



ORDINANCE NO. 2022-02

AN ORDINANCE DECLARING A SIX-MONTH MORATORIUM ON NEW CONNECTIONS TO THE CITY WATER SYSTEM IN THOSE AREAS LOCATED NORTH/NORTHEAST OF BOB'S CREEK FROM NORTH FORK ROAD, EXCLUDING LANDS IDENTIFIED AS RIVERVIEW MEADOWS PHASES 2 AND 3, AND EAST OF THE INTERSECTION OF NORTH FORK ROAD AND MCDONALD ROAD DUE TO LACK OF WATER SYSTEM ADEQUACY; AND DECLARING AN EMERGENCY

WHEREAS, the City of Nehalem is a home rule city under the laws of the State of Oregon and has a duly acknowledged Comprehensive Land Use Plan; and

WHEREAS, the City of Nehalem operates a municipal water system serving its citizens located within the City limits as well as serving properties located outside the City limits, and

WHEREAS, as the City of Nehalem is a "water supplier" under OAR 333-061-0200(150) and as a water supplier, the City has the obligation of "maintaining a pressure of at least 20 pounds per square inch (psi) at all service connections at all times", and

WHEREAS, pursuant to 2019 Oregon Fire Code, Appendix B; Nehalem City Code 51.10(F)(1) and the City's Water Master Plan, the City has an obligation to ensure that water lines serving any single family dwelling maintain a fire flow of at least 1000 gallons per minute.

WHEREAS, the City Engineer Kyle Ayers has evaluated the City's water system and discovered certain areas along its water lines where this standard of 20 psi may not be maintained at all times, if additional water service connections are made, without additional improvements of water reservoirs, water pumps and other recognized tools to increase water pressure within an area, and

WHEREAS, the City has identified an estimated potential of 59 properties within the proposed moratorium area, as depicted on the map attached as Exhibit A, which could request a new water connection to the City water system, if there was sufficient, stable water pressure in the defined moratorium area, and

WHEREAS, the City had additional testing of certain fire hydrants done, in the affected area, which resulted in a dramatic drop in water pressure within the proposed moratorium area. Allowing additional water service connections in the proposed moratorium area within the Exhibit A mapped area would exacerbate any low-pressure issue which may be periodically experienced at the higher elevations in the proposed moratorium area, and

WHEREAS, the City of Nehalem's acknowledged Comprehensive Land Use Plan requires that the City take actions that are consistent with appropriate state and federal environmental quality standards, statutes, programs and policies, including those for water quality, and

WHEREAS, the City of Nehalem's acknowledged Comprehensive Land Use Plan also requires that undeveloped lands within the Urban Growth Boundary (UGB) shall be urbanized only in cases where necessary public services, including water service, can be orderly and efficiently extended; and

WHEREAS, both the Comprehensive Plan and the Nehalem City Code 51.09 provide that the cost of public services or facilities shall be distributed equitably among those residents or land developments creating a need for such services and that large developments or heavy water users should make equitable contributions to the improvement of the water system and shall pay all costs associated with the extension of water lines. For individual properties not located in a subdivision, it is the responsibility of the owner to provide any necessary improvements for sufficient water pressure to their respective properties, without reducing pressure to other users of the system, and

WHEREAS, the City finds there is a demonstrated need to prevent water pressure shortfalls that would occur if the proposed moratorium is not in place; and

WHEREAS, the identified pressure deficiencies are limited to a geographically constrained area, primarily an area outside of the city limits and thus, any moratorium shall be reasonably limited to restricting new water line connections to the properties identified on the map attached as Exhibit A, and providing any new water connections will exacerbate these existing deficiencies, and

WHEREAS, based upon reasonably available information, the City makes the following findings in support of the above finding of demonstrated need as required by ORS 197.520(2):

- A. While a moratorium can logically have a negative economic effect, the lack of infrastructure necessary to maintain 20 psi of pressure at all times causes safety hazards and reduces the overall quality of life which may lead to the same results. Therefore, it makes more sense to control growth through a moratorium until a plan of correction can be identified.
- B. The City Engineer's Technical Evaluations dated September 6, 2022 and November 7, 2022, attached to the Supplemental Staff Report attached as Exhibit B, explains that the City's water system within this moratorium area is currently experiencing low pressure conditions that violate state water quality standards. Therefore, the City cannot allow any new service connections that place additional water service demand within these restricted areas.
- C. The City has made every effort to reduce the impact the proposed moratorium could have on development. Given the City Engineer's determination that a proposed reservoir, vault with controls and pump station will allow new development on lands within the Riverview Meadows Phases 2 and 3 development, the City modified its moratorium to exclude those areas from this moratorium. By removing those lots from

the moratorium area, the estimated housing impact for this moratorium is reduced to new water connections for 59 homes. Of this number, only 16 lots, including the 7 lots within the Riverview Meadows Phase 1, require a water connection to accommodate the development of a residence within the City's UGB. As noted previously, the City's 2019 Housing Needs Analysis projects a need for 162 dwelling units or approximately 40.5 acres needed within the 2038 planning horizon with a buildable supply of 150.36 buildable acres. Removing a total of 59 lots from development, both within and outside the City's UGB, will not have any impact on the City's ability to meet its projected housing needs when there are 90.25 acres of buildable land (including areas such as Bayside Gardens) outside the moratorium area to meet the projected need. In other words, other areas of the City and UGB are available in the short term to accommodate the needed housing demand. Additionally, this moratorium only prevents connection to City water. It does not constrain development that might be served by a rural well, as would be appropriate for rural areas outside of the city limits. Finally, as for the City's economic development needs, none of the area affected is zoned to accommodate industrial, employment or commercial uses.

D. Any development or redevelopment proposal that does not require a new water connection will be exempt and allowed to proceed. By not prohibiting development when connected to rural water supplies, this moratorium serves to accommodate the housing and economic development needs of the area affected by the moratorium as much as possible.

WHEREAS, to avoid exacerbating existing deficiencies within the City's domestic water system and to allow time for completion of studies to identify solutions, funding arrangement and the construction of necessary improvements, the City Council finds there is immediate need to impose a moratorium on new water connections for a period of six months pursuant to ORS 197.520(2). The City Council's determination of need for the moratorium is based on reasonable available information, the record of proceedings leading to adoption of this ordinance and the findings contained in this ordinance, and

WHEREAS, the City understands that it has an obligation under ORS 197.530(1) to adopt a program identifying a solution to correct the problem creating the deficiency within 60 days after the effective date of this moratorium and to further that effort, the City has and will continue to convene stakeholder meetings to encourage mutual agreement as to a comprehensive solution and explaining that funding these improvements will be borne by those seeking to connect at the time of development, and

WHEREAS, pursuant to ORS 197.520(1)(a), the City has provided written notice to the Department of Land Conservation and Development on July 29, 2022, which is 45 days prior to the public hearing on September 12, 2022, for adoption of this ordinance, and

WHEREAS, pursuant to ORS 197.520(1)(b), the City has made written findings justifying the need for the moratorium as set forth in the Supplemental Staff Report and adopted by reference, in accordance with ORS 197.520(2), and

WHEREAS, pursuant to ORS 197.520(1)(c), on September 12, 2022 and November 14, 2022, the City Council held a duly noticed public hearing on declaring a moratorium based on

the lack of adequate water service infrastructure to allow new connections to the City's water system and the findings which support the moratorium.

NOW, THEREFORE, THE CITY OF NEHALEM ORDAINS AS FOLLOWS:

Section 1. Moratorium Declared.

Based on the foregoing findings, a moratorium based on lack of adequate water service infrastructure for new development is declared for the areas identified in the map attached as Exhibit A.

While this moratorium is in effect, all development shall be subject to the following notice and restrictions:

1. Property owners and representatives shall be notified by staff of the moratorium at the earliest opportunity either during pre-application conferences or through the County land use review process. However, the failure to provide notice shall not alter the development restrictions imposed by this moratorium.
2. The City shall continue to cooperate with the County in processing land use permit applications during the moratorium period, and if approved, appropriate conditions shall be imposed restricting development until the required water pressure necessary to serve the proposed development is in place.
3. No new water connection request may be issued until these pressure and fire flow deficiencies within the existing system are remedied in compliance with the state and local water pressure and fire flow standards and the moratorium is lifted for those areas.

Section 2. Term. This moratorium shall expire six months from the date of its enactment unless otherwise extended in accordance with state law.

Section 3. Effect on Unexpired Land Use Approvals. For properties subject to this moratorium that have an approved land use review that has not yet expired, the expirations date for the approved land use review shall be extended by the length of this moratorium and any moratorium extensions.

Section 4. Reporting. The City Engineer shall regularly report to the City Council on the impact of the moratorium on development and the fire flow and water pressure conditions.

Section 5. Severability. If any provision of this Ordinance or its application to any person or circumstance is held invalid, the invalidity does not affect other provisions or applications of this Ordinance that can be given effect without the invalid provision or application, and to this end the provisions of this Ordinance are severable.

Section 6. Emergency. This Ordinance being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this Ordinance takes effect on its passage.

PASSED AND ADOPTED by the City Council on this 14th day of November 2022; and

APPROVED by the Mayor this 14th day of November 2022.



Bill L. Dillard, Jr., Mayor

Attested:



Melissa Thompson-Kiefer, City Manager

First & Second Reading: November 14, 2022

Ayes: 3
Nays: 0
Abstentions: 0
Absent: 1

Adopted: November 14, 2022

Ayes: 3
Nays: 0
Abstentions: 0
Absent: 1

Exhibits:

Exhibit A - Map identifying the areas affected by moratorium

Exhibit B – Supplemental Staff Report including Technical Engineering Analysis

CITY OF NEHALEM WATER CONNECTION MORATORIUM

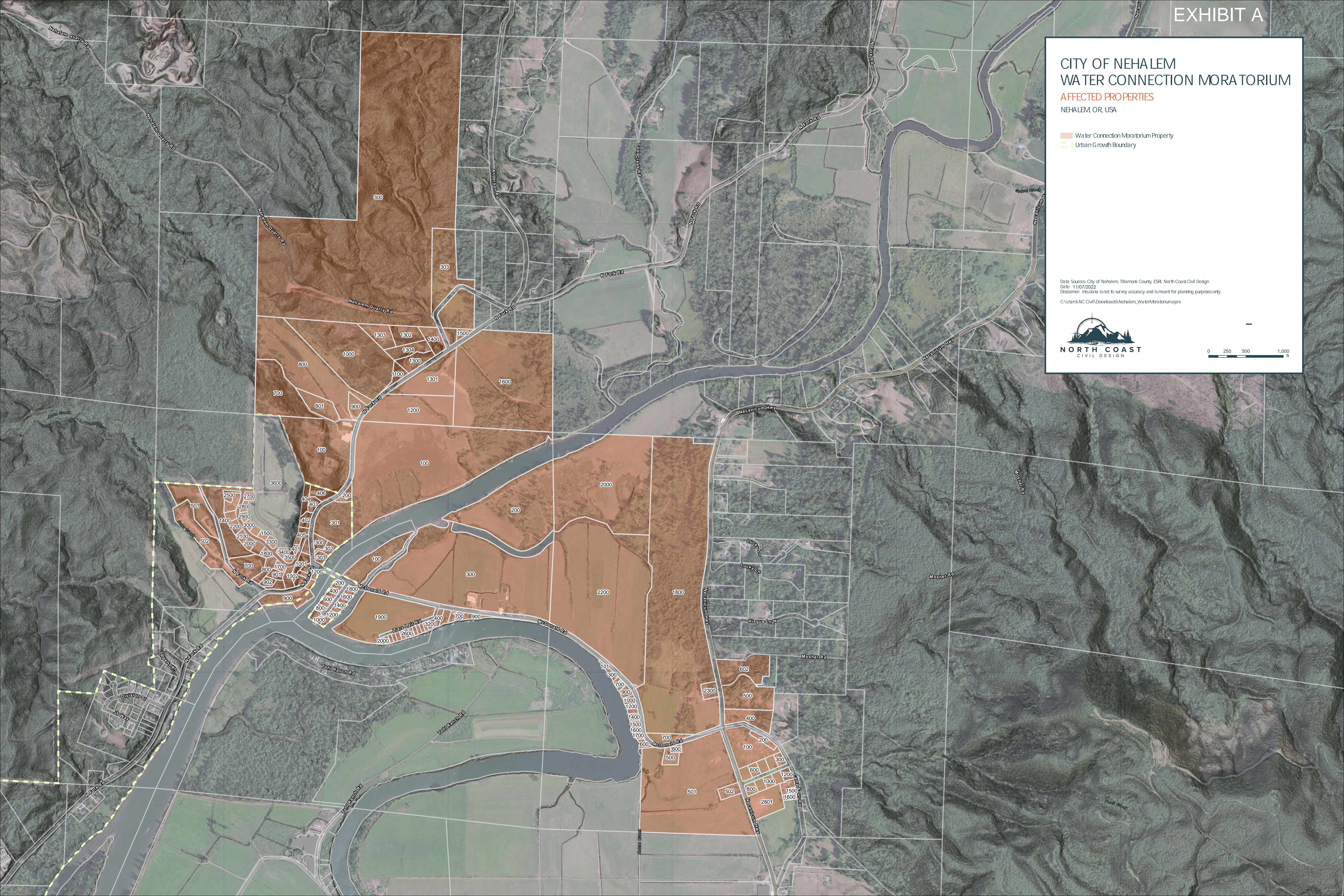
AFFECTED PROPERTIES

NEHALEM, OR, USA

-  Water Connection Moratorium Property
-  Urban Growth Boundary

Data Sources: City of Nehalem, Tillamook County, ESRI, North Coast Civil Design
Date: 11/07/2022
Disclaimer: This data is not to survey accuracy and is meant for planning purposes only.

C:\Users\NC\Civil\Downloads\Nehalem_WaterMoratorium.aprx



SUPPLEMENTAL STAFF REPORT

TO: NEHALEM CITY COUNCIL
FROM: Carrie Richter, Contract City Attorney
RE: Moratorium Ordinance 2022-02
DATE: November 7, 2022

Executive Summary

On September 12, 2022, the City Council held a public hearing to consider declaring a moratorium on new water connections for areas to the north and northeast of the City limits. This matter was continued to a date certain of November 12 and the record was left open to allow all parties time to submit additional materials. On October 20, Tillamook County granted tentative subdivision approval for Riverview Meadows 2 (RVM2). This approval included a plan for providing water service to the new RVM2 development through the construction of a reservoir, vault with controls, and a pump station (referenced as the “RVM2 improvements”). As discussed in greater detail below, the City Engineer has evaluated this proposal and determined that these water improvements will be adequate to allow water connections to the RVM2 development in compliance with state and local regulations, if accomplished consistent with the proposed plan and conditions. These RVM2 Improvements will also serve Riverview Meadows 3 (RVM3), which has yet to be reviewed. As such, City staff recommends modifying the boundaries of the moratorium to exclude those lands to be developed as RVM2 and RVM3. Although it may be that the installation of the RVM2 improvements will provide the required pressure and fire flows necessary to serve existing Riverview Meadows 1 (RVM1) water customers or other nearby undeveloped properties, some further steps are required before excluding other areas of residual service from the moratorium. Therefore, staff recommends modification of the moratorium boundaries to exclude only the RVM2 and RVM3 subject lands.

For the reasons explained further below, the City’s water system lacks improvements necessary to accommodate any new connections within the moratorium area and as such, requires declaration of a moratorium through the adoption of Ordinance 2022-02.

Analysis

In order to declare a moratorium, the City must make written findings justifying the need for a moratorium consistent with the criteria set forth in ORS 197.520(2)(a). The statute includes different criteria depending on the status of the lands affected. Those lands that are within the City’s urban growth boundary (UGB) are subject to the applicable criteria as “urbanizable” lands where it is assumed urban facilities and services will be provided and a moratorium may be necessary where such services are not available. The moratorium also affects rural lands (lands outside the UGB) that are within the City’s Water Master Plan-identified service area. The statutes provide different criteria for declaring a moratorium on rural land that is not premised on a lack of public facility adequacy. As the moratorium in this case is based on a lack of water system conveyance adequacy for all affected lands, the findings below respond to the applicable approval criteria which provide:

(2) For urban or urbanizable land, a moratorium may be justified by demonstration of a need to prevent a shortage of public facilities which would otherwise occur during the effective period of the moratorium. Such a demonstration shall be based upon reasonably available information, and shall include, but need not be limited to, findings:

(a) Showing the extent of need beyond the estimated capacity of existing public facilities expected to result from new land development, including identification of any public facilities currently operating beyond capacity, and the portion of such capacity already committed to development;

As noted in the City's previous report, an adequate water system is one that can maintain a pressure of at least 20 pounds per square inch (psi) at all service connections at all times and meets the City's minimum fire flow requirement for single family residential development of 1,000 gallons per minute (gpm) sustained for a minimum of 1-hour. OAR 333-061-0200(150) and 2015 Water Master Plan. A Technical Evaluation summary dated September 6, 2022 from the City Engineer summarized the existing water system deficiencies in the following finding:

"We know from 2 sets of recent hydrant flow tests, that while the hydrants along North Fork Road, McDonald Road or HWY 53 are operated, the pressure at nearby water services above elevation 110' are adversely affected and cannot sustain the required 20 psi. This includes all water services located in Riverview Meadows and other elevated services primarily west of North Fork Road. As mentioned above, these tests were conducted twice, once contracted by the City of Nehalem and once contracted by the developers of Riverview Meadows, with the same results of less than 20 psi for both sets of tests. These tests indicate that the system is currently operating beyond its capacity."

Since then, the owner/developer of the RVM2 and RVM3 property submitted a proposal for improvements that would serve their proposed residential development. The city engineer offered the following summary of the RVM2 Improvements:

"More specifically, it should be noted that the pump station shall be rated for 'residential' and 'fire service' since that is the intent of supplying approved flows to RVM2 and RVM3.

Because the City's main reservoir is higher in elevation than the Proposed Improvements (PI) reservoir, the new reservoir will "float" on the water system. Pressures at RVM2 and RVM3 will depend on elevation and/or auto controls. This will require further hydraulic analysis during the planning stages and approval by the City Engineer and the Oregon Department of Health. During seasonal operation, this reservoir may require control modifications.

To be assured that the new flow conditions out of the PI system are adequate, the Nehalem Bay Fire Department shall also be required to approve the planning and construction according to the latest Oregon State Fire Code and given the type of construction that is being planned for RVM2 and RVM3."

The city engineer worked with the RVM2 engineering representatives to evaluate the proposed water improvement plans and concluded that these improvements will allow for development within RVM2 and RVM 3 to proceed in compliance with City standards.¹ This analysis consisted of hydrologic computer modeling which represents the industry standard approach for obtaining reasonably available information to gauge the effects of planned water system improvements. With the RVM2 required improvements

¹ It is important to point out that the RVM2 water system improvement plans changed between those that were provided at the Council's first moratorium hearing on Sept 12 and those that were approved by Tillamook County Planning Commission on October 20. Just to be clear, the findings set forth herein are based on the RVM improvement plans dated August 9, 2022 and its attached plan entitled "Riverview Meadows Phase 2 Tentative Plan" dated May 12, 2022 and updated "7/24/22 Add WL Feeder, Tank, Pump, PRVS".

online, the proposed booster pump will pressurize RVM 2 & 3 to approximately 60 psi to all residential services, based upon initial design parameters provided by the RVM 2 engineers. In the case of a fire, a dedicated fire pump will engage, providing the minimum 1,000 GPM at fire hydrants throughout the subdivision.

Based on this analysis, the city engineer has concluded that installation of the RVM2 water improvements, if accomplished consistent with the proposed plan and conditions, will allow for the provision of new water connections to RVM2 and RVM3 with a pressure greater than 20 psi and fire flow of more than 1,000 gallons per minute.

To ensure that the RVM2 improvements remain adequate to serve RVM2 and RVM3 as construction moves forward, the County's approval imposed the following condition of approval:

"7. The applicant/owner shall meet the requirements of the City of Nehalem for water supply system design & construction as set forth in the City of Nehalem letter dated October 12, 2022. A letter of final approval from the City of Nehalem confirming satisfaction with construction of utility improvements is required for Final Plat approval. Letter of water service availability will be required at the time of development of each individual lot."

The requirements imposed by reference to the City's October 12, 2022 letter provide:

"Applicant shall install a water distribution system to serve Riverview Meadows Phase 2 "RVM2" that substantially complies with the narrative dated August 9, 2022 and its attached plan entitled "Riverview Meadows Phase 2 Tentative Plan" dated May 12, 2022 and updated "7/24/22 Add WL Feeder, Tank, Pump, PRVS" (called in this condition for simplicity "Riverview Water Plan"), authored by engineer, Jason Morgan.

- a. Coupled with submission of its Schematic Design plans, the applicant shall submit a pre-design report for the reservoir, pump station and components for the high pressure zone indicating that all connections will maintain adequate pressure.
- b. Prior to completing any road paving, the new water infrastructure shall be tested to verify that improvements comply with the City's requirements and standards and where those standards are not met, pipelines shall be repaired or replaced, and tested. These findings shall be provided to the City Engineer.
- c. Prior to recording the final plat for RVM2, the Applicant shall secure the City's acceptance for the water distribution improvements in substantial conformity with that Riverview Water Plan.
- d. Similarly, prior to recording the final plat for RVM3, the Applicant shall install to City standards and secure the City's acceptance for the water distribution improvements in substantial conformity with that Riverview Water Plan, subject to periodic testing during installation. This condition does not imply that RVM3 must be approved with respect to water system adequacy or otherwise. Such implication cannot be drawn because no application for RVM3 has been submitted. Rather, this condition is designed to respond to, and assuage, city concerns that a water distribution system substantially complying with the Riverview Water Plan will be installed for RVM 2 and ultimately 3 and so provide the agreed-upon adequate water service capacity to serve the entire 74-lot subdivision that is contemplated for the RVM 2 and 3 property.

e. The Applicant, its principles and its subsequent owners in interest, shall not make any applications for new water service for RVM2 or RVM3 until the Riverview Water Plan improvements have been accepted by the City.”

These conditions were written in conjunction with the city engineer providing confirmation that development occurring in compliance with the tentative plat approval can comply with the state and local requirements. These conditions also preclude the owner of RVM2 and RVM3, and any subsequent owners, from seeking new water connections until the RVM2 improvements are in place.

As the city engineer notes, it is likely that the RVM2 improvements will benefit areas beyond RVM2 and RVM3. It may be that by introducing a pressure reducing valve and connecting to RVM1, these improvements will create the required pressure and fire flows within RVM1. Assuming as much, the difficulty with removing RVM1 from the moratorium area now is that RVM1 land is not subject to any condition precluding new water connections until the improvements are in place. There is no guarantee on the timing for installation of the RVM2 improvements. As soon as there is some certainty with respect to timing, (coupled with an evaluation of complete schematic design plans), it is likely that RVM1 and perhaps some of those lands nearby can be removed through amendment of the moratorium boundaries.

That said, these improvements are unlikely to improve the pressure and fire flow limitations for properties along McDonald Road and Highway 53. The properties located along McDonald Road and Highway 53 currently have adequate pressures for residential use, approximately 75- 85 psi. Due to the length of the dead-end, non-looped water pipe, it is unlikely that new development will be able to meet the 1,000 gpm fire flow requirement.

Therefore, the previously discussed hydrologic modeling and analysis indicates that, taking into account the existing demand creating inadequate conditions, the City’s water system is currently inadequate to accommodate any additional water connections within the moratorium area. A water connection moratorium is necessary to allow the City to identify and implement a solution to address this shortfall.

(b) That the moratorium is reasonably limited to those areas of the city, county or special district where a shortage of key public facilities would otherwise occur; and

As explained above, the engineering analysis completed by the City’s licensed and qualified engineer indicates that any additional water connections mapped within the modified moratorium boundaries cannot be served with water service satisfying either the 20 psi pressure standard, the 1,000 gpm fire flow Master Plan requirement, or both. The RVM2 engineers completed their own independent hydrant evaluation and concurred that the existing system is inadequate and identified improvements for RVM2 and RVM3 that allowed for new development within these areas to go forward in compliance with the applicable regulations. An Oregon Health Authority (OHA) System Survey, completed on October 18, 2022, confirms this finding.

The City has received requests from individuals engaged with the Twin Lakes subdivision seeking to be excluded from the moratorium because their subdivision was platted in 1970, is adjacent to a rural fire department and a city water line runs through an easement is available to serve these properties. Further, these owners argue that they should be subject only to the Fire District’s Rural Water Supply Requirement of 250 gpm for 4 hours. The Water Master Plan is unambiguous in requiring 1,000 gpm for single family homes with a spacing greater than 100 feet. P 13. The plan does not contemplate any exception for pre-existing subdivisions lacking connections or different standards for rural lands. No party disputes that the fire flows are not adequate to serve new development in compliance with these City-adopted standards.

The only way to alter this component of water system adequacy would be to amend the master plan to remove this obligation. However, such an amendment is not before the City now for consideration. Rather, the only question for the City to answer here is whether the moratorium is limited to prevent a shortage of public facilities. That shortage is created by requirements relating to water pressure and fire flows. Whether some of the areas subject to the moratorium are suffering a greater shortfall than others does not change the fact that allowing any additional new connections cannot be accomplished in compliance with these standards.

The removal of RVM2 and RVM3 from the moratorium area suggests that the City is willing to remove from the moratorium those areas where the evidence indicates no water service inadequacy will occur. Until a plan is identified and improvements made to relieve the water connection shortfall in other areas, the moratorium boundaries, as proposed, is constrained to that area necessary to address the inadequacy.

(c) That the housing and economic development needs of the area affected have been accommodated as much as possible in any program for allocating any remaining public facility capacity.

In the previous reports, staff had estimated that 133 properties were impacted by the proposed moratorium. This number included the 38 lots approved within RVM2 and the 36 lots estimated for the RVM3 subdivisions. By removing those lots from the moratorium area, the estimated housing impact for this moratorium is reduced to new water connections for 59 homes. Of this number, approximately 16 lots, including the 7 vacant lots within the RVM1, that it is anticipated will seek a water connection to accommodate the development of a residence within the City's UGB. As noted previously, the City's 2019 Housing Needs Analysis projects a need for 162 dwelling units or approximately 40.5 acres needed within the 2038 planning horizon with a buildable supply of 150.36 buildable acres. Removing a total of 59 lots from development, both within and outside the City's UGB, is not likely to have any impact on the City's ability to meet its projected housing needs. This criterion is satisfied.

Other Concerns

On October 18, 2022, the City received formal notice from OHA in the form of a Water System Survey acknowledging the existing 20 psi pressure deficiencies as previously noted. This notice requires the identification of a corrective action plan no later than December 6, 2022. Therefore, the City may need to install a pressure sustaining valve or some other improvements immediately to respond to this requirement. Implementing this moratorium on any new water connections reinforces this corrective plan by assuring that no further violations will occur.

The primary objective of those who have testified in opposition to this moratorium is that the City is trying to use the moratorium to avoid paying its fair share of the improvements necessary to address the shortfall. First, adopting this moratorium makes no determinations as to the nature of the necessary improvements or who will fund them. Rather, declaring a moratorium will allow the City to hold off in granting any new connections request until it: (1) identifies those improvements required in the immediate term as necessary to "maintain" 20 psi to its existing customers, as required by the OHA; (2) evaluate the RVM2 improvements and identify whether they will, as proposed or with any modification, allow additional new connections on properties within the UGB in compliance with the standards and fairly allocate the costs to benefiting owners; and (3) identify improvements necessary to allow connections along McDonald Road outside the UGB and to fairly allocate the cost to benefiting owners. This will be accomplished consistent with the priorities for new water connections under Nehalem City Code (NCC) 51.04 and the cost of upgrades paid for by those property owners benefiting from such improvements as required by NCC 51.10.

Further, as explained in the moratorium ordinance findings, state law allows a local government 60 days after the effective date of a moratorium to identify a program to resolve an identified deficiency. The

reason for the stakeholder meetings is to allow those who are ultimately responsible to pay their fair share of the necessary improvements the opportunity to have input on the nature and timing for the installation of those improvements.

Conclusion

Based on the foregoing findings, along with the evidence provided by the city engineer, the City should determine that existing deficiencies in the water service delivery system impair the City's ability to provide water connections to new development in compliance with state and local standards and declare a moratorium.

Attachments:

City Engineer Technical Evaluations dated September 6, 2022 and November 7, 2022

Also submitted into the Record:

Tillamook County Tentative Subdivision Approval of Riverview Meadows 2
OHA October 18, 2022 Water System Survey

November 7, 2022

City of Nehalem, OR
P.O. Box 143
Nehalem, OR 97131



Attn: City Manager, Melissa Thompson-Kiefer

Re: Updated Water Moratorium Technical Evaluation

Dear Melissa,

This letter is to update and supplement the findings set forth in a September 6, 2022 Technical Evaluation provided by this firm. The Sept. 6 Evaluation details the need for a water connection moratorium based on a shortage of water infrastructure necessary to provide water to certain areas to the north and northeast of the existing city boundaries. An “adequate water system” is one that can maintain a pressure of a least 20 pounds per square inch (psi) at all service connections at all times and when 1,000 gallons per minute (gpm) can be measured and sustained for a minimum of 1-hour. OAR 333-061-0200 (150) and City Water Master Plan.

CHANGES TO RIVERVIEW MEADOWS WATER MAIN

The Sept 6 Evaluation provides a detailed explanation about how high flows can lower the actual pressure to services at higher elevations below the required 20 psi mark, most notably within the existing Riverview Meadows Phase 1 (RVM1) development. In fact, where the flow is high enough, it can create negative pressure that could be very dangerous as it can siphon toxins into the City water system or collapse water lines. In order to ensure the safety of the system to existing customers in the short term, installation of a pressure sustaining valve was recommended.

Also of note, the City received a system survey from the Oregon Health Authority (OHA) dated October 18, 2022 which identifies a system distribution violation with respect to water pressure of less than 20 psi affecting existing customers. This survey requires that the City provide a corrective action plan to address these deficiencies by December 6, 2022. Taken together, the existing water modeling as well as findings from the OHA indicate that the existing water system is inadequate and that adding new connections to the existing system without improvement will further exacerbate this deficiency.

Since this initial analysis was completed, the owner/developer of Riverview Meadows Phases 2 and 3 (RVM2 and RVM3) submitted a plan to construct water improvements to serve new development in this area. This plan, entitled: “Riverview Meadows Phase 2 Tentative Plan” dated May 12, 2022 and updated “7/24/22 Add WL Feeder, Tank, Pump, PRVS” provides for the construction of a reservoir, vault with controls, and a pump station that includes capacity to meet fire flow requirements.

Working in conjunction with the RVM2 engineers, a water model was completed for the analysis of the proposed RVM2 improvements. The evaluation focused on the impacts to the existing system to determine if the inadequacies were resolved. This hydrologic computer modelling represents the industry standard approach for obtaining reasonably available information to gauge the effects of planned water system improvements. With the proper infrastructure and control valving, this modelling indicates that the required 20 psi pressure and fire flows will be

achieved to serve new residential development within RVM2 and RVM3 and that this area should not be included within the moratorium.

EVALUATION OF IMPACTS TO LANDS BEYOND RVM2 AND RVM3

The effect the RVM2 improvements will have on the remainder of the lands within the moratorium area has yet to be fully determined. However, by utilizing a bi-directional water line to fill the new reservoir, in conjunction with an altitude valve and a downstream pressure reducing valve, the proposed improvements may result in fire flow increases within the surrounding areas. With the infinite combinations of settings of all components within the new pressurized system, or knowing the precise specifications and horsepower/pump curves of the new pump station, etc., the full impacts of the new system on the existing system won't be known until tested, once construction is finalized.

With the current number of unknowns in the new RVM water system, it may be that installation of a pressure sustaining valve (which may be necessary as a stop-gap measure anyway), a cross-over connection, regulation in the reservoir flows or some other approach may be available to achieve the required standards while taking advantage of the RVM2 improvements. More testing, based on a property-by-property or hydrant-by-hydrant in the area along North Fork Road will provide this additional information and may be accomplished through subsequent facilities planning efforts.

It is important to note that although the RVM2 improvements may be altered after construction to provide pressure necessary to serve existing or new development in RVM1 or lands in close proximity, these improvements will not address the lack of adequate fire flow to properties along McDonald Road or Highway 53.

CONCLUSION

In summary, the primary goal of a municipal water system is to supply safe drinking water to residents and adequate fire flow to serve the community. As such, we recommend that the City declare a moratorium on all new water connections within a modified moratorium boundary that excludes the RVM2 and RVM3 lands proposed for development. The City should also install a pressure sustaining valve on the water main that services RVM1 to rectify the deficiency per the OHA system survey. The City should also continue to monitor the effect of the RVM2 improvements as they become active.

After the improvements are in place and operational, we recommend more fire flow analysis to decide how fire flow events will affect the water system on the east side of Nehalem.

Sincerely,
North Coast Civil Design, LLC



Kyle Ayers, PE
Principle in Charge

September 6, 2022

City of Nehalem, OR
P.O. Box 143
Nehalem, OR 97131



Attn: City Manager, Melissa Thompson-Kiefer

Re: Water Moratorium Justification Technical Evaluation

Dear Melissa,

The City of Nehalem has requested a letter detailing the water system and associated pressure and flow issues located along the North Fork Road water main. Along with North Fork Road, the water main extends east along McDonald Road to Highway 53 and heads south terminating at the Nehalem Bay Fire & Rescue Hwy 53 facility.

In order to assess the water system, we must define what makes an adequate water system. A water system is considered an adequate and sufficient water supply if it can maintain a pressure of at least 20 pounds per square inch (psi) at all service connections at all times. Also, a water system is considered meeting City fire flows requirements when 1,000 gallons per minute (gpm) can be measured and sustained for a minimum of 1-hour. These parameters have been set forth by OAR 333-061-0200(150) for minimum pressure and the 2015 City of Nehalem Water Master Plan for minimum fire flow. A system that cannot meet these thresholds creates a shortfall.

We know from 2 sets of recent hydrant flow tests, that when the hydrants along North Fork Road, McDonald Road or HWY 53 are operated, the pressure at nearby water services above elevation 110' are adversely affected and cannot sustain the required 20 psi. This includes all water services located in Riverview Meadows and other elevated services, primarily west of North Fork Road. As mentioned above, these tests were conducted twice, once contracted by the City of Nehalem and once contracted by the developers of Riverview Meadows, with the same results of less than 20 psi for both sets of tests. These tests indicate that the system is currently operating beyond its capacity.

NORTH FORK WATER MAIN

Nehalem has a significant number of houses already connected to the very long water pipe running out North Fork Road, running east along McDonald Road to Highway 53 and heading south and terminating at the Nehalem Bay Fire & Rescue Hwy 53 facility. This eastern portion of the City is only served by this single water line that is not looped. For this reason, flow and pressure for this portion of the City are more susceptible to rapid drops in pressure resulting from high demands than other parts of the system.

MCDONALD ROAD & HWY 53 WATER MAIN

The water main within North Fork Road is an 8-inch PVC & HDPE water main. This main branches out to the east along McDonald Road and reduces down to a 6-inch PVC & HDPE after the large dairy farm. In 2012, the Nehalem Bay Fire & Rescue District funded and contracted for the construction of an extension of the 6-inch water main down HWY 53 for the purpose of supplying domestic water to the remote Fire Station structure to allow them to fill their tankers from the end-of-main fire hydrant.

It is important to understand that the testing performed per Oregon Health Authority (OHA) and American Water Works Association (AWWA) standards when the waterline was installed did not provide any certification that the water line has adequate pressure. This is not a certification that the pressures or flows meet a certain limit, but rather that the new water line has been isolated (between 2 shut valves at each end of the new pipeline) and that the water line can withstand holding pressure, that was introduced by a mechanical pump, for a certain duration without leaking. The testing requirement is defined within

(AWWA), Section C651, to determine the strength of the pipe, but this test offered no evaluation on the effect such a draw would have on the broader system.

After this line was installed, it was observed that during the times the end-of-main fire hydrant was flowing full, water pressure and flow dropped significantly and dangerously at Riverview Meadows. It is for this reason that the Fire District no longer fills its tankers at this location.

RIVERVIEW MEADOWS WATER MAIN

Within Riverview Meadows, pressure can be maintained if only a few customers are using water at the same time. High flows at certain times of day (like supper time demands) will lower the actual pressure to the services at higher elevations. In fact, so much water can be used in a high flow situation that the water pressure at these services will fall below the required 20 psi mark. If a flow is high enough for a sustained duration, as seen during hydrant testing along North Fork Road, water pressure at high elevations will result in negative pressure. Negative pressure within a water system is very dangerous and could result in the siphoning of toxins into the City water system or could result in collapsing water main lines. Both situations listed could cause severe health and safety issues for residents within this area or even to the entire community served by the City's water system. This substantial risk to health and safety creates an inadequacy such that the service is operating beyond its capacity.

Due to these possibilities, the City is currently in the process of installing a Pressure Sustaining Valve on the highest water main that serves Riverview Meadows. This special valve acts as a Check-Valve when high flows are detected within the North Fork water main. The valve will not allow the pressure to be "siphoned" from water demands occurring at the higher elevations, eliminating the possibility of negative pressure for a sustained amount of time. Once the flows return to within a "normal" range, the valve will then open again and continue to supply water to the highest services. This Valve is only a temporary, partial fix for this low-pressure situation. This valve will only serve as a partial fix due to the limited functionality of only allowing protection to the existing small number of users at the high elevation level. The valve will allow the existing static pressure within the pipeline to be temporarily "stored" until the pressure is replenished by the waterline on North Fork Road. If more services are allowed in this high elevation level, the added demands of these services would not allow the pressure to return to "normal" and the stored pressure in the line would bleed under 20 psi and eventually to zero.

WATER SERVICE MORATORIUM

While discussing the stated pressure problem and possible solution, Oregon Health Authority, Drinking Water Services (OHA-DWS), was contacted to discuss this further. In conversations with Evan Hofeld from OHA-DWS, he states "A moratorium is an effective tool to ensure future demands do not exceed the capacity of the existing infrastructure and has been used in other communities (e.g. Youngs River Lewis and Clark Water District in Clatsop County and Falcon Cove at the northern end of Tillamook County come to mind)".

Until the time that those seeking a new connection add the required storage and pump system to provide the required pressure and flow to this upper water system creating the necessary additional system capacity, no additional connections should be allowed to connect to the City's water mains as shown in the Water Connection Moratorium map.

CONCLUSION

We recommend that the City monitor the effect of the newest service connections as they become active. Simultaneous to this monitoring, it is recommended that the pressure sustaining valve be installed on the water main that services the Riverview Meadow subdivision. Any unanticipated impacts should be evaluated and reported and re-analyzed in the Water System Model immediately to minimize further stress on the water system.

The primary goal of a municipal water system is to provide safe drinking water to residents and adequate fire flow to serve the community. We recommend additional fire flow analysis to determine how fire flow events will impact the water system as a whole. As future planning continues, in order to remedy the

pressure and flow issues on the North Fork water main, coordination with Nehalem Bay Fire and Rescue will be critical. Fire protection is paramount and determining a solution that provides additional hydrant flows and pressure is an important next step.

**Sincerely,
North Coast Civil Design, LLC**

A handwritten signature in blue ink that reads "Kyle Ayers". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

**Kyle Ayers, PE
Principle in Charge**



MORGAN CIVIL ENGINEERING, INC.

PO Box 358, Manzanita, OR 97130

ph: 503-801-6016

www.morgancivil.com

August 9, 2022

Riverview Meadows Development, LLC

Alex Reverman

areverman@gmail.com

**RE: Water System Improvements for Tax Lot 3600, Map 03N 10W 23B, Nehalem, Tillamook County, Oregon (Riverview Meadows, Phase 2)
Project #19-10-Riv**

Dear Mr. Reverman:

At your request, I have prepared a preliminary design for the water distribution system to be serving the proposed subdivision of Riverview Meadows Phase 2.

Storage

We propose to install a new storage tank at the northwestern corner of the new development, with a ground elevation of about 160 feet. The City tank is at an elevation of 220 feet, so the new tank can be fed by gravity.

The proposed tank will include 60,000 gallons of water storage for fire-fighting (1000 gpm for 60 minutes) and about 20,000 for domestic use (240 gallons per house for 90 homes). The average City residential usage is 141 gallons per day. The total tank size will be about 80,000 gallons.

The new tank will be filled with treated water from the City System, with a dedicated feed line beginning near Lot 13. The feeding pipe will be in a shared trench with a new distribution pipe. A pressure reducing valve (PRV) will need to be installed at the tank in order to prevent overflowing.

The feeder line, tank, and PRV are shown on the attached drawing in red.

Distribution

Water from the new reservoir will be pumped to a pressure of about 60 psi (140 ft gauge pressure/300 feet total pressure). The water will then be distributed in a looped system in order to serve the residents of Phase 2 and Phase 1 of the subdivision (not including Lots 1-2, and 12-13).

Lot 75 is located at elevation 155 feet. Lot 14 is at elevation of 120 feet. Therefore, the service pressure will be between roughly 60 psi and 85 psi.

Connection

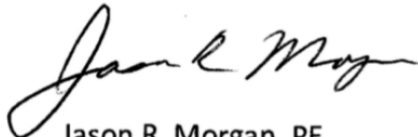
In the roadway near Lot 14, a second PRV will be used in order to connect to the City system. The pressurized system will tie into the city system in order to allow flow when needed. This PRV is shown in red on the drawing.

There is a gap in the map in order to show both ends of the new system. Further design of these improvements will be necessary before construction.

If you have any questions, please contact me at jason@morgancivil.com or 503-801-6016.

Sincerely,

MORGAN CIVIL ENGINEERING, INC.



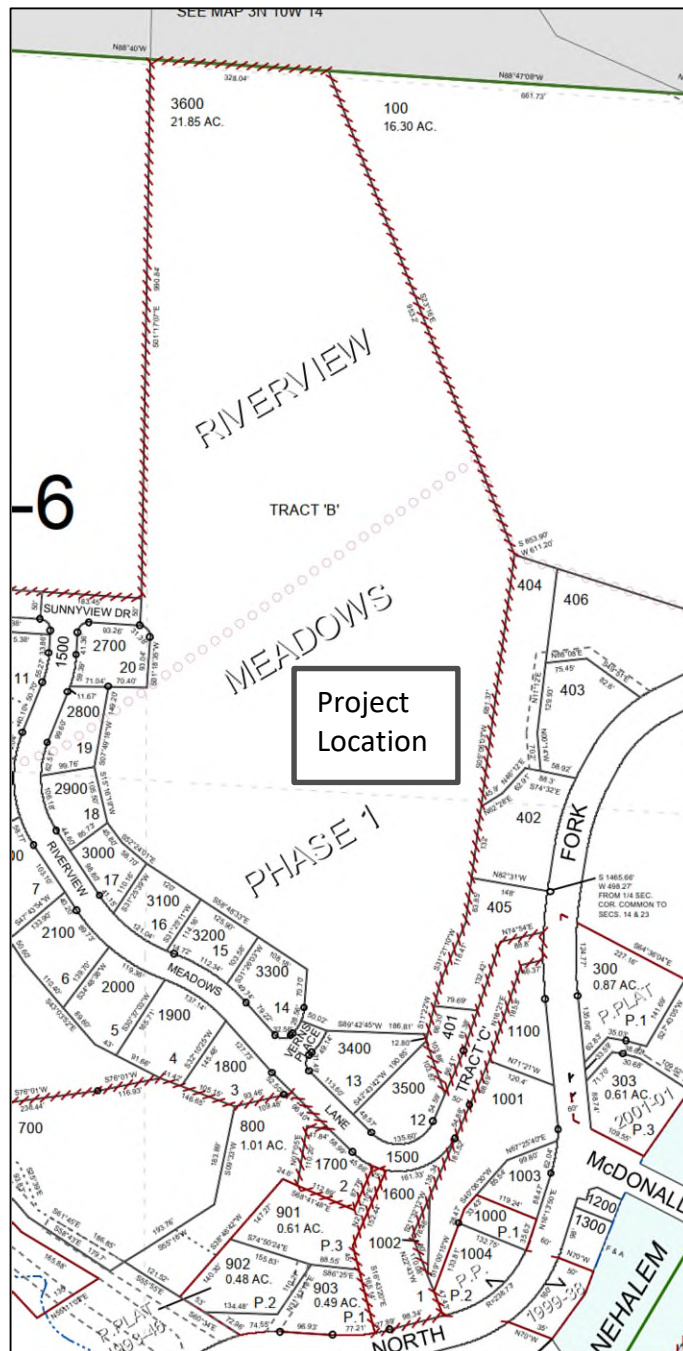
Jason R. Morgan, PE
Professional Engineer



RENEWAL DATE: DECEMBER 31, 2022

cc: Project File #19-10-Riv

<V:\19-10-Riv\Reports\Riverview Meadows-2 Water System.docx>



**Tax Lot 3600, Map 3N 10W 23B
RIVERVIEW MEADOWS PHASE 2
Nehalem, Tillamook County Oregon**

RIVERVIEW MEADOWS PHASE 2 74 LOT SUBDIVISION TENTATIVE PLAN

MAP 3N RIJW SECTION 23B

GRAPHIC SCALE



(IN FEET)
1 inch = 60 ft.

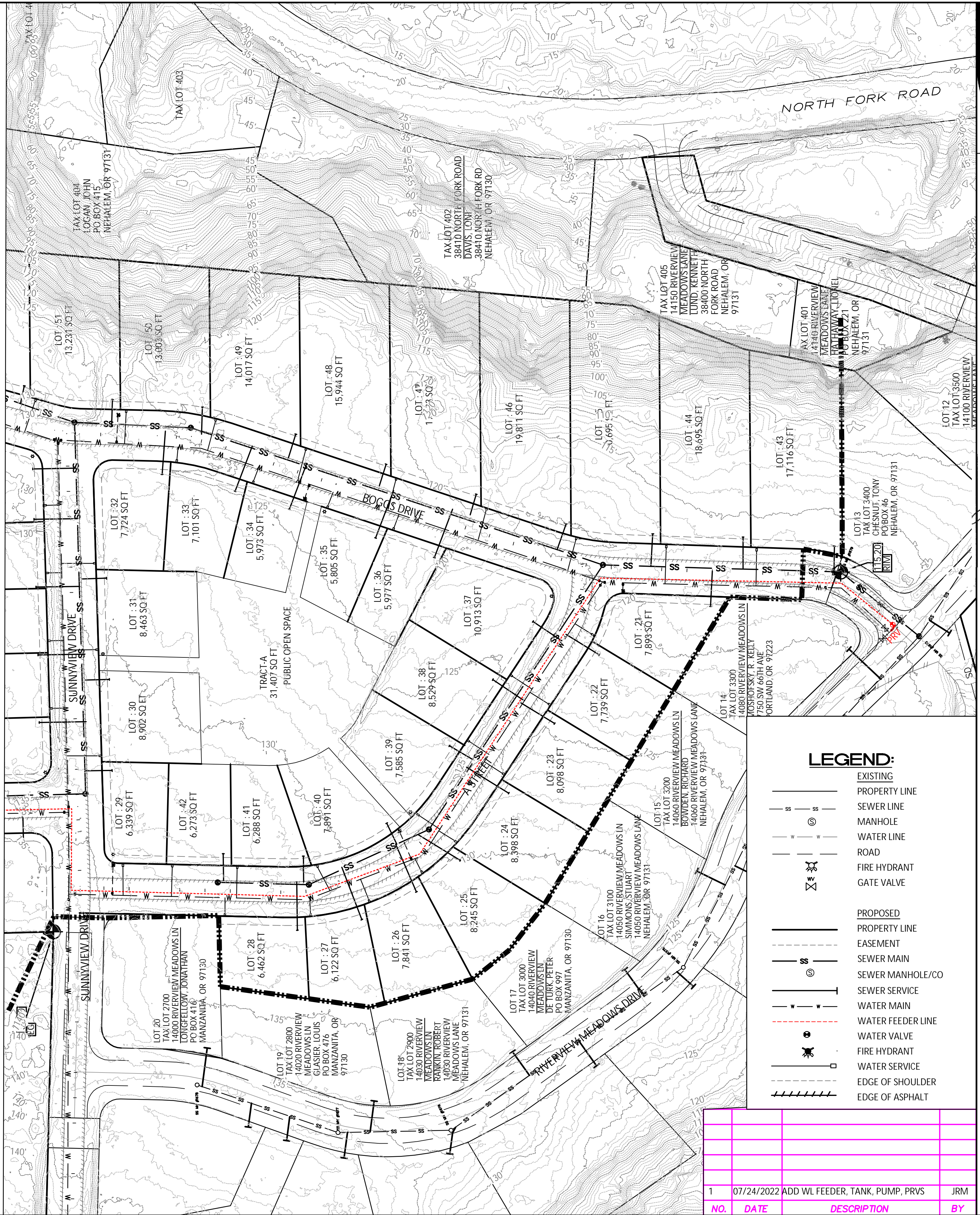
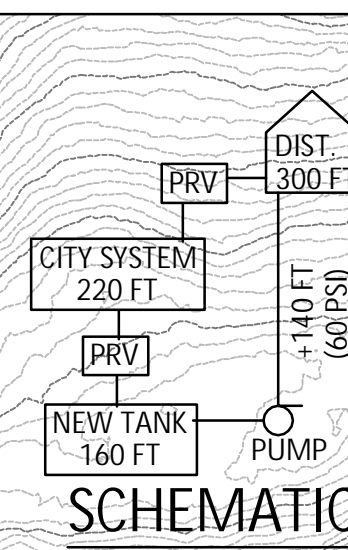
ELEVATIONS:

CITY TANK - 220 FT
PROPOSED TANK - 160 FT
LOT 75 - 155 FT
LOT 3 - 120 FT

USE PUMP AT -300 FT EQ
(ADD 140 FEET = 60 PSI)

WATERLINE:

- 1) INSTALL NEW TEE ON MAINLINE AT LOT 14.
- 2) INSTALL FEEDER PIPE TO TANK SITE. L-2100 FT.
- 3) INSTALL PRESSURE REDUCING VALVE.
- 4) STORE WATER IN TANK. MIN 80,000-GALLON.
- 5) DISCHARGE THROUGH PUMP STATION. ADD ±60 PSI.
- 6) AT LOT 14, INSTALL PRV TO REDUCE TO CITY PRESSURE.



LEGEND:

- EXISTING PROPERTY LINE
- MANHOLE
- SEWER MAIN
- SEWER SERVICE
- WATER MAIN
- WATER FEEDER LINE
- WATER VALVE
- FIRE HYDRANT
- WATER SERVICE
- EDGE OF SHOULDER
- EDGE OF ASPHALT

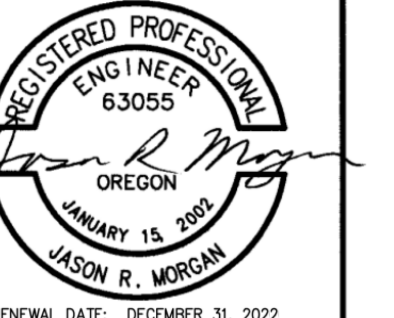
NO.	DATE	DESCRIPTION	BY
1	07/24/2022	ADD WL FEEDER, TANK, PUMP, PRVS	JRM



**MORGAN CIVIL
ENGINEERING, INC.**

- CIVIL ENGINEERING
- INSPECTION
- PLANNING

PO BOX 388
MANZANITA, OR 97130
(503) 801-0016
www.morgancivil.com



RENEWAL DATE: DECEMBER 31, 2022

RIVERVIEW MEADOWS DEVELOPMENT, LLC
RIVERVIEW MEADOWS PHASE 2
UTILITY LAYOUT

SHEET
3b
OF TWENTY

NEHALEM, MAP 3N TOW 23B