

# Lions Gate Secondary Wastewater Treatment Plant Education Workshop

## Meeting Summary

December 4, 2015, 8:30 a.m. – 3:30 p.m.  
Creekside Community Centre  
1 Athletes Way, Vancouver, BC



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## Background

The purpose of this workshop was to share this exciting new project with teachers and educational specialists from the North Shore and across Metro Vancouver. The objectives were to introduce the project, learn about what teachers are already doing in the classroom around liquid waste education, and to explore new ideas for educational opportunities at the LGSWWTP. The twelve teachers who attended this workshop were given the Lions Gate Secondary Wastewater Treatment Plant (LGSWWTP) [Indicative Design](#) as background reading.

They were also asked to consider three key questions for the workshop:

- How do you currently support learning about regional sustainability topics (e.g. liquid waste, drinking water, solid waste, ecological health, etc.) in your classroom (e.g. big ideas, core concepts, approaches, activities, resources, community connections etc.)?
- How can the LGSWWTP be a highly attractive asset to the education community?
- How can we get schools to engage with these opportunities?

## Overview

This full day workshop yielded a rich conversation, stimulated excitement about the project and generated a large pool of resource ideas for Metro Vancouver to consider. Some of the key findings are summarized here:

- We need an inspiring name for the facility. The name should help explain what the building is for and help people understand that it is a centre for learning and exploration, not just an operational plant.
- The building should offer multiple entry points (features to stimulate curiosity and draw visitors to want to learn more). These entry points should include public art and architecture to help to tell the story of wastewater and help visitors grasp the related concepts.
- Programs and resources should focus on why we treat water first, and the process of treating it second. We should explore opportunities to connect personal actions to impacts on what residents value most; oceans, rivers, marine organisms, environment and human health. Programs should connect to the water cycle, explore how we use water, our responsibility to care for it, and emphasize that we are just borrowing it.

- Exploration opportunities inside and out should be experiential and facilitate student lead questioning as opposed to “stand and deliver” methods of teaching. The interactive house exhibit from the [Wet Science Centre](#) at L.O.T.T. (Lacey, Olympia, Tumwater, and Thurston County) wastewater treatment plant was considered to be a good example of an experiential exhibit. Also, the touch screen map of the region showing how water gets from an individual’s home to the wastewater treatment plant (wwtp) was of interest to teachers.
- One main concern with offering a tour of the treatment facility is how hidden all of the processes are. Since so many of the steps in the treatment process are covered to prevent odour, there are limited opportunities for sensory engagement. Metro Vancouver should explore ways to make these steps visible or focus on showing these step using exhibits and classroom activities. There was some concern that the treatment process would appear so sterile and ‘clean’ that the importance of treating wastewater might not be clear to younger audiences.
- Exploring concepts about wastewater treatment could be achieved through play-based approaches such as toilet slides, climbing walls, indoor and outdoor water features and discovery parks.
- Many opportunities exist to connect students to the process of public engagement and governance. Resources for classrooms and/or onsite activities that highlight how/who makes decisions about regional issues would be meaningful themes to consider. Topics related to how liquid waste is managed, decision making about locations for new infrastructure and treatment plants, decisions about cost, and the negotiation that needs to go on within communities, with First Nations (FN) and other levels of government are some examples.
- MV should explore opportunities for authentic engagement with the Squamish First Nation. On-site experiences could be combined with an outdoor program offered on Squamish land nearby and delivered by a FN community member.
- Public spaces could include office space for rent to various community groups doing stewardship work, it could accommodate a nature-based daycare, offer space for a presentation theater or recreational programs (for example, a yoga studio). This would help achieve the goal of designing a facility as an asset to the community.

### **Next Steps**

This summary will be circulated to participants and posted on the LGSWWTP webpage. Metro Vancouver also plans to engage a number of public education service providers in the region to help inform a broader strategy for education at the LGSWWTP. These suggestions will be integrated into the strategy and many of the design considerations

will be included in the Request for Proposal. Once the program plan is developed, another workshop with educators may be necessary.

The following outlines the specifics of the workshop on December 4<sup>th</sup>, 2015, and provides more details of the feedback received.

## 1. Welcome! Shape of Day

Andrea Winkler, Program Manager, Public Involvement, Metro Vancouver (MV), called LGSWWTP workshop (Meeting) to order and welcomed all in attendance.

Ms. Winkler explained that the impetus of the education strategy arose from the community engagement process that occurred between 2012 - 2013. The community expressed interest in using the LGSWWTP to provide public education at the site with respect to liquid waste management.

Ms. Winkler advised that MV worked extensively with the Lions Gate Public Advisory Committee (LGPAC) on the design of the LGSWWTP and community consultation. She introduced LGPAC member, Jan Timmer (who was also present at the workshop).

Tanya Melanson, Public Involvement, MV, commented on MV's familiarity with the development of education programs on water treatment, water usage and other regional sustainability issues. Input is being sought now on the development of the LGSWWTP education strategy in order to ensure that the resources required will be available when the plant opens in 2020. The education strategy will also inform the classroom and educational spaces to be incorporated into the designated LGSWWTP.

Ms. Melanson provided an overview of MV and its responsibility to deliver core services:

- Drinking water
- Liquid waste treatment
- Solid waste management
- Air quality
- Regional parks

Ms. Melanson reviewed the agenda and the objectives of the Meeting to:

- Introduce teachers to the LGSWWTP design,
- Excite and explore opportunities for engagement with K – 12 school audiences, and to
- Develop a strategy for how these opportunities can be realized.

## 2. Icebreaker and Introductions

Meeting participants were invited to introduce themselves to their neighbour and to share information on how they addressed regional sustainability topics in their own classrooms.

During the introductions, a number of valuable comments were shared that will be useful considerations for the LGSWWTP education strategy.

Comments included the following:

- That there are opportunities for programs at the LGSWWTP to build on the education around water and wastewater that is already taking place in the region.
- The opportunity for art engagement pieces as entry points and opportunity to provoke environmental stewardship. Entry points are “hooks” or tools for engagement. In order to make student’s early experiences with a topic more engaging and motivating, students can be offered a variety of ways to “enter into” the study. These entry points respond primarily to learning profiles and interest.
- Multiple entry points for education (art, architecture, sensory experiences, lab activities)
- Designing the education program with the [BC Ministry of Education’s 21Century Learning principles](#) and [new curriculum](#) in mind but not to limit the topics of the programs to this curriculum.
- Teach new immigrants about water and waste as it may be different from their areas of origin. Great opportunity to create life-long behaviour change.
- Include regional sustainability and geography topics in social studies as they are not currently explicit for teachers. Curriculum focuses more on global context. MV can help with support resources.
- The need to increase wastewater education.
- Using videos and virtual tours of the LGSWWTP to increase accessibility to education to students on wastewater treatment (in classroom and on-site). Not all students will be able to visit the facility.
- The opportunity to integrate environmental stewardship and sustainability into the Grade 9 curriculum.
- The potential to integrate the LGSWWTP education program into high-school biology, physics and chemistry courses, with a focus on sustainability.
- The opportunity to fit wastewater treatment into the global context and connectedness (opportunities to compare and contrast how other cities treat water).
- The opportunity to tie into the Grade 4 watershed program that MV offers at the Lower Seymour Conservation Reserve and Coquitlam Watershed.
- Supporting school “green teams”.
- LGSWWTP potentially being an entry point for the school district to engage with industry partners in the vicinity of the new plant.
- The opportunity to include discussions through a climate justice and sustainability lens, in the Grade 11 curriculum.
- The opportunity to provide hands-on learning to students.
- The opportunity to teach about the cycle of water in the region and the role humans play in ecological cycles.
- The need to increase the visibility of wastewater treatment.
- Examples of education programs at Washington State secondary wastewater treatment plants (L.O.T.T and Brightwater) - Other example of microorganism zoo in Amsterdam.

### 3. Virtual Tour of a Wastewater Treatment Plant

A video was played providing a virtual tour of the Lulu Island Secondary Wastewater Treatment Plant. The video is currently available at the [MV website](#), for use in the classroom. Teachers felt this video provided good context for them and would also be useful as pre-trip activity.

### 4. Project Overview

Paul Dufault, Project Manager of the LGSWWTP, Liquid Waste Services, and MV, reviewed the:

- The history of the existing LGWWTP which opened in 1961,
- The land on which the existing plant is located, which will be returned to the Squamish Nation when the new facility is built,
- The unique urban context and design features of the new facility, and the
- Enhanced technology and new educational opportunities.

Mr. Dufault invited questions from the Meeting participants. The following table summarizes these questions and responses:

Issue, Comment, Question	MV Response
<b>LGSWWTP</b>	
What is the main component of concern in the Class A biosolids generated at the LGSWWTP?	We treat biosolids at a very high temperature but there is a very small possibility that it may contain pathogens and viruses.
What is the 100-year plan for dealing with waste in the future as the population grows?	The new plant is being designed to last until the end of the century. The plant will need to be renovated in 2050. The processes may be changed within the existing footprint to accommodate increasing populations. There may be a need for satellite sites in the future.
Will the outfall be in the same area?	Yes.
<b>Use of Reclaimed Water</b>	
Is the green roof watered with reclaimed water?	Yes.
Is the reclaimed water drinkable?	No.
Is water drinkable after tertiary treatment?	No. Reverse osmosis would be required for the water to be drinkable.
Could there be a water park feature?	There could be a water park but the site is quite industrial and there are adjacent port activities.

Issue, Comment, Question	MV Response
<b>Community Planning</b>	
How does the plant fit into the District of North Vancouver's (DNV) plans for the development of the area?	This is still a port and commercial area however the DNV has plans to develop the area further. This facility is in line with those plans.
<b>Educational Considerations</b>	
The plant is so clean. We will have to make a great effort to teach the children about the reasons for future behaviour changes to promote sustainability and environmental stewardship if there is nothing "gross" about seeing the treatment process?	Perhaps we should have some parts of the facility that are transparent so the children understand the "yuck" factor.
The organics ban eliminated the opportunity to teach children about the organics loop. I am concerned that this will have the same impact. They need the visceral reaction.	Noted.
There is a need to define the central message to be conveyed to the children when they go to the LGSWWTP.	The message is evolving and may be formulated based on our discussions today. The focus could be on future behaviour change to consider what they put into the toilet, the contaminants and the impact on the receiving environment.
I like the message "We are just borrowing the water".	Noted.
The water park would provide a visible end feature that would be concrete and comprehensible to the children.	Noted.
<b>Educational Considerations</b>	
We should link the LGSWWTP to the marine environment.	There is an opportunity to link the education program with the restoration of McKay Creek that is nearby.
There is a need for good visuals for people to understand the wastewater treatment process.	Noted.
Why is everything covered? Is there a way to select building materials that are transparent? It would allow the plant to become the education space.	Everything is covered because of our commitment to the community to eliminate odour. There is always an opportunity to open the lid. There could be a transparent section incorporated in each process.



## 5. Blue Sky Vision Session

The Meeting participants were divided into one elementary and two secondary school groups for a visioning exercise of the ideal field trip to the LGSWWTP and to consider the following questions:

*You just got back to your classroom after the most amazing field trip to the new LGSWWTP...*

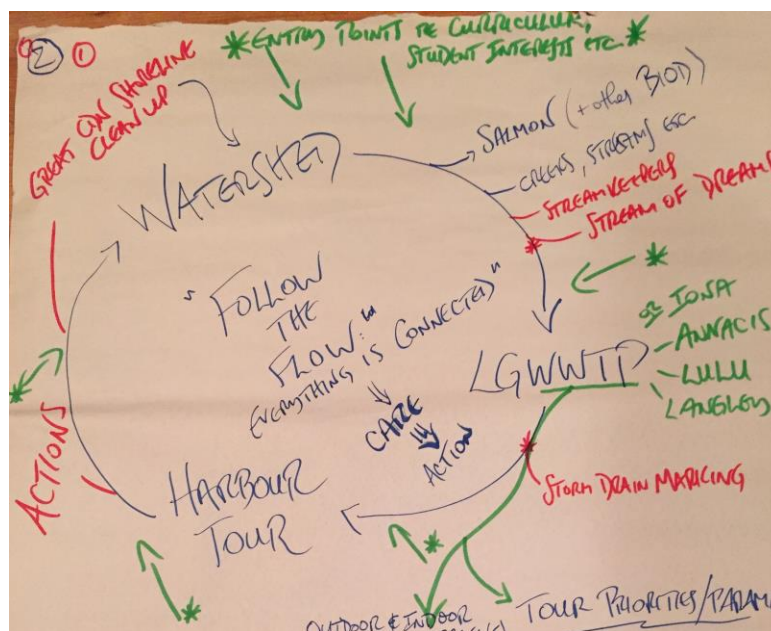
- What just happened?
- What did the day look like?
- What happened in your classroom to prepare students?
- How did you get there?
- What was your first impression of the facility?
- Who was there to meet you?
- How did you move through the space?
- What did you experience (e.g. sensory experience, activities)?
- How did students learn about wastewater and their connection to it?
- What happened after the field trip?

The following comments were provided during the subsequent reporting out:

- Group 1 – Secondary
  - Inquiry based learning to parallel the curriculum
  - Hands-on learning
  - Spend the dollars to create something impactful
  - “Wow” factor
  - Historical information
  - Comparison with other cities
  - Behavioural changes
  - Post-activities with science disciplines
  - Incorporate the big picture
- Group 2 – Elementary
  - Big picture with numerous entry points
  - Follow the flow – everything is connected
  - Action-oriented activities that can be done through the process
  - Sensory
  - Park-idea
  - Guided tour with school and with family
  - Pre and post tour activities are important
  - Incorporate other resources that are available
  - Student directed inquiry- Frame concepts and have students come up with their personal questions. MV and facility should provide ways for students to get answers to those questions in experiential ways (discovery based, use art, hands-on experiences)
  - The idea of rethinking about our part in the world vs. reducing and reusing

- Interactive house display with different choices (similar to LOTT in Washington)
- True data about how much water we are using
- The cost of wastewater treatment vs. not doing it
- Links with biodiversity and First Nations language and culture
- Scavenger inquiry allowing answers to pre-posed questions to be found through the tour
- Whiteboards on walls to do graffiti about wastewater treatment
- Recognize that water is just one of the cycles

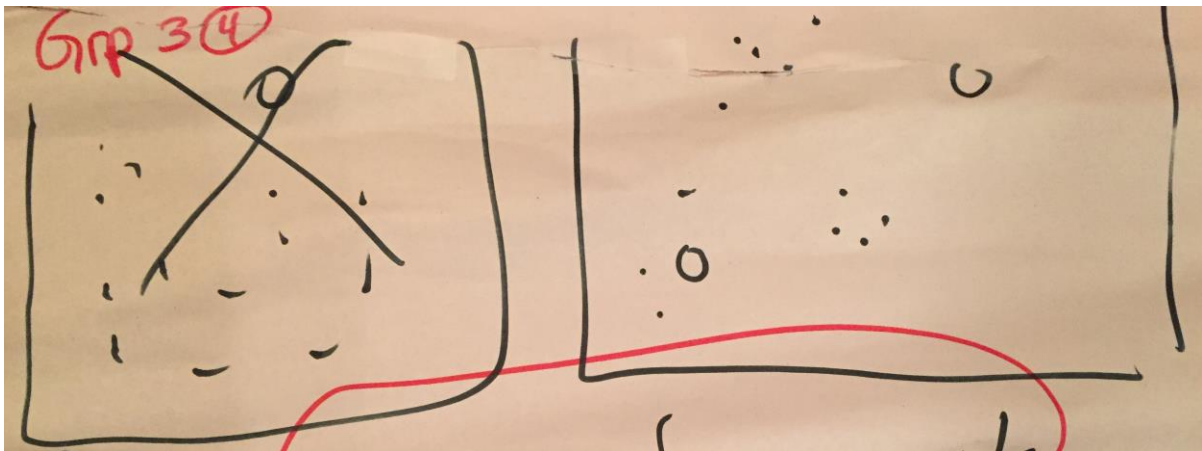
**Chart 1-** Flow chart by Group 2 to show cyclical connections between water and wastewater related themes.



- Group 3 – Secondary
  - Change the name to reflect the educational aspect
  - Part of a larger series of field trips to include a field trip to the watershed and activities between trips
  - Make space where the wastewater treatment process can be duplicated- (ex. Mini model of treatment processes)
  - Teach the decentralized idea of government to home responsibility
  - Include First Nations perspectives and culture (Consider how local FN used to deal with waste and treat water) (link to nearby Squamish land and waterfront)
  - How waste is treated in other areas such as Victoria, Brazil, etc.
  - Inquiry based
  - Public education and school education are the same (lots of overlap with activities)
  - Direct part of the budget toward the understanding of the health of the receiving environment

- Educational space should be open and flexible
- Depart from the stand and delivery mode of teaching
- Each room is about a question, and discussion is facilitated by artwork in each room. Numerous art pieces can be the starting place to address various questions (ex. Are humans part of nature?") (perhaps MV needs to create these questions)
- Educate the adults in addition to providing school education
- Make it an inviting space e.g. theatre that could be used for the VIFF, rooftop garden, etc.
- Incorporate into the civics and service elements of the curriculum.

**Chart 2-** Group 3 visual explanation of inquiry based classroom set-up. The focus is on allowing students to explore the space. MV and teachers to provide the framework for inquiry and then allow students to find answers to their inquiry questions.



## 6. Digging Into the Details – Carousel

A video showcasing the educational centre at the [Wet Science Centre](#) at the L.O.T.T. (Lacey, Olympia, Tumwater, and Thurston County) wastewater treatment plant in Olympia, Washington was played.

The meeting participants were divided into four groups to undertake a world café discussion of the potential uses for the educational facility space. A plan of the defined footprint for the educational facility at the LGSWWTP was displayed to frame the discussion around ideas for the use of the spaces.

A [video](#) of the [TOTO toilet museum](#) in Japan was shown for inspiration.

The three main ideas for each component of the educational space were provided during the subsequent reporting out:

- Exhibit Hall and Lobby
  - First impression of space should link to an emotional connection with nature (receiving environment, ocean, water, landscape) Full wall mural/image. This will help connect the treatment of wastewater to the importance of protecting what we value about our land
  - Free space and very interactive, programs similar to L.O.T.T.
  - Potential for costumes and puppets to appeal to all age groups
  - Incorporate living things such as a stream running through the building would be great.
  - Sewer flows map would be interesting.
  - Geology map (examine glacial history, alluvial fan from Capilano Watershed sediments)
- Public Art
  - Rotating exhibits profiling local artists
  - Use of art as a vehicle to what is seen at the LGSWWTP
  - Build capacity for welcome poles to incorporate First Nations culture.
- Public Education
  - Opportunity to look at water and to think about it from the First Nations' perspective.
  - Develop interconnected themes
- Partnerships
  - Hub for organizations involved in water quality (consider building office space for rent by various non-profits doing work re: marine and aquatic health). Satellite office for Vancouver Aquarium
  - Partnerships with adjacent industries
- Pre/Post Trip
  - Connections to expand on the purpose of the LGSWWTP
  - Have space available for connections between school groups, teachers and industry partners
  - Visit location of the outfall
  - Visit the site of the old Lions Gate Wastewater Treatment Plant and acknowledge its relationship to the Squamish Nation and the mouth of the Capilano River; this could ground the understanding of why we should care about the wastewater treatment
  - Partnership with sustainable transportation from sites of the old and new plants (bike rental program with Squamish FN to take visitors from LGSWWTP to Squamish land)
- Outdoor Space
  - Picnic or eating area to welcome the community. Focus on view opportunities as public asset
  - Signage/art to pose questions and to pique interest on the inner space. Draw people inside.
  - Representation of human scale and global scale

- Classroom
  - Lab space with water, sink, gas, secured chemical space and that is flexible
  - Be sure eating space is separate from lab space
  - Flexible audio/visual space (smart boards are a must)
  - Use for other gatherings
  - Budget to replenish supplies
- Multi-Purpose Room
  - Make it available and attractive to the public for community events
- Tour
  - Inquiry- based
  - Choice and flexibility in numbers that can be accommodated at one time, elements of the tour and accessibility
  - Hands-on
  - Explores career connections by interviewing staff
  - Interdisciplinary
  - Alignment with the BC curriculum
  - Student-centered and directed.
  - If it is clean and covered, is this going to benefit students (not much to see) or should focus be on why we are treating water (less about process) through classroom activities?
  - Perhaps there are other ways to demonstrate the process (mini-models, virtual tours).

## 7. Evaluations, Final Thoughts and Next Steps

Ms. Melanson thanked the meeting participants for their energy and their level of engagement. The ideas generated will be considered in the design of the LGSWWTP, and the development and resource requirements of the education strategy.

Ms. Melanson invited meeting participants to attend the public open house in January 2016.

## 8. Closing Remarks

Mr. Dufault thanked the meeting participants noting that the LGSWWTP project is an integrated process that incorporates community input.

## 9. Attendance

### **Focus Group Participants:**

- Briar Ballou, Retired Science Teacher, Handsworth Secondary, North Vancouver
- Diane Ehling, Vice Principal and Elementary School Teacher, Deep Cover, North Vancouver
- Stephen Fuerderer, Secondary Science 8/10, Burnaby School District
- Chris Henley, Elementary teacher, Lynn Valley, North Vancouver
- Andrew Humphries, Prince of Wales Mini School Secondary Science Teacher, Vancouver
- Corrine Kinnon, Secondary Science Teacher, North Vancouver School District
- Kevin Lyseng, Elementary Science and Professional Development Representative, Richmond School District
- Selina Metcalf, Secondary Social Studies and English Teacher, Surrey School District
- Jan Timmer, LGPAC Member
- Justin Wong, Principal and Secondary Science Teacher at Handsworth Secondary School, North Vancouver
- Fiona Zawadzki, Educational Consultant for MV Watershed Education Program, Elementary and secondary teacher, Coquitlam
- Victor Elderton, LGPAC Member, Principal and Elementary Teacher at Norgate Elementary, North Vancouver (Victor participated in a phone interview with TM, and was not able to attend the workshop). His comments are included in this summary.

**Metro Vancouver Resources:** Paul Dufault, Bruce Ford, Erica Forssman, Joan Liu, Tanya Melanson, Andrea Winkler

**Recording Secretary:** Carol Lee (Raincoast Ventures Ltd.)