

February 25, 1997

SUBJECT: DEDICATED FIRE PROTECTION SYSTEM - KITSILANO PUMP STATION

RECOMMENDATION:

THAT the Board authorize the General Manager of Parks and Recreation to participate with Engineering Services in meeting with the community to evaluate options for siting a Dedicated Fire Protection System pump station in Kitsilano Point.

BOARD POLICY

Any alienation of Park Land requires approval of two thirds of the Park Board.

PURPOSE

This report updates the Board on Vancouver's Dedicated Fire Protection System, and recommends that Park Board staff participate in a public process to review potential sites for the Kitsilano Pump Station, with the goal of proposing a final site for Board and City Council approval.

BACKGROUND

The City of Vancouver receives its water from the Capilano and Seymour reservoirs on the North Shore. The two Burrard Inlet crossings are critical links to our water supply, but lie in soils that are susceptible to liquefaction in the event of an earthquake. Realizing that the City is vulnerable to a loss of one or both of the Burrard Inlet crossings during a seismic event, and having observed the failure of the First Narrows crossing in 1986, the City has embarked on developing alternative methods for supplying water for both fire fighting and potable purposes.

In April, 1992, Vancouver City Council approved the construction of the Dedicated Fire Protection System (DFPS) at an estimated cost of \$40 million. The DFPS system is intended to supplement the normal water supply system during multi-alarm fires and to provide total fire protection in the event of an emergency situation caused by a major water system component failure, such as following a major earthquake.

The DFPS system is composed of land based pump stations that supply a dedicated grid of large diameter mains. The pump stations normally use water from the potable supply system, with each station capable of supplying 10,000 gallons per minute at 300 psi pressure. Should the potable system be

incapable of supplying the required volume of water, the pumps are supplied with seawater via an intake pipe into the ocean.

The DFPS system will cover the Downtown core as well as Kitsilano, where rising fire demands due to densification and aging infrastructure are reducing the potable water system's ability to supply water for fire fighting.

As shown in Figure 1, with construction of the Coal Harbour and False Creek pump stations complete, as well as with completion of the pipeline connecting the two stations in the summer of 1997, the core of the downtown system will be complete. Engineering Services is now beginning design of the Kitsilano phase of the system.

The Kitsilano system consists of a pump station connected to a single pipeline running east-west near 7th Avenue. The final pipeline route has not been selected. The system design also includes connecting the Kitsilano system with the Downtown system via an underwater crossing of False Creek. This increases the amount of water available either Downtown or in Kitsilano, as well as provides important redundancy of supply. Preliminary engineering reviews have been undertaken on numerous potential sites for the Kitsilano pumping station.

DISCUSSION

A DFPS pump station site should meet the following engineering criteria in order to be viable:

1. The location must meet the hydraulic design requirements for the system coverage
2. Available suitable land with firm soils, close to the shoreline
3. Adequate water depth at the shoreline for the saltwater intake
4. Firm soil for incoming and outgoing supply pipelines
5. Relative close proximity to existing services
6. Minimize environmental impacts
7. Adequate supply of potable water for routine operation

City Engineering and consultant staff surveyed the shoreline from Granville Street to Alma Street to identify and evaluate possible locations for the Kitsilano Pump station with the following results:

In general, sites west of Maple street are considered impractical due to inadequate potable supply, long connection to the DFPS distribution line, and an intake structure that would have too high an environmental impact and cost due to its long length. There is one vacant parcel of land between Granville Street and the Burrard Street bridge, located adjacent to the Burrard

Civic Marina, on the east side of the bridge.

The survey concluded that anywhere near the shoreline area between Maple Street and the east side of the Burrard Street Bridge could produce a practical location for the Kitsilano Pump Station. This entire area, except for the Chestnut Street right of way, is under jurisdiction of the Board of Parks and Recreation.

As this area is fairly large, with significant variations in topography, ground conditions and utility supply, a preliminary engineering siting study was undertaken on four possible pump station locations extended along the length of the area. The sites selected in the study are representative and were selected for engineering advantage as well as to represent a plausible station configuration in the general area of the proposed siting. Preliminary cost estimates for each site are provided to gauge relative cost.

As shown in Figure 2, the four sites selected for the preliminary study are:

1. East of Burrard Bridge/Civic Marina
2. Vanier Park/Coast Guard Station
3. Chestnut Street
4. Maple Street

Each of these sites is within park land, or on a street right of way within a park. The preliminary siting study investigates the feasibility and costs of locating the pump station at each site. However, it must be noted that the four sites identified are not definitive and movement of each station location would be possible within the vicinity of these sites with minor impacts on cost and environmental implications. Significant changes in site or configuration could have significant changes on cost and environmental implications.

The preliminary siting alternative study is complete and has verified that technically, a pump station could be built at each of these sites with various cost and environmental implications. The study also describes one architectural concept for each site based on the surrounding landscape and ground elevation. It can be concluded that the pump station could be located anywhere within the park area subject to the engineering criteria outlined above.

Operationally, a DFPS pump station requires the following:

- "wet well" which holds approximately 150,000 gallons of water and which can be filled at an adequate rate using either a potable supply or seawater.
- A pump floor elevation of +4.0 metres Geodetic. (About 2 metres above highest tide)
- Saltwater intake pipe to wet well.

- A building structure to accommodate motors, pumps, fuel tanks and other equipment.
- A safe environment, free from structures that may collapse in a large seismic event

Depending on the layout and configuration of the building, the building footprint would occupy approximately 13 by 18 metres. Figure 3 shows a "typical" pump station in plan and Figure 4 shows a station in profile.

Now that the technical feasibility of a Kitsilano Pump Station has been confirmed, Engineering Services would like to enter into discussions with the Board of Parks and Recreation to identify an acceptable site from a Parks perspective, as most of the land under consideration is under Parks jurisdiction. It is also proposed that Engineering Services, along with Board of Parks and Recreation Staff, enter into a public process to elicit public opinion and concerns, and propose the most appropriate location for the DFPS Kitsilano Pump Station.

To date there have been significant public concerns about locating a pump station in certain areas of Vanier and Hadden Parks. The Park Board staff will also be weighing these options in terms of the following criteria;

1. loss of parkland
2. visual impacts
3. adequacy of mitigative measures
4. loss of future programmatic opportunities
5. loss in income
6. reduction in client services
7. by-law compliance

It is assumed that commensurate compensation packages will be developed for each option to respond to the above noted areas of concern. These will need to be addressed through the public consultation process.

The proposed public process would involve a number of steps to receive feedback and build consensus. It would begin by meeting with interested community members and associations in the Kitsilano and Burrard Slopes areas, and then meet with the public at large through a forum such as an Open House. At each step issues and concerns would be drawn out allowing multiple opportunities for people to express their concerns and/or preferences. This multi-step process that allows for significant input also provides the time and media to allow questions to be answered and to ensure that all information is clearly understood.

At the end of the public process, we will have amassed public input and will return to the Board with the results.

It is anticipated that through consultation with Parks staff and the public, a suitable site for the DFPS Kitsilano Pump Station will be found. After site acceptance by the public and City staff, final approval by the Park Board and City Council will be sought.

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