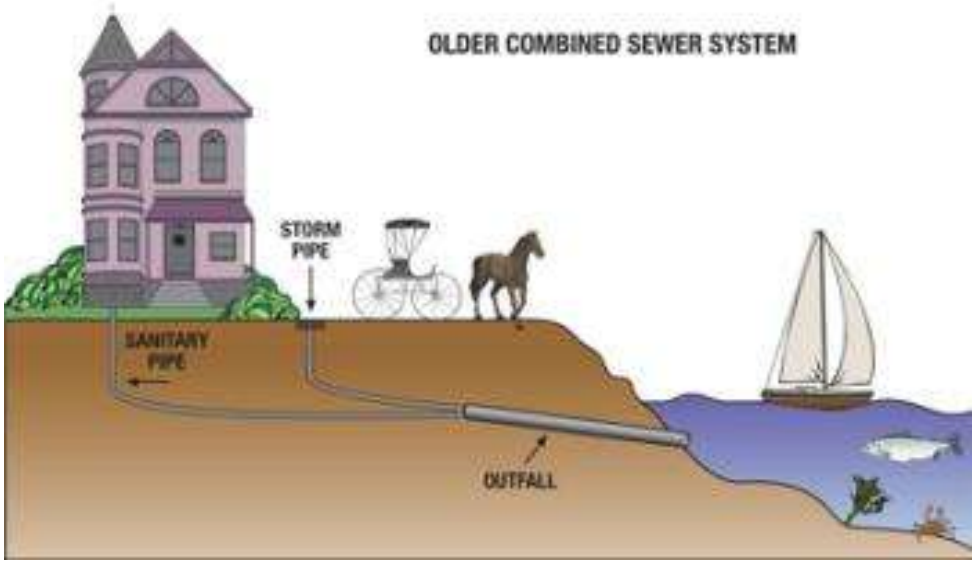
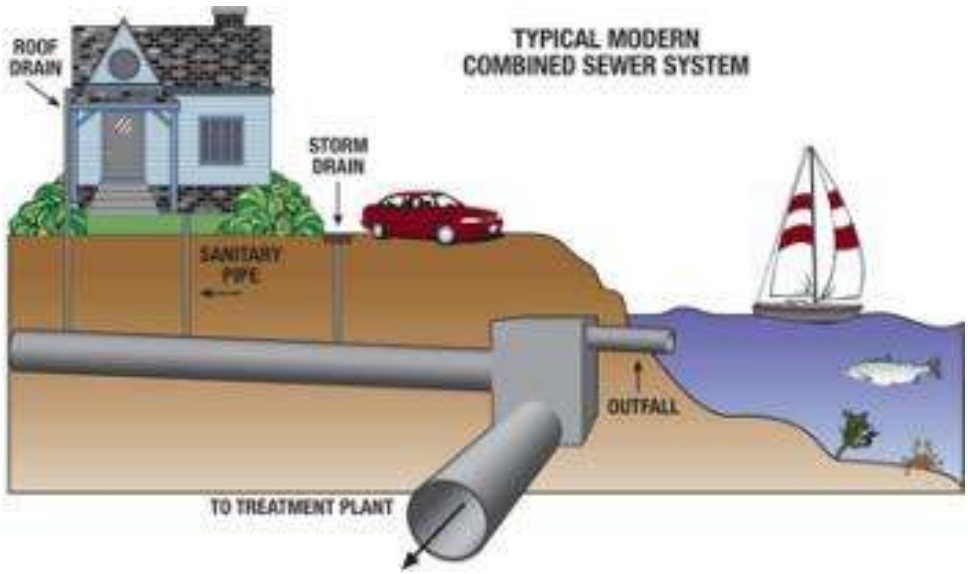
COMBINED SEWER OVERFLOWS (CSO)
FREQUENTLY ASKED QUESTIONS

What is a Combined Sewer Overflow (CSO)?	In Port Angeles, the sewer system is constructed the same as many older cities in the United States. Our combined sewer system was largely constructed between the early 1900s and the 1960s. The system was designed to convey sewage, horse manure, street and rooftop runoff, and garbage from city streets to the nearest receiving body of water.  Prior to the main interceptor line that went in during the late1960s and the construction of the wastewater treatment plant in Port Angeles, the combined sewer system discharged directly to Port Angeles Harbor through numerous outfalls without treatment. A system of gravity sewers, lift stations, force mains, and regulators was constructed in the late1960s to intercept these outfalls and convey the sewage to the newly constructed Wastewater Treatment Plant. The interceptor sewers and lift stations were sized to accommodate all of the dry-weather flows and part of the stormwater runoff during wet weather. The CSO outfall locations were left in place when the present sewer system was updated in the 1960s to act as safety valves when the pipes get too full to handle the high volume of water during heavy rains. At those times, excess combined sewage resulting from stormwater overflowed directly into the Port Angeles Harbor. The advantage of the combined sewer system was that, most of the time when rainfall was low to moderate both the stormwater and wastewater went entirely to the treatment plant before being discharged to the harbor. The disadvantage was and continues to be that during heavy rains, untreated stormwater and wastewater are often discharged together at combined sewer outfall locations without any treatment.

	
How much untreated sewerage is discharged?	The amount varies from year to year, being dependent on the size and frequency of storm events. It is currently estimated to be about 30 million gallons per year.
Where can we get information on the health hazards at our beaches?	In the past, there were fewer people in and on the water during the winter when the overflows typically happen, and the level of risk from CSOs compared to other health risks was judged to be low. Now, there is more water-based activity in the winter. Additionally, there are new nationwide requirements for CSO public notification as well as CSO control projects. The Washington State Department of Ecology in partnership with county health departments has implemented a beach monitoring program. The mission of the BEACH Program is to reduce the risk of disease for people who play in saltwater by: • Monitoring bacteria levels at popular, high risk beaches. • Notifying users when bacteria results are high or when a known pollution event, such as a sewage spill, has occurred. • Educating the public about the risks associated with polluted water and what each of us can do to reduce that risk. More information can be found at the Clallam County Department of Health and Human Services at: http://www.clallam.net/HHS/index.html or at the Washington State Department of Ecology at: http://www.ecy.wa.gov/programs/eap/beach/index.html In addition, the Public Health Department for Seattle and King County have a CSO specific webpage which can be found at: http://www.kingcounty.gov/healthservices/health/ehs/toxic/cso.aspx
How extensively has the CSO problem been studied in Port Angeles?	The infrastructure and solutions for the Port Angeles CSO problem have been studied extensively. Some of the early studies date back as far as 1976. In addition, the wastewater system and stormwater system have had major studies done on them including complex hydraulic models. The results of these studies allow the City to predict with some confidence that the proposed solution to CSO

	pollution provides both the most appropriate and affordable solution for the City of Port Angeles.
What is in the CSO program to fix the problem?	Two projects in the Capital Facilities Program are being executed in phased work for the CSO program. They include the CSO Phase 1 project (WW08-2008) and the CSO Phase II project (WW10-2008). The two projects together will reduce the frequency of CSOs to less than one overflow per outfall per year, calculated on a five year average. This is the standard mandated by the Department of Ecology. In addition, the City does other select projects during the course of each year to further separate the stormwater system from the wastewater system where it is cost effective to do so and also to reduce or eliminate leakage into the existing wastewater collection system. Typically, these are done in conjunction with our alley improvement work.
What is included in the CSO Phase I project?	The Phase 1 construction project will increase the size of the sewer force main (primary interceptor) between downtown and the wastewater treatment plant. The current interceptor is too small to handle peak flows during wet weather and it is located along the shoreline and in some places it is located in the harbor. Figuratively, it is the main artery of this system, connecting all other wastewater pipes to the plant. By eliminating this bottleneck in the system, much of the CSO problem will be corrected. The new interceptor pipes will cross Ennis Creek on a bridge that has been sited to facilitate future Creek restoration projects. When the project is complete, the Olympic Discovery Trail will be improved, and will cross over the new bridge. In addition, the wastewater treatment plant will have some internal bottlenecks remedied, which will increase the capacity of the plant. During the heaviest rain events, the plant will not be able to treat all the flow as it arrives. At those times, excess flow will be pumped to a 5 million gallon storage tank that will be retrofitted as part of the CSO Phase 1 project. This tank will be gradually drained into the plant during times when flows will permit it. In addition, the old Rayonier industrial outfall will be retrofitted and placed into service as the City's primary wastewater treatment plant outfall. This outfall is larger, longer, and deeper than the City's existing outfall and will diffuse treated wastewater more effectively and in a location farther away from the Port Angeles harbor.

	
What is included in the CSO Phase II project?	This project will upgrade the pumping capacity to the Wastewater Treatment Plant. It replaces pumpstation 4 which is located just east of Estuary Park, and relocates it to a small area of land on the south side of Marine Drive. Additionally, a new gravity sewer main will be installed from Lincoln Street to the new pumpstation in order to prevent CSO discharges for the outfall that overflows to Peabody Creek. When Phase II is complete, only one outfall will remain in the downtown area. During the design of the Phase II project, the location and configuration of the remaining outfall will be determined. This project has the ancillary benefit of putting the new pumpstation in a location less vulnerable to vehicle collisions as well as enhancing the appearance of the park area on the north side of the road.
After the CSO projects are complete, what are the expected discharge overflows for the system.	The City has had as many as eleven CSO outfalls that historically have discharged to the creeks and harbor in Port Angeles. To date, the City has eliminated all but four of these CSO outfalls. In more recent times, there have been as many as from 110 - 120 discharge events per year out of these four outfalls. At the completion of the Phase 1 and 2 construction projects, it is estimated that these types of discharges will be reduced to just once in an 8 year period for the outfall in the downtown area, and just once in 1.7 years for the Francis Street outfall, and 1.3 events per year for the new industrial outfall that was obtain in association with the Rayonier property acquisition. All of the other outfalls will be eliminated. It is expected that at that point in time, a discharge can only occur in the most extraordinary of storm events.
Will the Olympic Discovery Trail be impacted during construction?	Yes, portions of the trail between Oak Street and the Wastewater Treatment Plant will be temporarily closed due to the new force mains being installed immediately adjacent to or on the existing trail. We intend to only close portions of the trail when construction activities make it necessary. The current

	expectation is that closure of portions of the trail will begin perhaps as early as late August 2012. The entire trail will be opened for the 2013 marathon, but portions may again be closed following it depending on construction activities. Where feasible, we will arrange for trail detours in order to reroute travel around the affected areas. In particular, provisions have been made in the Phase I contract to ensure that a detour is available for pedestrian and bicycle traffic on the portion of the trail from Morris Creek to Ennis Street. This detour will reroute such traffic in the vicinity of the eastern portion of the former Rayonier Mill (Ennis Street area) to City streets and connect back into the trail at an appropriate point further west. We expect that this detour will be available for most closure events to ensure travelers won't have to backtrack significant distances due to a closure. The status of any trail closures will be posted on the City website.
What will be the condition of the Olympic Discovery Trail be when the CSO Phase 1 project is complete?	The condition of the trail will be much improved at the completion of the Phase 1 project. Of significance is that the tedious loop that currently takes the ODT by the wastewater treatment plant will be eliminated. A new bridge will be constructed across Ennis Creek which will provide greater recreational opportunities for this area and eliminate the need for this out-of -the-way loop. In addition, the trail will be completely restored where construction activities disturb it, providing new surfacing. These improvements should enhance the ODT experience for its patrons.
Is this a permanent fix to the CSO project?	The proposed projects accomplishes very real and permanent fixes for this infrastructure problem. When originally designed back in the 1960s, the main sewer interceptor was inadequate in capacity to contain the entire volume of combined sewerage and stormwater that could occur, resulting in overflows spilling into the harbor. The proposed CSO program permanently fixes that capacity deficiency which will remedy the CSO issue. In addition, the original interceptor main is now over 50 years in age, is out in the harbor, and should be replaced. This project remedies that situation, by relocating this primary sewage transport line out of the harbor. The environmental importance of this is very significant. The project also replaces the City's pumpstation #4, which by its age requires a major rehabilitation including pump replacement. In summary, this project does provide a permanent fix for the CSO problem, while simultaneously fixing and replacing a significant amount of the City's older infrastructure that was due for replacement or upgrading.
What would have been the potential consequences if the City didn't fix the CSO problem?	There are a number of potential impacts if the City did not fix its CSO problem including: - The City will ultimately be in noncompliance with the Clean Water Act by failing to meet the December 2015 deadline mandated by the Department of Ecology for fixing the CSO problem. - Non-compliance would subject the City to fines of $10,000 per day by the State of Washington for failure to comply with the Agreed order. - The City would most likely face 3rd party lawsuits, penalties, and the additional mandates and projects ordered by federal or state courts. - Existing low cost financing for these projects that was provided by the State under very favorable terms would likely have to be returned. Given the State's financial situation, similar low cost financing may not be obtainable for Port

	Angeles in the future.
What are the potential consequences if the City were to try to just separate stormwater sources from the sewer system rather than fixing the capacity issue?	Attacking the CSO problem by trying to eliminate the stormwater sources, has implications which include: - Costs that would be 3 to 5 times as much as the current proposed program. - Vast disruptions to the City's residential and downtown areas due to the construction activities required for separation of the stormwater and sewer systems. Construction would be required on both public and private property. - With only source separation, it will be very difficult to achieve and reliably maintain full compliance. - Continued environmental degradation and public health risks caused by sewerage entering the harbor. - Loss of treatment for the stormwater that goes through the combined sewer system, causing direct discharge of runoff to creeks and streams.
Wouldn't it be cheaper to just disconnect roof downspouts?	It is not as simple as that. Although many roof drain connections can be remedied at nominal cost, residential downspouts only make up a fraction of the problem. It will not come close to solving the entire problem. In addition, the soil does not have an unlimited capacity to infiltrate water into the ground. For Port Angeles, the infiltration capacity of our soils is marginal for a substantial amount of the city.
Can't all of the stormwater be infiltrated into the ground?	No. The process of infiltration can occur only if there is capacity available for water to be absorbed at the soil surface. The available volume for additional water in the soil depends on the porosity of the soil and the rate at which previously infiltrated water can move away from the surface through the soil. The maximum rate that water can enter a soil in a given condition is the infiltration capacity. If rainfall intensity at the soil surface occurs at a rate that exceeds the infiltration capacity, ponding begins and is followed by runoff over the ground surface, once depression storage is filled. The rate of infiltration of stormwater is affected by soil characteristics including ease of entry, storage capacity, and transmission rate through the soil. Due to the underlying soils types that are pervasive in Port Angeles, particularly the Clallam Hyopus and loams and the underlying glacial till, much of this stormwater will not infiltrate effectively. Even with just modest rainfall after prior rainfall events have occurred, the stormwater will shed crossing and affecting neighboring properties, and/or entering the stormwater system directly. Consequently, the impacts need to be carefully considered, including the limits on the capacity of our soils and existing stormwater system.
Can't the runoff that occurs be handled as it naturally would prior to development?	The City is now a highly urbanized area and the natural runoff system for the area has been significantly altered or no longer exists. Many of the natural gullies, furrows, and ravines that were present as tributaries to our existing creeks that served as surface runoff routes prior to the City being developed, have long since been filled in. Additionally, the City has significant amounts of impervious surfaces in its streets, parking areas, trails, and buildings. Much of the remaining area is only partially pervious such as lawns. Consequently, the City relies on its stormwater system to transport excess stormwater in order to prevent flooding of the residences and businesses in our community. Because those tributary routes no longer exist, the high percentage of impervious surfaces, and underlying poor draining soils, stormwater that cannot be infiltrated

	leads to muddy bogged grounds for many areas or heavily relies on the piped stormwater system to move the water to the creek and harbor outfalls to prevent flooding.
Don't the piped stormwater systems impact the creeks by transporting stormwater too quickly to them?	Yes, that is true. That is why Low Impact Development techniques that infiltrate stormwater into the ground are quite beneficial where they are effective. The water that can be infiltrated is delivered to the creeks through a much slower migration pathway, reducing large spikes in volume that can damage creek banks and habitat. However, the stormwater that is presently in the combined sewer system does not contribute to this problem. The CSO system flows to the wastewater treatment plant, and at peak flows discharges to 3 harbor outfalls and one outfall on lower Peabody Creek culvert. It is noted that separating the stormwater from the combined sewer system does increase the volume in the stormwater system and loses the treatment of the stormwater that is gained through the wastewater treatment plant. In the City's current project, the CSO portion of otherwise high runoffs that would cause a problem to our creeks will be discharged out of the industrial outfall in a much more suitable location and cleaner manner. By many aspects, the City's current project provides practical benefits to the environment.
What is the current schedule to fix the CSO problem?	The major program milestones are as follows: Phase I Construction Contract Awarded 8/7/2012 Phase I Construction Complete 4th Qtr 2013 Phase II Construction Contract Awarded 2nd Qtr 2014 Phase II Construction Complete 4th Qtr 2015
What is the total program cost expected to be to ultimately solve the CSO problem?	The total program cost is expected to be $41.5 million. This is the amount that was established based on 2008 planning documents. This amount includes all of the planning studies, design, environmental and archaeological investigations, and the purchase of 12.5 acres of land and a 5 million gallon tank from Rayonier.