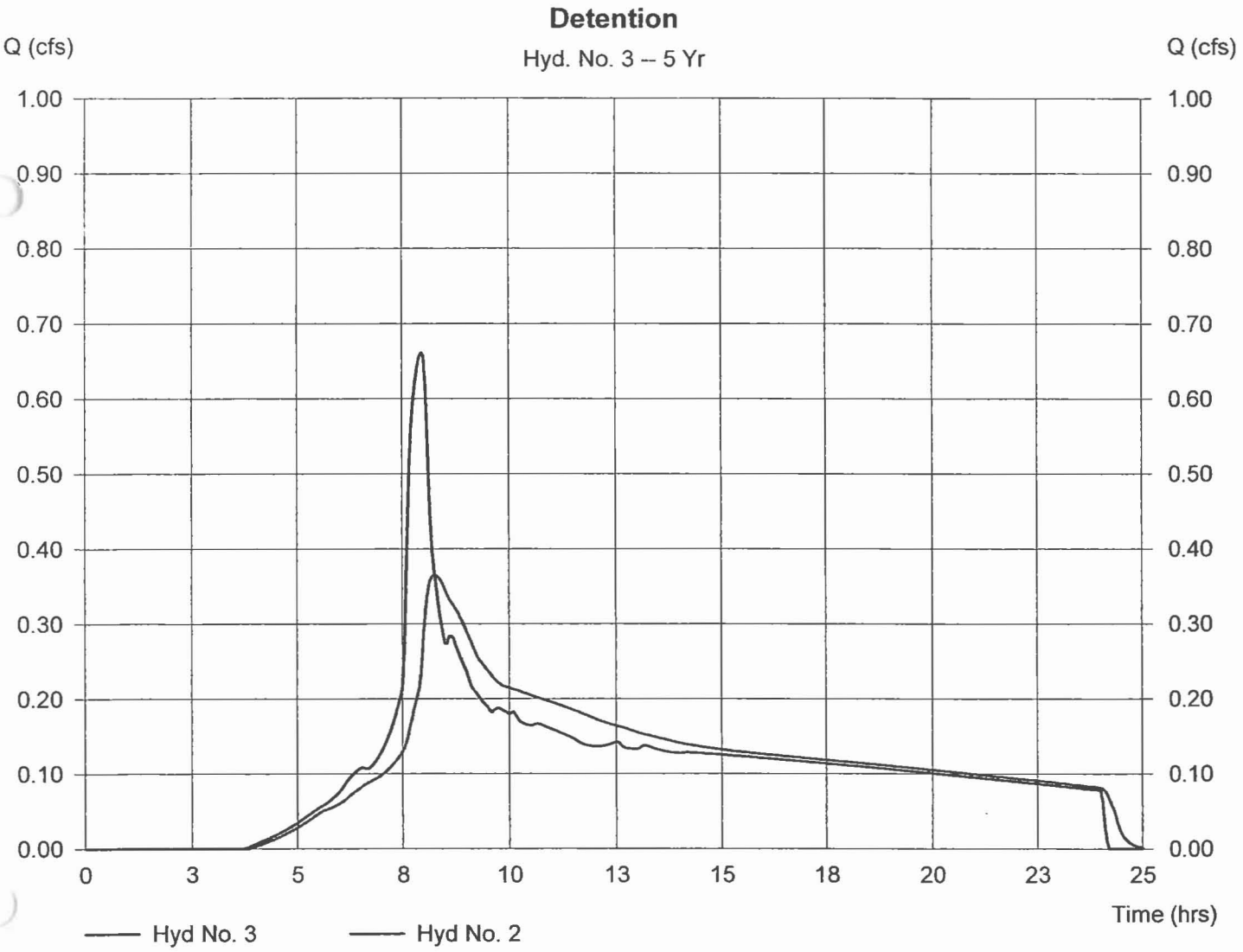
Hyd. No. 3

Detention

Hydrograph type	= Reservoir	Peak discharge	= 0.36 cfs
Storm frequency	= 5 yrs	Time interval	= 3 min
Inflow hyd. No.	= 2	Max. Elevation	= 526.71 ft
Reservoir name	= DETENTION	Max. Storage	= 996 cuft

Storage Indication method used.

Hydrograph Volume = 9,726 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Wednesday, Aug 15 2007, 9:22 AM

Pond No. 1 - DETENTION

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	525.50	635	0	0
0.50	526.00	807	361	361
1.50	527.00	980	894	1,254
2.00	527.50	1,060	510	1,764
3.00	528.50	1,322	1,191	2,955

Culvert / Orifice Structures

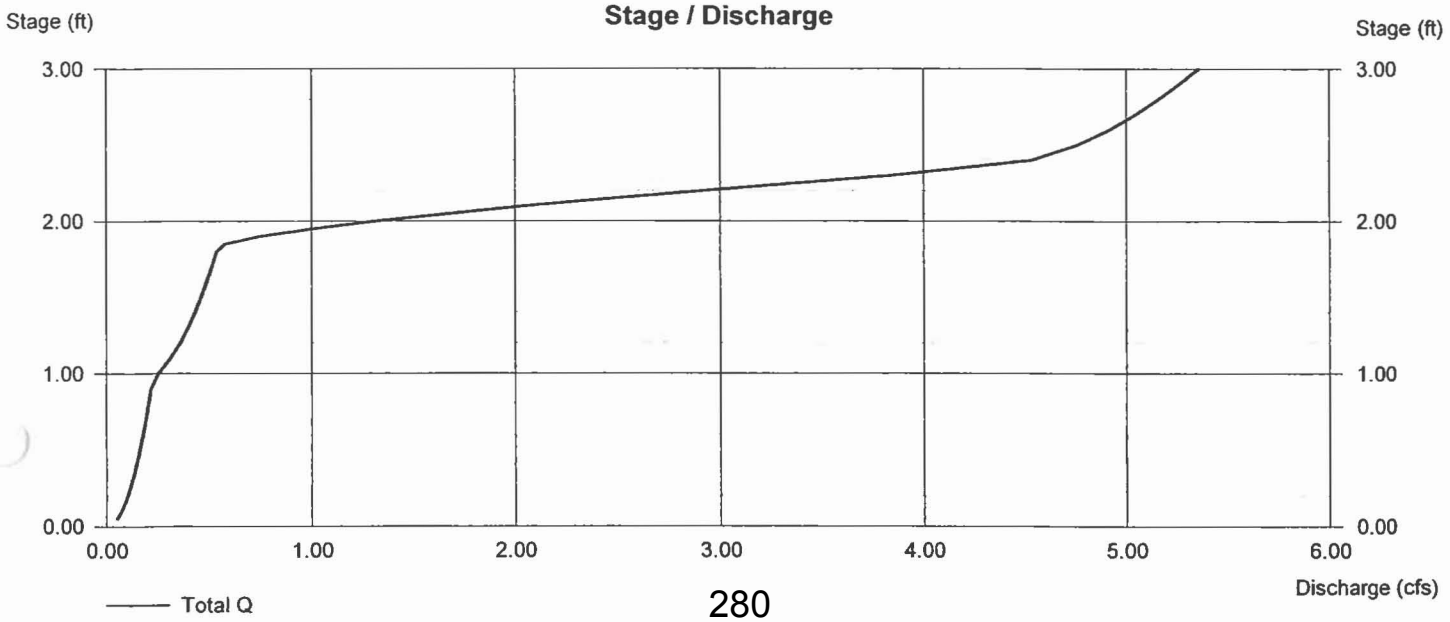
	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	2.95	3.15	0.00
Span (in)	= 12.00	2.95	3.15	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 524.66	524.67	526.39	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 0.55	0.00	0.00	0.00
N-Value	= .013	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 3.14	0.00	0.00	0.00
Crest El. (ft)	= 527.33	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Hydrograph Summary Report

No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	0.71	3	483	11,774	----	-----	-----	Predeveloped
2	SCS Runoff	1.05	3	477	14,984	----	-----	------	Developed
3	Reservoir	0.71	3	489	14,983	2	527.39	1,649	Detention

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

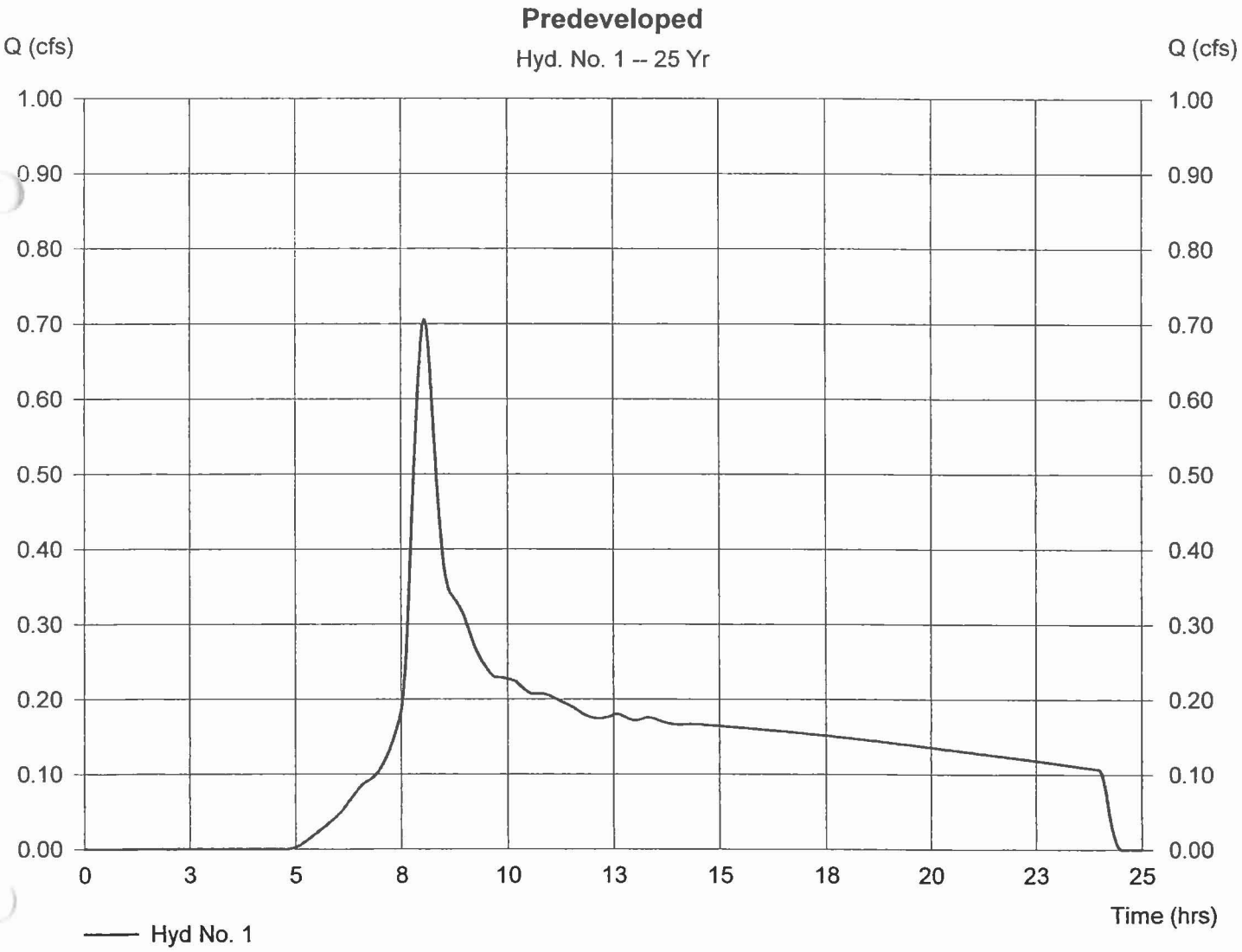
Wednesday, Aug 15 2007, 9:22 AM

Hyd. No. 1

Predeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 0.71 cfs
Storm frequency	= 25 yrs	Time interval	= 3 min
Drainage area	= 1.740 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 18.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 11,774 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

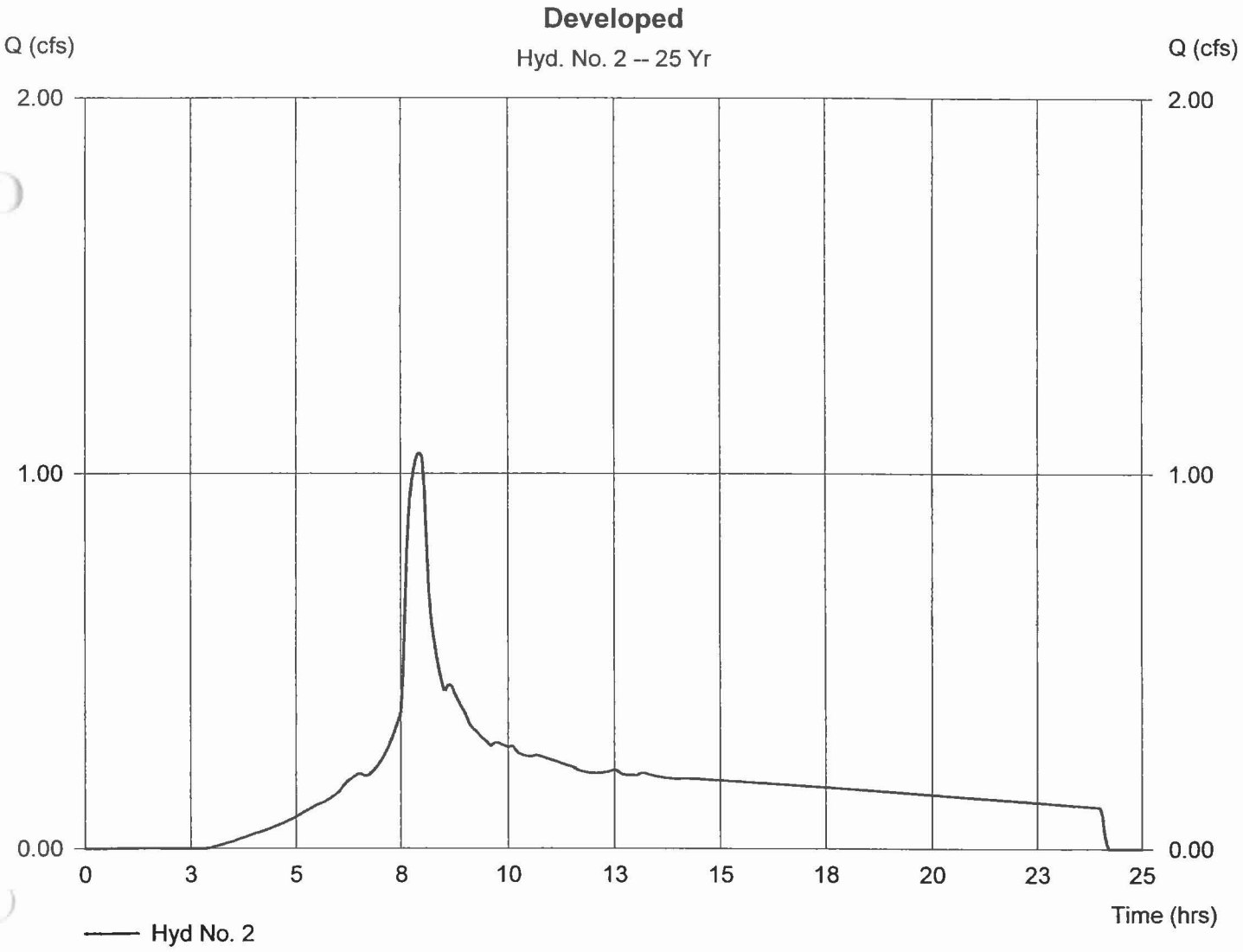
Wednesday, Aug 15 2007, 9:22 AM

Hyd. No. 2

Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 1.05 cfs
Storm frequency	= 25 yrs	Time interval	= 3 min
Drainage area	= 1.730 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 14,984 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Wednesday, Aug 15 2007, 9:22 AM

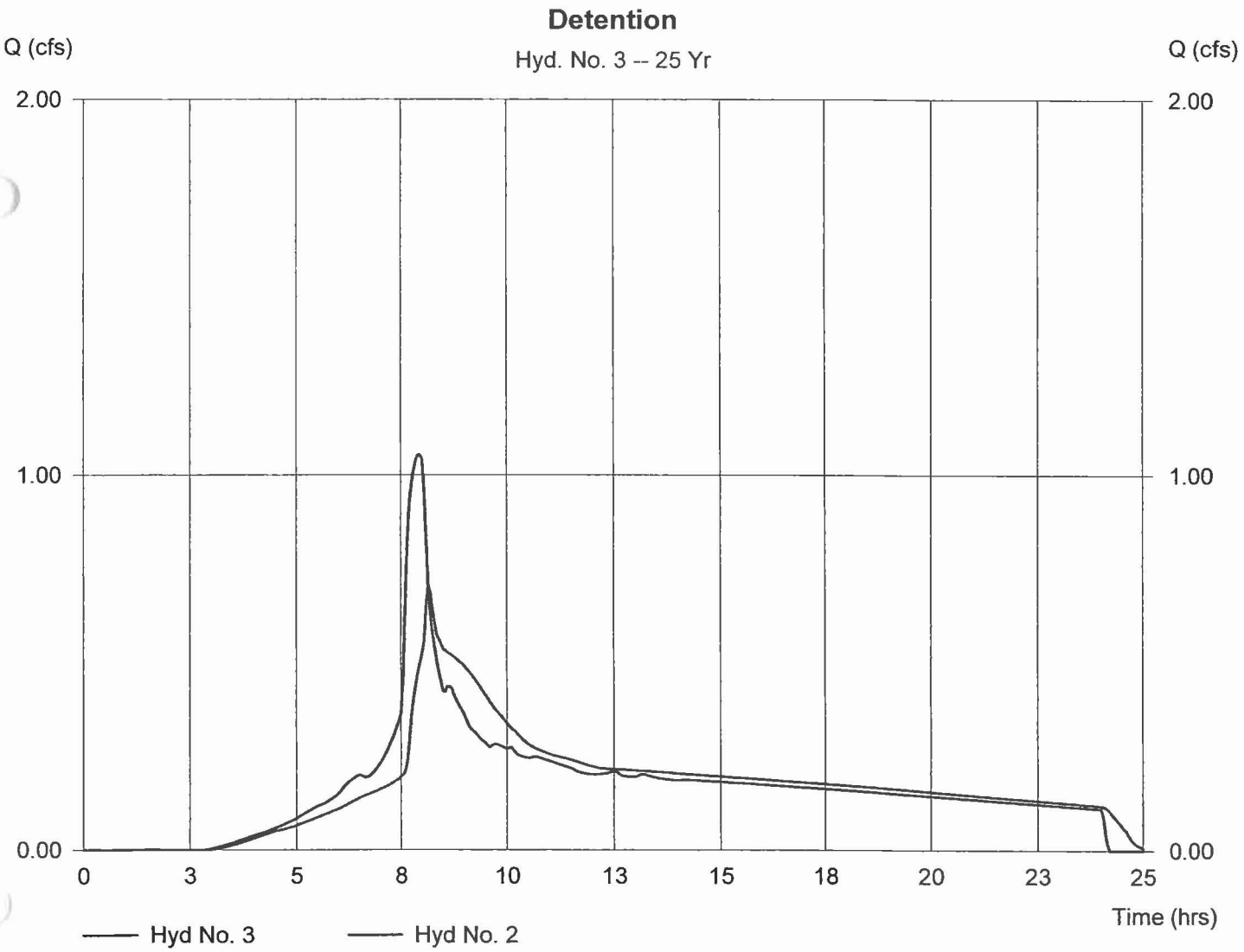
Hyd. No. 3

Detention

Hydrograph type	= Reservoir	Peak discharge	= 0.71 cfs
Storm frequency	= 25 yrs	Time interval	= 3 min
Inflow hyd. No.	= 2	Max. Elevation	= 527.39 ft
Reservoir name	= DETENTION	Max. Storage	= 1,649 cuft

Storage Indication method used.

Hydrograph Volume = 14,983 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Wednesday, Aug 15 2007, 9:22 AM

Pond No. 1 - DETENTION

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	525.50	635	0	0
0.50	526.00	807	361	361
1.50	527.00	980	894	1,254
2.00	527.50	1,060	510	1,764
3.00	528.50	1,322	1,191	2,955

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	2.95	3.15	0.00
Span (in)	= 12.00	2.95	3.15	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 524.66	524.67	526.39	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 0.55	0.00	0.00	0.00
N-Value	= .013	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 3.14	0.00	0.00	0.00
Crest El. (ft)	= 527.33	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.