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WATER ENGINEERING COMMENTS **Debi Davis 487-7173**

EXISTING CONDITIONS:

City records show an existing 12" 14" & 16" DI NW Old Lower River Road, and a 16" DI in HWY (501), and a 10" DI in NW Harborside Drive (P) in the dock area.

FIRE PROTECTION:

It is estimated that at least 3500 gpm fire flow is currently available from hydrants in the proposed project area. Records show hydrants in the area The proposed project is within the City of Vancouver service area, therefore service can be provided if the conditions listed below are met.

REQUIREMENTS:

(?) = Size of pipe depends on the fire flow required by the Fire Marshal.

Area 600: Connect a new (?) water main to the existing 14" or 16" in Old Lower River Road extend on site to serve new water services, fire protection systems, and any required fire hydrant.

Area 200: Connect a new (?) water main to the existing 16" water main south of the tracks extend on site to serve new water services, fire protection systems, and any required fire hydrants.

Area 300: Connect a new (?) water main to the existing 16" water main in HWY(501) Extend on site as needed loop the main back to HWY(501) or connect to the existing 12" water main on the east side. Connect new water services fire protection systems, and any required fire hydrants to the new water main.

Area 400: Connect to the existing 12" water main in NW Harborside Drive (P), extend on site to serve new water services, fire protection systems, and any required fire hydrants.

Looping the water mains thru the Areas may be required depending on fire flow needed. All water mains, fire hydrants, and water meters will require an easement dedicated to the City of Vancouver.

Further requirements may be necessary depending on the final project configuration and will be determined through the engineering review process. If there are any questions, please contact Debi Davis via telephone @ 360-487-7173, or via email at debi.davis@cityofvancouver.us.

WATER SYSTEM STANDARDS:

All water lines, services, and hydrants constructed shall conform to the most current "City of Vancouver General Requirements and Details" for Water System design and construction along with the following:

The standard for main extensions is 8-inch diameter, or larger as master-planned or needed per hydraulic analysis and fire flow.

Fire hydrant locations are to be specified by the Fire Marshal. If new hydrants are required, they shall be served by water mains with a minimum of 8-inch diameter, except that a 6-inch main can be used for a dead-end run shorter than 50 feet to a hydrant.

1443
1444 Separate water services are required for each building. Water meters shall be located in a non-
1445 paved area, centered along the property frontage.
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1447 **Back Flow Assemblies** are required on irrigation systems, services larger than 2-inch, fire
1448 protection lines and if there is a potential for cross connection. Back Flow Assemblies must be
1449 constructed and installed per City of Vancouver "Standard Backflow Prevention Details."
1450

1451 **SEWER ENGINEERING COMMENTS**

Aaron Odegard 487-7153

1452 Two existing public sewers traverse the area from northwest to southeast.
1453

1454 **Area 200 Unloading and Office:** Existing private (Port) casings travel under the railroad tracks
1455 in the area. The casings were constructed in about 2010 with the Port of Vancouver West
1456 Vancouver Freight Access project (ENG2007-00173). The casings are shown on Sheet U-7 of
1457 the design drawings. Record drawings are not available.
1458

1459 ENG2010-00009: Public gravity sewer is located north of the proposed unload area in Old NW
1460 Lower River Road (P). Manhole #21025 marks the headwaters of the 18-inch gravity that flows
1461 southeast. The manhole also receives a private six-inch (6") HDPE force main from its the
1462 casing to the southwest. This sewer was constructed in 2010 with POV T5 Industrial
1463 Improvements. The area is shown on Sheets C3.1 and C3.2 of the record drawings.
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1465 ENG2010-00064: Southern portions of the force main were constructed in 2012 by the Port of
1466 Vancouver Terminal 5 Marine Cargo Laydown project. Piping is shown on sheet C4.0 of the
1467 record drawings (E10064021.tif).
1468

1469 **Existing Private Sewer:** A private sewer and a manhole is located in the access road near the
1470 CPU cooling towers. This sewer was built in 2003 with the CPU Warehouse project (ENG2002-
1471 00006). A plan view is shown on sheet C3.1 of the record drawings (E0200604.tiff) and the
1472 profile is shown on C3.2. A private utility easement is described in AF #4607523 and shown in
1473 its Exhibit D.
1474

1475 **Area 300 Tanks:** Public gravity sewer and several manholes front the south side of the site north
1476 of the rails. This sewer was constructed in 2012 with WVFA #9 (ENG2011-00026). Record
1477 drawings and other remaining file closure items have not yet been submitted. A plan view is
1478 shown on sheets U-04B and U-05B of the design drawings and the profile view is shown on
1479 Sheet U-16. An existing six-inch (6") service lateral extends north to the site from MH P9-7.
1480

1481 **Area 400 Dock:** An existing public gravity sewer is located north of the site and at the
1482 intersection of Gateway and Harborside and Vapor Option #2. A existing manhole (#14411)
1483 receives a private pressure sewer from the west and turns the sewer from the northeast to
1484 southeast. Sewers continue southeast within an existing public sewer easement.
1485

1486 SB1729: This sewer was constructed in 1999 with the Clark County Jail Work Center. A plan
1487 view is shown on C1.5 of the record drawings (WB203505.tif) and the profile is shown on Sheet
1488 C1.6.
1489