City of Rockaway Beach
Sourcewater Protection Plan Development Advisory Committee (SPPDAC) Meeting Agenda

Date: Tuesday, July 9, 2024
Time: 10:30 AM– 12: 30 PM
Location: Rockaway Beach City Hall, 276 Hwy 101 – 2nd Floor Conference Room

Join here to attend the meeting remotely:
https://us06web.zoom.us/j/87920636534?pwd=8j5IQJpQM7rAphYn3oieHbsAsNVMOa.1
Meeting ID: 879 2063 6534
Passcode: 044190
Dial by your location
253 215 8782 US (Tacoma)

How to Provide Public Comment:

- Written Comments – submit in person at meeting or online at https://corb.us/advisory-committees/
- In Person – sign-up sheet and instructions will be located on the table inside the meeting room.
- Virtually on Zoom – use the "raise hand" feature when the Chair announces it is time to do so.

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1. **CALL TO ORDER** – Sandra Johnson, Chair

2. **ROLL CALL**

3. **APPROVAL OF MINUTES** – June 17, 2024 Meeting

4. **PUBLIC COMMENT**

5. **NEW BUSINESS**

    a. **Prioritizing Risks**
    Suzanne de Szoeke, GSI Water Solutions, Inc., will introduce the source water and groundwater risk prioritization tables that are currently under review by the Sourcewater Protection Plan (SPP) Team. Committee members to review and provide comments on the tables.

        i. **Draft Rockaway Beach Source Water Protection Plan Risks Prioritization Table (Surface Water)**
        This table shows input gathered from individual SPP Team members thus far on risk likelihood and impact scores and the initial risk prioritization recommendations of natural hazards by the SPP Team meeting (shown in bold and underlined). The SPP will also be meeting on July 8, so we will have more risk prioritization recommendations to share at the July 9 meeting.

ii. **Rockaway Beach Source Water Protection Plan Risks to Groundwater Table**
This table shows input gathered from individual SPP Team members thus far on risk likelihood and impact scores. The SPP Team has not yet discussed this table as a group to choose risk levels to recommend. SPP will also be meeting on July 8, so we will have more risk prioritization recommendations to share at the July 9 meeting. Jetty Creek is the primary focus of the Drinking Water Protection Plan, but we are also documenting groundwater risks for context regarding the City's water management issues.

b. Next Steps

c. Committee Comments

6. ADJOURNMENT

City of Rockaway Beach
Sourcewater Protection Plan Development Advisory Committee (SPPDAC) Meeting Minutes

Date: Monday, June 17, 2024
Time: 8:30 a.m.

1. **CALL TO ORDER** – Sandra Johnson, Chair
   Johnson called the meeting to order at 8:30 a.m.

2. **ROLL CALL**
   Committee Members Present: Sandra Johnson, Jason Maxfield, Lydia Hess, Ron Cleman, Jay Udelhoven (Zoom)
   Council Members Present: Alesia Franken, City Council Liaison, and Mayor Charles McNeilly
   Staff Present: Luke Shepard, City Manager; and Melissa Thompson, City Recorder
   Consultants Present: Suzanne de Szoeke and Mikaela Clarke, GSI Water Solutions, Inc. (Zoom)

3. **APPROVAL OF MINUTES**

   McNeilly noted a correction to the April 29, 2024 meeting minutes.

   Hess made a **motion**, seconded by Maxfield, to approve the April 29, 2024 meeting minutes as amended.

   The **motion carried** unanimously.

   Johnson noted that a watershed tour referenced in the minutes had occurred. She thanked those who participated and coordinated the tour. At the request of Udelhoven, Johnson confirmed that there would be opportunity for discussion prior to voting on motions. Johnson noted that the SPPDAC meeting documents and a form for submitting comments could be found on the City website.

4. **PUBLIC COMMENT**

   Nancy Webster submitted a flyer and spoke regarding an upcoming North Coast Communities for Watershed Protection (NCCWP) speaker event on June 22, 2024.

   Daniel Howlett spoke regarding Nedonna Beach waterline improvements and advocated for consideration of sewerline improvements. Howlett encouraged conversation regarding annexation.

   Mary McGinnis, City Councilor, addressed questions she received regarding the City's interest in purchasing tax lot 2800. McGinnis shared a map with the Committee and explained that the largest tributary going into Jetty Creek comes out of that tax lot.

Penny Cheek, City Councilor, thanked the committee members for giving their time and efforts toward the success of the Committee.

5. NEW BUSINESS

a. Review of Overarching and Current Objectives

Suzanne de Szoeke, GSI Water Solutions, Inc., shared a presentation providing an overview of a Drinking Water Protection Plan (DWPP), as well as overarching and current goals and objectives. Udelhoven expressed preference for a broad approach including infrastructure. McNeilly noted that the adopted purpose of the Committee did not include infrastructure, and suggested comments regarding infrastructure could be submitted to the City Council.

There was discussion regarding the estimated schedule, and a suggestion to refer to the public engagement meetings as "Town Halls." It was suggested a committee member could attend the DWPP Team meetings as an observer. There was discussion regarding the scope of the committee's purpose, and the importance of the primary and backup drinking water sources. There was a suggestion regarding a storage reservoir, and questions regarding potential liability associated with land ownership.

b. Identifying Risks

i. **Preliminary Rockaway Beach Drinking Water Protection Plan (DWPP) Risks Table (Surface Water)**

ii. **Rockaway Beach DWPP Risks to Groundwater Table**

Suzanne de Szoeke, GSI Water Solutions, Inc., summarized the source water area risks tables, and answered clarifying questions for the committee. Committee members reviewed and provided comments on the tables. There were requests to clarify whether a gravel borrow pit was active in the sourcewater area (SWA). Committee suggestions for additional risks to add included stored liquid mercury, excessive herbicide use, a dike that separates Nedonna from the river, tsunami inundation, tourism and potential development. There were suggestions to include information regarding water use, projections for future water needs, and consideration of additional water sources. It was suggested to separate forestry activities into the upper and lower watershed, and to address different strategies for areas with different landowners. It was proposed that comments be added to infrastructure to note that the city is replacing Nedonna Beach waterlines and has a leak detection program in place.

There was discussion regarding the sourcewater assessment, concern regarding liability, and a suggestion for a more recent assessment. De Szoeke commented that she could contact the Department of Environmental Quality (DEQ) to request updated assessment maps, and it was suggested that consideration of liability could be added to strategies.

De Szoeke explained that updated risk tables would be distributed to the committee for review at the next meeting, and additional suggestions could be submitted to her.

c. Prioritizing Risks

De Szoeke provided an overview of the Risk Prioritization Examples. Committee members reviewed and provided comments. McNeilly and Maxfield expressed support for the 3x3 risk prioritization model. Udelhoven suggested the 5x5 model should be used if data supported it. Franken expressed some agreement with Udelhoven. De Szoeke noted that there weren't big pools of data to draw from. Clemen advocated for the 5x5 model.

After discussion, Maxfield made a **motion**, seconded by Hess, to default to the 3x3 matrix, unless an issue proved more complicated, and that evaluation didn't do it justice.

Johnson invited discussion. Clemen stated he stood by his comments to use the 5x5 model.

The **motion failed** by the following vote:
Aye: 2 (Maxfield, Hess)
Nay: 3 (Cleman, Johnson, Udelhoven)

Cleman made a **motion**, seconded by Udelhoven, to use the 5x5 model.

Johnson invited discussion. Udelhoven stated that he preferred the more rigorous analysis, and if those doing the analysis determined it was impossible to use, then they could default to the 3x3 model.

The **motion carried** unanimously.

d. Next Steps

Johnson invited Committee comments. Cleman inquired if Jetty Creek provided sufficient water for annual usage. Johnson suggested that issue could be addressed in the strategies. Shepard explained that the City hasn't come close to running out, but in some years the City has come close to reaching its in-stream water right. Cleman inquired about the leakage project. Shepard explained that the mainline repair project was awaiting state funding.

6. ADJOURNMENT

Maxfield made a **motion**, seconded by Hess, to adjourn the meeting at 10:32 a.m.

Johnson invited discussion. Shepard confirmed for Hess that he would send out poll for scheduling of the next meeting.

The **motion carried** unanimously.

DRAFT

Rockaway Beach Source Water Protection Plan Risks Prioritization Table (Surface Water)

7/2/2024

Note: This document shows input gathered from individual Sourcewater Protection Plan (SPP) Team members thus far on risk likelihood and impact scores and the initial risk prioritization recommendations of natural hazards by the SPP Team meeting (shown in bold and underlined). The SPP will also be meeting on July 8, so we will have more risk prioritization recommendations to share at the July 9 meeting.

Identifying and prioritizing potential risks will form the foundation for developing strategies to protect drinking water quality. Risks can be prioritized based on the likelihood of their occurrence and the severity of their impacts to drinking water sources, water quality, and infrastructure. Using a scale of 1-5, please indicate how you would rate these two aspects for each risk below.

Likelihood		**Impact**	
1	Rare/very unlikely	1	Insignificant
2	Unlikely	2	Minor
3	Possible	3	Moderate
4	Likely	4	Severe
5	Almost certain	5	Catastrophic

Risks to Jetty Creek Drinking Water Source

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Natural Hazards	Highly Erodible Soils	80% of the stream miles (18.58 mi) within 500 feet of the stream in the source water area contain soils with high erosion potential (USWA, 2016). Highly erodible soils contribute sediment and potential contaminants at a higher rate to the water source, increasing turbidity and decreasing water quality. There are steep slopes in the watershed, and significant rain events are expected in the wet season.	Look into sources of data. DEQ can look into providing more data. Most of the risk assessments are based on ~8-year old data. Would the city be able to support a reassessment of current conditions? For example about landslides and soils data from before recent logging. Could potentially get updated maps from DEQ if possible and if Team & Committee find it necessary. High risk. Steep slopes in the watershed, significant rain events expected in wet season (and a history of erosion and sedimentation post harvest) Likely to get continued input of sediments. Should plan for that while working to implement solutions to reduce input. 1.5 to 2 inches of rain in 24 hours will move sediment and turn color regardless of cover type and activities. What BMPs does the water district have to address this risk? Forest soil organic matter can significantly reduce erosion. Cable based harvest systems and larger buffers minimize soil disturbance and leave intact organic matter. Forested buffers also can create sediment when trees blow over and uproot near streams. There is a lot of good data on sediment and harvest operations from studies done by the watershed co-op, Hinckle Creek, Alsea, and Trask Watersheds. The biggest factors in increased sedimentation will be geology and rainfall. Harvests under the FPA rules can increase sedimentation but it will be for a short duration and be within the natural variation of the system. The City has a settling pond off-channel – the issue is that sediment builds up in front of fish screen. This impacts operations. Active management is required annually.	*3* *4* *2-3* *4* *4* *4* **4**	*2* *3* *1-2* *3* *4* *2-3* **3**

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Natural Hazards	Landslides	Landslide deposits (non-rock material) are mapped near the intake and in the mid-watershed (USWA, 2016). Landslides can increase turbidity in the water. A 2015 landslide closed a road, and several small landslides have been observed. There are many steep slopes in the watershed.	Look into sources of data. ODF publishes high landslide hazard location data; we could look into this more. DEQ can look into providing more updated data, but could take a few months. What level of detail do we want our analysis to be for this risk? We can consider evaluating certain parts of the watershed more closely. Are there risks, such as liabilities, associated with landslides and cleanup? This is a high risk, lots of steep slopes in watershed. Currently majority of the watershed was recently harvested, leading to higher current landslide susceptibility. Risk impact could be dependent on location. At a natural intensity and frequency, they can benefit stream systems by adding woody debris. Recent additions to the FPA rules require leaving trees in certain areas of steep slopes so when they slide sometime in the future, wood is added to the stream. In the last 11 years even with the harvest there hasn't been a major landslide in the watershed. Large forested buffers around streams can act as a barrier or at least slow down velocity of slides, reducing the amount of material that reaches the stream. Slides are acute events. Sedimentation from Minor to moderate severity slides can be mitigated by shutting down the intake when high rains are expected. Seems to be a higher risk of shallow landslides but not deep landslides that would be more likely to affect the water supply. Other water systems in the area have had their infrastructure impacted by landslides. Maps of water intake would be helpful, and input from City on infrastructure risk.	*3* *3* *1* *4* *4* *2* <u>3</u>	*2* *4* *2-4* *3* *4* *3* <u>3-4 (confirm with City)</u>

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Natural Hazards	Drought and Low Streamflows	Drought and low streamflows put the City at risk of water supply shortages and decreased drinking water quality. Low streamflows can increase water temperatures, which may introduce toxic algal blooms. Low flows have a higher concentration of contaminants. Climate change is projected to cause more frequent and severe droughts and low streamflows, which increases the impacts of other risks, such as high stream temperatures, sediment, pollution, dissolved oxygen, algae, and bacteria counts.	High risk of drought, younger age stands will reduce water in Jetty Creek during dry seasons. Drought conditions will increase due to climate change as extreme fluctuations continue. Has the city seen a decline in water availability since the harvests? What is the current water draw from Jetty Cr? Lots of uncertainty in the impact. Some aspects dependent on other conditions (sufficient shading may keep temps down) The single most important factor impacting low stream flows is rainfall, and then geology. Low stream flows are exacerbated by the fact that the city uses the most water when it's at its lowest point. As the city grows and tourism increases this will become more of an issue and can only be solved by adding additional water sources or greater storage. There are several studies highlighting the impacts of forest type on stream flows. The topic is complex and depending on geology has mixed results. In general trees and other plants use water by intercepting rain and it evaporating from foliage before it hits the ground, and by transpiration. Typically when forests are harvested there is an increase in available surface water. As trees mature and begin to use more water there can be a decrease in surface water, and eventually a return to the base line. The impacts have been studied in small drainages using management practices that haven't been used in 60 years. For larger drainages individual harvests have less of an impact. About 20% of a drainage needs to be harvested to impact surface water flow. Larger riparian buffers may also reduce any increase in surface water due to recent harvest. Since Jetty Creek has been managed forest for greater than 60 years, maybe longer, the base line for the water system has been managed forest. A harvest would typically increase available surface water for 2-10 years and then return to baseline. City may have historical streamflow data for Jetty Creek, streamflows may have been lower in recent years.	*3* *5* *2-3* *4* *4* *5* <u>5</u>	*4* *4* *3-4* *3* *4* *4* <u>5</u>
Natural Hazards	Climate Change	Climate change exacerbates existing risks to the drinking water source. It is projected to cause more frequent and severe droughts and low streamflows, which increases the impacts of other risks such as high stream temperatures, sediment, pollution, dissolved oxygen, algae, and bacteria counts. Longer, drier summer months reduces streamflows, thereby reducing water supply when demand is highest. Increasing temperatures and droughts also increase the risk of wildfires in the watershed. Climate change is projected to increase winter precipitation in the form of rainfall and decrease snowpack, which can increase erosion and sediment transport to streams. Storms are also likely to increase in severity and frequency, increasing the risk of flooding and sediment transport to streams.	Team decided to incorporate climate into individual hazards, and make it a separate risk to stand out and reiterate the potential impacts. Lots based on predictions. Some uncertainty in what could happen. Impact could be more or less depending on what actually happens. Climate is always changing and is a relatively slow process that we can adapt to.	*3* *5* *1* *3* *4* *5*	*3* *4* *2* *3* *4* *Depends on the event specifically*

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Natural Hazards	Earthquake	The entire Oregon Coast is at risk of a severe Cascadia Subduction Zone earthquake. The effects of an earthquake could include destruction of water system infrastructure, landslides, and potential contamination of drinking water. Tsunamis following an earthquake would intensify these effects and have additional effects.	Uncertainty as to when the "big one" will hit, but likely to come someday. Depends on the location of the earthquake and severity. (Impact level 4 for worst scenario).	*3* *4* *1* *4* *5* *2* **3**	*5* *5* *5* *4* *5* *4* **5**
Natural Hazards	Tsunami	Rockaway Beach is at a higher risk of a tsunami than Tillamook County as a whole (NHMP, 2023). The water treatment plant and public works building are exposed to tsunami (CSZ M9.0-med) and have a greater than 50% probability of moderate to complete damage from a CSZ earthquake (NHMP, 2023). A tsunami could destroy vital infrastructure and result in water supply shortages, potential saltwater intrusion, and other contamination of drinking water.	High risk to infrastructure, assuming Treatment plan is within tsunami zone. Dependent on the earthquake happening first, but anything within the tsunami zone at risk. Dependent on location of earthquake and severity of tsunami. Impact could be lower or higher.	*3* *3* *1* *4* *5* *1-2* **3**	*4* *4* *5* *4* *5* *5* **5**
Natural Hazards	Severe Storms	Severe storms increase the likelihood of high stream turbidity and flooding, which puts drinking water quality at risk. The region has experienced impactful severe storms in recent years. December 2015 storms caused significant riverine flooding east of Highway 101. A combination of sand-blocking outlets and high tides meeting large volumes of runoff from the higher ground caused road closures. January 2021 saw coastal flooding events, landslides, and debris flows in the area. Climate change is projected to increase winter precipitation through more severe storms, which can increase erosion and sediment transport to streams.	These are common enough there should be some experience and knowledge on how to prepare and handle. Usually know these are coming and can prepare in advance. Already frequent enough that preparing for an dealing with these should already be occurring. It's about when it happens, not if. Storms are part of life on the Coast. The impact to drinking water will manifest as the topics discussed about, Landslides, Erosion. Impacts transportation infrastructure, etc., but maybe not drinking water intake & source area as much. Could affect power infrastructure which could affect drinking water supply.	*4* *5* *2* *3* *4* *4-5* **4**	*2* *3* *3* *3* *4* *4* **3**

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Natural Hazards	Wildfire	Wildfires remove vegetation and damage soils, which increases runoff and erosion and decreases soil water infiltration and retention. Firefighting chemicals could potentially impact water quality. Water used for fire suppression could be taken from the water supply. Increasing temperatures and droughts anticipated from climate change could increase the risk of wildfires.	The majority of wildfires on the coast are human-caused (we could distinguish between natural and human-caused fires in DWPP). Concern of PFAS (not typically used for fire suppression). Not required to inform the state when PFAS is used for fires, but 13 occurrences have been reported statewide since 2020. Question about how we know about the 13 PFAS occurrences and request for more information about this. *Answer (from Alyssa): This number came from the DEQ Emergency Response Program –these were voluntary notices to the state when people used PFAS to extinguish fires. PFAS is not really used in the state for fires, but other types of foam.* Wildfires in recent years were set off by extreme winds. Climate change could influence the causes of wildfires. High risk – fires always a concern in forests, whether human caused or natural. Not usual. Could be an increasing risk. Depends on location, severity, etc. Wildfire is a natural phenomenon and at some point in time there will be a significant fire. Likely in our lifetime fires will be small and low severity. There is a good, well maintained road system in Jetty Creek which will aid in any fire suppression activities and act as fire breaks. Accumulated slash piles from forest harvesting have been burned reducing the fire hazard. There will be little to no fire use associated with forest harvest in the next 18 years. Forest landowners have their own firefighting crews and contractors to aid in suppression of any future fires.	*2* *3* *1* *2* *3* *2-3* **2**	*2* *4* *1-4* *3* *4* *4* **3**
Natural Hazards	Volcanic ashfall	Volcanic ashfall from a Cascade volcanic eruption is identified as a low risk to Lincoln County in the NHMP (2023) but could affect Rockaway Beach. The effects of volcanic ash would be significant for water quality and could damage water infrastructure (NHMP, 2023).	Good to include but not necessarily something within the control of this plan/ a DWPP design? Can't control but could have a response plan just in case. I'm not sure if this is even a risk for Jetty Creek.	*2* *1* *1* *1* *2* *1-2*	*2* *3* *1* *2* *3* *3-4*

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Forestry Activities (See additional notes at end)	Clearcut harvesting	The source watershed is 100% private forested land with two landowners (USWA, 2016). The USWA (2016) identified clearcut harvesting with a rotation of under 35 years as a potential risk in the source water area. The USWA specified clearcuts southeast of the City's intake as a risk. Aerial imagery from 2000 to 2024 shows that nearly the entire drinking water source area has been clearcut within the ~25 year time period. Timber harvesting impacts the ecology and hydrology of watersheds, including the amount of runoff, stream temperatures, sediment transport, soil properties and moisture retention, and stream turbidity (other DWPPs). Factors such as elevation, slope steepness, and direction of slope can influence the impact of timber harvesting. Jetty Creek has a history of erosion and sedimentation post-harvest). Additionally, younger age stands have been shown to reduce water in Jetty Creek during dry seasons.	Should clearcuts be a separate risk from partial harvesting/thinning? Could consider distinguishing between clearcuts near water intakes versus higher in the watershed due to potentially different impacts. Are risks different for longer rotation cycles? Could consider dividing out clearcutting risks by cycle length or other factors. Consider breaking the forestry section into risks/strategies for the lower watershed and upper watershed, based on the different landowners. Should be a distinct risk from thinning and partial harvesting. New PFA Rules will help in the longer term.	*2* *4* *1* *3* *4* *4-5 for clearcutting, 3 for non-clearcutting*	*2* *4* *1-2* *3* *4* *4 for clearcutting, 2 for non-clearcutting*
Forestry Activities	Pesticides, Herbicides, and Fertilizers	Pesticides, herbicides, and fertilizers used in forestry may enter waterways and contaminate water quality. DEQ has reported detections of herbicide residue (sulfometuron-methyl) in Rockaway Beach's untreated drinking water (USWA, 2016). The method and timing of chemical applications influence the level of risk to drinking water. For example, applying on steep slopes in sparsely vegetated areas increases the risk of contaminating the creek. Aerial spraying is potentially a greater risk to water quality than other application methods. (other DWPPs)	Can we get soils tested and get a list of what sprays and chemicals have been used? Discuss herbicides in addition to pesticides and fertilizers in this section. Current landowners have been involved in conversation around adjusting pesticide and herbicide usage. MOU agreement restricts chemical use in the lower watershed. Pesticides and fertilizers are not typically used in the coastal forests. Some risk but rules in place to minimize potential. Would likely take an unintentional circumstance to occur.	*1* *5* *1* *2* *4* *2-3*	*1* *3* *1-2* *2* *4* *4*
Forestry Activities	Access Roads	Building, maintenance, and usage of roads, particularly wet weather haul, may contribute to erosion and stream turbidity. Updated Oregon Forest Practices Act rules and best management practices can help reduce these impacts.	The access roads connect to other private forestry lands. Would the City be responsible for the maintenance of roads if it acquired land in the watershed? Depending on the easement structure, the roads would likely be 'user maintained' meaning those using the road would be responsible for the maintenance. Since the City would own the road, if acquired, they would be responsible for any maintenance not associated with user use. Could be higher impact depending on the circumstance. Updated FPA rules reduces this risk from "Likely" to "Possible" Depends on the location and road design.	*2* *3* *1-2* *2* *3* *4*	*2* *2* *1-2* *2* *3* *3*

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Forest Activities	Riparian Impacts	Timber harvesting activities could affect soils and vegetation along streams, resulting in increased erosion and stream turbidity. Reduced vegetation could lead to an increase in stream temperatures and potentially an increase in algae growth and bacteria counts. Updated Oregon Forest Practices Act rules increase riparian buffer zones based on stream classifications and add protections for non-fish-bearing streams.	Less likely to be an issue going forward with new rules. Possibly some legacy impacts. Add invasive species- can use large amounts of water. Updated FPA rules reduces this risk from “Likely” to “Possible” It would be helpful to know which of the streams would fall into fish and non-fish bearing and therefore the PFA levels they qualify under.	*1* *3* *1* *2* *3* *3*	*1* *3* *1* *2* *3* *2*
Forestry Activities	Borrow Pit	A small, likely inactive (identified as inactive in the 2002 SWA) borrow pit east of the intake used for local logging roads is a potential risk to drinking water. Spills or leaks of waste or chemicals from mining operations could impact water quality (SWA, 2002).	The original SWA (2002) describes the borrow pit as small and inactive. Comment in June 17 SPPDAC meeting that there is an active borrow pit. Is the active borrow pit in the watershed or outside of it? Which pit is active? There are a lot of trucks going up and down access roads that may or may not be in Jetty Creek Watershed. Get information on where the active pit is from the landowners. City can start identifying on future maps where the active borrow pit is (potentially in the DWPP map). Several potential pits visible in aerial imagery and lidar. Better understanding of number, locations and current/potential use is needed. Single source easier to take measurements to reduce potential problems.	*1* *2* *1* *2* *Not Enough Information to Characterize* *1-2*	*1* *2* *1* *2* *Not Enough Information to Characterize* *2*
Municipal	Infrastructure leakage or failures	Municipal water system infrastructure, such as pipes, valves, storage tanks, and water treatment facility, is vulnerable to leaks and failures due to aging and wear and tear. Aging infrastructure may impact the City’s ability to divert, store, and distribute water. Leaks can increase demand for water diversions, which may not be available during droughts.	This issue is being addressed. The City has an active leak detection program in the budget, and is working to replace mainlines (specifically at Nedonna Beach). This is outside the watershed. Should look at any and all ways to increase efficiency In 2010 there was a significant amount of water loss due to leaks. I’m not sure how much there is now. As infrastructure ages leaks will increase.	*3* *2* *3* *3* *2* *3*	*4* *2* *2-3* *3* *3* *5*
Municipal	Vandalism	Vandalism or sabotage would include deliberate damage to water pipelines, the water treatment facility, and other components of water infrastructure. Vandalism could impact water quality or quantity. Cybersecurity is another concern for municipalities, as cyber attacks could affect the City’s ability to operate its water system.	Cybersecurity seems like a higher risk than deliberate physical damage. Impact could be higher depending on circumstance, such as cyber attack.	*1* *3* *1* *2* *1* *2*	*4* *3* *1* *3* *4* *1*
Municipal	Development	New development will add to water demand. Ensuring the City will have an adequate water supply is a growing concern.	Information, such as projections for climate scenarios and development etc, would help with understanding whether the City has sufficient water supply. Need to take steps to plan for additional need. Increase efficiency, look to alternative sources (desalination?)	*4* *3* *2* *3* *3* *3-4*	*3* *2* *2* *4* *3* *4*

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
			Development will increase water demand. It seems during August and September there is already more demand than can be supplied during dry years. If that increase causes overuse of the wells that have had problems with salinity coliform and organic compound. That could be a risk to the water source.		
Municipal	Tourism	Tourism increases water demand substantially in the summer. Ensuring the City will have an adequate water supply to meet summer demand is a growing concern.	Information, such as projections for climate scenarios and development etc, would help with understanding whether the City has sufficient water supply. Usage rates throughout the year would be helpful to see. Probably similar to development. The challenges with water supply peak with peak tourism at the end of summer.	*4* *4* *3* *3* *3* *4*	*3* *3* *2* *4* *3* *2-3*
Land Use	Unauthorized camping	Camping is not allowed on the properties within the watershed, but it can be difficult to prevent people from accessing and camping on the land. Camping land uses that pose a risk to the source watershed include improper garbage and/or human/animal waste disposal, potential vehicular pollution, and fires.	We could include these risks under the municipal category, or create a separate category (such as land use). Could be part of a recreational risk section Not likely to happen on large scale but could occur to some degree. Could offer alternate sites that are more controlled. Especially if homeless crisis expands to other areas like observed in places such as Seaside, OR	*3* *3* *1* *2* *2* *2*	*2* *2* *1* *2* *3* *2*
	Recreation	Hiking, horseback riding, and possibly other recreational uses in the source water area pose potential risks to drinking water, such as erosion and pollutants from litter and/or animal waste.	Low amount of use limits impacts and risk.	*1* *3* *1* *2* *3* *4*	*1* *2* *1* *2* *2* *1*
	Fecal coliform TMDL	A TMDL (Total Maximum Daily Load) for fecal coliform levels in Jetty Creek was determined in 2003 by DEQ. According to the North Coast TMDL coordinator, bacteria can be present at levels above criteria in a few situations but is not generally a source of concern. Possible sources of bacteria in Jetty Creek would be wildlife in most of the watershed. The only other sources would be from the residences, runoff from Highway 101, or the marine at the mouth of Jetty Creek. The data for the Jetty Creek listing was collected in 1998. At the time the TMDL was established, it was common for DEQ to extrapolate data collected low in the system to the headwaters in small systems like Jetty Creek, but it is unknown where the data was collected for Jetty Creek.	Depending on the team's decision, we may not need to include this as a risk in the Plan. Rare for fecal coliform source to be upstream of the water diversion.	*1* *2* *1* *2* *2* *Would defer to DEQ on this*	*3* *2* *1-2* *1* *4* *Would defer to DEQ on this*

General questions and comments

- Time frame? What time frame are we using? Given enough time all these will occur at their most severe intensity.
- It seems there are primary and secondary risks. Most of the forest management activities are secondary that they may exacerbate the primary. Might combine categories?

Additional Forestry Comments

Clearcut Harvesting

The explanation in the description/impacts tab describes potential impacts assuming no rules or BMP's are followed. Because of Oregon's FPA rules and BMP's paired watershed studies such as the Trask and Alsea indicate that direct impacts from harvests are short term and not biologically significant.

Jetty Creek would have been 100% Harvested and likely broadcast burned in the 1950's-60s with no riparian buffers. It is possible that more of the old growth was harvested at an earlier interval. 2010's to present harvest began again under FPA rules and significantly better techniques and technologies.

Average age of Clearcut in West Oregon 40-50 years. Jetty Creek harvest age is older, the last stand we harvested was 56.

There will be no harvesting on Stimson ground for at least 18 years within Jetty Creek.

When does a clear-cut become a young-forest? Currently the youngest stand has 6 year old trees in it and is fully occupied by trees and early seral vegetation. (2 year old trees are replanted). The oldest harvest is 22 years old.

I would argue that thinning can have more risks to cause sedimentation than clearcuts. Thinning often requires more roads to reach around leave trees and leave areas. Thinned stands are more susceptible to strong winds and expose soil when they blow over and uproot.

Mentioned low flow impacts of harvesting under low flow/ drought section

Pesticides, Herbicides, and Fertilizers

An herbicide is a pesticide, it's confusing to list them separately.

There is no operational practice for fertilizing hemlock stands.

Historically herbicides, insecticides, and rodenticides are the only pesticides associated with forest activities. Insecticides are rarely if ever used currently. Rodenticides are associated with control of mountain beavers and are used very little. Herbicides are commonly used in forestry.

In a typical rotation herbicides are used 1-2 times in 40 to 50 years. Herbicides must meet certain criteria by the EPA to be registered for forestry use. They target biological process such as photosynthesis that are unique to plants, thus they are relatively non-toxic to birds and mammals. most of the products commonly used in forestry are in the class 4 relatively nontoxic category. For comparison dawn dish soap would fall in this category, Table salt is a class 3 slightly toxic, Caffeine is Class 2 moderately toxic. (Acute oral exposure)

There are several studies local to the area looking into forestry related herbicide use and drinking water. DEQ did a study around 2013-2014 along the coast, more recently needle branch part of the Alsea watershed, and Stimson hired a 3rd party to conduct a study in the Tillamook Watershed. These studies are under the old FPA

rules. The new rules significantly increased protections of water. In these studies herbicides were sometimes detected at extremely low levels, for short durations within 24 hours of application, immediately adjacent to the application site. They were 100 to 1,000 of times below the MCL for chronic exposure. So, in summary nowhere near a level for health concern for a very short period. Several of these were done with aerial applications.

There likely won't be any broadcast herbicide applications on Stimson forestland in Jetty Creek in the next 18 years. There will be a roadside herbicide application on a 3-4 year cycle. During roadside applications roads are surveyed ahead of time and streams/ wet areas are flagged with a 10' to 50' buffer depending on water type. The water district is also notified ahead of time so that they can shut off the intake during the operation.

I am not aware of a water system ever getting a detection of herbicides over a MCL.

Access Roads

The biggest potential for impact from forest harvest activity will be from roads at stream crossings during high rainfall events. A recent paper from the Trask watershed showed detectable increase in sediments from roads beneath stream crossings but, not at a biologically significant level when following FPA rules and best management practices. The new FPA rules increase protections and infrastructure requirements for roads and stream crossings which should reduce impacts further. Jetty creek has some of the best rock there is to maintain roads, and the infrastructure is up to date and in good health. Foresters routinely survey road surfaces and infrastructure during and after harvest to make sure they are functioning properly. Culverts are surveyed during high rainfall events in an effort to locate and remove any blockages due to slides and high stream flows. FPA rules require structures be built to withstand 100 year flood events. Log hauling and truck traffic is halted during high rain fall events. Usually around 1.5" in 24 hours. Cross drains and road surfaces are designed to direct water away from stream systems so that it can filter through the forest floor.

Riparian Impacts

New FPA buffers require 100'-110' either side of fish streams and 50'-75' buffers to non-fish perennial streams. All other streams have protections from equipment activity. The buffer width is to ensure protection of cold water habitat and from sedimentation. Vegetation on the coast grows rapidly, any riparian area exposed to sunlight will be covered in salmonberry/elderberry within 1-2 years. The biggest impact from riparian areas will be trees uprooting during windstorms and exposing soil near the stream system.

Rockaway Beach Sourcewater Protection Plan Risks to Groundwater

7/2/2024

Note: This document shows input gathered from individual Sourcewater Protection Plan (SPP) Team members thus far on risk likelihood and impact scores. The SPP Team has not yet discussed this table as a group to choose risk levels to recommend. The SPP will also be meeting on July 8, so we will have more risk prioritization recommendations to share at the July 9 meeting.

Identifying and prioritizing potential risks will form the foundation for developing strategies to protect drinking water quality. Risks can be prioritized based on the likelihood of their occurrence and the severity of their impacts to drinking water sources, water quality, and infrastructure. Using a scale of 1-5, please indicate how you would rate these two aspects for each risk below.

Likelihood		**Impact**	
1	Rare/very unlikely	1	Insignificant
2	Unlikely	2	Minor
3	Possible	3	Moderate
4	Likely	4	Severe
5	Almost certain	5	Catastrophic

Risks to Groundwater Sources

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Natural Hazards[1]	Tsunami	Rockaway Beach is at a higher risk of a tsunami than Tillamook County as a whole (NHMP, 2023). The water treatment plant and public works building are exposed to tsunami (CSZ M9.0-med) and have a greater than 50% probability of moderate to complete damage from a CSZ earthquake (NHMP, 2023). A tsunami could destroy vital infrastructure and result in water supply shortages, potential saltwater intrusion, and other contamination of drinking water.	*Could be higher depending on location, at least to the infrastructure. Not sure that it would affect groundwater itself.*	*3* *3* *3* *5*	*4* *4* *3* *5*
Natural hazards	Saltwater intrusion	OHA has issued at least three alerts of sodium detections in the City's groundwater (USWA, 2016). Sodium from seawater impacts water quality. In addition to introducing salt, seawater can transport other pollutants to groundwater. With sea level rise due to climate change, this risk is likely to increase.	*Have more alerts been issued since 2016?* *Might be more of a developing issue for planning purposes*	*3* *4* *3* *4*	*3* *4* *2* *3*
Municipal	Sewer lines	Sewer lines through residential areas pose a contamination risk to groundwater.	*Stresses the importance of maintenance of sewer and water lines.*	*3* *3* *3* *3*	*3* *3* *2* *4*

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Municipal	Septic systems	Above ground storage tanks and large capacity septic systems serving more than 20 people are potential sources of contamination. Septic systems, particularly aging ones, can leach contaminants into the groundwater.	*Can be monitored and corrected. Stresses importance of maintenance.*	*3* *3* *3* *3*	*3* *2* *2* *4*
Municipal	Residential high-density housing	High-density housing with septic systems can result in a higher concentration of contaminants leaching into groundwater these areas.	*Should this be a separate risk from the septic systems risk?* *Can limit additional developments of this nature. Also maintain systems to prevent intrusion.*	*3* *3* *3* *3*	*3* *3* *2* *4*
Municipal	Aging infrastructure	Aging wells, pipelines, and other components of drinking water infrastructure put the ability of providing groundwater at risk.	*This issue is being addressed. The City has an active leak detection program in the budget, and is working to replace mainlines (specifically at Nedonna Beach).* *Need to address sooner than later. Costs will keep rising. If this is an important water source it will be worth the investment.*	*3* *3* *3* *2*	*3* *3* *3* *3*

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Municipal	Dike	A dike between Nedonna and the Nehalem River has likely not been maintained in several years, which could put groundwater quality at risk if the dike failed.	*Potentially need more information about the dike to identify risk level* *Also need more info on groundwater source in this area. Will tides reach it if the dike is breached? Can it be moved? Potential natural resource benefits from removal/breaching*	*3* *3* *3* *Not enough information to characterize*	*2* *2* *2* *3*
Municipal	Phone line?	SFM (State Fire Marshall) - HSIS (Hazardous Material Information System) for WIRED TELECOMMUNICATIONS CARRIERS has one chemical reported on site that could impact water quality	*Information is lacking about this risk. USWA doesn't identify the chemical that poses a risk.* *Seems low risk. Any record of this being an issue anywhere?*	*1* *2* *3* *Not enough information to characterize*	*2* *1* *1* *Not enough information to characterize*

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Transportation	Roads, highways, and railroads	Several transportation corridors as potential risks to groundwater sources: the Port of Tillamook Bay Railroad, Highway 101, and a few roads owned by BLM, ODOT, the City, and the County. Vehicles may deposit contaminants that can infiltrate into groundwater sources via stormwater runoff. Herbicide use along highways, roads, and railroads has also been identified in the groundwater source area, which could potentially contaminate groundwater.	*Less restrictions are placed on chemical use for municipal infrastructure ROW than forestry use.* *This is already in place. Are there major issues? Can implement strategies to minimize (bioswales, others?)*	*3* *2* *3* *3*	*3* *3* *2* *3*
Industrial	Mercury storage site	Mercury is stored at a site uphill from Nedonna Beach, posing a risk to the groundwater in Nedonna Beach if there is a Mercury leak	*Potentially need more information about the Mercury storage site to identify risk level* *Need to know more. Also, is this something that is necessary or could be relocated?*	*3* *3* *3* *Not enough information to characterize*	*3* *2* *2* *4*

Risk Category	Risk	Description and Impacts	Comments/Questions	Input on Risk Likelihood (scale of 1-5)	Input on Risk Impact (scale of 1-5)
Other	Stormwater	The USWA identified stormwater from Nedonna Wave PUD (People's Utility District?) as a potential source of pollution in its Site Information System (SIS). Stormwater runoff is a risk to groundwater quality, as it has the potential to transport pollutants to the groundwater.	*More information is needed about this specific risk.* *Could be higher depending on the circumstance. Why single out PUD-stormwater runoff comes from a lot of sources.*	*3* *2* *3* *Not enough information to characterize*	*3* *2* *2* *3*

[1]Other natural hazards risks from the surface water risks table may apply to groundwater, such as highly erodible soils, landslides, and wildfires, but weren't included in this table to minimize repetitive information.