5-16-6

QUIL CEDA VILLAGE

TULALIP TRIBES

Special Projects

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Project Manager

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Quil Ceda Village
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WETLAND CREATION

WHERE: QUIL CEDA VILLAGE:

SHORT TERM: PILOT SITE

WHY:

INCREASE HABITAT

COHO CREEK FLOW LIMITED A PORTION OF THE YEAR

EVERETT WATER SETTLEMENT ON SNOHOMISH RIVER

- Provides for up to 40MGD water to the Reservation

RE-USE WATER FROM MBR PLANT:

- Closest water to pilot

SECONDARY OBJECTIVE:

SUITE OF OPTIONS FOR THE MBR PLANT OPERATOR

- STREAM AUGMENTATION (NPDES)
- FOREST IRRIGATION
- LAWN IRRIGATION
- REUSE IN FACILITIES
- CURRENT UIC (APPLICATION BY RULE)
  -- NPDES AT SOME POINT

WHEN:

LONG TERM: 6 – 8 YEARS

CONSTRUCT A LARGE SYSTEM AROUND COHO CREEK

Maybe via groundwater; maybe surface water system

INFILTRATE WATER INTO CREEK

Mark the water

SHORT TERM: 1 – 5 YEARS

FIGURE OUT THE BEST METHOD FOR OUR CONDITIONS

PILOT WETLAND TEST BED FOR POTENTIAL SYSTEMS

BETTER UNDERSTAND MARKING

BETTER UNDERSTAND CHARACTER OF BACKGROUND

PHARMACOLOGY & ENZYME ISSUE

CONSTRUCT: THIS LATE SUMMER OR FALL

PROGRESS THUS FAR

REVIEW LITERATURE, JOURNALS, REG

CONCEPT STAGE

- DRAFT CONCEPTS
- SOME GEO WORK
- TEST PITS:
  - -- RATE OF INFILTRATION
  - -- FISH CAN LIVE IN IT
- COORDINATE WITH REGULATORS/SERVICES
- NEPA DOCUMENT

GUIDANCE:

Constructed wetlands treatment	9.2000 EPA
Design manual: Constructed wetlands	9.88 EPA/625
Handbook of constructed Wetlands	1994 EPA/USDA
Reuse standards	12.98 WA-DOE
Reuse standards	9.97 WA DOH

STUDY PROGRAM: 2 – 5 YEARS

UW STUDY ASSISTANCE

REGULATORY ASSISTANCE

CONCEPT WETLAND

3 sections:

Assume: Pond is 3' deep 300' long, & 50' wide or 45,000 cu ft. Times 1q,728 cu in/cu ft = 77,760,000 cu in: or 242,243 gallons or 13 day retention time

Assume: no evoration
Pond 1:1 water to volume
Surface flow is 1:1
Sub surface flow is 40% voids

Pond 40' X 40' X 2' = 3,200 cu ft or 17,226 gallons or 2 day retention time for 8,750 gpd

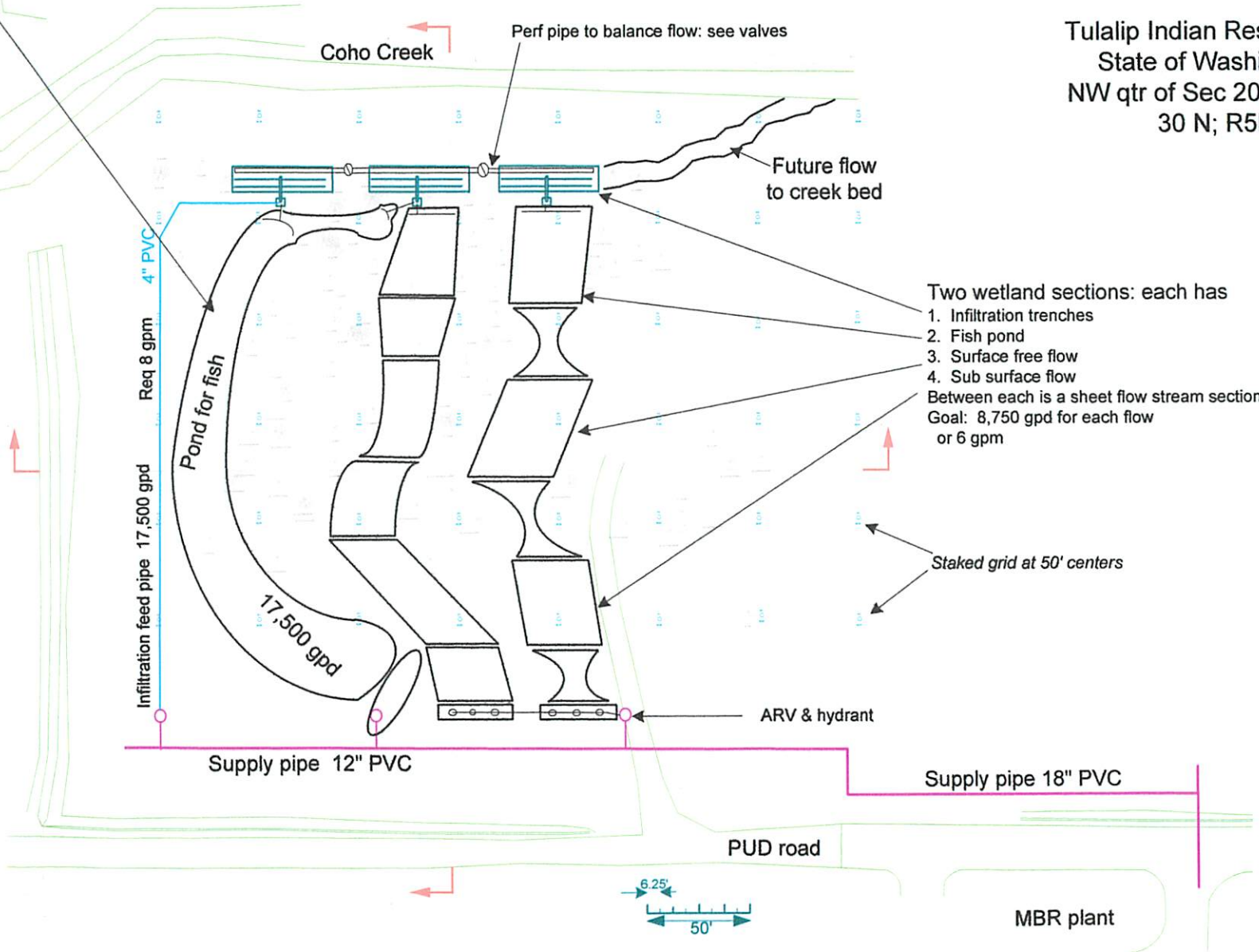
Surface flow: 40 x 40 x 2 or 3,200 cu ft = 17,226 gallons

Sub surface flow: 40' x 40' x 2' = 3,200 cu ft. 40% voids = 6,890 gallons or 9.45 hr retention time

Pond 17,226 gal
Surface 17,226 gal
Sub surf 6,890 gal
Total 41,342 gal or
2.36 days retention time

OPERATIONAL METHOD:
1. Vol of water to wetland takes precedence: adjust vol to maximize goals
2. Fish pond – steady volume to keep ox level and flow: let plants grow by natural selection: ox and flow drive program
3. Use infiltration as overflow and to balance other pond and wetland
4. Adjust retention times as study dictates

Tulalip Indian Reservati
State of Washington
NW qtr of Sec 20, Twns
30 N; R5E

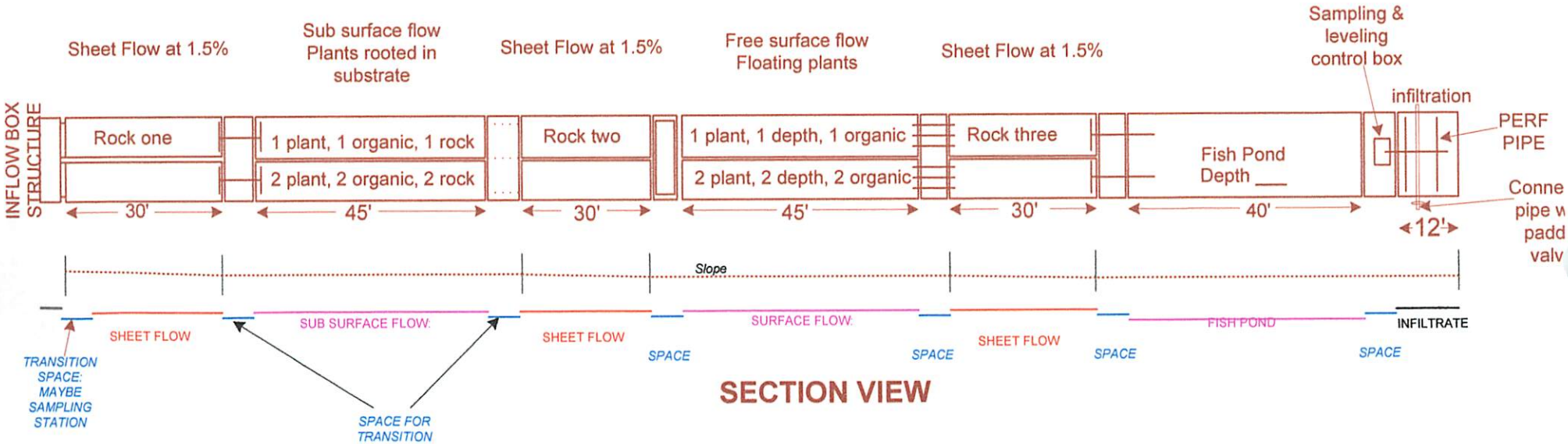


CONCEPT WETLAND FOR DISCUSSION PURPOSES ONLY

270'

While this plan view graphic shows flow in a straight line, the actual flow will be in a meandering fashion

PLAN VIEW



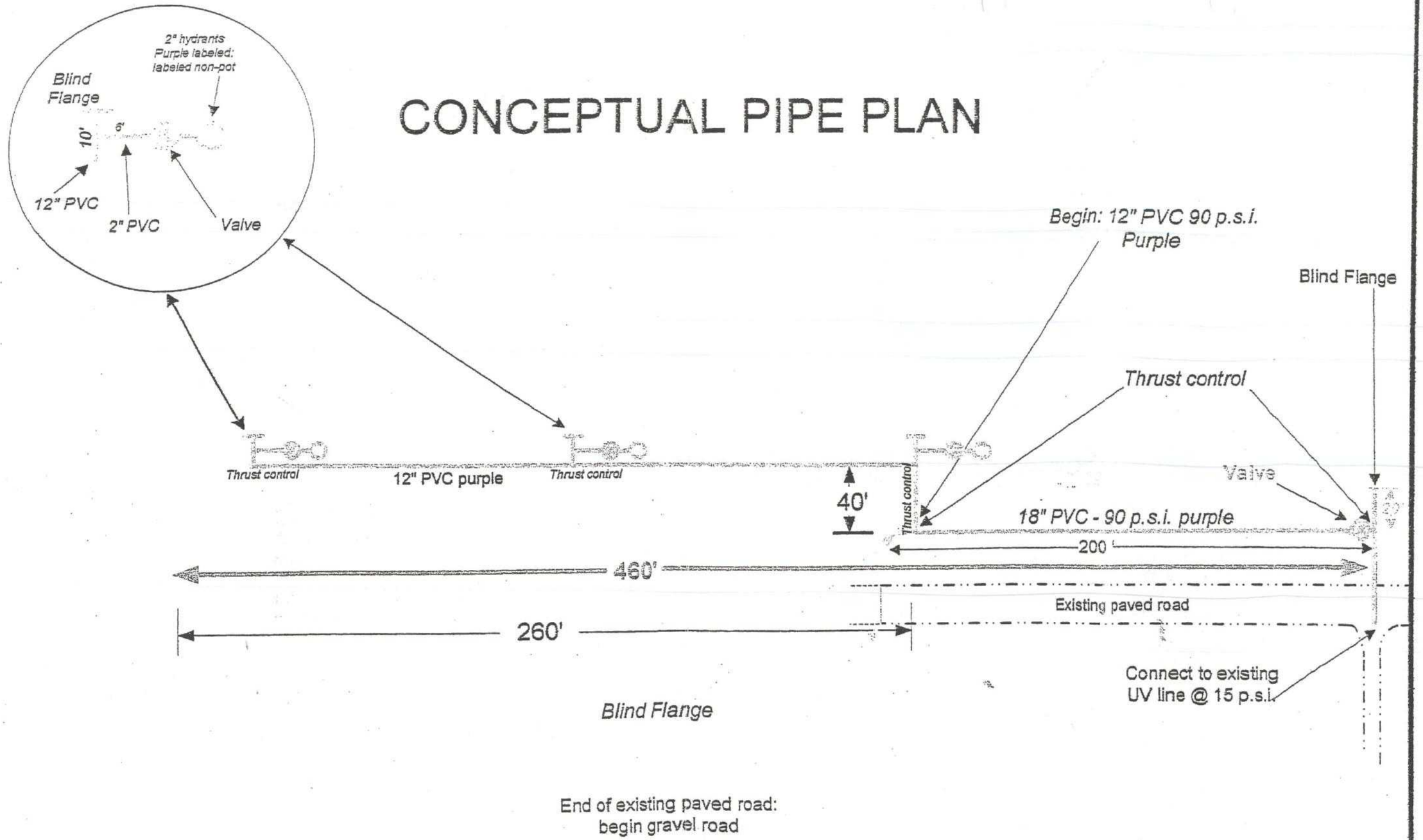
SECTION VIEW

SLOPE:
Infiltration = 0% or 0 in
Ponds & spaces = .1% or .34 in
Sheet flows = 1.5% or 5.4 in
Total fall = 17.22 in

270' distance at .5% slope = 16.8" fall
1' distance at .5% slope = .06" fall
30' distance at .5% slope = 1.8" fall
45' distance at .5% slope = 2.6' fall

scale
20 feet

CONCEPTUAL PIPE PLAN



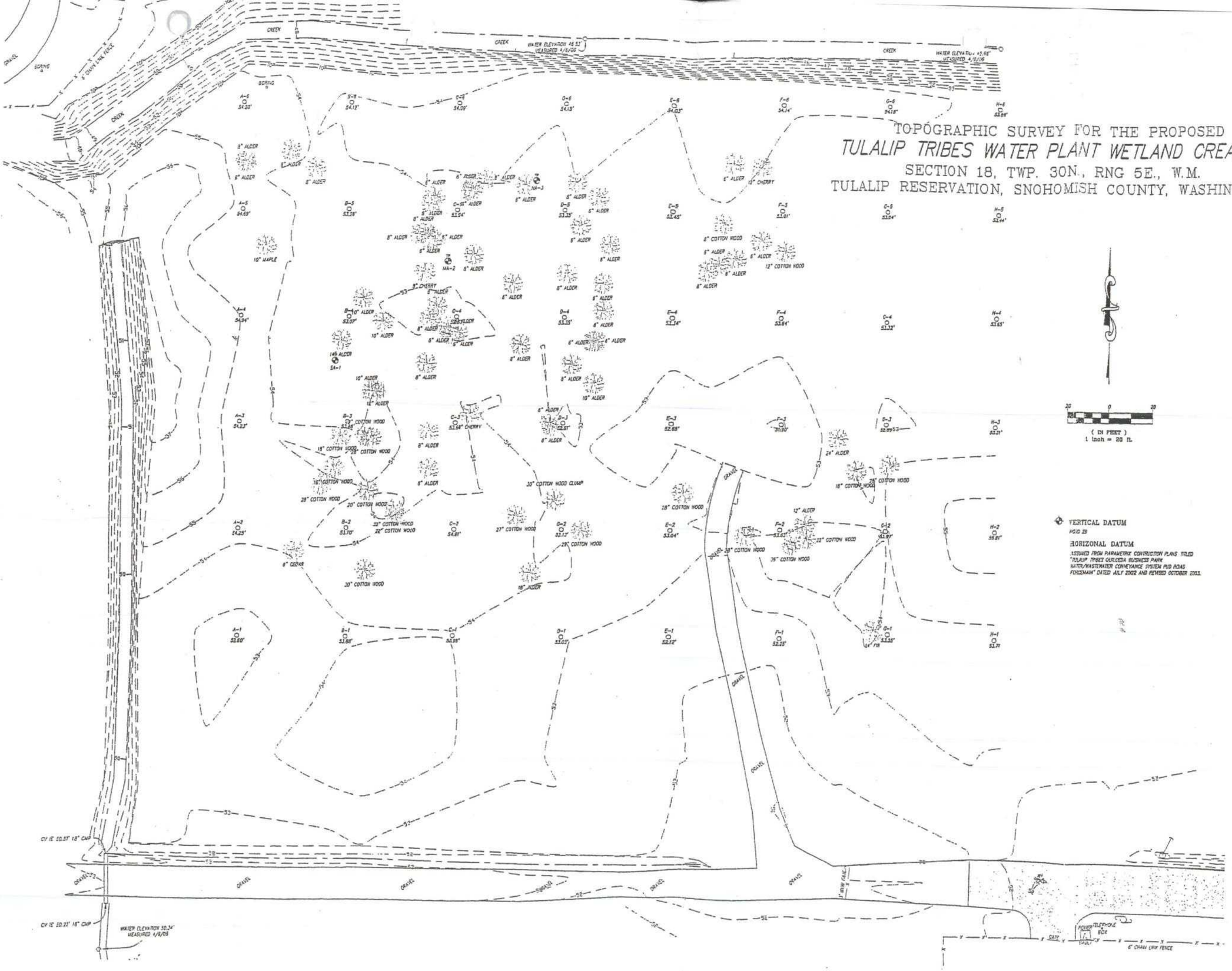
No.	Change	Date:

PROJECT # _____

QUIL CEDA VILLAGE
TULALIP, WA

NAME:
EXHIBIT

Sheet No.



revision/issued

date

TULALIP TRIBES WATER PLANT
WETLAND CREATION

DAVID R. DOWNING & ASSOCIATES
4229 – 76th ST. N.E. #202
MARYSVILLE, WASHINGTON 98270 PHONE. (360) 653-5385

dwn by: DDD

ck by:

date: 4/14/06

job no. 05-071

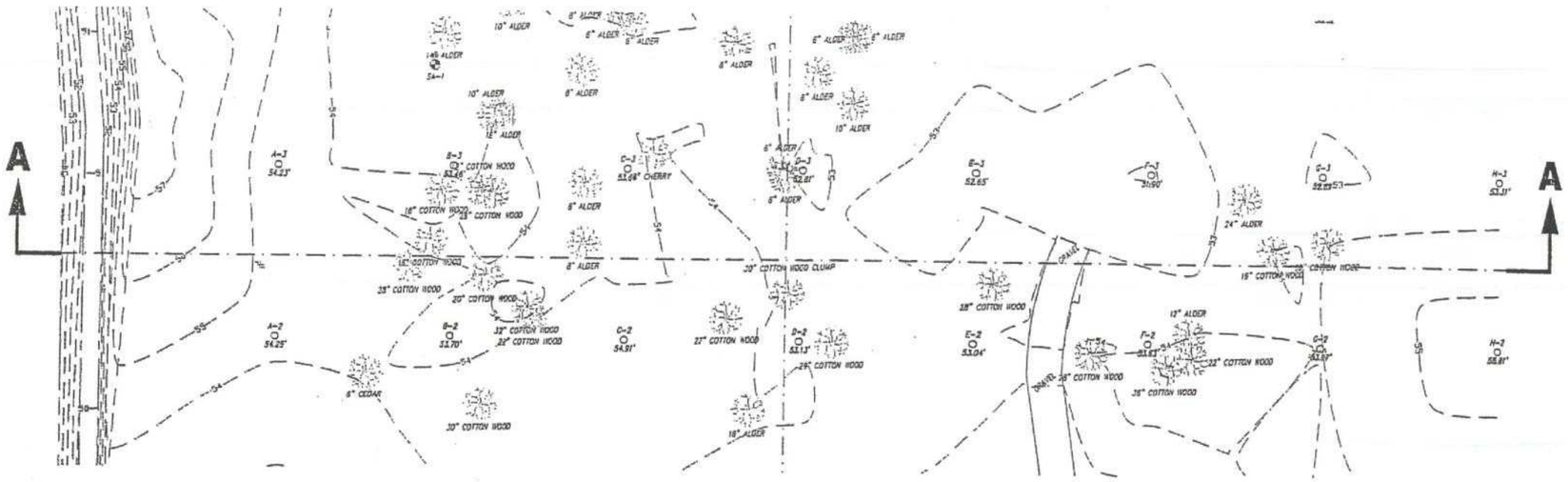
SHEET NO. 1

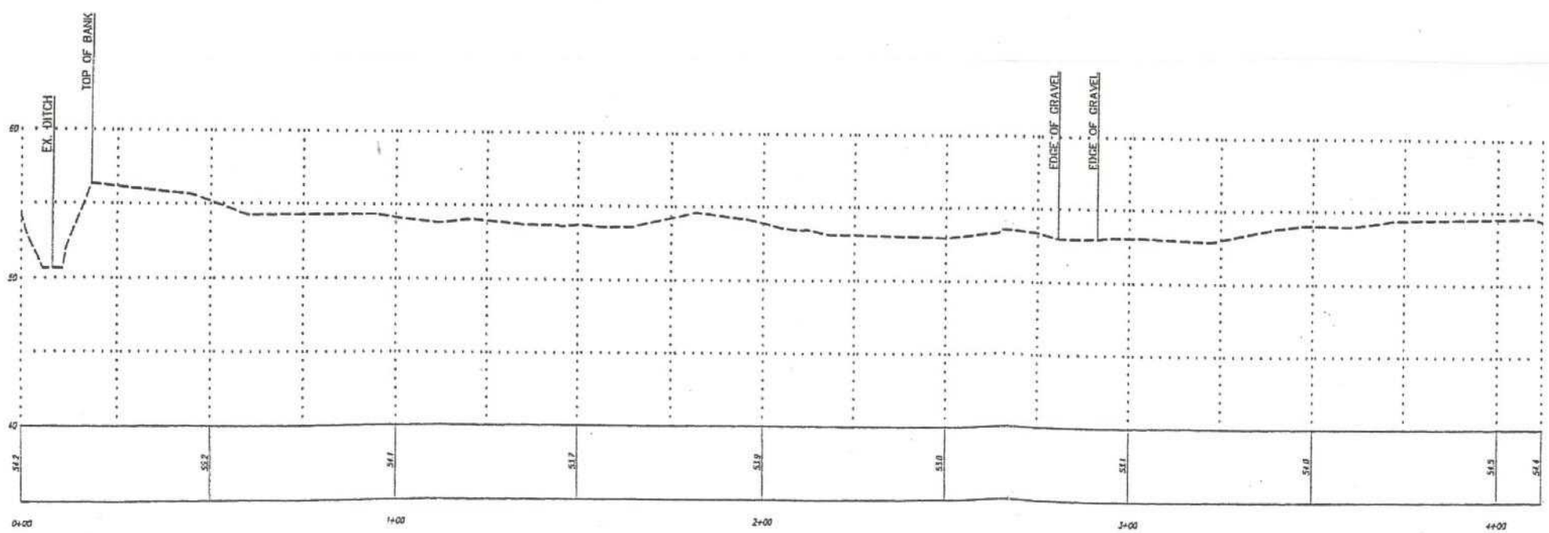
TOPOGRAPHIC SURVEY FOR THE PROPOSED

TULALIP TRIBES WATER PLANT WETLAND CREATION

SECTION 18, TWP. 30N., RNG 5E., W.M.

TULALIP RESERVATION, SNOHOMISH COUNTY, WASHINGTON.





SCALE: 1" = 20' HORIZ.
SCALE 1"= 5' VERT.

A-A

date	revision/issued	by

DAVID R. DOWNING STATE OF WASHINGTON REGISTERED PROFESSIONAL LAND SURVEYOR EXPIRES 3/5/08

TULALIP TRIBES WATER PLANT
WETLAND CREATION

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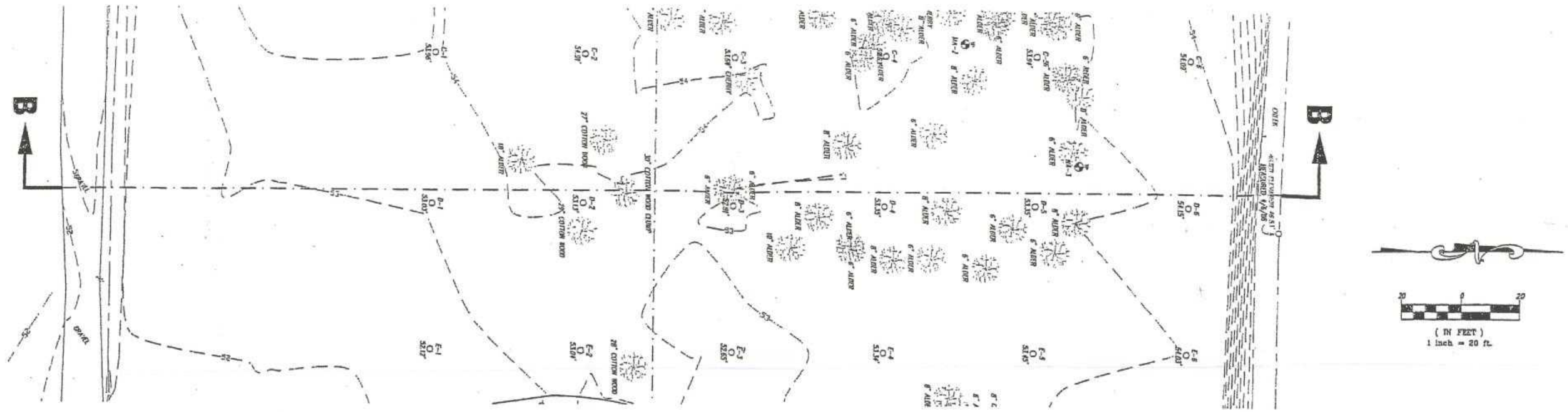

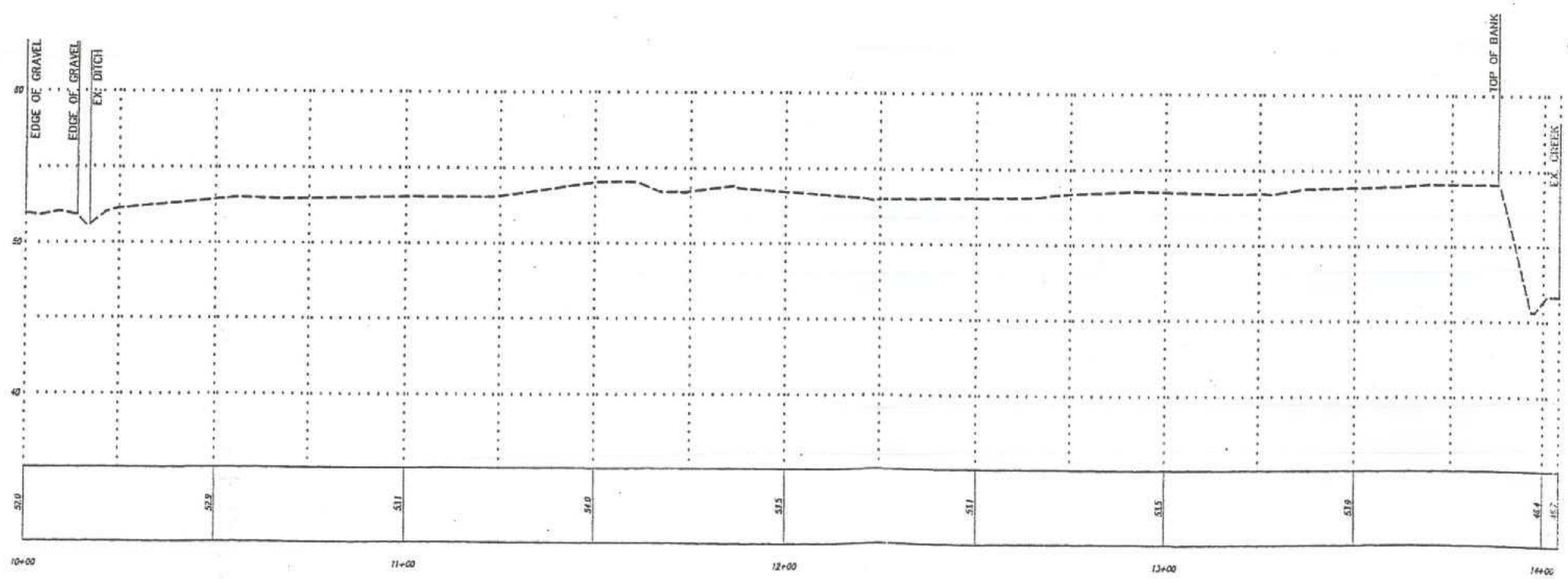

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SCALE 1" = 5' VERT.

B-B

TULALIP TRIBES WATER PLANT
WETLAND CREATION

DAVID R. DOWNING & ASSOCIATES
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dwn by:	DDD
ck by:	
date:	4/14/06
job no.	05-071
SHEET NO.	3
OF 4 SHTS.	

CURRENT UIC:

1. APPROVED MARCH 2003 FOR FIVE YEARS

2. CURRENTLY 250,000 GPD

3. ULTIMATE GOAL IS NPDES

4. SHORT TERM: CONSIDER EXTEND/AMENDING

   - EXTEND FOR ADDITIONAL FIVE YEARS
   - AMEND RATE FROM GPD TO GPM (month)
   - INCREASE FROM 250,000 TO 300,000 GALLONS

QUESTIONS:

WHAT KIND OF PERMIT OR ACTION ?

LIST OF A GOOD ENGINEER

PARTICIPATE IN DESIGN REVIEWS ?

ASSISTANCE ?