



Serious Shoreline Issues on Phantom Lake

By Brian Parks, President
Phantom Lake Homeowners Association,
with contributions from many

*Submitted to Planning Commission:
6/13/2012*

260.7
Maximum Lake Level

INTRODUCTION

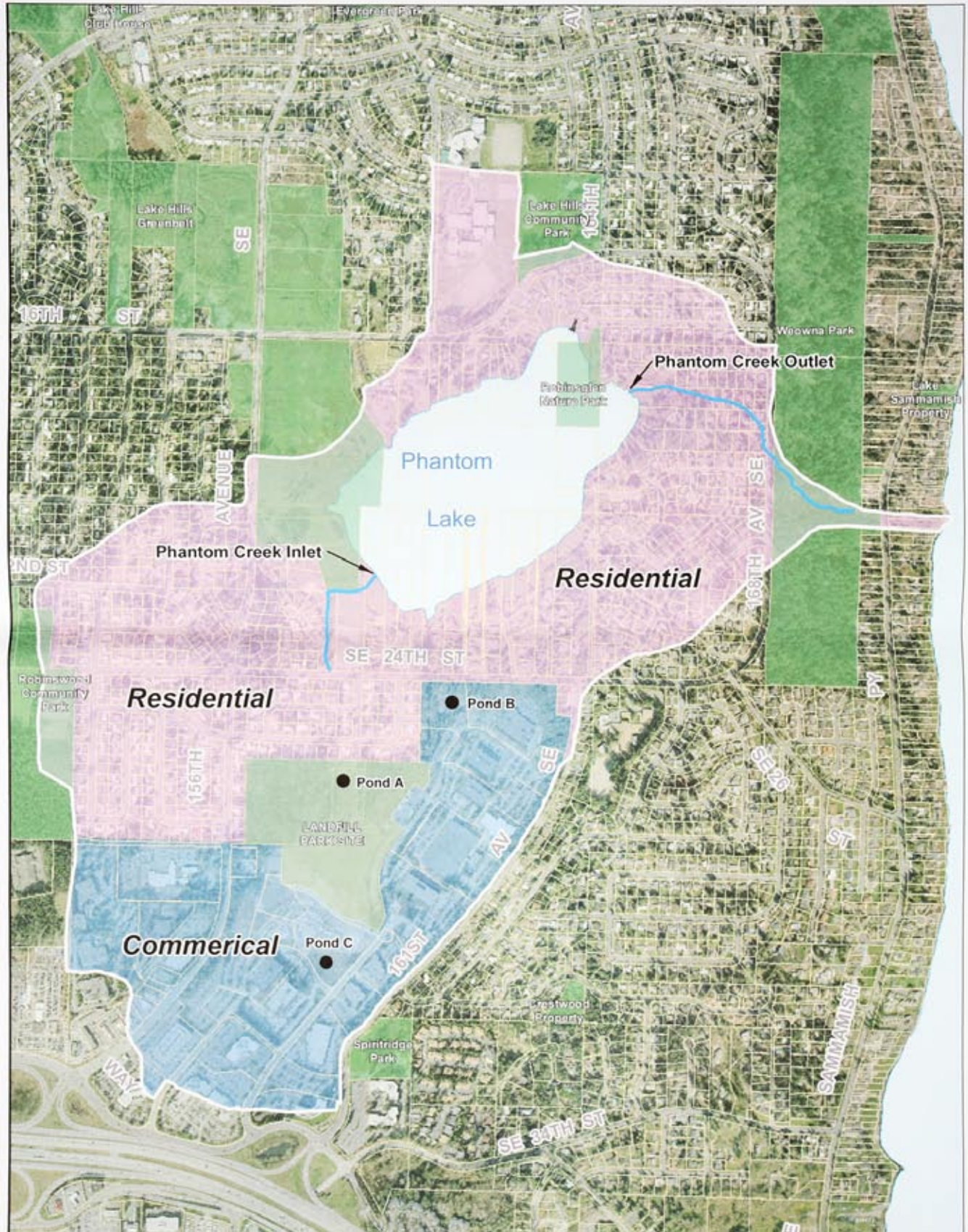
This document examines historical and current causes and affects of lake level changes, influencing both the flooding and regulation of properties on Phantom Lake. It is for the most-part a summary of my statements to the Planning Commission and Environmental Services Commission since September 2009, including my references made as footnotes and attachments. I submit this for inclusion in the record of the Shoreline Master Program.

It is important to understand that due to minimal fluctuation in natural lake levels, and the fact that shore land topography is very gradual for much of Phantom Lake, there is need to evaluate and operate within 1/10th ft increments (.1 NAVD).

Even slight lake level increases exceeding lake's natural banks, or "brim", move waterline inland rapidly on fairly level properties.

Since current Bellevue standard for measuring lake elevations above sea-level is NAVD 1988 datum, for convenient comparisons I have converted any older 1929 NGVD Datum referenced by adding +3.6 feet conversion for our region. I indicate so by adding "equivalent" to such elevations. So an old 257.1 NGVD29 + 3.6 feet conversion = 260.7 NAVD88 equivalent at present. I will also generally round to the nearest .1 ft (=1/10th foot, or 1.2 inches).

Phantom Creek Drainage Basin



EXECUTIVE SUMMARY

Utilities raised lake level and OHWM in 1990:

The following documentation clearly establishes that the Surface and Stormwater Utility Department raised both the typical average water level of Phantom Lake as well as the Ordinary High Water Mark (OHWM) in 1990, when an adjustable outlet weir to the east and berm-dam blocking surface overflow to the NW were implemented.

▼ Figure 1: Cleaned Weir 2011

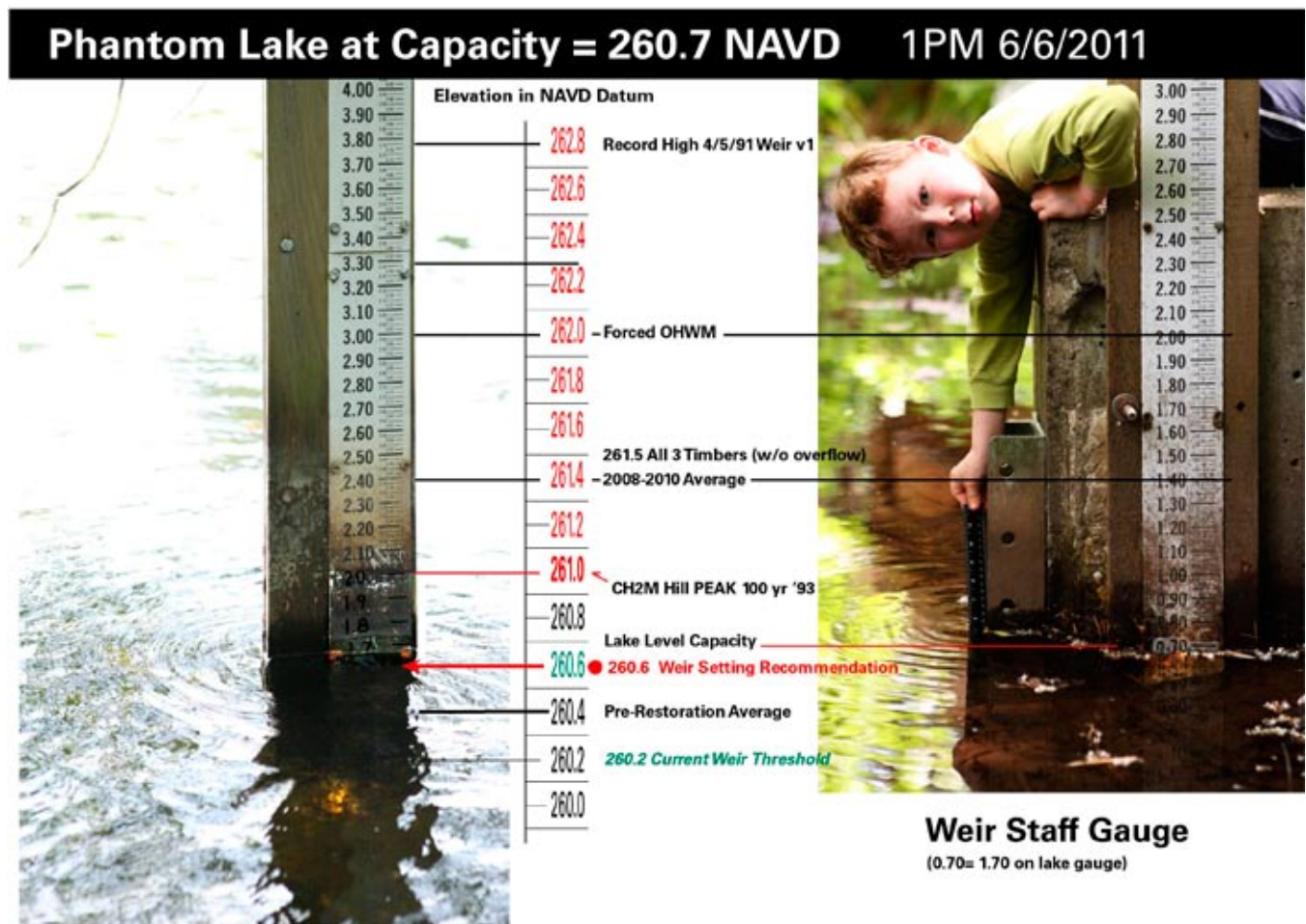


Operational practices carried out by the City of Bellevue Utilities Department have maintained this increase since; causing extensive damage to properties that surrounds the lake. The weir-gate outlet outflow settings have been raised since 1991 through 2011 and the mere presence of weir in winter impedes flow somewhat. The rising water level has important ramifications for both environmental and residents' concerns. Bellevue's Storm Water Utility Department was previously named "Storm and Surface Water Utility", or SSWU. (As they will be referred to through this report). Additionally, such actions violated State law RCW 90.03.030 which states, ***"any person may convey any water which he or she may have a right to use along any of the natural streams or lakes of the state, but not so as to raise the water thereof above ordinary highwater mark, without making just compensation to persons injured thereby..."***

Artificial OHWM a full foot higher:

City Utilities' lake level graphs, and the SMP Map Book put OHWM a full foot higher in elevation than prior to weir, at about 262 NAVD. Unlike Lake Sammamish and Washington, Phantom Lake is a kettle lake, and naturally should only fluctuate only about 12-18 inches annually. Data from old maps (**see figures 11 & 12**) shows that Phantom Lake had neither natural creeks flowing in nor out, being likely spring-fed with surface flows in and out, which is common with many Puget Sound Lowland kettle lakes. There is a distinct shoreline "edge" mark around Phantom from etching, or lake "brim" as I shall refer to it. This can be seen on most properties without heavy brush growth along the lake edge. This "brim" more accurately indicates an OHWM at an elevation of about 260.7 NAVD, based on a calm lake level on 6/6/11 being .5 ft over a fairly level weir threshold that is reported as 260.18 (**see Figure 2, pg 4**).

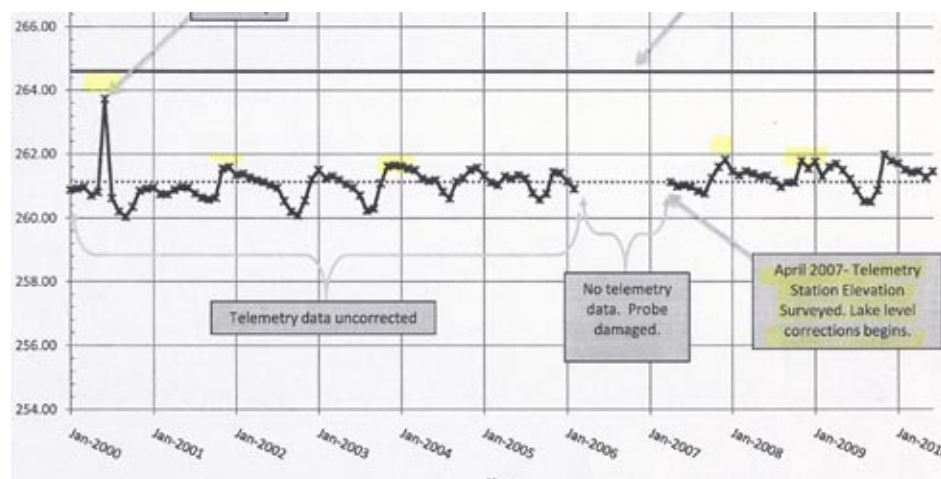
▼ Figure 2: Water depth at weir



Lake Staff Gauge

According to city and other documents, prior to the Phantom-Larsen Restoration Project implementation in 1990 (KCM Projects) the normal ordinary high water mark was approximately 260.7 NAVD equivalent. Even after these KCM Projects, in 1993 CH2M Hill prepared a report titled “Stormwater Detention Analysis for Boeing Computer Services Headquarter Site”, which estimated even the future maximum capacity for 100-year storm at 261.0 NAVD equivalent*. However, both City Utilities lake level graphs, and the SMP Map Book Page 3, now put OHWM now about 262.0, or a full foot higher in elevation. The average lake level for 2008-2010 was 261.4 NAVD, or again a foot higher than average lake level of 260.4 equivalent before KCM 1990 Projects. (See Figure 3).

▼ Figure 3: Phantom Lake average surface levels 2000-2010



This 50% relative increase and subsequent rapid inland-shift of water levels is significant for several reasons:

1) Tree Rot: Long-standing mature trees and other natural vegetation continue to die from root-rot, both an environmental and safety hazard.

▼ **Figure 4: Mature tree dies from root rot**



2) 75 ft. Shift in OHWM: This higher lake level causes up to a 75-foot horizontal shift in the OHWM. Therefore, the SMP's regulatory Shoreline Overlay District is "over-reaching" as it is by definition, 200 ft. from OHWM. This may also alter building setbacks in some steeper situations, which in turn may affect property value and use.

3) Loss of Property: Many have lost property due to the "etching" action of elevated water and waves.

4) Artificially Created Wetland Zone: When ground is saturated (anaerobic) it causes growth of wetland plants and soil conditions leading to restrictive wetlands designations in a synthetically created zone.

What has caused an increase of one foot in the OHWM elevation?

Both SSWU and their consultants have set target levels too high for reasons yet to be publicly explained. A recent document offered by SSWU states 260.79 is the weir-board over flow operating level approximately May through October. However, even higher settings have been used as recent as 2011 and even current reported setting exceeds the lawn saturation elevation of about 260.7 by over an inch, even absent of any storm overflow. SSWU claim they have no target lake levels, but some documents specify some and SSWU have not been receptive to Phantom Lake Homeowners Association requests to lower the outflow level, despite being referred to as "a private lake" by staff. At such artificially elevated levels, the lake and residents' properties have gone into the fall rainy season already close to saturation levels, resulting in artificial flooding at the first major rainstorm event and lake's inability to catch back up into winter, due to limited outflow capacity.

Recommended outlet channel improvements to prevent flooding were never implemented:

It appears that Phantom Lake was designated by the SSWU as a detention site in the 1970's and specifically in the 1976 MDP, just as the Federal Clean Water Act was coming into place. Then in the 1980's, the Mercer Airfield was rezoned and developed as an office park, causing increased stormwater runoff and water quality problems entering nearby Phantom Lake.

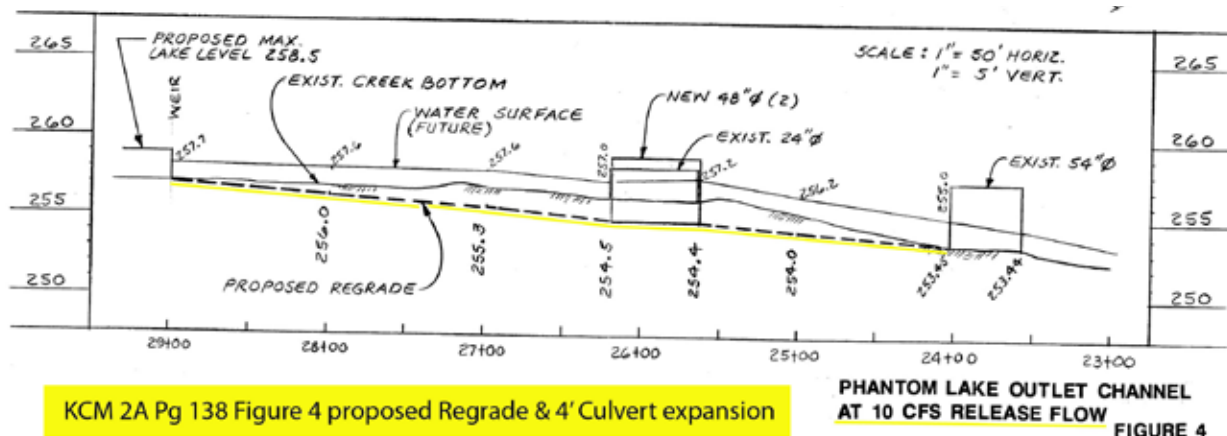
The last paragraph of a 1984 memo about stormwater detention within Phantom Lake and a weir design (done prior to 1986 KCM study & recommendation of a weir for lake's water quality improvement) refers to a detention range from 260.1 (about current weir's threshold bottom) to 261.1 equivalent (over lawn saturation elevation).

Subsequently in 1986 the Phantom-Larsen Lake Restoration Project, under a Referendum 39 DOE Grant, was awarded to mitigate the damage. City consultants Kramer, Chin & Mayo (KCM) in the latter 1980's aimed for lake levels exceeding the natural lake edge. Then, although the KCM recommendations of an adjustable outlet weir and NW berm-dam were installed in 1990 (Phase2 was KCM Projects),

the recommended compensating measures were not implemented by the City, such as a deeper-set 4ft culvert pipe on the outlet channel, intended to replace the smaller 2ft culvert. KCM Report 2 Section 5.3 on pages 32–33 states ***“The Phantom restoration plan includes an outlet weir that would prevent outflow below a lake level of 257.0 feet...(260.6 NAVD equivalent)”*** However even wide-open, that is only within 1/10th ft of lawn saturation elevation, allowing minimal winter overflow before flooding.

It went on to explain ***“... analysis, shown on Figure 4 in Appendix C* indicate the need for substantial (outlet) channel improvement and the replacement of one 24-inch diameter culvert with one or more culverts having about 18 square feet of area below an elevation of 257.0 feet (260.6 NAVD). These improvements are needed in order to get the lake outlet water level down to 257.7 feet (261.3 equivalent, and the culvert’s top) at a flow of 10cfs to allow the outlet weir to operate at these flows, and prevent lake shore flooding.”*** Again, these recommended outlet channel improvements were never implemented.

▼ **Figure 5: Proposed Regrade Culvert Expansion**



Thus contributing factors leading to increases of about 12" in both average lake level and Ordinary High Water Mark (OHWM) have been: the weir design and high operational settings for its adjustable weir-gate along Phantom Lake's only remaining outlet channel, along with unlimited permitted inflow to Phantom Lake, a 1990 berm-dam blocking natural peak outflow towards Larsen Lake, and the lack of maintenance along the sole outlet channel (a man-made ditch).

Both SSWU then and Utilities now claim the weir is not a cause of flooding; that it controls only summer lake levels. Both agencies point to the SE 17th Place under-street culvert pipe, as limiting factor. However:

1) At most times the weir threshold is the determining factor for lake level:

This downstream culvert's full capacity is the limiting factor ONLY during peak storm events exceeding about 261.3 surface elevation (full culvert pipe elevation and over lawns); at all other times the weir threshold or gate board elevation is the determining factor for lake level. Culvert has an estimated capacity of about 11.5 CFS (per: KCM2b Page 32), however when this flow rate is exceeded, the SE 17th Place culvert does in fact act as a de-facto limiting orifice for detention site functionality. We will examine Utilities' other claims and stances as well.

2) Weir settings cause overflow of one foot over property saturation point:

Utilities claim their current Weir Operational Protocol is 260.79, the minimum pin settings on weir. Holes in weir indicate a three setting range of 260.8, 261.1 & 261.4. Middle gate setting of 261.1 is shown being used in weir resident's photo 4/3/11. This caused a lake level with overflow of 261.7, or one foot over property saturation point and nearly a foot over supposed Protocol. It is important to remember that any weir overflow causes lake surface levels in excess of adjustable weir-gate board settings.

▼ Figure 6: Resident photo of weir setting 261.1



Based on the forementioned facts and others to follow, PLHO propose the following:

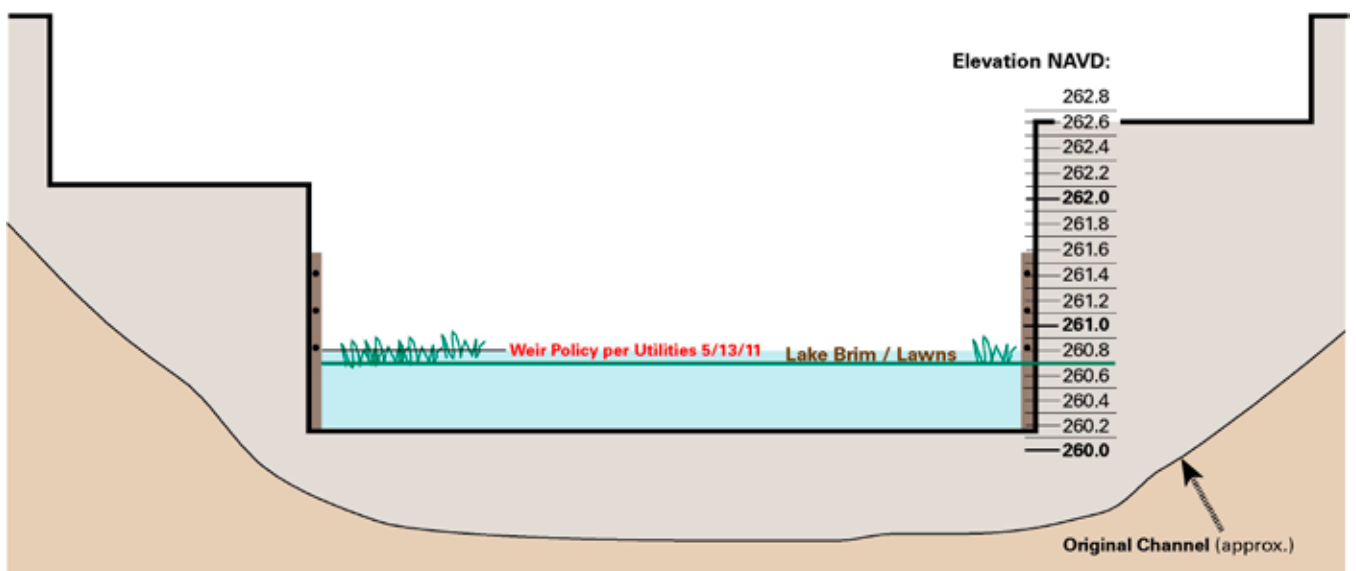
1) Restoring lake closer to the traditional 260.4 mean average lake level
(typically 260.1–260.7 NAVD).

2) Set 260.7 NAVD both as maximum desired lake level and OHWM.

3) Reduce the maximum weir gate setting to an elevation of 260.6 ft.

These compare to SSWU's current policy of weir-gate settings from 260.79 up to 261.1 (plus any overflow).

▼ Figure 7: Weir Policy Now



Otherwise wood gate boards would float upwards. The unique circumstances and historic background dictate the need to compensate for increased restrictions on Phantom residents by designation of an administrative Ordinary High Water Mark (OHWM).

4) Stop using Phantom Lake as a detention pond.

As defined in RCW 90.58.30, detention facilities are exempt from the CAO and SMP; Phantom Lake is clearly being used as such, and therefore is likely considered exempt from these regulations.

ABOUT THE AUTHOR

Joined WSSA in 2009: In September 2009 I was informed of a new group consisting of Bellevue shoreline homeowners (Washington Sensible Shoreline Association–WSSA). Their goal is to monitor and give input (on behalf of residents) to Bellevue’s Shoreline Master Program Update process (SMP). Although I had no plans to redevelop, I went to a meeting and thought it worthy of volunteering a few hours. I was also interested in learning why Phantom Lake was already full to the brim in November, then flooded frequently throughout winter and spring.

Much research, many interviews and meetings: Through my involvement since, I have interviewed long-time residents, searched City website, met with City staff, and extensively researched historic and current documents within City, County, and Puget Sound libraries and archives. I learned that ever since the berm and weir projects’ implementations in 1990, residents here have complained to the City of increased frequency and duration of flooding. From my research and many meetings with City staff the past three years, this document reports what I have found as causes of the problems, what has taken place since, and the current and ongoing impacts. My findings will show how city policy could be both improved to reduce flooding and create reasonable, environmentally beneficial policies and practices regarding Phantom Lake (Phantom).

PLHO President, WSSA board member: I am currently president of the Phantom Lake Homeowners Association (PLHO), a board of 5 elected residents with longstanding bylaws and roots dating back to 1938, as well as their delegated SMP representative. As such, I have made every reasonable effort to gather opinions of many residents, work together with them in expressing their concerns and developing these statements, and to accurately represent the various interests around the lake. I also serve on the board of WSSA where I am an executive member and the sole Phantom Lake resident. These are both unpaid volunteer positions of community service and representation.

PROBLEMS

Currently there are serious problems with Phantom Lake, in both policy and practice, more so than just those evident “on the surface”. Even small actions, such as slightly raising Phantom Lake’s average lake level and OHWM, can have big impacts. Evidence will be here presented that SSWU decided to and has been in fact using Phantom Lake as an informal detention facility, which does not comply with today’s environmental standards. I will show this practice has caused a rise in lake levels that negatively affects residents in numerous ways.

Rise in lake levels can affect many things, including:

- 1.** Baseline jurisdictional “reach” of SMP Shoreline Overlay District (SOD) of 200’
- 2.** Aquatic Designation “reach”
- 3.** Vegetation & building setback distance
- 4.** Broad Conservation easements
- 5.** Saturated soils leading to CAO setbacks of 110 feet
- 6.** Many mature and long-standing trees dying from root-rot
- 7.** Unusable property due to excessively wet ground

8. Residents unable to mow lawns until late spring, leading to lawn damage from overgrowth.
9. Washed in weed seeds encourage broadleaf herbicide spray around a lake with limited flushing ability.
10. Nutrient loading of lake from bothfrom incoming runoff, erosion, and washing of shorelands.
11. Loss of natural “beach” and gravel shorelines.
12. Destruction of bird nesting habitat from flooding
13. Damage to primary residences and structures from “pumping” of peat soils

▼ **Figure 8: Hanberg residence flooded on South shore of Phantom Lake**



ENVIRONMENTAL PROBLEMS

This kettle lake is not a recieving water:

Phantom Lake is a kettle lake with no natural inlets or outlets and thus limited “flow” out of the lake, therefore using the lake as “a receiving water”, when it is not, has caused flooding and accumulated contamination. Flooding has caused mature trees to die from root-rot and now pose a threat to residents’ safety and homes.

Adverse impacts from City development has not been mitigated:

Development of the I-90 business park (1980’s) greatly increased the amount of storm water entering Phantom Lake. In 1954 King County began using the north end of Mercer Airfield’s runway as a landfill, apparently to fill-in deep swales surrounding it, which had caused dangerous airfield updrafts. (per: Bill Rahr’s testimony) The 1980 Concomitant Zoning Agreement for changing Airfield into present I-90 Business Park stated that the City **“should mitigate any adverse impacts which might result from the proposed rezone”** as per RCW 43.21C and was **“to safeguard Phantom.”** Resident Don Miles complained of Pond A’s ineffectiveness in a letter dated June 30th, 1990 (see figure X). This agreement has not been upheld and has precipitated decades of complaints and two lawsuits. There is also a long-term issue of accumulation of heavy metals over time, or aquifer contamination from up-gradient landfill, due to the runoff.

▼ **Figure 9: Don Miles letter** (resident of Phantom Lake, engineer)

Director of Design & Development
PO Box 90012
Bellevue, WA 98009-9012

Attn: Ken Thiem
City of Bellevue

Ref: Project: Phases IV, Increment A-2
Boeing Computer Services

The storm drainage runoff into Phantom Lake has in the past few years continued to increase at a more rapid rate. The lake level thus raises very rapidly even with small storm events. It is quite evident that the storm detention system is not controlling the rate of runoff as predicted in the expanded environmental statement. Consideration should be given to landscape types that

Water quality problems:

Flooding shorelines contributes to nutrient loading of lake, a water quality problem that needs to be monitored and should be avoided. Recent water quality tests performed by PLHO for the piped water entering both into the I-90 Business Park and landfill's detention Pond-A, compared to that leaving Pond A, indicate the detention pond is generating more metals going out than coming in, likely from landfill groundwater leachate. (See Appendix-Pond A Tests) Water quality tests were also done on the sludge being deposited within sediment at the lake's edge where inlet inflow from Pond-A point-source is deposited. These are very high in toxins as well (See Appendix-Inlet Tests).

Proposed land use plans will only further overload an overwhelmed system:

Amidst the Eastgate Land Use Plan that includes increased impervious surfaces, there is no EIS looking at downstream limitations and the CAC report to City Council did not list water volumes as a PLHO concern (only mentioning water quality and traffic concerns), despite CAC chair Jay Hamlin having been on Planning Commission for the past 3 years of SMP discussions as well as being married to a Planning Department staff member. This avoidance of the numerous public comments by author, the PLHO President, about Eastgate Land Use Plan would seem a major oversight.

Phantom Lake inflow CFS data avoided:

The 1980 rezone put a limit of 19.2 CFS on Pond A outflow. Utilities claims to have no idea of the CFS for neither inflow channel nor outflow channel for Phantom Lake, Bellevue's largest wholly owned lake. However CFS for most other basins are listed on City website.

Street outfalls

Street swales and drain outfalls currently carry sediment and toxins into Phantom. The bay at NE corner of Phantom, for example, is filling in with sediment and buildup from two street outfalls. There is need to reduce contribution of pollution from such outfalls (8-12 of them?) into Phantom Lake through the installation and application of "Best Practice" filtration and outfall discharge technologies. These should ultimately replace all old technologies of "oil-water separators" in catch basins and bio-filtration swales.

PUBLIC HEALTH CONCERNS

The aforementioned contamination of lake water poses a threat to people, and pets, especially swimmers and those who eating lake caught fish. Toxic blue-green algae outbreaks have occurred in the past and are of concern.

PROPERTY RIGHTS PROBLEMS

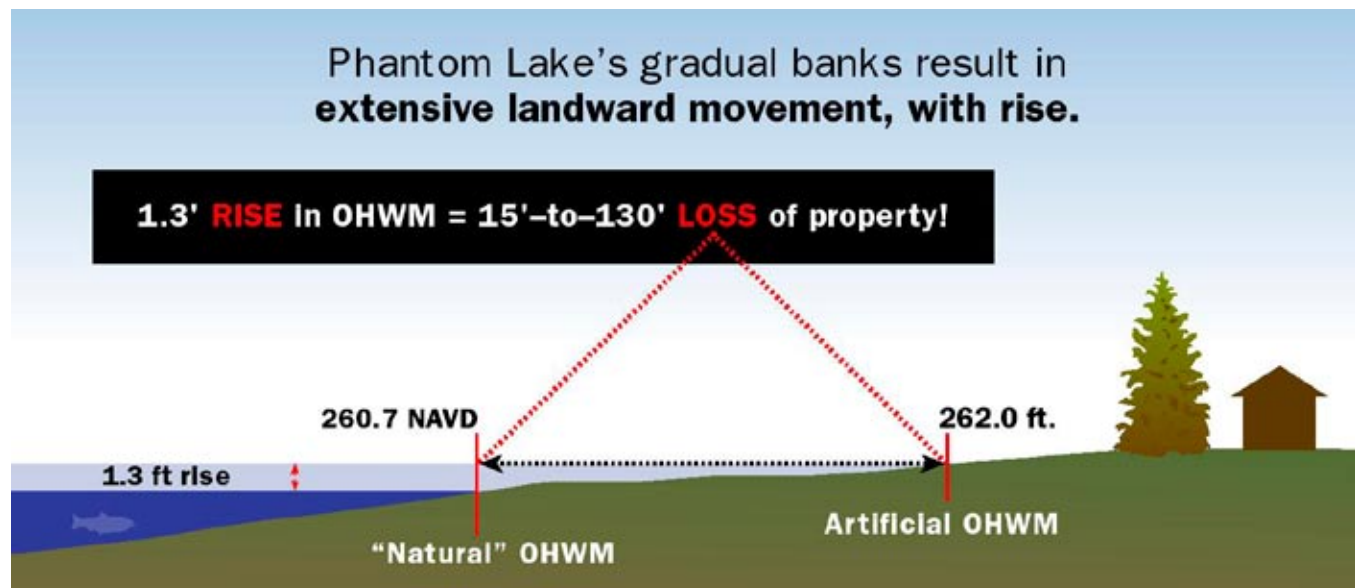
Phantom Lake is unique because it is a “privately owned lake” (per: *BOTTON vs. Department of Game* 1966). There is a decommissioned Landfill at the head of the lake from where most storm water flows into Phantom. The landfill’s environmental problems are not appropriate to neither address nor impose upon private property and a swimming lake, nor did property owners give permission to use the lake as a detention pond. This may likely constitute “a taking of property”. City actions have adversely affected property owners’ rights without consent or consideration for safety. Residents have been misled and back burned, by inviting them to share concerns, and then marginalize and not providing relief.

SMP & CAO REGULATORY PROBLEMS

Loss of property:

Increased lake levels have led to loss of property due to physical and regulatory conditions mentioned, such as creating and increasing wetland critical area designations, and advancement of regulatory OHWM. (see Appendix-OHWM)

▼ Figure 10: 1 foot rise in lake level = over 75 foot landward movement of water



Violations of RCW:

RCW 90.03.030 states *"any person may convey any water which he or she may have a right to use along any of the natural streams or lakes of the state, but not so as to raise the water thereof above ordinary highwater mark, without making just compensation to persons injured thereby..."*

The Ordinary High Water Mark (OHWM) acts as both as an effective waterward property line and a starting point for both SMP jurisdictional Shoreline Overlay District (SOD) and for regulatory buffers and building setbacks. OHWM is defined as *"...that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally*

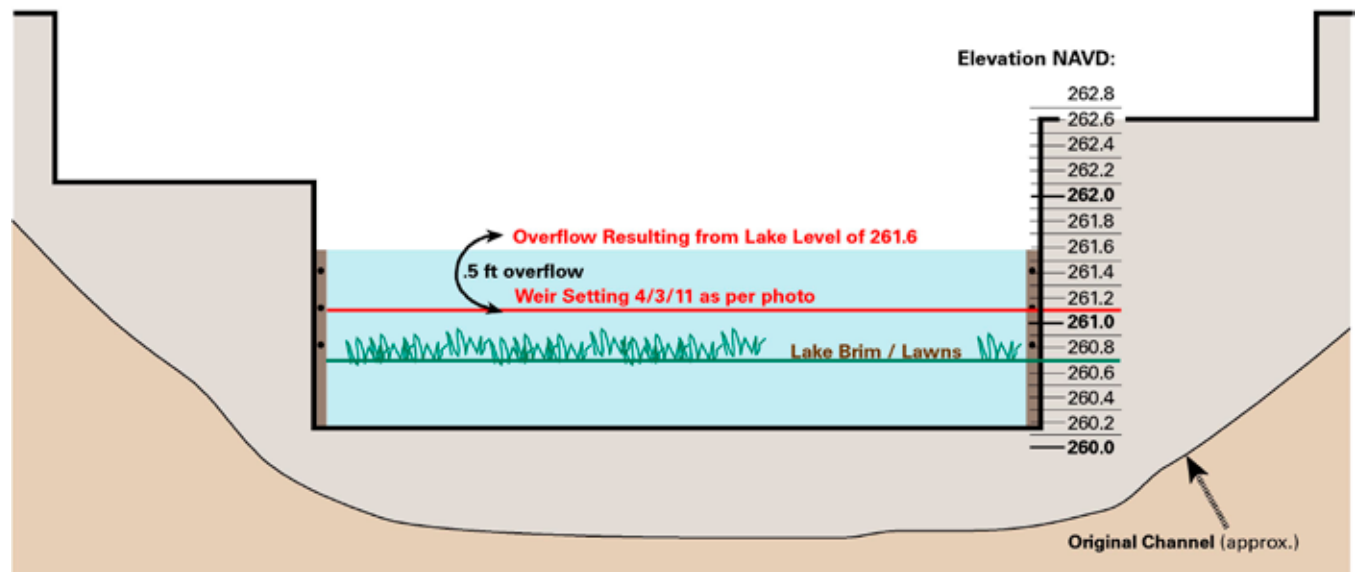
change thereafter, or as it may change thereafter in accordance with permits issued by the City or the Department of Ecology; provided, that in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining fresh water shall be the line of mean high water.”

(per: SMP Handbook, chapter 5, page 2)

Elevation of the (OHWM) by SSWU

When weir-gate boards, or “timbers” are placed in Phantom’s outlet weir so that water exceeds the natural lake banks, such as shown being done 4/3/11, it forces the surface level up and exceeds the prior OHWM.

▼ **Figure 11: Middle Weir Setting with Overflow**



This is about a foot rise over lake brim and can equate over 60 feet landward shift in OHWM on many properties. With flooding, lawns become saturated soils, and with these events the city has reclassified the lake as wetlands, which then fall under the critical areas ordinance and regulation. Some 40% of the properties on Phantom are low lying, given the kettle lake gradual shorelands, and as such are highly affected by the foot rise in a lake. (see Appendix–OHWM for more info)

Critical Areas Ordinance (CAO)

As per RCW 90.58.030 2(h) **“Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities.”** Since documents show Phantom Lake was in fact specified as a stormwater detention facility, therefore shorelands with palustrian wetlands are not to be under SMA wetland regulations. Nor can its shores be designated critical as Areas of Special Flood Hazard. Also, the 2006 CAO cannot be directly transferred into the SMP without Planning Commission discussion, as it was not citizen reviewed, other than a small CAC at that time, which did not even discuss lakes.

Take for example the recent plight of one Phantom Lake couple. The gradually advanced wetlands may have “tipped the scales” as to whether they can subdivide to financially enable staying in their home. Upon review, the City Planner emailed them **“What I came up with based on the sketch of the wetland boundary and the categorization is that your property is right on the cusp of subdividability.”** He went on to say, **“the only way to know for sure is to follow up with a licensed surveyor to complete a boundary and topographic survey that includes the delineated edge of the wetland and shows the appropriate 110 foot wetland buffer.”**

The couple argues that, based on the experience of having lived on Phantom since prior to 1990, they have observed the advancement of the lake and wetland plants since the weir & berm installation. They feel they shouldn’t be subjected to this loss of use due to SSWU actions. On a legal basis,

the designation of Phantom Lake for stormwater detention in the 1970's & 1980's documents, as well as the subsequent actions of setting the weir elevation higher may have prevented them from subdividing, and so constitute a taking. As a result, after living on Phantom Lake his whole life, he was forced to sell his property instead of subdivide for needed finances.

▼ **Figure 12: Lifetime property owner on Phantom forced to sell**



FEMA FIRM & Floodplain Designation

Two issues here. First, the FEMA FIRM Maps overestimate the 1% Base Flood Elevation (BFE, formerly 100 year floodplain) to be 265, which prevents structures within it. However this was challenged by PLHO in the Memorandum of Understanding during the citizen meetings about Phantom/Larsen Restoration Project, yet staff dropped the ball, promising to pursue this subject but discontinuing when that staff member left city. Looking at the actual topography surrounding the lake and to the north, it appears physically impossible for the lake to ever reach that level.

Secondly, there appears to be nothing preventing SSWU from filling up the lake another 3 ft in depth to the floodplain listed as 265 NAVD (from 1978 designation of 261 NGVD). (see [Appendix–FEMA](#))

REASONS FOR FLOODING

Back in the 1970's the city was weighing new plans to control storm water. They could either design and construct a storm water collection system with pipes underground, or alter the naturally existing systems and use streams and lakes for storm water detention. They chose the latter and today many problems have resulted from using Phantom Lake as a detention Pond rather than rather than building storm water infrastructure. Surely that choice must have accounted for the need for maintenance with this natural drainage system crossing through private property as well?

When KCM wrote their report, they chose to estimate “Peak Storage” as 261.4 (257.8 NGVD), however this was above the natural shoreline of 260.7 and would not have been agreeable with residents.

My research shows that SSWU had plans that were carried out indicating the clear, predetermined intention utilize Phantom Lake for municipal stormwater detention, which has resulted in flooding of properties surrounding Phantom Lake.

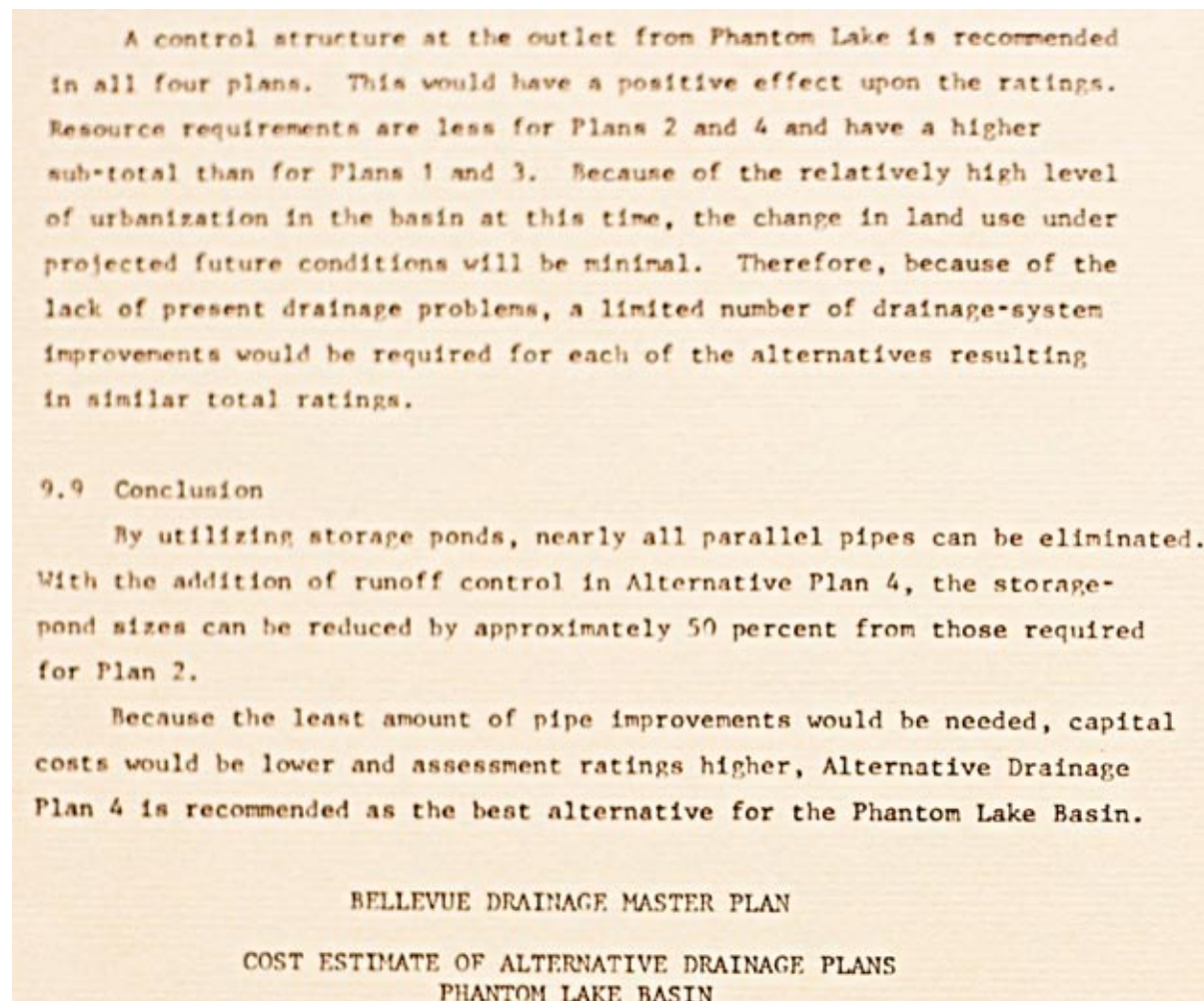
SSWU determined to raise lake levels for detention

Although Phantom residents were told during KCM Study phase that an outlet channel weir control structure would improve the water quality of Phantom Lake, documents would seem to indicate it was in fact for water quality improvements downstream, such as Kelsey Creek to the North, Lake Sammamish to

the East, and beyond. Subsequently, both Phantom residents and the lake itself have suffered unnatural flooding, tree loss, artificial advancement of wetlands, and accumulated contamination from streets and landfill, as well as regulatory overreach and other losses and damages.

The 1976 DMP by KCM* analyzed several options for using natural streams and ponds for municipal collection, conveyance and detention of stormwater, rather than parallel sewer piping. Inserting a weir on Phantom Lake's outlet channel was an element for all four options (see Figure X pg XX) Known issues listed for basin included sedimentation of outlet channel and erosion within what would become Weowna Park, which continue in storms today, (see Figures 7 & 8 pg xx) despite a 1.2 million dollar restoration project in 1996*. The KCM cover letter of 1976 Drainage Master states ***"The Master Plan primarily consists of... channel improvements which utilize the City's open stream system as much as possible... the first major drainage system in the Pacific Northwest that recommends a drainage system which incorporates control of flow conditions and retention of existing stream system as an asset... is also the most cost-effective... The City's existing drainage problems are significant..."*** This was previous to the KCM Phantom Lake Restoration report commissioned by City, which recommended a berm-dam and same flow control weir on the Phantom outlet for "phosphorous control" reasons. For Phantom Lake Basin it mentions outlet erosion through Weowna as biggest problem and specified weir to limit outflow to 20cfs (the SMA threshold for streams) and gives inflow/outflow CFS under storm conditions. Existing Problems Map shows outlet channel sedimentation above 168th and erosion below. It is noteworthy that this document, along with others, were subsequently transferred to UW library archives after I started referring to it at Planning Commission meetings and with Utilities, and so was unavailable when I went back to KCLS on 110th for further study. It is not listed in UW library. (see Appendix–UW Library Archives Email).

▼ Figure 13: 1976 Drainage Master Plan



▼ **Figures 14: Flooding from initial weir, 1990** (North shores)



▼ **Figure 15: Filled-in sediment pond at Parkway, and sediment plum into Sammamish**



Denny Vidmar, SSWU employee since 1984 and Utilities Director from 2005 until recently retiring early in 2011, previously worked for KCM. Perhaps he may have been involved with the 1976 Drainage Master Plan by KCM (usually abbreviated MDP). The City would have employed him during 1986-91 KCM studies, both of which recommended using City streams & lakes for polluted stormwater conveyance

and detention, including specifying an outlet weir on Phantom for detention. When KCM later recommended a weir and berm-dam in 1986, this time it was for “lake water quality improvement” by reducing groundwater transfer of natural occurring phosphorous.

1980 The Concomitant agreement not upheld

In 1980, Cabbot Cabbot & Forbes broke ground to convert their purchased Mercer Airfield in Eastgate into the planed I-90 Business Park and Detention Pond-A was excavated south of the landfill that December. That Winter 1980-81, muddy flows from construction washed fine glacial silt into Phantom. The Concomitant Rezoning Agreement specified conditions, as mentioned earlier. Their 1979 EIS had stated, “flooding was not a matter of record” and “City would be responsible for frequent cleaning” of Pond A (per: 1979 EIS Cabott, Cabott & Forbes). Many of the long-time residents have testified that flooding historically hadn’t been much of an issue prior to 1980 redevelopment of airfield. This agreement has not been upheld, even though Pond-A is next to a contaminated landfil site.

▼ Figure 16: 1980 Concomitant Agreement

WHEREAS, the City pursuant to RCW 43.21C of the State Environmental Policy Act should mitigate any adverse impacts which might result because of the proposed rezone; and

The was no natural inlet

Pond-A’s outlet channel, being the foremost man-made inlet channel into Phantom Lake, was relocated and expanded in September 1984 (see Figure X). The 1898 USGS map (see Figure X) as well as 1940 Plat map of area (see Figure X) show no previous creek from airfield, nor any natural inlets nor outlets for Phantom Lake, which is typical of many spring fed kettle lakes in Puget Sound lowlands.

▼ Figure 17: Inlet from Pond A under SE24th St



▼ Figure 18: Phantom Inlet channel reconstruction

3. 1983-1984 PRE-RESTORATION READINGS *	
FLOOD STAGE	258.9'
HIGH	257.6'
NORMAL HIGH	257.1'
MEAN	256.8'
LOW STAGE	256.3'

▼ Figure 19: Construction flow in swale from airfield redevelopment



Airfield created Swale,
muddy from I-90
Business Park &
Pond-A construction

PHANTOM CREEK
REROUTED AND
DITCHED OUT TO
HANDLE
INCREASED FLOWS



▼ Figure 20: Inlet from Pond A constructed



▼ Figure 21: 1898 USGS Topographical Map showing no inlet



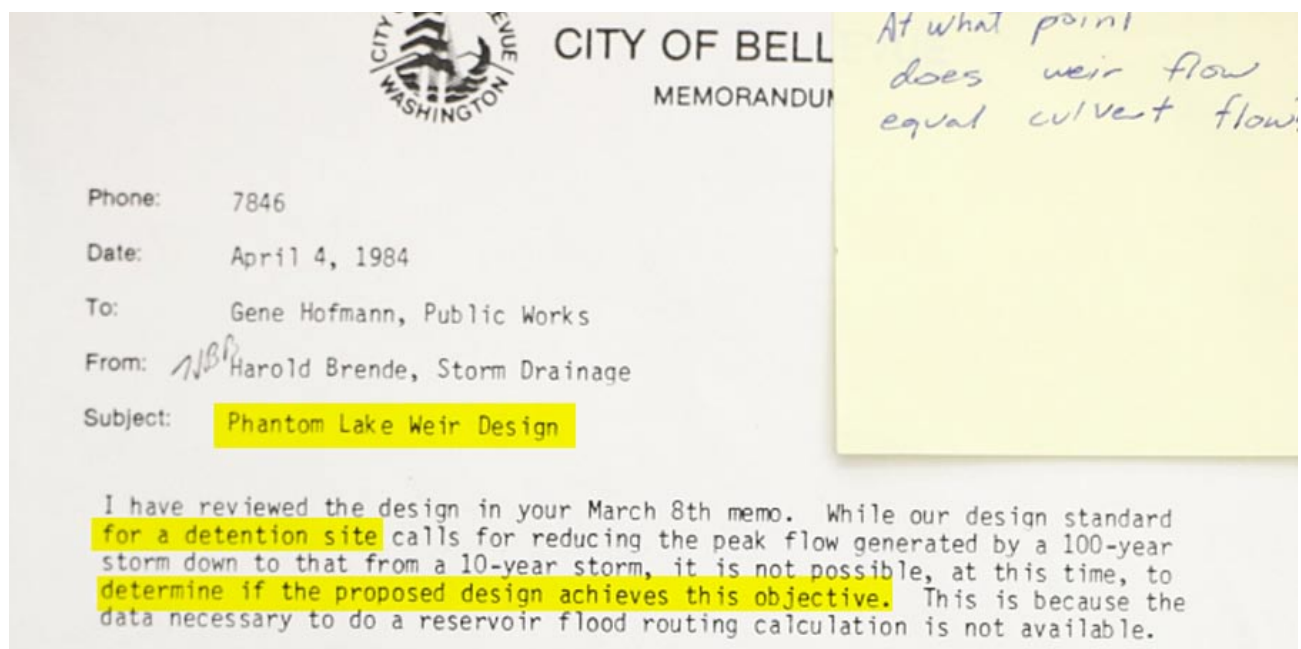
▼ Figure 22: 1940 Plat map showing no inlet



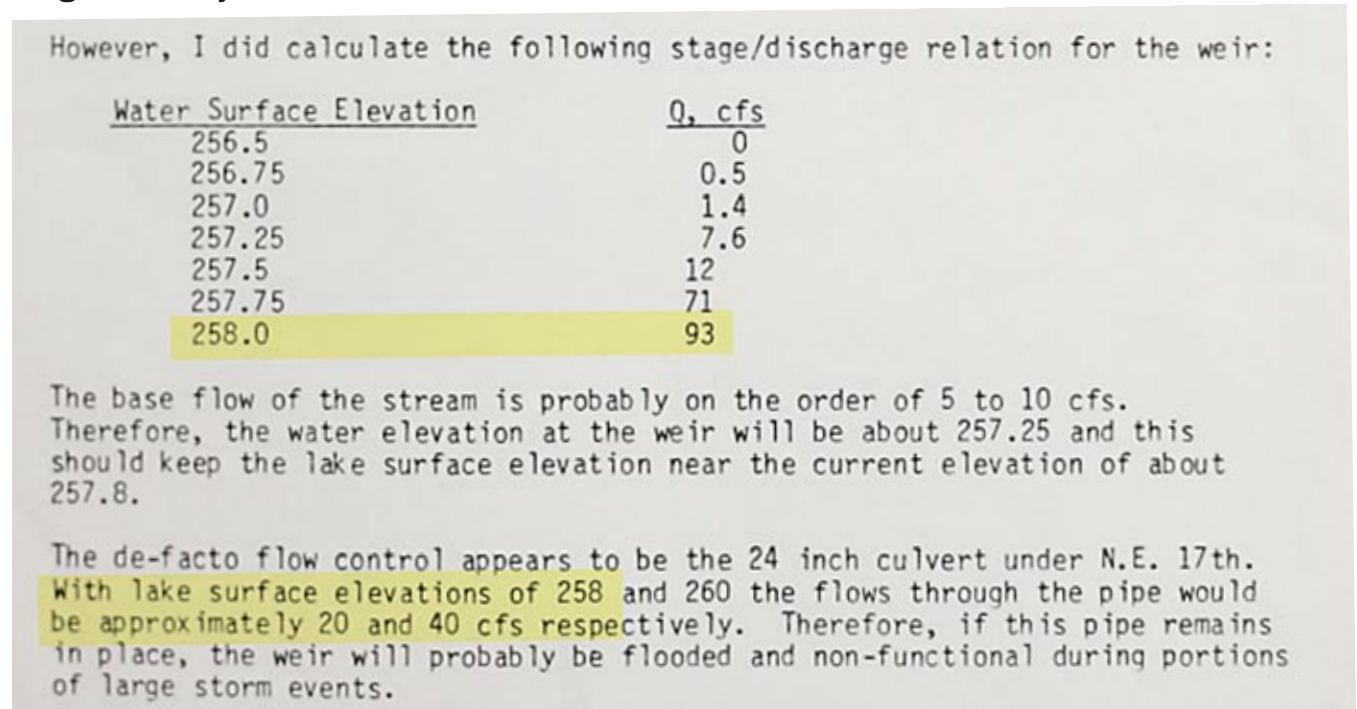
Reservoir calculations made

A 1984 SSWU memo replies to a question that was asked about “reservoir calculations” for Phantom Lake as well. This would seem to indicate the proposals of a weir from 1972 and 1976 were still under discussion, but no weir placed yet for some reason. However, Phantom was a “private lake” and State Court had already established in the 1966 BOTTON vs. Department of Game that one property owner could not over-ride the riparian rights of the other property owners.

▼ Figure 23: SSWU memo Phantom Lake referred to as “A Detention Site”



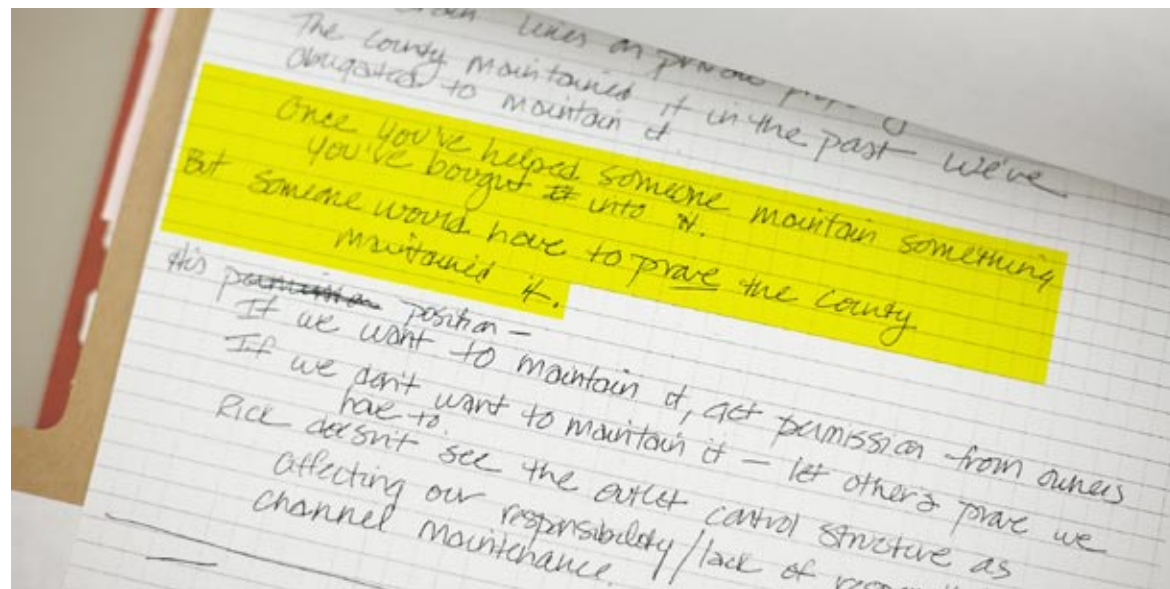
▼ Figure 24: City memo refers to bottle-neck culvert as “D-Facto Flow control”



KCM study influenced by foredrawn conclusions

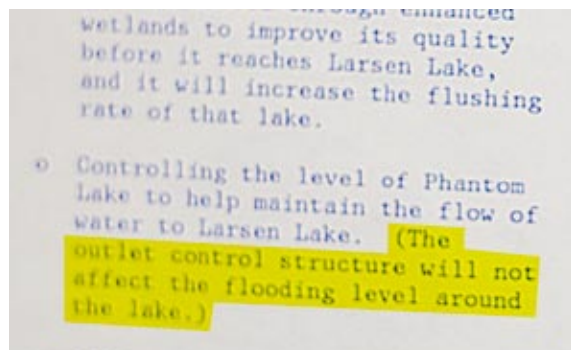
The KCM (Study) Phase1 Report page 3.2 INFRASTRUCTURE section PP1 states, **“At present there is not a lake level control structure at Phantom Lake. ... However there is informal lake level control through maintaining the inflow and outflow channels by the City of Bellevue.”**... **“The City of Bellevue’s 1985-1989 capital Improvement Program Plan proposes an outlet structure to control its surface water level with input from this investigation.”** It seems predetermined that KCM would again be recommending a weir like they had ten years previous in their COB 1976 Master Drainage plan for stormwater detention purposes. This would seem to indicate both intent to raise OHWM and responsibility to maintain outlet, based on **“prior maintenance precedence of maintaining it” (see Figure X)**, as well as ability to regulate lake levels “informally” by lack of maintenance for winter flows. SSWU now claim they have only done a “one-time cleaning” in Sept 1997 and now again 2011, as well as emergency responses, such as to blockages.

▼ Figure 25: Maintenance responsibility



KCM's 1986 Phantom-Larsen Lake Restoration Plan, like 1976 MDP, did in fact recommend a weir and a berm blocking natural NW flow. Easements were acquired and these, as well as an aerator and alum treatment to seal in contaminants, were implemented in 1990. The justification was that higher lake levels in summer might prevent much phosphorous rich groundwater from creeping into Phantom Lake, by a higher lake creating hydraulic subterranean pressure away from lake. This appears nowhere in prior discussions as a reasoning for weir placement, rather always as "detention". The project update newsletter dated August 1988 promised residents, **"The outlet control structure will not affect the flooding level around the lake"**. They stated the weir would only keep lake elevation from falling in summer (see Figure 26).

▼ Figure 26: Newsletter promises no increased flooding

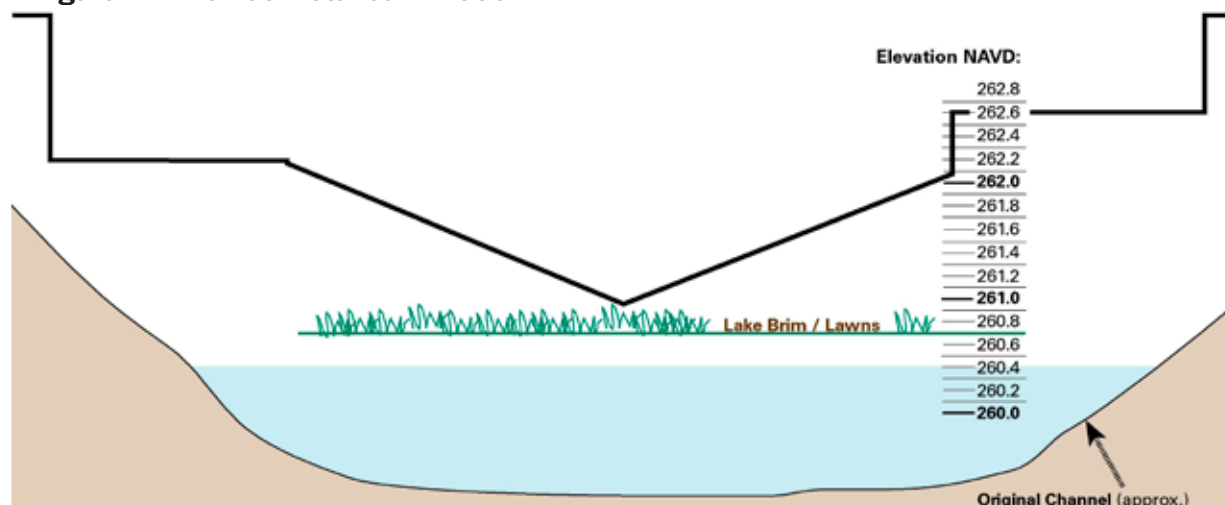


Weir design too aggressive

The initial 1990 installed weir design specified a 120° "V" notch shaped threshold at 260.6 equivalent with a screw type adjustable top-gate (permitted flow was less than a small pizza-slice-sized passage below flooding level), however it is claimed that due to a surveying error (a reoccurring theme), it was installed .8ft too high (9.6 inches) (see Figure X). Based on current threshold of 260.18, that would be in excess of 261.0 equivalent (over natural lake brim). There was an immediate outcry from residents from increased flooding that year and weir threshold was revised by sawing out concrete threshold deeper, specified to be 260.14 NAVD in summer 1991. An engineering flow calculation sheet recommended this revised weir (v2.0) be operated at 260.6 equivalent (see Figure X). However, 260.72 equivalent gate elevation was in fact utilized during a 1993-1995 lake level study, yet complaints and even two lawsuits by Anton Steen and Rudy Elmer continued regarding damages from flooding and outlet flow increases.

A later KCM Report reviewing project stated **"Construction of the outlet structure (weir) in late summer 1990 maintained lake levels at approximately 257 feet (260.6 equivalent) until retrofitted in October 1991. Installation of the outlet weir resulted in a net gain in dead lake storage of 1,877,000 cubic ft over the course of the first Phase2 study year"** (see Figure 27)

▼ Figure 27: Weir as installed in 1990



▼ **Figure 28: Gained detention capacity**

Construction of the outlet structure in late summer 1990 maintained lake levels at approximately 257 feet until retrofitted in October 1991. Installation of the outlet weir resulted in a net gain in dead lake storage of 1,877,000 ft³ over the course of the first Phase II study year. The outlet weir was lowered approximately 8 inches to the originally recommended elevation in November 1991. This decreased the dead lake storage capacity, compared to 1991, resulting in a net loss of 1,097,000 ft³ over the course of the second year. (In the Phase I study, there was a net loss of dead lake storage of 325,000 ft³ over the course of the year.)

▼ **Figure 29: Flooding 1991**



Residents outraged as a result of flooding

The two lawsuits that followed, were ironically by the late Anthony Steen (this was previously unknown to me), who's home I now live in, and the late Rudy Elmer on Sammamish, who is related to my wife (suit known to me only after buying our home on Phantom). SSWU still denies having any substantial annual lake level data prior to 1990 weir and berm. Both suits had requested, but were not provided any regular lake levels prior to 1990 KCM Projects and both ended in no decision. Both men nearing 90 yrs in age died a few years after; it does not appear either knew each other. Independently, Don Miles, an engineer living on Phantom who had been City's official lake level recorder of a staff gauge mounted on his dock for years, even wrote the City in one of his many letters about flooding and KCM Project, "In this subject correspondence there is discussion as to the lack of historical lake water elevation data. I find it hard to believe the shallow approach taken in trying to accumulate such findings. I myself have sent reams of data to the City"**. In a 1991 flooding report to City by PLHO, Mr. Miles reported lake levels prior to 1990 as follows (adjusted to NAVD):

▼ Figure 30: Flood records

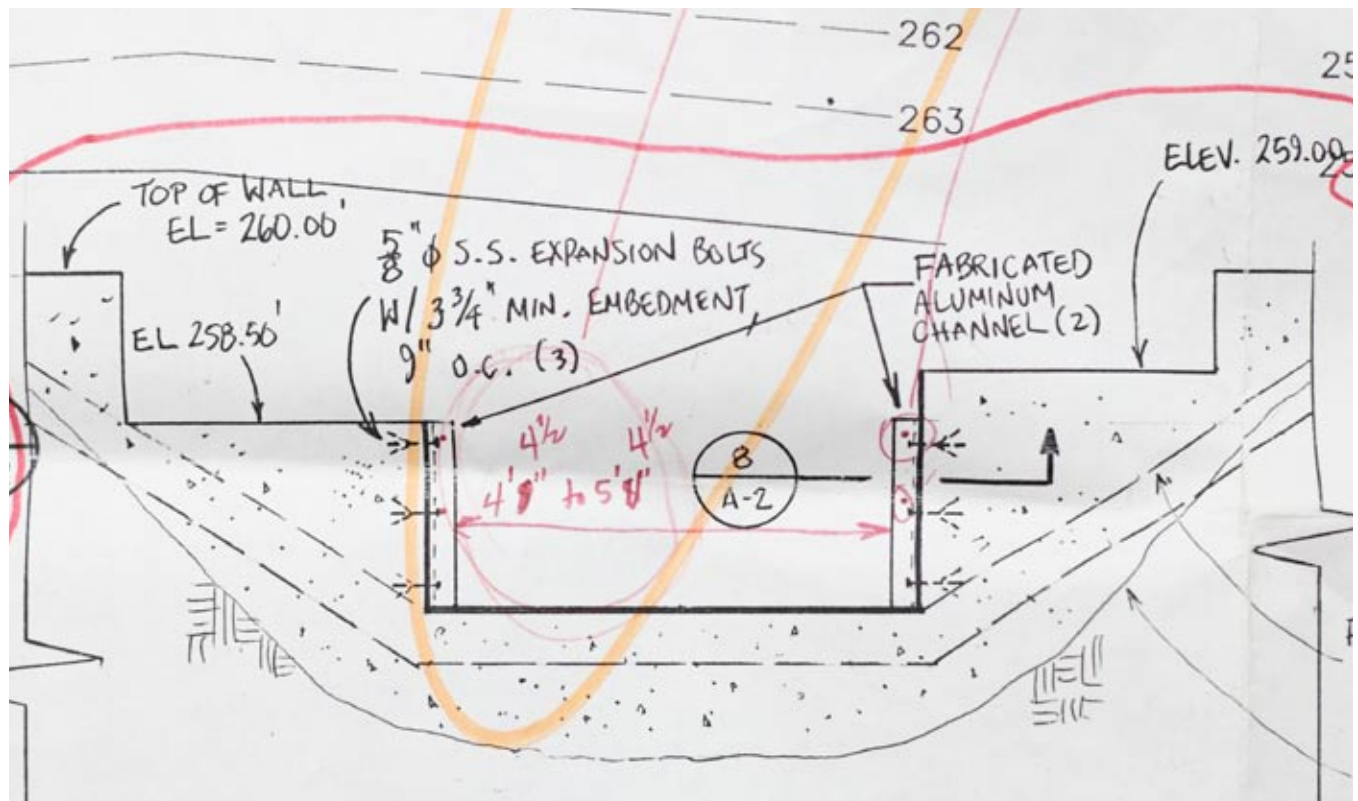
3. 1983-1984 PRE-RESTORATION READINGS *	
FLOOD STAGE	258.9'
HIGH	257.6'
NORMAL HIGH	257.1'
MEAN	256.8'
LOW STAGE	256.3'

Memos found in project archives indicate numerous implementation problems for both Larsen & Phantom Lakes. In a Letter of Agreement signed 7/24/91, KCM a representative, City Attorney, and the SSWU Director agreed to conditions for **“additional design and analysis services... correcting deficiencies ... attributed to KCM design errors and omissions.”** However, current weir (v3) is not in fact 2ft lower than first relief, as in engineering drawings.

▼ Figure 31: Agreement with City over KCM design errors and omissions

The City shall not be charged for the additional design and analysis services. Instead, however, KCM shall be credited for these additional services against the cost of correcting deficiencies with the Phantom/Larsen lake restoration project attributed to KCM design errors and omissions.

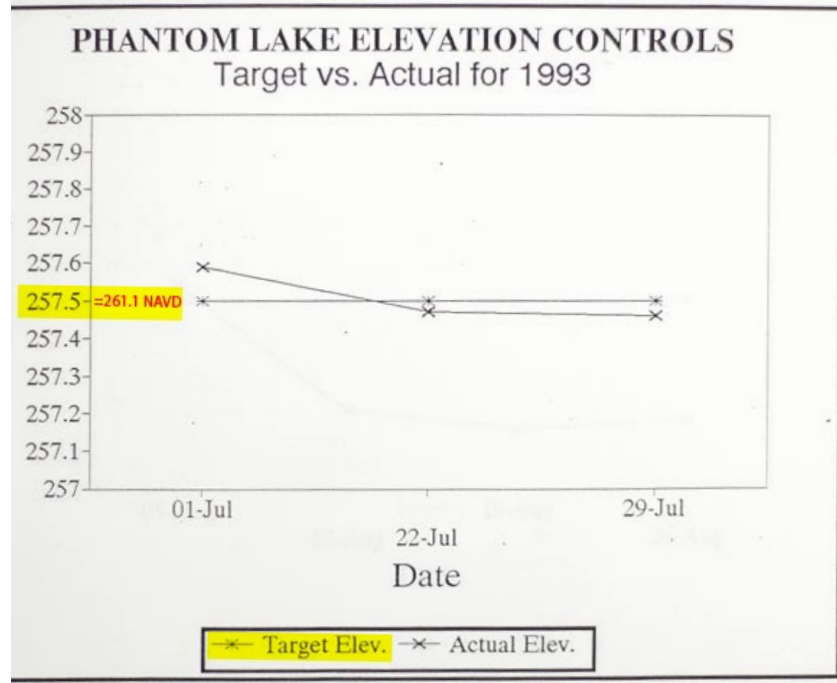
▼ Figure 32: Weir 3 Engineering Drawing



Overly aggressive weir gate settings

Amid complaints of flooding, Utilities has escalated weir “gate” setting from the 260.6 equivalent KCM recommended in 1991*, to 260.72 equivalent in 1993-1995 study, and now up to 261.1 in 2011 (See figure 11, pg 12), This has caused the lake to be at full capacity going into rainy season and is about equal to the typical winter flooding depth before the 2011 channel cleaning project when KCM revised the weir structure one year after installation, the engineers noted on their “Outlet Rating Curve” 7/9/91* “probably want to operate at 257.0 (260.6 NAVD)”. Utilities ignored this advice, starting with a higher adjustable gate setting that has been raised higher since. These amount to over 6 inches rise in gate setting from 1990 to 2011. PLHO asks that the recommended 260.6 be utilized. The placement of third hole up is very telling of future ambitions for lake detention, being way over lawns levels and natural lake banks.

▼ Figure 33: SSWU target lake level for July 1993, 261.1



▼ Figure 34: SSWU promises weir won't raise OHWM

Mr. Bill Rahr
15609 SE 18th St
Bellevue, WA

Dear Mr. Rahr:

I very much appreciate your efforts in documenting Phantom Lake flooding. Your efforts have given the City a running start in resolving Phantom Lake problems. This letter is an update on current Storm and Surface Water Utility Phantom Lake efforts.

The Utility will modify the outlet control structure before the next rainy season, ideally by mid-July. The intent is to insure the control structure does not affect the lake level except in the late spring and summer, as needed to benefit water quality without causing lakeshore flooding. We have asked KCM Inc., the original design firm, to modify the design. The Utility will then hire a contractor to make the necessary changes. Staff hope to convene a meeting of the Phantom Lake advisory group to discuss the modified design. N. Alison Tucker will be scheduling that meeting.

KCM previously evaluated the effects of the berm on the lake level and concluded it would not increase lake high water. We have asked KCM to check the predictive accuracy of their hydrologic model by running it with data from this past year. We will explore a high

Needed actions ignored

A SE 17th Place culvert is downstream from the lake several properties, along the very gradual outlet drainage channel leading to Weowna Park's waterfalls. It is a 24inch culvert through which all outflow must pass. This is a critical part of the entire basin system, as it is also the limiting factor for outflow during PEAK storm flows only. The aforementioned 1976 MDP forewarned that an increase in outflow was needed in excess of 20 CFS*, yet no measures were taken, while increased inflows have been permitted for over 30 years since. Likewise, along with KCM's Weir, Berm & Alumn treatment in 1990, they recommended a larger and deeper 4ft culvert to replace the under-road SE 17th Place pinch-point bottleneck. **(See Figure 5, pg 6: Proposed Regrade & Culvert Expansion)**

At first glance this seems a major oversight, until one recognizes the difficulties in expanding the SE 17th Place outlet culvert. Expanding this passage would increase flow volume along those upper channel residents' properties past the weir, which would face increased erosion at footings for foundations and bridges quite close to this channel. Then past 168th, Weowna Park already has erosion problems surrounding the Weowna Restoration Project, which used gunnite to try and eliminate erosion. Finally, once past Weowna and Lake Sammamish Parkway, another Lake Sammamish resident's access road, a small bridge, and foundation would likely face increased erosion threatening those structures.

There is no justification for City to simply ignore the downstream limitations and consequences. It is not reasonable to expect homeowners at that SE 17th place crossing to finance a study project, and assume liability for an entire channel increase and its downstream impacts. Is a Lake Management District for entire basin feasible, when many do not suffer from the problem, even though they contribute to the problem? We have witnessed the NW berm redirected peak storm-flows from the large Kelsey Creek Basin and its problems, is this sub-problem associated with the entire City stormwater system? So it seems in everyone's best interest to keep channel and culvert free-flowing for now and limit inflow increases, be they owners of Business Park properties, Utilities staff, shoreline residents, channel residents, or downstream Weowna Park Management and residents.

UTILITIES' RESPONSES, STANCES, AND OPERATIONAL PRACTICES

SSWU resistance

As the president of PLHO, I have undertaken the task of resolving short-term issues while looking for long-term relief, such as making sure that the outlet channel & culverts are operating at capacity in spite of the inadequacy of the system. However there have been instances where some SSWU staff resist and hinder cooperative efforts.

A tour of the entire Phantom Outlet Channel from Weir to Weowna Park was made with SSWU staff on 9/10/10. Here I discovered the downstream culvert at SE 17th Place was 1/3 filled with sediment, seriously reducing flow capacity. The culvert's sedimentation condition had not been visible from the road access, and so was unknown to me until this channel walk-through. At the conclusion, I asked staff member Phyllis Varner if she would go talk to the residents owning the "private property" at the congested road culvert about the need for cleaning it and about the illegal vegetable gardens encroaching down sides of channel right at it. She responded, "I have been instructed to be in an advisory role". Therefore I, a stranger and mere resident living a 1/4 mile away with no authority, was left with an important responsibility affecting the entire Phantom Lake drainage basin. I introduced myself and spoke with all 3 affected property owners soon after.

While getting various estimates for culvert vactor truck cleaning, I spoke with either engineers or production guys from four different City approved Vactor truck companies whom all agreed that a City clear and grade permit is not usually required in this situation, however SSWU had required such \$400 permit, at a 25% increase to total project cost (truck & dump ests \$1600).

However, during a meeting between PLHO, SSWU staff, and City Manager Steve Sarkozy where we brought this to his attention, he directed SSWU to look into an outlet channel and culvert

cleaning to aid PLHO residents. This was accomplished through a State Conservation Grant in summer 2011 and has helped greatly.

▼ **Figure 35: Congested Weir**



Weir operation protocol

Although in recent years the weir-gate boards have been placed in up to 261.1, such as shown in 4/3/11 photo with an additional .6ft overflow raising lake level to a high 260.7 (**See Figure 11 pg 12: Middle Weir Setting with Overflow**), yet a recently offered document stated Utilities' policy is "... **260.78**" (see Attachment-Weir Op). When previously asked what target lake level was, Utilities replied there was none. However documents found at Puget Sound Archives within the Steen lawsuit had documents showing targeted vs. actual lake levels indicating a targeted surface level of 261.1 equivalent (**Figure 33, pg 24: SSWU target lake level for July 1993, 261.1**), which brings into question why three weir boards (261.1 plus any overflow) would be placed in now, even for summer. Why does Utilities continue to strive for higher weir settings amid complaints of flooding, if not for a desired goal? And why are they opposed to trying lower settings, if not for NPDES Stormwater permit reasons?

Pond-A operation

SSWU claims Pond A is now a "water treatment pond" with three smaller "cells". However it was designed for deeper detention storage and buffering of Phantom Lake under the 1980 rezone agreement. It is rumored that there were operational problems with it at larger capacities. A "Hydrologic Study of Pond A and Hydraulic Analysis of Outflow Channel to Phantom Lake" done for SSWU by Collins Engineers in 1990 stated on page 27 "***The hydrologic analysis of Pond A determined that the existing facility did not meet the 1987 detention standards.***" Pond A was well overdue for a cleaning when PLHO called for such in 2010, that was completed in 2011.

Pond-B operation

SSWU claims detention Pond B (Boeing owned) is fine, however I am told it can't operate at capacity due to lack of capacity in SE 24th St stormdrain infrastructure and therefore a tendency to surcharge main lines. (per: Elfi Rahr's testimony)

Misleading and questionable stances by SSWU

1. Culvert is not the limiting factor: Utilities claims an old 24-inch diameter culvert at SE 17th Place is the limiting factor for outlet flow, however this is untrue for two reasons:

A. The mere presence of a weir with narrower width than that of channel flow is a restriction even at low flow, and therefore backs up the lake to some extent at any level, more so at higher flow elevations.

B. The downstream culvert's interior height is not exceeded until weir flow reaches about 261.68 NAVD (per: outlet channel survey 2011), which is a depth in excess of 18 inches, or 12 inches over lake brim. Therefore, culvert is only a limiting factor at very high peak storm events or when lake is already high (such as too high going into fall rainy season due to high weir gate).

2. Extent of damage: Utilities claims there are no damages to primary structure, and imply little actual damage, I have found otherwise. There have been reports of damage to primary structures, however residents are hesitant to notify City for fear of both permitting and flood insurance implications. What is the reduction in value of property for both resale and rebuilding when wetland setbacks of 110' are applied, based on lake level increases upwards of a foot on low lying shores over the past two decades?

▼ **Figure 36: Advancing artificial wetlands effecting CAO**



3. No LMD required: Council was recently led to believe the outlet cleaning agreement with PLHO was conditional upon agreement to forming an LMD, however PLHO leadership merely said we would be willing to discuss and hear Utilities' reasoning behind possible benefits of forming a LMD. Regardless, we have heard no stated benefits other than being "a financial instrument" for future outlet cleanings of our own. We both disagree with such responsibility being reasonable (even if legally standing), and not withstanding, don't believe such a taxing instrument would be necessary to achieve such.

4. Higher water levels INSIDE the Berm (not outside): SSWU claims the 1990 NW Berm-dam, which was installed to block incoming high-phosphorous laden surface and sub-surface flows, always has higher water levels outside, than inside (see Figure X). However there is a known of but unclear tipping-point (see Figure X), and as you can see in this photo, this is not always the case (see Figure X). **In addition, field observation by the author following a peak storm event 12/12/2010 was in fact that surface flow over the now partially sunken berm-dam was in the traditional NW direction, leading through the greenbelt and towards Larsen Lake. The Phnatom Lake was overflowing and in excess of 261.5 at that time.**

▼ **Figures BELLOW VVVVVVV:**

5. Nothing being done about landfill:

SSWU Director Damon Diessner signed the paperwork for KCM Projects that asked, “What other water pollution control projects have occurred/are planned in the watershed...” which was answered as “none”, despite close proximity of landfill.

Discrepancies in lake gauge elevation supplied by Phyllis Varhner

When I asked for the NAVD elevation of 2.00 on the Staff Gage at Robinsglen Park (for observed lake level calibration and comparison purposes), I was told 261.4 NAVD in an email 5/17/10, however after I had pointed out discrepancies with weir elevations, it was later revised to 261.0 NAVD in an email 5/13/11... Such a 5-inch discrepancy is over 40% of the normal fluctuation range. (see [Appendix–Varhner emails](#))

Channel survey mystery

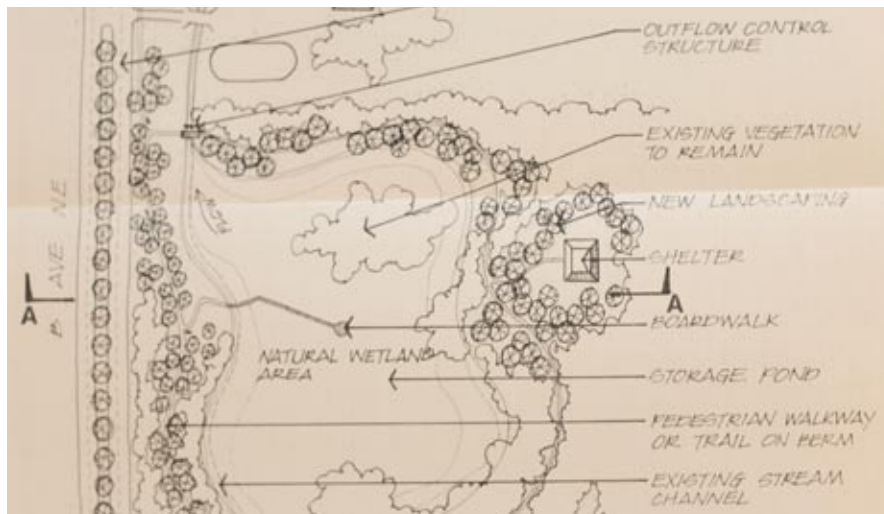
The surveyor for 2011 King County Conservation Grant cleaning of outlet channel initially reported to a resident on SE 17th Place that weir threshold was 260.8, then he changed his figure to 260.18, claiming in a subsequent thread of emails with author that due to a surveying error (a reoccurring theme), he measured on top of a sediment mound within the small weir threshold... However in all the time I’ve been studying the weir, never have mounds appeared within this focused flow point and any sediment has been level, even distribution. This, combined with irreconcilable elevations, may indicate the need for an independent verification of survey at weir, culvert, and Robinsglen staff gauge to verify levels.

Legal stances

1. Denial

Former Utilities Director Denny Vidmar claimed in a meeting that the 1976 DMP by KCM was never implemented, however Figure 4-1 showed a “Typical Pond” with outlet weir, paths, viewing dock platform, and trees and vegetation within detention area, all strikingly identical to what appears now on both Phantom and Larsen Lakes.

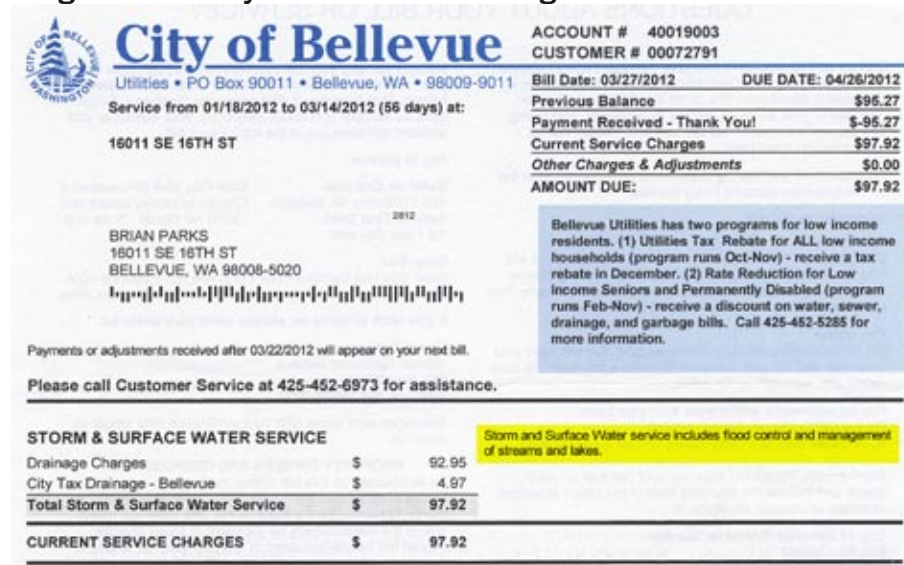
▼ **Figure 37: 1976 MDP Typical detention pond**



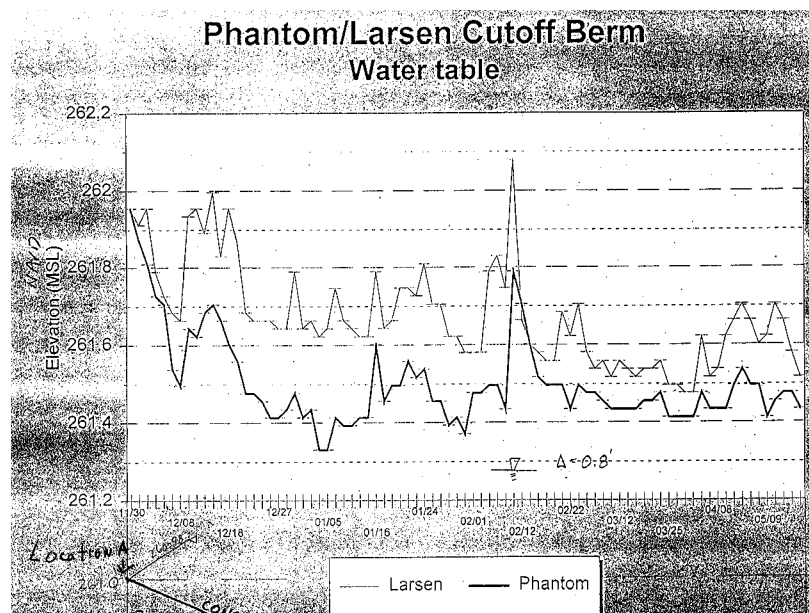
2. Private property stance

Utilities claims they cannot spend money on a few, isolated property owners. However if that was true, you’d never be allowed to concentrate two police cars in one location, and all services would have to be doled uniformly, yet they are not. Before the Bellevue Planning Commission on October 14, 2009 Denny Vidmar said, “In some residential and short plat developments, the facilities they build to mitigate storm and surface water runoff may become public facilities and therefore the responsibility of the city to operate and maintain”. So I ask how can Phantom Lake’s detention use not be considered the City’s responsibility to maintain?! It is in City interest to look past the outlet weir to the downstream limitations of culverts and channel into Lake Sammamish. We are billed for flood protection on our City utility bills, which state, “Storm and Surface Water services include flood control and management of streams and lakes.” and yet Utilities refuses to do so.

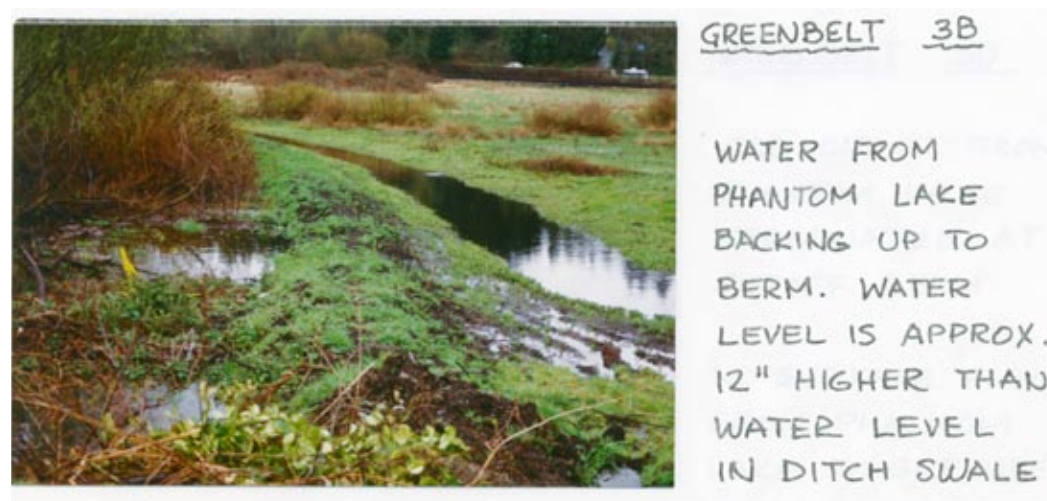
▼ Figure 38: Utility bill storm water charges



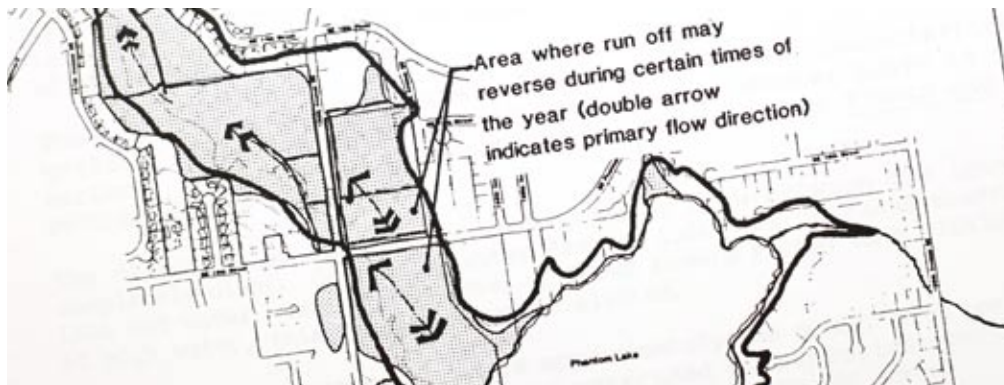
▼ Figure 39: supposed water levels to North and South of berm



▼ Figure 40: example of water actually higher within berm



▼ **Figure 41: green belt surface flow tipping-point**



3. Private Lake Stance

We're referred to as a "private" lake. In reality, just like Lake Washington, anyone is able to come use the parks & lake at any time (just not all at once, per 1966 BOTTON case when overuse infringed on riparian [littoral] rights of others). The label of "private" applies to the ownership of the lakebed, distinct from Lk Washington where beds beyond shorelines of the second class, or the inner harbor line, are held in ownership by the state. No advantages of being a "private lake" have yet been identified. Since the City owns over 20% of shoreline and well over 25% of the abutting upland acreage, this seems a technicality.

Also questionable is why do PLHO residents have no say in weir settings, if this is a private lake.

4. Lake Levels Stance

SSWU has said in many resident meetings and before Commissions, "Lake levels have not changed substantially", "Floodplain is 265 NAVD and not being reached", and "no primary structures have been reported damaged". They show lake data from last 10 years on a compressed scale to illustrate how consistent lake is. However they set up a strawman, as changes since 1990 KCM Project installations are the issue. To this they must claim no data, as they have turned nearly-none over in response to Public Records request for all lake level data prior to 1990 KCM Projects. This only produced data for a few specific days and couple months of one partial year (a drought year 1985). One must ask, "how can you claim lake levels have not risen when you cannot bring forward any data, as opposed to residents who know lake intimately and what has taken place since 1990 weir & berm?"

Policy stances

1. SSWU stance on Resolution #5968

15 years ago amidst severe algae problems following the installation and use of the 1990 aerator, Council once stated, "any new studies of projects would be contingent on formation of a Lake management district", in the midst of seeking to create one. A committee was formed for that purpose. The last section contemplated that the Lake Management District might not form by disbanding the Committee if the District did not form. Was that a permanent policy of the City Council, or an idea that fell-through? This 1995 Resolution #5968 which Utilities claims prohibits any further study or projects on Phantom Lake without a LMD is from another time and circumstances and so must be "clarified". This would allow lake assessment going forward.

2. LMD stance

Utilities also claims "residents request a higher level of service, so must form an LMD to provide us more funding". This makes absolutely no sense to us. Shoreline residents' utility bills indicate having already paid and continue to pay as they state, "Storm and Surface Water service includes flood control and management of streams and lakes" without any specifying "which lakes". Are we to understand that although our properties all drain to lake, that we are paying for other public sections, but must pay again for managing our drainage system? PLHO has not approached Utilities with a laundry list of requests.

Phantom residents have simply provided SMP appropriate suggestions and only ask for the upholding of the 1980 Concomitant Agreement for Rezone of Airfield, which was to mitigate adverse impacts.

Why would we take on responsibility for King County's decommissioned Eastgate Landfill's downstream consequences, being a huge environmental liability with possible EPA violations? We believe this contaminated site is leaking waste and leachate into Pond-A, which empties directly into Phantom lake, appearing to accumulate heavy metals and importing this point source pollution straight into lake via a 6ft culvert pipe, accounting for over 50% of the lake's current water budget (per: KCM reports).

Utilities have repeatedly proposed a LMD for nearly 2 decades. When asked, "what benefits might shoreline residents expect", no solutions applicable to our concerns have been proposed that we are aware of. Is Utilities' LMD stance actually to prevent looking into environmental impacts and liabilities?

Utilities has threatened raising our drainage fees

Current SSWU Director Nav Ota stated before the Planning Commission on 3/28/12 that since Phantom properties drain into lake, we here pay lowered rates, and "should probably be paying higher rates".

Environmental Services Commission (ESC)

Numerous appearances by PLHO before the ESC produced nothing and Brad Helland is a DOE compliance officer, perhaps over Pond A. His failure to act and appearance before the PC on 3/28/12 in solidarity with Utilities indicate the ESC is of no remedy for PLHO. See Appendix-Brad's minutes at PC

Planning department SMP positions

1. Acquiring devalued land

SMP Restoration Plan Proposal PL-3 states "Acquire lake front property as it becomes available & set-up conservation easement along shoreline." However 95% of Phantom shoreline residents signed our PLHO petition, submitted to City April 2011, asking for both elimination of PL-2 as well as proposing an alternative "PL-7" which recommended an outlet channel & culvert cleaning (see Figure X). There is concern that property values have been devalued by flooding and damages proceeding any City purchase of upcoming properties.

▼ Figure 42: 93% signed PLHO Petition For Outlet Cleaning & Against SMP PL2 & PL3,

PHANTOM LAKE Shoreline Residents PETITION IN OPPOSITION TO SHORELINE MASTER RESTORATION PLAN AND IN FAVOR OF OUR PL-7 "OUTLET CHANNEL RESTORATION"

We the undersigned residents of Phantom Lake do hereby oppose SMP Final Draft's Shoreline Restoration Plan items PL-2 & PL-3 and propose a new PL-7 to restore Phantom Outlet Channel as far as Weowna Park Boundary:

PL-2 States: "Phantom Lake inlet channel - create > 100 feet of stream meanders, install LWD, replant with native veg (>4,000 s.f.), reduce shoreline hardening and improve overall habitat complexity."

- Inlet ditch from Pond-A to Phantom Lake is not a natural stream;
- Inlet channel, like outlet, is on private property which Utilities stated they were not willing to take on maintenance responsibility for;
- Polluted inlet waters inappropriate for encouraging wildlife habitat; and
- Disturbing existing hardening and replacing with soft stabilization encourages sedimentation.

PL-3 States: "Acquire lake front property as it becomes available & set-up conservation easement along shoreline."

- Phantom lake is a "private lake" and City already owns over 25% abutting acreage so residents oppose increased City ownership and wish to maintain residential nature of Phantom Lake shore lands;

Long-time resident and a former PLHO President (then named Phantom Lake Community Club) Rolland Hays told me that in the early 1970's there was a City Open House meeting at the Lake Hills Community Center where it was proposed for an upcoming Park Levy to have an item granting "first right of refusal" to buy any properties that came up for sale around Phantom Lake. He said his family and others wrote a petition and gathered 500 signatures in opposition of that item, so out of fear of the General Obligations Bond Levy failing it was taken off the final measure. During this period, Lee Springate was Director of Parks and proposed the "City in a park" focus. A public Records Request was made regarding levy drafts, but City was unable to produce any draft versions. A trip to the Library on 110th located a 1973 park plan showing a King County Trail Route 27 wrapping around Phantom Lakes SW corner, where the area from Phantom Community pool-to-Park access from 156th is. This also was transferred to UW library at same time.

SMP docks & bulkheads & large woody debris

Also, we are being told that neither bulkheads nor docks will be grandfathered in under staffs SMP Draft. On the contrary, it specifies new docks and dock replacement over 50% can only be a 4ft wide walkway leading to no platform. This restriction as well as flow-through grating seem unnecessary, as we have no salmon or endangered species in Phantom. Shade is actually beneficial to algae reduction by lowering lake temperatures for phosphorous control, although adding leaves and woody debris is not. (see [Appendix-USGS Whitepaper](#)). Flooding beyond natural lake banks (261.0+ NAVD 88) in winter can cause nutrient loading, leading to raised phosphorous levels. existing bulkheads were certainly built for a reason, perhaps in response to flooding and increased erosion.

CONCLUSIONS

Phantom Lake is in essence, a puddle, without natural inlets or outlets, and being historically surface-flow and groundwater-fed. Old maps show this, and thus is not an environmentally sound place to send landfill runoff or to dump polluted street storm water into. The Phantom/Weowna outlet channel to Sammamish isn't a natural outlet either. It's a minor man-made feature, more like a small leak in the puddle. Phantom Lake, as it is not classified as "a Receiving Water", To put polluted point source water into it may likely even violate Federal laws.

Both operational and policy changes regarding Phantom Lake and stormwater management are needed. Based on the detention intentions and weir height settings evidence, it would appear that the Phantom Lake resident's flooding concerns have been both legitimate, and totally ignored by SSWU for decades. City leadership is encouraged to now make changes to protect and restore Phantom Lake conditions from artificial flooding and contamination from stormwater and landfill leachate. City leadership is also encouraged to restore the rights of Phantom Lake residents to reasonable use of their property. City leadership may want to further investigate other policies and operations of SSWU.

Regardless of motivation, the aforementioned policy and actions since mid-70's have contributed to the current state of Phantom Lake. We must understand the history in order to understand why we are where we are today and take corrective actions to remedy the flooding and contamination of Phantom Lake that has been allowed to occur. SSWU needs to admit to prior errors in judgment and take responsibility to rectify the problems that are the result of their actions. Examination of SMP and CAO implications, such as landward advancement Ordinary high Water Mark (OHWM) and wetlands have brought these issues into light. Now, amidst the SMP, would seem the time for Utilities to acknowledge and correct the past. **The days of using Phantom Lake as a Stormwater Detention facility must come to an end.**

THE NEED FOR LOWER, SHORTER WEIR OPERATION

Residents see recreational and other benefits of keeping summer lake levels slightly elevated, even if the KCM reasoning for phosphorous control may be compromised. The mere presence of the weir and its threshold of 260.18 keep summer levels from dropping down to pre-1990 channel depth where still-

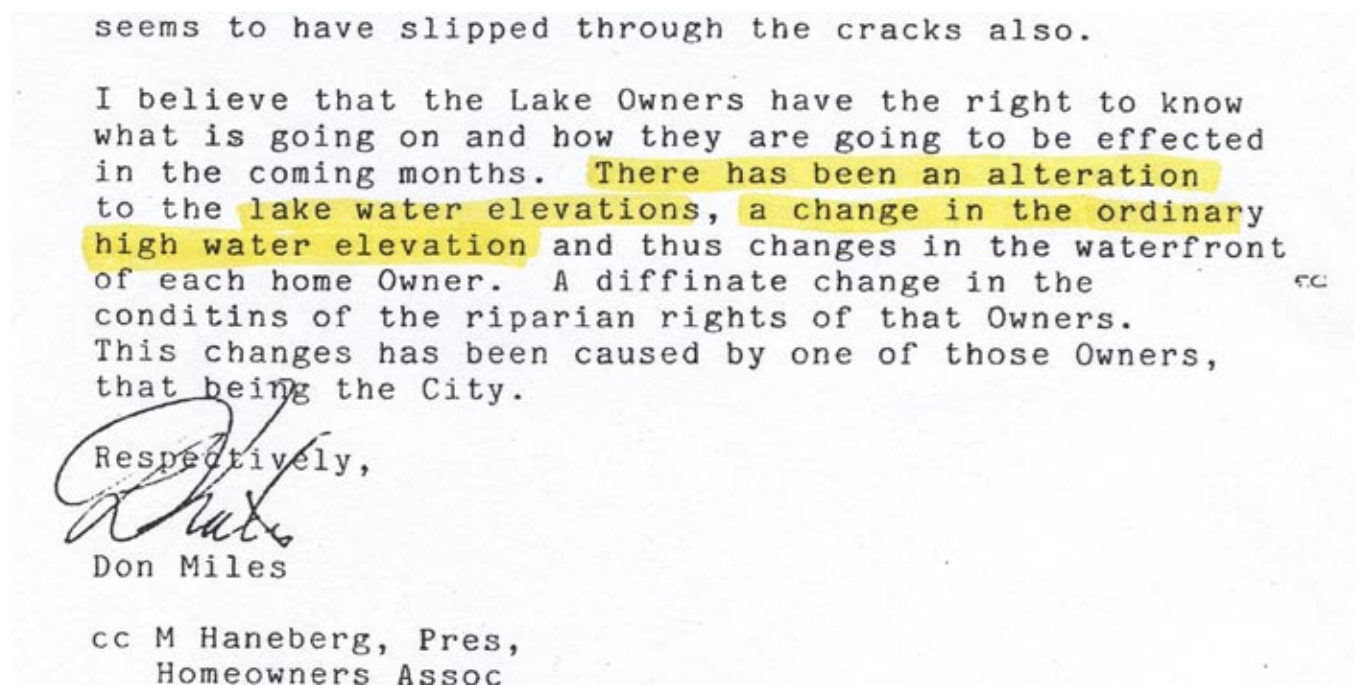
buried clay-tile culvert pipes lay. Therefore, and since minimal additional boards can be utilized without exceeding lake brim and flooding properties, minor altering of lake levels seems necessary.

PLHO supports operating the weir at 260.6 as KCM recommended in revision, for such target levels, so as to maintain historic typical lake levels, while permitting some overflow. This should reduce “summer drop”, yet keeping within lake brim with overflows, at still a slightly sustained pre-1990 “normal high” level*. This would require slight modification of drilling four 1/2” holes in weir’s gate-plates for the two hold-down pins at 5 inches height/water depth. Or perhaps a 4x6 beam that is permitted to float, so as to “freeboard” slightly when weir flow depth exceeds about .4ft, permitting sediment to pass under it and downstream. This may have added benefit of sedimentation reduction while maintaining same retention amounts. Currently lowest holes for gate settings are at 8 inches height/water depth. Weir’s next holes are at 11.5 inches and 15 inches (3.5 inch spacing).

THE NEED FOR BOTH AN ADMINISTRATIVE OHWM OF 260.7 NAVD and 260.7 AS LIMITING MAXIMUM LEVEL

Much research was done by author to seek out lake level data prior to the 1990 installation of KCM Projects of Weir & Berm. SSWU has claimed it has no reference point as to what OHWM was prior to 1990. Their lake level data also stops abruptly at weir implementation, despite Don Miles having recorded them faithfully for city. Don Miles also complained of the elevated OHWM in a letter to the Director of SSWU June 23rd, 1991. (see Figure X)

▼ Figure 43: Miles OHWM rise complaint in 1991



However other sources beside City were found, upon which we concluded 260.7 as recommended maximum target level and for Admin OHWM:

1. Planned rise in lake levels for storm water detention

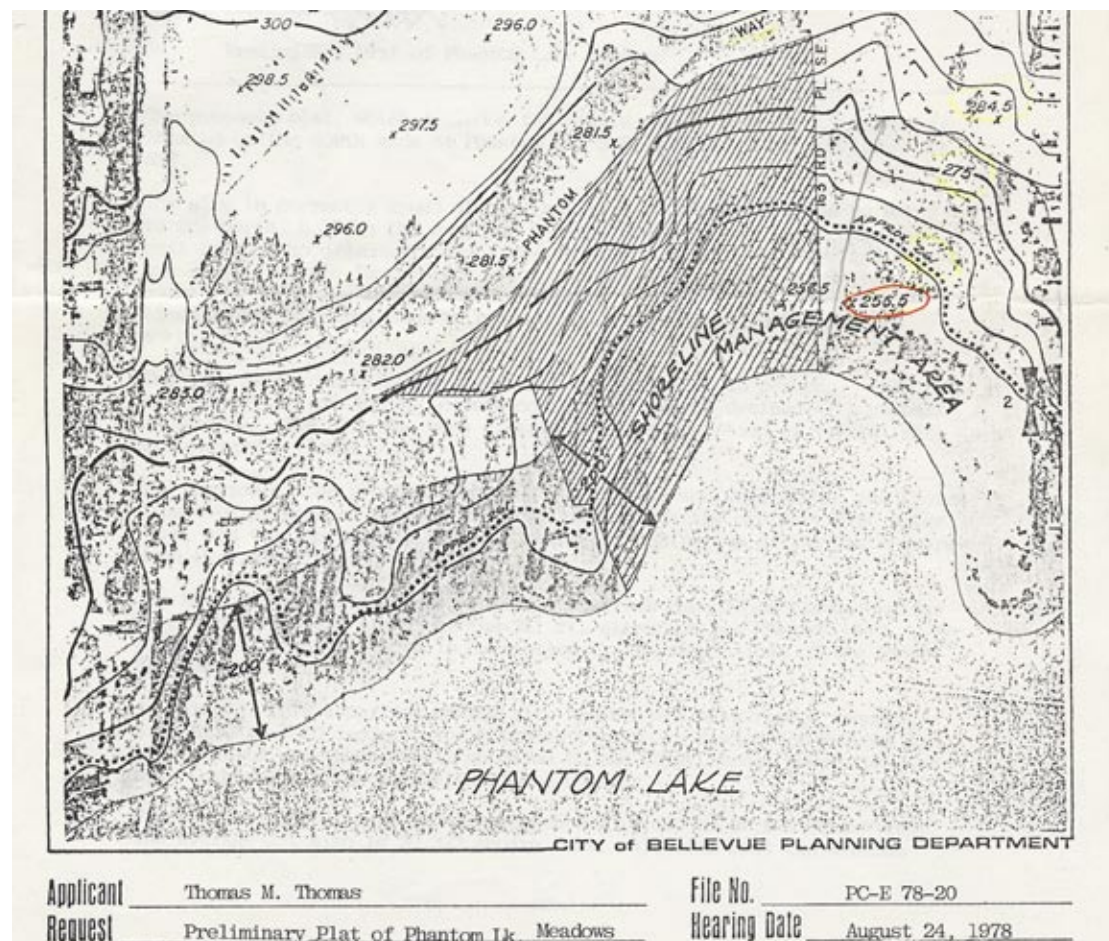
We have clearly established that SSWU planned to, and took actions to raise lake level for stormwater detention purposes, therefore it is logical to assume the proper historic OHWM is bellow current OHWM estimation of 262, based on peaks of city data points.

2. On a 1978 Preliminary Plat for Phantom Lake Meadows Development, a 260.1 equivalent is shown above OHWM and within the 200' Shoreline Management Area (SMP jurisdictional “Shoreline Overlay District” or SOD). (see Figure 44, pg 34)

3. CH2M Hill Future 100yr PEAK prediction (in 1993) was under 261.0 NAVD equivalent (257.37 NGVD) (see Figure 45)

4. 260.6 was KCM's revised weir operational recommendation for an elevated high lake level, plus any overflow. (see Figure 46)

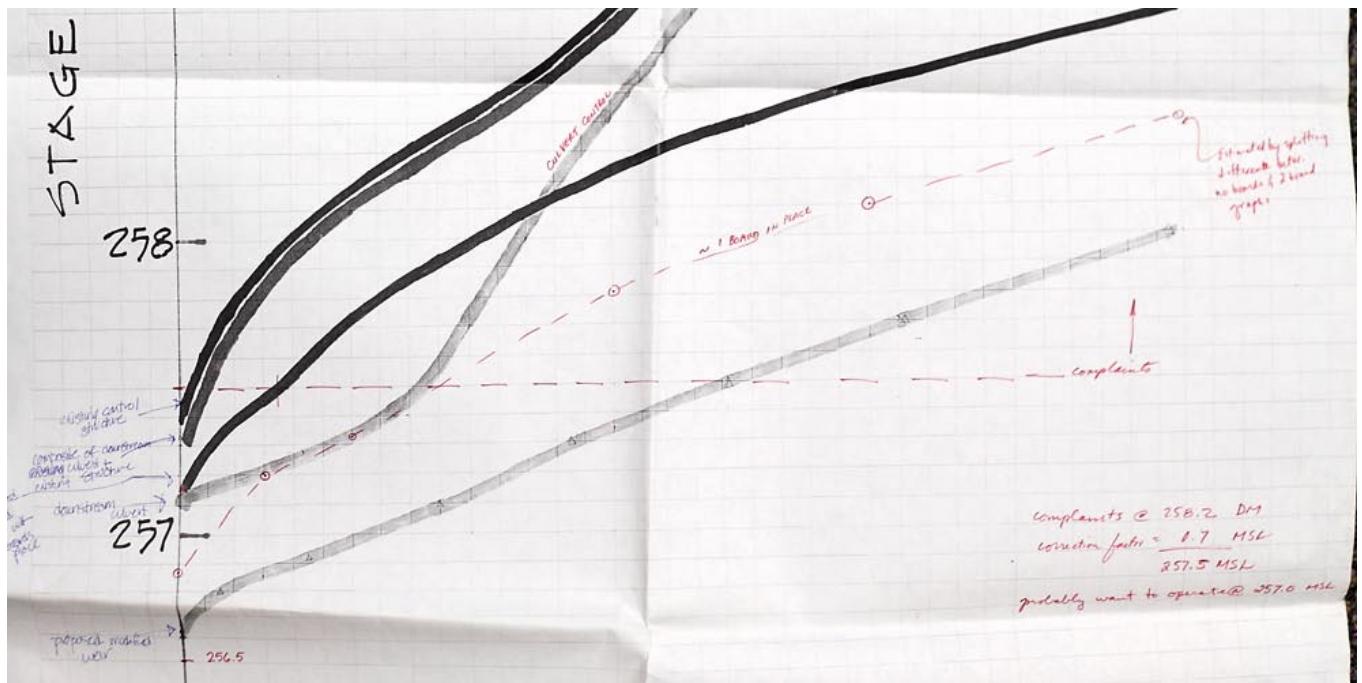
▼ Figure 44:



▼ Figure 45: CH2M Hill 100 year flood estimation of 261.0

Table 17 Phantom Lake Peak Stage-Storage				
	Design Storm Event	2-year, 24-hour	10-year, 24-hour	100-year, 24-hour
Existing Conditions	Stage (elev)	257.17	257.24	257.35
	Storage (ac-ft)	11	15	23
Future Conditions with additional detention	Stage (elev)	257.20	257.31	257.39
	Storage (ac-ft)	13	20	25
Future Conditions without additional detention	Stage	257.18	257.30	257.37
	Storage	12	19	24

▼ Figure 47:



5. Observation of natural shoreline reveals etching, an indicator of OHWM, at the brim of 260.7-261.0 when corresponded to staff gauges at weir and Robinsglen Park, even with forced lake elevations.

▼ Figure 48: Increased shoreline etching killing trees



6. A Phantom weir cfs worksheet within City archives shows cfs estimations for elevations from 260.1–261.6 NAVD equivalent and asks “Based on observed Q in channel, it appears the lake level would be at about 260.85 (equivalent) under “base flow” conditions and this geometry. What is current lake level? Would about ~260.85 (equivalent) be OK with people?” This worksheet had calculated 260.85 (equivalent) to be 7.6 Q cfs. This worksheet implies 260.85 would be an elevated, but perhaps acceptable level for residents. This once again illustrates the disconnection between SSWU and the actual natural topography and in-situ conditions, as they exist on Phantom Lake.

7. An independent investigation by City to research the permits issued on Phantom Lake prior to 1990 for OHWM is suggested. Phantom Meadows Development in 1978 and the Haneberg residence in 1986 are both known being built in-between 1972 SMA and 1990 weir.

LAKE LEVELS PRIOR TO 1990 BERM-DAM & WEIR

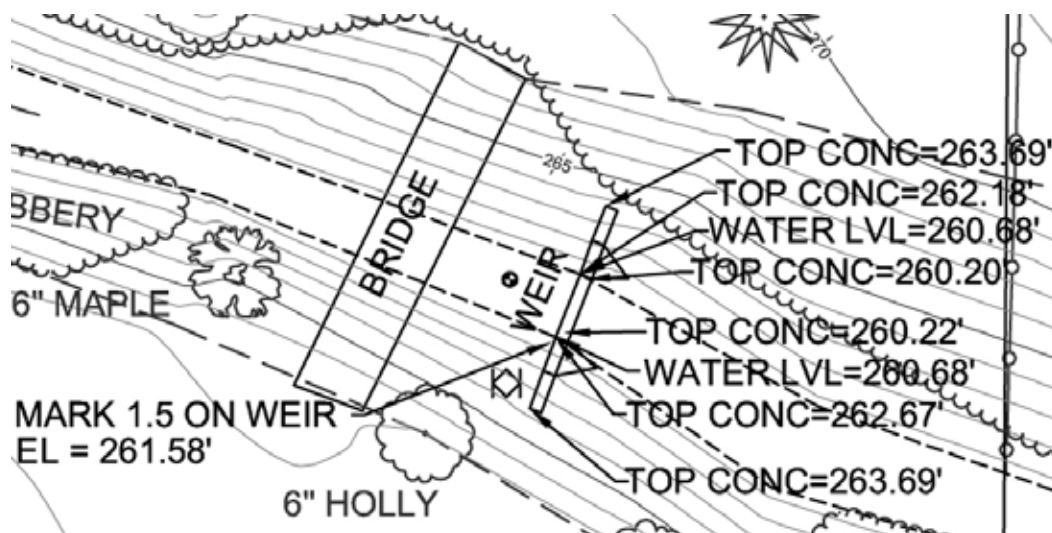
260.7 NAVD equivalent was reported as the Pre-Phantom Restoration “Norm High” (now OHWM) according to a 1991 resident flooding report to the City, citing Don Miles’ lake level recordings*. Observation of the lake’s geographical topography, lawns, vegetation, and natural shorelines indicate the lake is full to the brim when the Robinsglen Park Staff Gauge reads 1.7/Weir Gauge 0.7 (**see Figure X**). This full capacity is 260.7 NAVD according to the most recent Outlet cleaning survey that reported weir threshold as 260.18 plus .5 feet water depth (= 6 inches flow at weir) (**see Figure X**). However, it is noteworthy that elevations given by Utilities have varied and been irreconcilably inconsistent. Also noteworthy is that going into both November 2009-20110 as well as November 2010-2011, lake was at full capacity due to high weir settings even before the seasonal heavy rains came, immediately pushing levels over the top and flooding.

Average lake level from 2000–2010 was 261.1 as previously targeted (**see Figure TARGET**) ; The 2008-2010 average was 261.4 NAVD (**see LEVELS2**), a foot over the pre-1990 KCM projects mean average lake level of 260.4 equivalent prior to 1990 projects of berm and weir installation (**see Figure WITH RED NAVD**). This 260.4 had also been reported by KCM to be level at which “surface flows went towards Larsen Lake”. (per: KCM Reports)

▼ **Figure 49: Full Lake at 260.7** (taken within the same hour as Figure 2: Water Depth at Weir, pg 3)



▼ **Figure 50: 2011 Survey Sheet**



Once again, RCW 90.03.030 states, ***"any person may convey any water which he or she may have a right to use along any of the natural streams or lakes of the state, but not so as to raise the water thereof above ordinary highwater mark, without making just compensation to persons injured thereby..."***.

I believe the above shows the need for the following:

- 1) Restoring the traditional 260.4 mean average lake level
- 2) Lowering weir settings of only one .3' weir timber
- 3) The need for an administrative OHWM of 260.7 NAVD to compensate for artificially elevated levels causing both increased regulatory starting point and for land not previously under SMA jurisdiction to now be brought within it.
- 4) The need to regulate properties appropriately under the SMP, not CAO.

The need to uphold 1989 Concomitant Agreement

We feel this agreement with CC&F has not been upheld after decades of complaints to City and lawsuits about water quality & quantity. The State of Washington has an anti-degradation policy and Water Pollution Control Act, ref. WAC 173-201-A-070 90.48 RCW. This can be used to justify additional funding to correct water quality issues.

THE NEED FOR POND-A: be brought up from 1980 to current code

Due to landfill location within Phantom Lake Drainage Basin, Eastgate Land Use development of area and Airfield Park development require Pond-A expansion & re-drain and its volumes into sanitary sewers. Pond A should be brought up to current standards, Phantom inflow control (quantity and quality) should be a requirement to develop the park as doing so would make the most efficient use of funds. Independent (separate) planning and execution does not make sense from either a requirements or funding point of view. Baseline data, flow rates and quality, need to be acquired prior to planning per items 5 and 6 above. Funding could and should be tied to and be part of the Park development and current and future pond maintenance activities.

THE NEED FOR POND-B:

Infrastructure problems need remedy so it can be used as designed. The 1976 MDP recognized undersized stormwater piping along SE 24th St as an issue. I've been told that this is a problem preventing full usage of Pond-B to capacity, as it has surcharged before, flooding SE 24th St.

▼ **Figure 51: Pond B dry in winter**



THE NEED FOR Wetlands exemptions under the SMP, AND EXEMPTION FROM CAO

Regulation of properties should appropriately be addressed under the SMP, not under CAO, since they were coerced into wetland status due to Phantom Lake's long-running usage as an informal, but sizable detention site. As an exemption under the Shoreline Management Act, 90.58.030(2)(h), wetlands do not include artificially created wetlands such as detention facilities. See definition at 20.25H.095. So, even where the Lake's shorelines exhibit wetland characteristics—the issue is whether the wetlands are regulated wetlands under state law. If Lake edge wetlands were created artificially due to the weir design & operation as well as unmanaged flows, Planning Commission can declare that the edge are not critical areas and not regulated as wetlands. That position has the full backing of the SMA.

THE NEED FOR A “NO BEAVER POLICY” ON PHANTOM

Unfortunately due to limited outflow and impracticality of continuously clearing beaver dams, beavers are not conducive to maintaining necessary basin outflow, and require relocation. They are currently making their home in the wetlands area north of Phantom Lake and continually come to the outlet to make a dam. Beavers may require future removal as they reappear on lake.

▼ **Figure 52: Beaver damage**



▼ **Figure 53: beaver dam in only outlet channel**



THE NEED TO REVISE SMP DOCK REGULATIONS

Current SMP proposed dock standards for Phantom is a 4ft for floating walkway alone. However, 6ft wide walkways with 8x10 platform are necessary for safety & stability of floating docks. Floating docks may be only available method, as there is no longer pile-driver access. Lake resident experience has shown that a 4ft floating dock is unstable and unsafe in even calm water conditions. Thus 400sq ft is therefore a more reasonable proposal.

THE NEED TO REMOVE SMP PL-3

Restoration item PL-2 States: ***“Phantom Lake inlet channel - create > 100 feet of stream meanders, install LWD, replant with native vegetation (>4,000 s.f.), reduce shoreline hardening and improve overall habitat complexity.”*** However:

- 1) This inlet channel, like outlet, is on private property, which Utilities stated they were not willing to take on maintenance responsibility for
- 2) Polluted inlet waters are inappropriate for encouraging wildlife habitat
- 3) Disturbing existing hardening and replacing with soft stabilization encourages sedimentation. (Local soils contain ‘glacial flour’ or fine clay particles. When this colloidal material enters into a lake through runoff it can remain in suspension for up to five years. This creates a multitude of problems in the system. You do not want to disturb soils unnecessarily.) And
- 4) The inlet ditch from Pond-A to Phantom Lake is not a natural stream;

20.25H.075 Designation of critical areas and buffers

A.–Definition of Stream.

An aquatic area where surface water produces a channel, not including a wholly artificial channel, unless the artificial channel is: 1. Used by salmonids; or 2. Used to convey a stream that occurred naturally before construction of the artificial channel.

When I emailed the City planner responsible for more details, he replied, “In short, there is no additional information to share.” (per: email from Kevin LeClair 1:51 PM 3/18/11)

THE NEED FOR CFS INFLOW & ZOOPLANKTON Monitoring

Monitoring of CFS inflow from Pond-A is needed to keep within limits and prevent additional inflows from the park and Eastgate development planned activities. Monitoring of Phytoplankton and food web also needed for restoration assessment.

THE NEED FOR UNUSED AERATOR REMOVAL

It is recommended that City remove the aerator in Phantom Lake, which has been determined to be the wrong design and has been out of operation for 15 years. It is a potential environmental, health and safety risk. City could perhaps repurpose maintenance funding to installation and monitoring of flow CFS meters, as this has been a yearly, non-productive expense.

THE NEED FOR CITY RESPONSIBILITY FOR OUTLET CHANNEL MAINTENANCE

SSWU need to recognize the functional role that Phantom Lake plays in the City’s stormwater management system, as part of their MS4 stormwater collection, conveyance and detentions system. Utilities’ reluctance to inspect private outlet led to extensive and disabling sedimentation in the SE 17th Place culvert on lake’s only outlet, prior to my discovery and calling for cleaning.

The City is encouraged to acquire permanent easements and/or rights of entry from the channel property owners to sustain access over the long term to the channel for maintenance. Phantom Lake residents are both interested and willing to assist the City in acquiring permanent easements over private property to allow maintenance (cleaning) of the outlet channel. The same could also apply to the inlet channels such as the one receiving water from the Eastgate Business Park.

The need for NPDES review

Using Phantom Lake as storm water detention does not likely comply with Federal issues such as 1973 Clean Water Act. Phantom Lake is not State specified as “a receiving water”. A geologist practicing liminology informed me there likely for a violation for doing so without a State injection permit, if putting point source into a wetland that is not “a receiving water”.

THE NEED FOR SSWU TRANSPARENCY POLICY NEEDED

It is apparent that a policy of being truthful, transparent, and with full disclosure to residents is needed within the Utilities Department. A municipality’s goals must not infringe upon the land and riparian rights of residents. We now know that both weir and berm’s benefits to lake are very suspect, as these had been recommended in two reports* over a decade before KCM’s “epiphany” that higher lake might help algae/phosphorous*.

The 1990 Weir/Berm appear to actually be about

- 1) slowing Weowna erosion*,
- 2) landfill leachate detention within Phantom for settling,
- 3) and Berm to relieve 156th/148th flooding when peak lakes level flow to the NW. These were all at the expense of Phantom residents’ properties and lake’s environmental health. Residents were told actions were only to prevent lake from dropping in summer months*. It would now appear that there were numerous municipal MS4 benefits to 1990 actions that were not addressed directly with residents nor was compensation made, nor lake level increases comprehensively approved by residents. Instead, the opposite has been true with residents submitting constant flooding complaints and being answered with half-truths and misleading excuses*.

RCW 90.03.030 ***“any person may convey any water which he or she may have a right to use along any of the natural streams or lakes of the state, but not so as to raise the water thereof above ordinary highwater mark, without making just compensation to persons injured thereby...”***

▼ Figure 54: RCW

RCW 90.03.030

Right to convey water along lake or stream -- Conveyance to intake structure in neighboring state.

Any person **may convey any water** which he or she may have a right to use along any of the natural streams or lakes of this state, **but not so as to raise the water thereof above ordinary highwater mark**, without making just compensation to persons injured thereby; but due allowance shall be made for evaporation and seepage, the amount of such seepage to be

The City must work with residents in order to continue to preserve this beautiful lake called Phantom.



Appendix following:

Appendix:

Re: Bellevue Master Drainage Plan

[Hide Details](#)

FROM: Brian Parks

Monday, November 15, 2010 12:17 PM

TO: Sharon Wilson

Yes Sharon, Stream document was one of the documents I looked through and made some copies of early in the year with Master Drainage Plan. I was hoping to copy a page I missed. City is taking an unusually long time fulfilling my requests (one over 100 days!). -Brian

From: Sharon Wilson <swilson@kcls.org>

To: Brian Parks <digital.mailbox123@yahoo.com>

Sent: Mon, November 15, 2010 10:50:12 AM

Subject: RE: Bellevue Master Drainage Plan

Hello, Brian.

I don't find any documents from the Bellevue Stream Advisory Committee in the documents I removed from our collection. And it's not on the shelves here at Bellevue, either.

I'm doing some research to see if a copy might still exist somewhere. So far, no luck. Have you contacted the city on this one yet? That might be the best possibility. I'll let you know if I find any other leads.

Thanks,
Sharon

From: Brian Parks [<mailto:digital.mailbox123@yahoo.com>]

Sent: Thursday, November 11, 2010 9:12 AM

To: Sharon Wilson

Subject: Re: Bellevue Master Drainage Plan

Great to hear Sharon, thank you for tracking that Master Drainage Plan down. Was the 1972 City of Bellevue Stream Advisory Committee "Review & Status Report – Stream Protection Program" on your list as transferring to UW as well? Once I hear back from you, I will know what to ask Janice Thomas for. Were there any identification numbers associated with these items or batch of transferred documents? Thanks

Dear Mr. Parks,

I am writing regarding your City of Bellevue Public Records Request (PRR 03645) and to let you know that we have completed your records request.

You have asked for the records for the following: Elevation of Phantom Lake Staff Gauge at Robins Glen Park reading of 2.00 and HPA permit form for ongoing cleaning of outlet. I routed your request to the Utilities Department for further response and they have supplied the following:

From: Varner, Phyllis
Sent: Monday, May 17, 2010 3:48 PM
To: Lashley, Ronald
Cc: O&M Support; Hanke, Kate; Kemmerer, Catherine; Varner, Phyllis
Subject: FW: New Public Records Request (03645) / Phantom Lake
Importance: High

Ron – added the one-page telemetry data to PRR response (see below). There were no other public records relative to records/information requested in PRR 03645. Phyllis

Ron, here is the information requested by Brian Parks in Public Records Request 03645/Phantom Lake:

1. Requested the elevation of Phantom Lake staff gauge at Robinsglen Park reading of 2.00. The answer is 261.4 feet NAVD88.

(Note: NAVD88 stands for North American Vertical Datum of 1988. The NAVD88 is an updated vertical datum which replaced the NGVD29 or National Geodetic Vertical Datum of 1929. To convert NGVD29 elevations to NAVD88 elevations, add 3.6 feet; for example, 257.8 feet NGVD29 = 261.4 feet NAVD88.)

The elevation was determined by observing the lake level reading on the staff gauge on May 10, 2010 at 1pm and comparing it to the lake's elevation (NAVD88) recorded on the City's telemetry data collection system at that same time and date. According to telemetry data collection system (see attached report), at 1pm the lake elevation was reported to be 261.2 (NAVD88) and the staff gauge read 1.80 feet. Therefore, the elevation at 2.00 is two-tenths higher—261.4 feet NAVD88.

2. Requested HPA permit form for ongoing cleaning of outlet.

Information on the Hydraulic Project Approval (HPA) permit is available on the Washington State Department of Fish and Wildlife website at <http://wdfw.wa.gov/hab/hpapage.htm>. (The Washington State Department of Fish and Wildlife is the permit authority for HPA permits.) The permit application for most HPAs is called a Joint Aquatic Resources Permit Application (JARPA). A link to the JARPA application is noted on the referenced website or can be accessed directly by clicking this link: [Joint Aquatic Resources Permit Application \(JARPA\)](#).

For more information and/or questions about HPA permit and the JARPA application, contact Larry Fisher at the Washington State Department of Fish and Wildlife. His business card is attached.

If you have questions about City permits required for Phantom Lake outlet channel maintenance, contact Phyllis Varner at 425-452- 7683.

Effects of Lawn Fertilizer on Nutrient Concentration in Runoff from Lakeshore Lawns, Lauderdale Lakes, Wisconsin

Introduction

Transport of nutrients (primarily forms of nitrogen and phosphorus) to lakes and resulting accelerated eutrophication are serious concerns for planners and managers of lakes in urban and developing suburban areas of the country. Runoff from urban land surfaces such as streets, lawns, and rooftops has been noted to contain high concentrations of nutrients; lawns and streets were the largest sources of phosphorus in residential areas (Waschbusch, Selbig and Bannerman, 1999). The cumulative contribution from many lawns to the amount of nutrients in lakes is not well understood and potentially could be a large part of the total nutrient contribution.

Why study runoff from lawns?

The shorelines of many lakes are already highly developed, and the potential water-quality effects of this development are increasing. Many lawn-care professionals and homeowners hold a common belief that runoff from lawn surfaces is minimal and that phosphorus movement from lawns is not a problem (Barth, 1995). The homeowners' goal to maintain lush green lawns may conflict with the lake manager's goal to minimize nutrient inputs. In cooperation with the Lauderdale Lakes Lake Management District and the Wisconsin Department of Natural Resources, the U.S. Geological Survey (USGS) conducted a study during 1999–2000 to determine the magnitude of nutrient runoff from nearshore residential lawns surrounding a lake and to determine whether fertilizer application and the type of fertilizer (regular or nonphosphorus types) affect the amount of nutrients in runoff from lawns. Such information is important for developing stormwater best-management practices and for developing or improving shoreland zoning ordinances and other local regulations to protect or improve the water quality of lakes (Wisconsin Department of Natural Resources, Wisconsin Shoreland Management Program, <http://www.dnr.state.wi.us/org/water/wm/dsfm/shore/title.htm>, accessed February 8, 2002).

The study area was located at Lauderdale Lakes in Walworth County, a chain of lakes in the more populated southeastern part of Wisconsin (fig. 1). The 15-mile shoreline of the lakes is about 70 percent developed, primarily as single-family housing, and is the focus for additional residential development. Most of the lakefront homes have sloping lawns that are maintained to the water's edge (fig. 2). Information about the specific sources and amounts of phosphorus entering the lakes was needed to develop a plan for reducing the input of phosphorus. The lakes are phosphorus limited, meaning that phosphorus is the nutrient limiting plant growth and affecting lake productivity. A previous study (Garn and others, 1996) found that surface-water inflow from the small nearshore contributing drainage area accounted for only 4 percent of the water inflow to the lake but represented 51 percent of the total annual phosphorus input from all sources. The Lake Management District is in the process of installing



Figure 1. Site locations surrounding Lauderdale Lakes, Wis.



Figure 2. Lakeshore development and lawns at Lauderdale Lakes, Wis.

FW: Bellevue Master Drainage Plan

Hide D

FROM: Sharon Wilson

Tuesday, November 9, 2010 1

TO: digital.mailbox123@yahoo.com

Hello, Brian.

I found my records of which Bellevue city documents were sent from here to the University of Washington library. The City of Bellevue Master Drainage Plan was one of those. The UW librarians might not have been able to get the document into their catalog yet, but at least it should be available. The contact person who can help you is Janice Thomas at 206-543-4363.

Thanks,

Sharon

Bellevue Library

425-450-1784

 Reply to Sharon Wilson

Send

Dear City Council,

As Phantom Lake's SMP representative, I am very concerned about the designation of Bellevue FEMA floodplains as critical areas. As you know, Bellevue's 2006 Critical Areas Ordinance designated them as such, however State Judiciary declared such invalid and temporary until Bellevue's Shoreline Management Program process could be completed. I have devoted countless hours in the SMP process both to monitor and influence it on behalf of Phantom residents. This would seem to allow Critical Areas designations to bypass SMP process.

In tonight's FEMA Land Use Code Amendment, 20.25H.175 Designation of critical area, reads:

A. Designation of Critical Area.

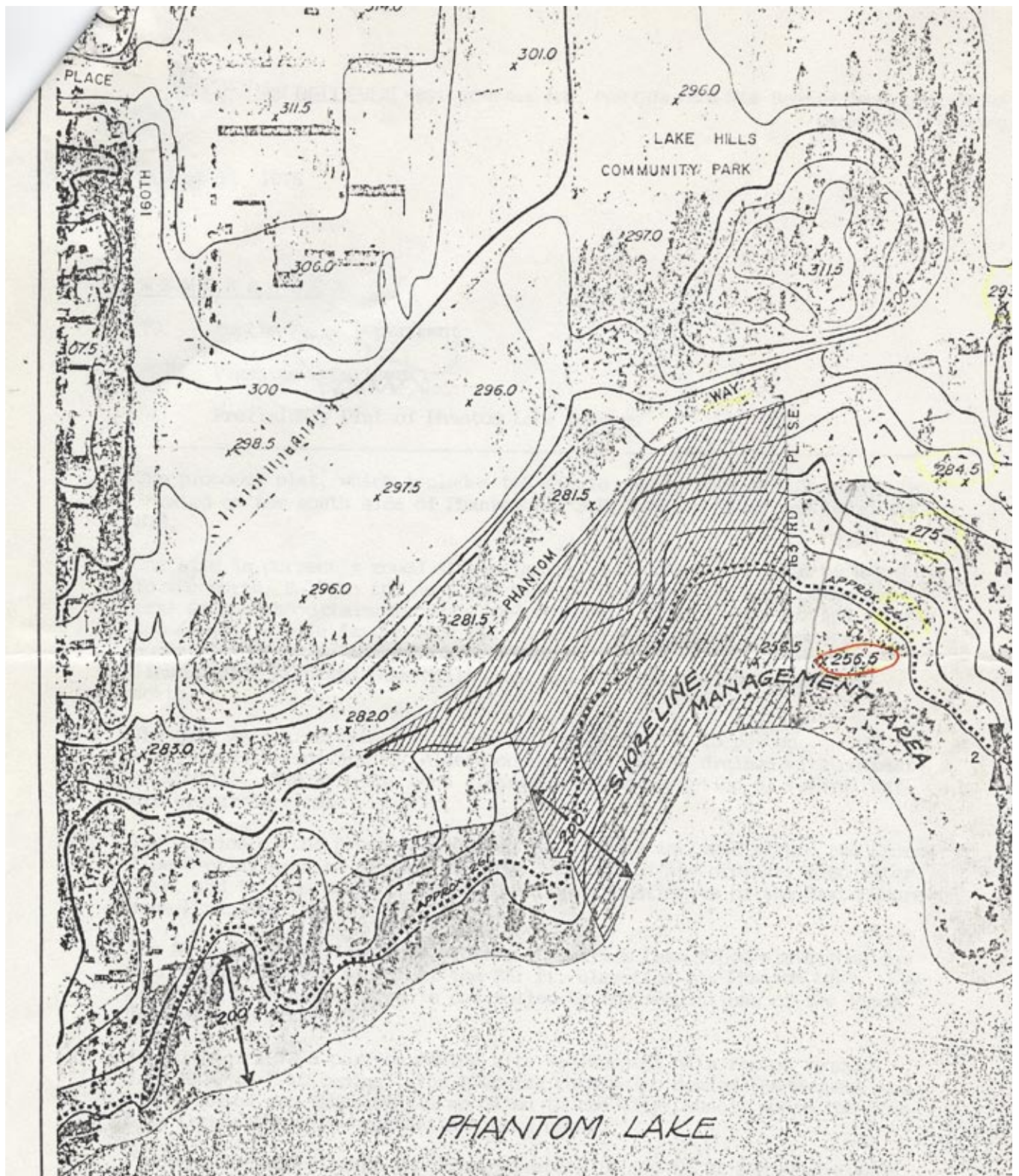
Areas of special flood hazard shall include:

1. Land Subject to One-Hundred-Year Flood.
2. Areas Identified on the Flood Insurance Rate Map(s). (This refers to the FEMA Federal Insurance Rate Map or FIRM.

Is this REQUIRED, or DESIRED? There is mention in the staff report that the City has several code provisions that go beyond the federal requirements.

Now on Phantom lake, FEMA maps show 261 NGVD/ 265 NAVD Elevation as floodplain, which is 4ft above surface elevation last few weeks. That is about 220 feet from my shoreline and would put much of Lake Hills under water. I know it was established years ago but in reality is an unrealistic number and needs revision! The result is flood insurance required in areas which should not be. There is no recorded history of such, in fact the 100 yr storm events have been less than half that!

On a similar, but separate issue, The average elevation of residential Phantom Lake has been gradually on the rise for years. Utilities & Planning Departments have allowed increased storm water and surface water to flow into Phantom Lake over time, mainly via I-90 Business Park, without any compensation or even routine maintenance on the main outlet. Airfield park's proposed playfields would add significantly to this as well. What used to be the high water elevation, is now the typical water elevation. I have submitted data on this to Planning Commission, and have city records requests in process for more. This is creating wetlands where they did not previously exist. This increases proposed SMP Shoreline Overlay district!



**EVERETT
ENVIRONMENTAL LABORATORY**

PROJECT #

00035183

Client: KIM PETERSON
Program: Contract
Contact: BLUE HERON

Date Received: 04/26/2011
Data Release: CK
Date Reported: 05/25/11

Department	Analysis	Units	DL	Method	PQL	BD96797	BD96845
						STORM 04/26/11	STORM WATER 04/26/11
METALS	Antimony	µg/L	0.5	200.8	2.0	< 0.5	
	Arsenic	µg/L	0.5	200.8	2.0	1.2 J	
	Beryllium	µg/L	0.5	200.8	2.0	< 0.5	
	Cadmium	µg/L	0.2	200.8	0.8	< 0.2	
	Chromium	µg/L	0.5	200.8	2.0	0.6 J	
	Copper	µg/L	0.5	200.8	2.0	2.5	4.6
	Lead	µg/L	0.5	200.8	2.0	< 0.5	2.1
	Nickel	µg/L	0.5	200.8	2.0	1.0 J	
	Selenium	µg/L	0.5	200.8	2.0	< 0.5	
	Silver	µg/L	0.5	200.8	2.0	< 0.5	
	Thallium	µg/L	0.5	200.8	2.0	< 0.5	
	Zinc	µg/L	5	200.8	20	65	
	Mercury	µg/L	0.1	245.2	0.4	< 0.1	

DATA REPORTING QUALIFIES

DL = Detection Limit
PQL = Practical Quantitation Limit (= 4xDL)
J = Analyte concentration less than PQL
SA = See Attached
ND = No Data

When Dissolved Metals > Total Metals note possible filtering process contamination
P/A (used for Total Coliform results) P= Coliforms present, A = Coliforms absent
Y/N (used for E. Coli Results) Y= E. Coli present, N=E. Coli absent
E = Estimated Value. Count from plates not within ideal range.
R = Sample was re-analyzed after holding time.

**CITY OF EVERETT
ENVIRONMENTAL LABORATORY**

PROJECT #

00037262

Client:
Program: OUTSIDE-MISC
Contact: KIM PETERSON

Date Received: 03/08/12
Data Release:
Date Reported: 04/09/12

BE70400 - SLUDGE

Sample Date/Time: 03/08/12 12:10

Sampler: KP

CONTRACT-NWTPH	Method	MDL	PQL	Units	Results
Diesel Range HC	NWTPH-D			mg/kg	220
Motor Oil	NWTPH-D			mg/kg	1400
NWTPHG	NWTPHG			mg/kg	470

METALS	Method	MDL	PQL	Units	Results
Aluminum (mg/kg)	6020	5.98	23.9	mg/Kg dry	17700
Antimony (mg/kg)	6020	1.495	5.98	mg/Kg dry	1.56 J
Arsenic (mg/kg)	6020	1.495	5.98	mg/Kg dry	13.3
Barium (mg/kg)	6020	1.495	5.98	mg/Kg dry	120
Beryllium (mg/kg)	6020	1.495	5.98	mg/Kg dry	< 1.495
Boron (mg/kg)	6020	5.98	23.9	mg/Kg dry	< 5.98
Cadmium (mg/kg)	6020	0.598	2.390	mg/Kg dry	2.08 J
Calcium (mg/kg)	6020	59.8	239.2	mg/Kg dry	7680
Chromium (mg/kg)	6020	1.495	5.98	mg/Kg dry	42.8
Cobalt (mg/kg)	6020	1.495	5.98	mg/Kg dry	10.7
Copper (mg/kg)	6020	1.495	5.98	mg/Kg dry	83.4
Iron (mg/kg)	6020	59.8	239.2	mg/Kg dry	16700
Lead (mg/kg)	6020	1.495	5.98	mg/Kg dry	107
Magnesium (mg/kg)	6020	59.8	239.2	mg/Kg dry	4760
Manganese (mg/kg)	6020	1.495	5.98	mg/Kg dry	327
Molybdenum (mg/kg)	6020	1.495	5.98	mg/Kg dry	3.88 J
Nickel (mg/kg)	6020	1.495	5.98	mg/Kg dry	35.8
Potassium (mg/kg)	6020	59.8	239.2	mg/Kg dry	726
Selenium (mg/kg)	6020	1.495	5.98	mg/Kg dry	< 1.495
Silicon (mg/kg)	6020	29.90	119	mg/Kg dry	< 29.90
Silver (mg/kg)	6020	1.495	5.98	mg/Kg dry	< 1.495
Sodium (mg/kg)	6020	59.8	239.2	mg/Kg dry	< 59.8
Thallium (mg/kg)	6020	1.495	5.98	mg/Kg dry	< 1.495
Tin (mg/kg)	6020	1.495	5.98	mg/Kg dry	9.81
Vanadium (mg/kg)	6020	1.495	5.98	mg/Kg dry	49.4
Zinc (mg/kg)	6020	14.95	59	mg/Kg dry	656

