## Scott Boettcher

**From:** Dunkin, Kristie A <Kristie.Dunkin@amec.com>
**Sent:** Friday, May 13, 2011 9:29 AM
**To:** Scott Boettcher; Dewell, Jane (ORA)
**Subject:** FW: GPT- Stream Determination
**Attachments:** GPT Watercourse Determiniatin - HPA.pdf

See attached and below for WDFW stream designations

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**From:** Williams, Brian W (DFW) [mailto:Brian.Williams@dfw.wa.gov]
**Sent:** Wednesday, April 27, 2011 3:01 PM
**To:** Dunkin, Kristie A
**Subject:** GPT- Stream Determination

Kristie,

WDFW has reviewed the watercourse designations presented on Figure 5-10 of the PID and offer the following comments for your consideration.

WDFW's Hydraulic Code authority, as defined by 77.55 RCW and Chapter 220-110 WAC, is limited to natural watercourses and natural watercourses that have been altered artificially.

Guided by the requirements and definitions of Chapter 77.55 RCW and Chapter 220-110 WAC, WDFW staff typically consider a wide range of information in determining whether a watercourse is a natural watercourse, a natural watercourse that have been altered artificially, or a wholly artificial watercourse. To determine the status of a watercourse, WDFW staff typically assesses the current and historical state, including any alterations by humans. For each watercourse, WDFW staff may consider some or all of the following sources of information:

A. ORIGIN OR SOURCE OF THE WATER
The character of the watershed and water sources supporting the flows in the watercourse.

B. DOWNSTREAM CONNECTIVITY
The pathway of a watercourse from the headwater areas of its watershed to its confluence with a significant watercourse or water body.

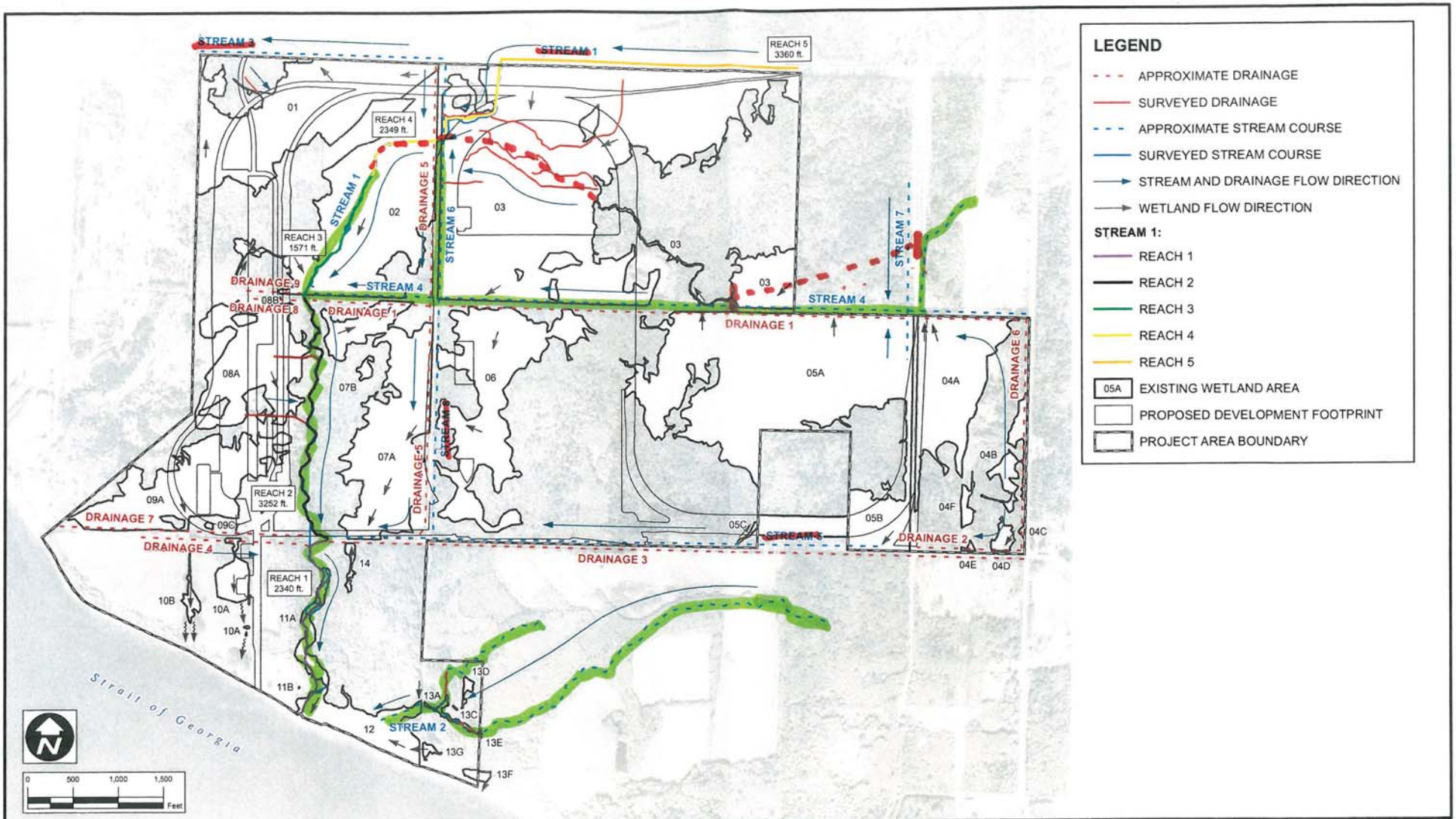
C. PHYSICAL CHARACTERISTICS
The extent to which the watercourse exhibits characteristics common to natural watercourses, such as being in dynamic equilibrium between erosion and deposition driven by hydraulic processes, having a channel with a defined bed and bank that moves and sorts sediments or bedload, and fluctuations in water discharge that results in changes in the width, depth, velocity, and sediment transport.

D. HISTORICAL EVIDENCE
Chapter 77.55 RCW does not limit the extent of the historic record that can be considered in determining whether a watercourse is natural, wholly artificial, or altered artificially. WDFW Regional staff used several methods to examine the historic timeline of the watercourses.

1) Light Detection and Ranging (LIDAR): a recent remote sensing technology that provides evidence of geomorphic processes on the landscape over a much longer time period (geologic timeline) than defined by the petitioners. LIDAR data are collected with aircraft-mounted lasers capable of recording elevation measurements at a rate of 2,000 to 5,000 pulses per second and have a vertical precision of 15 centimeters (6 inches). LIDAR creates a high resolution three-dimensional characterization of site topography by rapidly pulsing laser light to the surface of the earth and measuring the time of pulse return. Millions of data points can be collected within minutes and hundreds of thousands of data points can be collected per square mile. Therefore, LIDAR is much more sensitive than traditional aerial photography and mapping technology.
2) Geomorphology: the study of how landforms evolved. It provides a science based foundation upon which to understand historic land forming processes and conditions in the Skagit River delta.
3) Soil survey data: examining the soil types in the vicinity of the watercourses provides insights into the historic conditions in the context of a geologic time scale rather than the much shorter historic timeline identified by the petitioners.
4) General Land Office (GLO) Survey maps and field notes: survey data that provide important historical reference, but the data contained in these surveys have limitations.
5) United States Coast and Geodetic Survey (USC&GS) charts: charts submitted as evidence by the petitioners.

In consultation with the Whatcom County Planning Department Based and based on our review of the available data for the GPT project site, WDFW has concluded that the Hydraulic Code, as defined by 77.55 RCW and Chapter 220-110 WAC , is limited to the watercourses highlighted in green on the attached figure.

If you have any questions, please call me at 360-466-4345 extension 250.




Pacific International Terminals

CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.

DWN BY: SD
CHK'D BY: KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch = 1,000 feet

PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL

TITLE: EXISTING CONDITIONS
STREAM NETWORK, WETLANDS, AND
HYDROLOGIC FLOW

DATE: FEBRUARY 2011
PROJECT NO.: 091515336C-18-01
REV. NO.: 1
FIGURE NO.: FIGURE 5-10