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**Conceptual Engineering &
Drainage Narrative for
ABW Technologies Site Development
Arlington, Washington**

Prepared for:
ABW Technologies, Inc.
6720 191st Place NE
Arlington, Washington 98223-4666

Prepared by:
John Cherry, P.E.

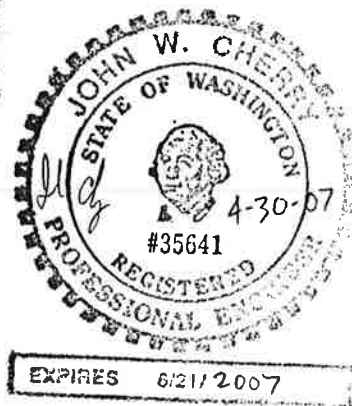
April 30, 2007

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PERMIT CENTER


hba DESIGN
GROUP
land use planning + civil engineering

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INTRODUCTION

ABW Technologies proposes to replace two existing temporary buildings on its 4.9-acre industrial site with a permanent 24,750 sq. ft. administration and manufacturing building in two phases. The accompanying Preliminary Site Civil Plan (HBA Design Group, 4/30/07) illustrates conceptually the proposed changes. In addition to the new building, the plan includes minor drainage conveyance realignments, a water main loop extension and suggested future frontage improvements by others on 191st Place NE.

PROPOSED DEVELOPMENT AND DRAINAGE PLAN

The 4.9-acre site currently is occupied by a 52,000 sq. ft. manufacturing plant and two temporary administration buildings, surrounded by paved parking, fire lanes and storage areas. Except for a landscape fringe around the perimeter, the entire site is impervious.

Stormwater management

The existing stormwater management system, designed in 1997 by Diversified Engineering Services, consists of two infiltration trenches (north and south) and several oil separator catch basins within the conveyance systems. Each of the trenches is four feet deep, 10 feet wide and 200 feet long, with a perforated 24-inch distribution pipe running the entire length between access manholes at either end. The underlying soil is Everett gravelly sandy loam with a projected infiltration rate up to 20 in/hr (SCS Soil Survey). There have been no reported problems with the existing stormwater system during the 10 years it has been in operation.

Because the proposed site development will not significantly alter total impervious area, no change in the existing infiltration system is proposed. The conveyance system for the south trench will be realigned as necessary to accommodate the new building and redesigned parking areas. All new catch basins in pavement areas will have oil separator tees. The roof downspouts for the new building will be tightlined through a manifold to the infiltration facility. A below-grade loading dock ramp will have a gravity drain tightlined to the conveyance system. Elevations have been checked to verify that this is feasible.

Water service

An existing 8-inch water main that currently terminates along the south boundary of the property will be extended to the southeast corner and then north to complete a loop with an existing main on adjacent property to the east. An existing hydrant will be relocated and another hydrant will be added near the southwest entrance to the site.

Sewer service

A sewer manhole currently exists near the southwest corner of the site close to the existing and proposed buildings. An existing side sewer will be relocated to more efficiently serve the proposed new building.

103.5	0.017	0.025	0.000	0.056
103.5	0.017	0.026	0.000	0.056
103.6	0.017	0.027	0.000	0.056
103.6	0.017	0.027	0.000	0.056
103.6	0.017	0.028	0.000	0.056
103.7	0.017	0.029	0.000	0.056
103.7	0.017	0.030	0.000	0.056
103.8	0.017	0.030	0.000	0.056
103.8	0.017	0.031	0.000	0.056
103.9	0.017	0.032	0.000	0.056
103.9	0.017	0.033	0.000	0.056
104.0	0.017	0.033	0.000	0.056
104.0	0.017	0.034	0.000	0.056

Name : Basin 1
 Bypass: No

GroundWater: No

Pervious Land Use Acres
 A B, Forest, Flat .33

Impervious Land Use Acres

Element Flows To:
 Surface Interflow Groundwater

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0.000094
5 year	0.000214
10 year	0.00035
25 year	0.000623
50 year	0.00093
100 year	0.001358

Flow Frequency Return Periods for Mitigated

<u>Return Period</u>	<u>Flow(cfs)</u>
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Yearly Peaks for Predeveloped and Mitigated

<u>Year</u>	<u>Predeveloped</u>	<u>Mitigated</u>
1950	0.000	0.000
1951	0.000	0.000
1952	0.000	0.000
1953	0.000	0.000
1954	0.000	0.000
1955	0.000	0.000
1956	0.001	0.000
1957	0.000	0.000
1958	0.000	0.000
1959	0.000	0.000

1960	0.000	0.000
1961	0.000	0.000
1962	0.000	0.000
1963	0.000	0.000
1964	0.000	0.000
1965	0.000	0.000
1966	0.000	0.000
1967	0.000	0.000
1968	0.000	0.000
1969	0.000	0.000
1970	0.000	0.000
1971	0.000	0.000
1972	0.001	0.000
1973	0.000	0.000
1974	0.000	0.000
1975	0.000	0.000
1976	0.000	0.000
1977	0.000	0.000
1978	0.000	0.000
1979	0.000	0.000
1980	0.000	0.000
1981	0.000	0.000
1982	0.000	0.000
1983	0.000	0.000
1984	0.000	0.000
1985	0.000	0.000
1986	0.000	0.000
1987	0.000	0.000
1988	0.000	0.000
1989	0.000	0.000
1990	0.000	0.000
1991	0.000	0.000
1992	0.000	0.000
1993	0.000	0.000
1994	0.000	0.000
1995	0.000	0.000
1996	0.000	0.000
1997	0.001	0.000
1998	0.002	0.000

Ranked Yearly Peaks for Predeveloped and Mitigated

Rank	Predeveloped	Mitigated
1	0.0022	0.0000
2	0.0012	0.0000
3	0.0012	0.0000
4	0.0006	0.0000
5	0.0005	0.0000
6	0.0004	0.0000
7	0.0003	0.0000
8	0.0003	0.0000
9	0.0002	0.0000
10	0.0002	0.0000
11	0.0001	0.0000
12	0.0001	0.0000
13	0.0001	0.0000
14	0.0001	0.0000
15	0.0001	0.0000
16	0.0001	0.0000
17	0.0001	0.0000
18	0.0001	0.0000
19	0.0001	0.0000
20	0.0001	0.0000
21	0.0001	0.0000
22	0.0001	0.0000
23	0.0001	0.0000
24	0.0001	0.0000
25	0.0001	0.0000
26	0.0001	0.0000
27	0.0001	0.0000
28	0.0001	0.0000
29	0.0001	0.0000

