



April 14, 2025
Project No. 20240073H001

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Camano Vista Water District
3093 Galena Drive
Camano Island, Washington 98282

Subject: Hydrogeologic Report - Seawater Intrusion Analysis
Camano Vista Water District
3093 Galena Drive
Camano Island, Washington 98282

1.0 INTRODUCTION

This hydrogeologic report presents the results of our evaluation of seven water supply wells (Wells 1 through 8, except Well 4) owned and operated by the Camano Vista Water District (Camano Vista). Well 4 is functional as an observation well only and so is not evaluated in this report as a water supply well, but is included in discussions as background information.

The subject site consists of residential parcels located within the Camano Vista water service area and are primarily located in Section 10, Township 30 North, Range 3 East, in unincorporated Island County, on Camano Island, Washington. Limited portions of the site extend east into Section 11, and south into Section 15 of Township 30 North, Range 3 East. The locations of the properties are presented on the "Vicinity Map," Figure 1. The location of the wells and the parcels that make up the subject site are shown on the "Existing Site and Well Locations," Figure 2. Well IDs are summarized in Table 1.

We understand that Camano Vista is regulated by the Washington State Department of Health (DOH) as a Group A public water system (PWS) (DOH PWS ID 10748). Camano Vista currently uses their wells to serve 203 approved connections and is seeking Island County approval to increase this to a total of up to 225 connections. The Camano Vista wells are located in an area designated by Island County as having very high sea water intrusion risk. Due to the risk of seawater intrusion, the new connections are subject to review per *Island County Code* (ICC) 8.09.99. In support of their application, Camano Vista contracted with Associated Earth Sciences, Inc. (AESI) to prepare this hydrogeologic report.

2.0 PURPOSE AND SCOPE

The purpose of our services was to provide a general assessment of the potential for a change in the risk of seawater intrusion at the subject site, in accordance with the criteria suggested by Island County. The services provided by AESI included the following:

- Review of existing historical water level and water quality data available via Island County's well database or from Camano Vista.
- Review of well construction information for Camano Vista's seven water supply wells (Wells 1, 2, 3, 5, 6, 7, and 8; Attachment A).
- Review of Camano Vista's water rights G1-0027C, G1-25111C, and G1-25152C to compare existing water production data relative to the water right instantaneous pumping rate (Q_i) and annual quantity (Q_a) and other provisions of the water rights.
- Conduct a site visit to observe each wellhead and collect static depth-to-water measurements.
- Prepare this report to document the results of our review and recommendations for up to 22 new residential connections. The report includes:
 - Vicinity and site maps showing the locations of the water supply wells, service area, water rights place of use (Figures 1 and 2).
 - Tabulated water quality and water level data (Attachment B).
 - Description of the site and hydrogeologic setting (Section 3, Section 6).
 - A general assessment of potential seawater intrusion potential of each well based on the existing data and hydrogeologic setting (Section 10).
 - Recommendations for data collection equipment and procedures to meet Island County and Washington State Department of Ecology (Ecology) water right requirements, including data forms to assist in future data collection and submittal (Section 10.2).

3.0 SITE DESCRIPTION

The subject site is primarily located in Section 10, Township 30 North, Range 3 East, in unincorporated Island County, on Camano Island, Washington. Limited portions of the site extend east into Section 11, and south into Section 15 of Township 30 North, Range 3 East. The locations of the properties are presented on the "Vicinity Map," Figure 1. The location of the wells and the parcels that make up the subject site are shown on the "Existing Site and Well Locations," Figure 2. The site vicinity and locations of nearby wells, based on Island County and DOH data, are shown on "Water Wells," Figure 3. Well IDs for on-site wells are summarized in Table 1. DOH source numbers and Island County well IDs are also summarized in Table 1.

Table 1
Well ID Summary

Well Name	DOH Source	Ecology Tag	Island County Well ID	Ecology GWIS Point of Withdrawal ID Number ²	Parcel
Well 1	Source 1	AAF 245	9CD	519655	R33010-158-4270
Well 2	Source 2	AGA 713	9C4	519656	
Well 3	Source 3	AGA 697	9AK	519659	R33010-084-4210
Well 4 ¹	Source 4	AGA 691	9AJ	519660	
Well 5	Source 5	AGA 698	9BY	525098	R33010-085-4750
Well 6	Source 6	AGA 699	9C3	525099	
Well 7	Source 8	AFJ 759	AN7	140541	R33010-084-4210
Well 8	Source 9	AFJ 760	DC8	140540	R33010-158-4270

¹Observation well only, not evaluated as water supply well.

²Ecology water rights information database.

The Camano Vista water treatment and storage system is located on Parcel R33010-158-420 along with Wells 1, 2, and 8. Wells 3, 4, and 7 are located on a separate parcel, and Wells 5 and 6 are located on a third parcel (Figure 2). The water system service area (DOH) and water right place of use (Ecology) are shown on Figure 2. The parcels which comprise the subject site generally consist of single-family residential parcels, which are accessed by a variety of local roads generally connecting from South Camano Drive and S East Camano Drive. The residential properties are used by both full-time and part-time residents, resulting in higher water demand during the summer months. On-site topography generally ranges from 155 to 240 feet in elevation (NAVD88). In the vicinity of the project, the conversion from NAVD88 to local mean sea level (LMSL) is -4.30 feet as determined using the online vertical datum transformation (Vdatum) provided by the National Oceanic and Atmospheric Administration (NOAA, 2024). All elevations referenced in this report are in feet LMSL unless specified otherwise.

4.0 WELL CONSTRUCTION

Well construction information summarized in Table 2, “Well Construction Summary,” is based on our review of Ecology water well reports and Island County Well Database information as well as information provided to us by Camano Vista including a previous Seawater Intrusion Assessment (AGI, 1999), the Well 7 Construction and Testing Report (CDM, 2001), and the Water System Plan (Coffman Engineers, 2024). AESI field-verified well locations, water levels, and that the installed Ecology well tags are consistent with the records reviewed.

Table 2
Well Construction Summary

Well	Diameter (in)	Ground Surface (ft LMSL)	Monitoring Point Elevation (ft LMSL)	Top of Screen Elevation (ft LMSL)	Bottom of Screen Elevation (ft LMSL)
Well 1	8	204.2 ¹	205.61 ¹	-39.8 ¹	-55.8 ¹
Well 2	6	191.8 ¹	193.13 ¹	-32.2 ¹	-37.2 ¹
Well 3	6	218.4 ¹	218.31 ¹	-42.6 ¹	-47.6 ¹
Well 4	6	217.3 ¹	218.13 ¹	-45.7 ¹	-50.7 ¹
Well 5	6	225.4 ¹	226.59 ¹	-49.6 ¹	-54.6 ¹
Well 6	6	221.2 ¹	222.61 ¹	-53.9 ¹	-58.8 ¹
Well 7	6	218 ²	~220	31	21
Well 8	6	205 ³	~207	33	23

in = inches

ft LMSL = feet local mean sea level

¹AGI, 1999

²CDM, 2001

³Camano Vista Ground Water Contamination Susceptibility Assessment Survey Form (Coffman, 2024)

We understand that wellhead monitoring point elevations reported to hundredths of a foot (Well 1 through Well 6) were surveyed (AGI, 1999). Monitoring point elevations for Well 7 and Well 8 are approximated based on nearby ground surface elevations.

Wells 1 through 6 were completed with screens below sea level, at elevations ranging from approximately -32.2 feet to -58.8 feet LMSL. Wells 7 and 8 were completed shallower, at elevations of approximately 21 to 33 feet LMSL.

Copies of water well reports for Wells 1 through 8 are included in Attachment A.

We observed the existing wellhead configuration of all of the Camano Vista wells. Sounding tube diameters and notes regarding our interpretation of instrumentation capabilities as currently completed are provided in Table 3.

Table 3
Well Sounding Tube and Potential Instrumentation Summary

Well	Sounding Tube Diameter (in)	Instrumentation Capability ¹
Well 1	~ 3/4	Can be instrumented with small-diameter logger
Well 2	~1 1/4	Can be instrumented with typical logger
Well 3	~ 3/4	Can be instrumented with small-diameter logger
Well 4	~1 1/4	Can be instrumented with typical logger
Well 5	~ 1/2	Requires modification to instrument
Well 6	~ 1/2	Requires modification to instrument
Well 7	~ 3/4	Can be instrumented with small-diameter logger
Well 8	~1	Can be instrumented with small-diameter logger

¹ Interpreted by AESI based on observation of wellhead.

5.0 WATER RIGHT CERTIFICATES

Camano Vista has three water rights certificates, as summarized in Table 4. The three water rights allow for a total annual withdrawal of 117 acre-feet (38,124,567 gallons) consisting of up to 75.2 acre-feet from Wells 1, 2, and 8, 20.9 acre-feet from Wells 3, 4, and 7, and 20.9 acre-feet from Wells 5 and 6. The water rights allow an instantaneous pumping rate of up to 50 gallons per minute (gpm) combined between Wells 1, 2, and 8, up to 50 gpm combined between Wells 3, 4, and 7, and up to 60 gpm combined between Wells 5 and 6.

Table 4
Water Rights Summary

Water Rights Certificate	Wells	Qi (gpm)	Qa (afy)	Qa (gal per year)
G1-00271C	Wells 1, 2, and 8	50	75.2	24,503,995
G1-25111C	Wells 3, 4, and 7	50	20.9	6,810,286
G1-25152C	Wells 5 and 6	60	20.9	6,810,286

Qi = instantaneous pumping rate

Qa = annual quantity

gpm = gallons per minute

afy = acre-feet per year

gal = gallons

5.1 Provisions of Water Rights

The certificate for G1-25152C specifies that the “permittee or its successor(s) shall submit in writing to the Department of Ecology, Northwest Regional Office, Redmond, Washington, during the months of April and August each year, the chloride concentration of the water pumped and static water level (pump off) of the well authorized by [the] permit. Depending on the results of this data collection, the withdrawal of ground water under [the] permit may be limited, or other appropriate action may be required, by Department of Ecology order, to prevent seawater intrusion into the subject aquifer”.

6.0 SUBSURFACE CONDITIONS

6.1 Geologic Conditions

Geologic mapping indicates that the area in the vicinity of the site is underlain by Vashon lodgement till, which is generally underlain by Vashon advance outwash deposits (maximum estimated thickness of 200 feet) over pre-Vashon-age sediments including Olympia-age non-glacial sediments and older glacial and non-glacial sediments (Schasse et al., 2009).

Based on the depth of the well screen, Well 7 and Well 8 are likely completed within Vashon advance outwash sediments. Wells 1 through 6 are likely completed within Olympia-age non-glacial sediments or older glacial and non-glacial sediments.

6.2 Aquifer Conditions

Well 1 through Well 6 are all completed in the deep, sea level aquifer. Well 7 and Well 8 are completed in a shallower perched aquifer.

6.2.1 Deep Aquifer

The deep aquifer is the primary, sea level, aquifer in the region (Island County, 2005). It consists of a lens of fresh water which floats above saline water due to its lower density, and is in direct contact with saline water on both sides of Camano Island and from below. Groundwater elevations in the sea level aquifer are typically slightly above sea level. Recharge to the deep, sea level aquifer is primarily from the infiltration and downward percolation of precipitation which falls on the land surface, and seepage from overlying shallower perched water. Groundwater flow in the sea level aquifer beneath the subject site is assumed to flow generally away from land, generally to the northeast and southwest in the vicinity of the subject site.

AESI reviewed well logs and summarized well construction and aquifer information in Table 5. The saturated, permeable sediments of this aquifer described in on-site well logs are up to 47 feet thick. Additional saturated sediments are present below the completion intervals of the wells, however with increasing depth, the salt content of the water will generally increase.

Aquifer parameters (transmissivity and hydraulic conductivity) were estimated for Well 1 through Well 6 based on the specific capacity data in gallons per minute per foot of drawdown (gpm/ft) using the method described in Driscoll (1986). The median transmissivity value of 2,259 square feet per day (ft^2/d) and hydraulic conductivity of 166 feet per day (ft/d) is generally within the typical range that we have found to be representative for wells in the area. These values are an approximation. The pumping rate and drawdown values reported on water well reports, on which our calculations are based, are approximate because of the variable nature of aquifer testing represented, and the possible influence of tidal fluctuations on groundwater elevations in this area.

6.2.2 Perched Aquifer

The shallower, perched aquifer is interpreted to be present generally between 20 and 40 feet above sea level, and to be 10 to 16 feet thick, based on on-site well logs. The base of this aquifer is a low-permeability layer, which causes water to perch above sea level. Recharge to this perched aquifer is, like the deep aquifer, primarily from the infiltration and downward percolation of precipitation which falls on the land surface. Some portion of this infiltrated water perches in this aquifer, where it is either withdrawn via wells, flows laterally to areas where the low-permeability layer is either more permeable or not present and then infiltrates downwards, or infiltrates more slowly downwards through the low-permeability layer. Groundwater flow direction in the perched aquifer is not well constrained.

Aquifer testing of the perched aquifer was conducted in Well 7 as described by CDM (2001). CDM (2001) estimated transmissivity values generally ranging from approximately 440 ft^2/d in proximity to the well to 53 ft^2/d at greater distances, and interpreted this to indicate a limited extent to the perched aquifer. This is consistent with a hydraulic conductivity of approximately 44 ft/d in close proximity to the well, and 5 ft/d at greater distance. We anticipate that these values are also generally representative of Well 8 which is completed within the same perched aquifer, however no such aquifer testing has been reported for Well 8.

Table 5
Well Construction and Aquifer Testing Information from Water Well Reports

Well	Minimum Aquifer Thickness (feet)	Water Level Elevation (feet LMSL)	Water Level Date	Well Diameter (inches)	Aquifer Testing Information						
					Type of Test	Discharge Rate (gpm)	Draw-down (feet)	Test Duration (hours)	Q/s (gpm/ft)	T (ft ² /d)	K (ft/d)
1	24	2.36	4/29/24	8	Pump	220	17	4	12.9	3460	144
2	47	2.05	4/29/24	6	Pump	30	10	4	3.0	802	17
3	13	0.81	4/29/24	6	Pump	30	8	3.3	3.8	1003	77
4	23	--	--	6	Pump	33	11	4	3.0	802	35
5	8	0.84	4/29/24	6	Pump	39	3	4	13.0	3476	435
6	14	1.44	4/29/24	6	Pump	39	2.6	4	15.0	4011	287
7	10	38.25	4/29/24	6	Pump ²	5	12	48	0.4	53 ¹	5
8	16	37.67	4/29/24	6	Pump	8	11	8	0.7	--	--
									Median (Wells 1-6)	2,259	166

feet LMSL = feet above local mean sea level

ft²/d = square feet per day

ft/d = feet per day

gpm = gallons per minute

gpm/ft = gallons per minute per foot of water level drawdown

T = Transmissivity

Q/s = Specific Capacity

K = Hydraulic Conductivity

¹CDM, 2001

7.0 WATER LEVEL DATA

Water level data from Well 1 to Well 6 is shown on Figure 4. Water level data in Well 7 and Well 8 is shown on Figure 5. To display recent trends, Figure 4 and Figure 5 display data from 2020 onwards. Water level measurements from 2011 to present are tabulated in Attachment B. We note that reported water level values prior to 2017, particularly in Well 2 and Well 6, are substantially below sea level. It is likely that these reported values represent measurements made during active pumping rather than static water level measurements, and as such do not reflect the static level of the aquifer.

Water levels in Well 7 and Well 8 show a slow decline through approximately 2020 and 2021. Little data is present from 2022 and none from 2023, however measurements from 2024 appear to show a recovery in water levels.

Water levels in Wells 1, 2, 3, 5, and 6 show substantial fluctuation since 2020. Water levels in April of 2024 are higher than those in April of 2021 and April of 2022. Water levels in the sea level aquifer may be affected by tide level at the time of pumping, and are likely affected by the duration for which the pump has been shut off prior to measurement, or even more so if the pump is operating at the time of measurement. As such, the data available is insufficient to allow analysis of long-term trends.

8.0 WATER QUALITY DATA

Electrical conductance and chloride concentration data from Camano Vista has been monitored regularly. A subset of test records were provided to AESI by Camano Vista. These test results and others are on file with the DOH Source Water Assessment Program. AESI compiled the available data, limiting our compilation to results indicated to represent “raw” water. This data, from the last approximately 10 years, is tabulated in Attachment B. A chart of chloride concentrations is included as Figure 6, and conductivity data is shown as Figure 7. Chloride and conductivity values since 2015 are discussed below.

Well 1, Well 5, and Well 6 have periodically had chloride values as high as 205, 251, and 173 milligrams per liter (mg/L), respectively. Electrical conductance in these wells was over 800 microsiemens per centimeter ($\mu\text{S}/\text{cm}$) as of the most recent conductivity data reported from August of 2023. These three wells are the deepest of the wells operated by Camano Vista, with base of screen elevations of -54.6 feet and below as described in Table 2.

Well 2 and Well 3 have had relatively stable chloride concentrations of generally less than 40 and 90 mg/L, respectively. As of April 2024 Well 3 has shown an increase to 95 mg/L.

Wells 7 and 8 have had chloride concentrations of below 20 and 40 mg/L, respectively, and conductivity values of typically 420 to 508 $\mu\text{S}/\text{cm}$ excluding one result of 700 $\mu\text{S}/\text{cm}$ from 2015 which is likely not representative of aquifer conditions. Well 7 and Well 8 are not at risk for seawater intrusion due to being completed above sea level, and so are not included on the chart on Figure 6.

9.0 WATER USE

AESI reviewed water use data provided by Coffman Engineers (2024) on behalf of Camano Vista, and meter readings provided by Camano Vista. Tabulated water use data per well from 2022 through July 2024 is included in Attachment B.

Total withdrawal as summarized in Table 6, and withdrawal per water right as tabulated in Attachment B, are much less than the maximum allowable amount per the water rights certificates.

Table 6
Annual Water Use

Year	Gallons Pumped	Acre-Feet
2018 ¹	9,193,020	28.2
2019 ¹	8,639,020	26.5
2020 ¹	8,691,876	26.7
2021 ¹	8,576,200	26.3
2022 ²	9,635,542	29.6
2023 ²	10,125,909	31.1

¹Coffman Engineers, 2024

²Based on meter readings provided by Camano Vista.

Camano Vista has throttled their wells to reduce the potential for seawater intrusion issues (Coffman Engineers, 2024). The wells throttled production capacities are summarized in Table 7 (Coffman Engineers, 2024). The total throttled production capacities of wells on the G1-00271C, G1-25111C, and G1-25152C water rights certificate are 13.3 gpm, 14.5 gpm, and 9 gpm, respectively. These are lower than the maximum allowable pumping rates per each water right certificate of 50, 50, and 60 gpm, respectively.

Table 7
Well Production Summary

Well	Throttled Capacity (gpm)
Well 1 ¹	2
Well 2 ¹	8
Well 3 ²	10.7
Well 4 ²	0 (monitoring only)
Well 5 ³	5.7
Well 6 ³	6.4
Well 7 ²	3.8
Well 8 ¹	3.3

gpm = gallons per minute

¹ Well is part of water right certificate G1-00271C

² Well is part of water right certificate G1-25111C

³ Well is part of water right certificate G1-25152C

10.0 SEAWATER INTRUSION ANALYSIS, CONCLUSIONS AND RECOMMENDATIONS

10.1 Previous Recommendations and Summary of Action Taken

A previous seawater intrusion assessment made several recommendations for management practices to maximize production and keep chloride levels below maximum contaminant levels (MCLs) (AGI, 1999). These recommendations were made prior to construction of Well 7 and Well 8. These recommendations were as follows:

1. Continue operation of wells using a low-tide-only pumping program.
 - a. Camano Vista has instead throttled pumping rates. AESI is unaware of any tidal efficiency assessment which would support the effectiveness of a low-tide-only pumping recommendation. If tidal efficiency is low, this effort would have little effect. If tidal efficiency is high, this effort could be useful. AESI recommends re-evaluating this recommendation based on more detailed water level monitoring data which can be compared to publicly available tide data.
2. Expand the water level and chloride monitoring programs.
 - a. Camano Vista previously regularly monitored the water level and chloride levels in their production wells, with monthly water level and bi-annual chloride and conductivity readings. Bi-annual chloride testing and water level measurements are required as a provision of the water rights certificates. From August of 2022 to March of 2024 water level monitoring was not performed. We understand that from April of 2024 water level monitoring has resumed and is expected to be bi-annual. AESI recommends additional water level monitoring including instrumentation, and chloride testing, as discussed later in this report.

3. Keep accurate instantaneous and total production records.
 - a. Camano Vista has kept appropriate records and provided them to AESI.
4. Consider increasing system storage capacity.
 - a. Storage capacity was assessed by Coffman Engineers (2024).
5. Consider interties with neighboring water systems.
 - a. Potential interties were assessed by Coffman Engineers (2024).
6. Investigate inline chloride sensors and pump controllers for each wellhead. These sensors can be set to turn off the pump when chloride levels reach 220 mg/L.
 - a. No such sensors are in use, however AESI instead recommends increased monitoring efforts as discussed later in this report.
7. Construct additional wells with screens installed in the top of the aquifer.
 - a. Camano Vista instead installed Well 7 and Well 8 in a shallower perched aquifer, above sea level, which is not subject to seawater intrusion.
8. Evaluate the productive capacity of any perched aquifer encountered above the silt/clay aquitard.
 - a. Well 7 and Well 8, completed in the perched aquifer, have been in use as production wells since installation, with combined annual production of 2.7 to 2.8 million gallons, respectively, in 2022 and 2023, with similar production continuing into 2024.
9. Maintain an on-site precipitation gauge to determine the amount of recharge entering the aquifer.
 - a. No on-site precipitation gauge has been installed. In AESI's opinion, recharge to deep confined aquifers should be evaluated on a regional, not site-specific, basis. Regional datasets such as 30-year precipitation normals (PRISM, 2024) are suitable for evaluation of recharge and no on-site rain gauge is necessary. Regional evaluation of aquifer recharge is outside the scope of this report.
10. Conduct accurate wellhead elevation surveys for all new, replacement, and neighboring wells.
 - a. Ground surface elevation near Well 7 and Well 8 has been surveyed to the nearest foot. Because these wells are completed in a perched aquifer above sea level, precision to the nearest foot is suitable for current efforts.

10.2 Conclusions and Recommendations

The currently available data is not detailed enough to support the addition of more connections to the Camano Vista water system:

- Wells 7 and 8, completed in the perched aquifer above sea level, are not expected to be capable of supporting substantially increased production beyond current use. Additional production would therefore need to be largely or entirely from the wells completed in the sea level aquifer.

- Current water level data from the wells completed in the sea level aquifer (Well 1 through Well 6) is insufficient to support an assessment of tidal efficiency of the wells or to evaluate the typical depth to the seawater/fresh water interface below the wells per the Gyben-Herzberg relationship as would be required to support an assessment of the potential for upconing of saltwater during pumping.
- We recommend installing digital data-logging pressure transducers in at least some portion of the wells to monitor water levels on an ongoing basis.
 - Based on the sounding tubes currently installed in the wells, it would be most economical to instrument Well 2 and Well 4, which we expect can accommodate typical data-logging pressure transducers. We recommend instrumenting these wells to record continuous (6-minute interval) records of water levels prior to the 2025 dry season.
 - Wells 1, 3, 7, and 8 are all either in proximity to Well 2 or Well 4, so instrumentation of Well 2 and Well 4 would provide information on the aquifer in those areas. We recommend instrumenting Wells 1, 3, 7, and 8 in the future, either by installing instruments on direct-read cables or, preferably, by installing larger-diameter sounding tubes as maintenance activities (pump replacement or similar activities) allow.
 - Well 5 and Well 6 are sited together some distance from all other wells, and neither can be instrumented in its current configuration without assistance from drillers with a hoist truck to install a logger on a direct-read cable and/or replace the currently installed sounding tubes with larger-diameter sounding tubes. Because Well 6 is at the deepest completion elevation of all of the Camano Vista wells, and because this pair of wells is responsible for a significant fraction of the total water produced, we recommend having Well 6 modified to allow instrumentation. We recommend instrumenting Well 5 in the future, either by installing an instrument on a direct-read cable or, preferably, by installing larger-diameter sounding tubes as maintenance activities (pump replacement or similar activities) allow.
- We recommend that chloride and conductivity testing of Wells 1, 2, 3, 5, and 6 be increased in frequency to monthly.
- Recent chloride test results show a wide range of variation, which could include a long-term upward trend in several wells. These results should be assessed in more detail in relation to more detailed water level data, particularly during and after the 2025 dry season.

- We recommend that manual water level measurement records should include the time of the measurement. This allows correlation with tide records. Manual water level measurements should also be taken at a time when the pump has not been running for as long as possible. If the measurement is made while the pump is running, or has been running within the last hour, a note regarding ongoing or recent pumping should be included. The water level record form in use should be modified to include this information, or the form provided in Attachment C may be used as a replacement form.

LIMITATIONS

We have prepared this report for use by Camano Vista regarding the potential for seawater intrusion from the pumping of their water supply wells. The information presented in this report is based on the above-described research. It should be noted that subsurface conditions, particularly hydrogeologic characteristics, can vary widely over short distances.

Within the limitations of scope, schedule, and budget, AESI attempted to execute these services in accordance with generally accepted professional principles in the field of hydrogeology at the time this report was prepared. No warranty, express or implied, is made.

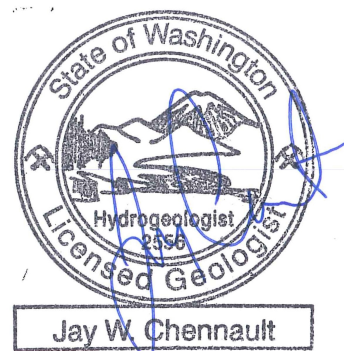
CLOSURE

We have enjoyed working with you and are confident that these recommendations will aid in the successful completion of your project. If you have any questions or require further assistance, please do not hesitate to call.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Mount Vernon, Washington



Anton D. Ypma, L.G., L.Hg.
Project Hydrogeologist



Jay W. Chennault, L.G., L.Hg., P.E., CWRE
Principal Geologist/Hydrogeologist

ATTACHMENTS

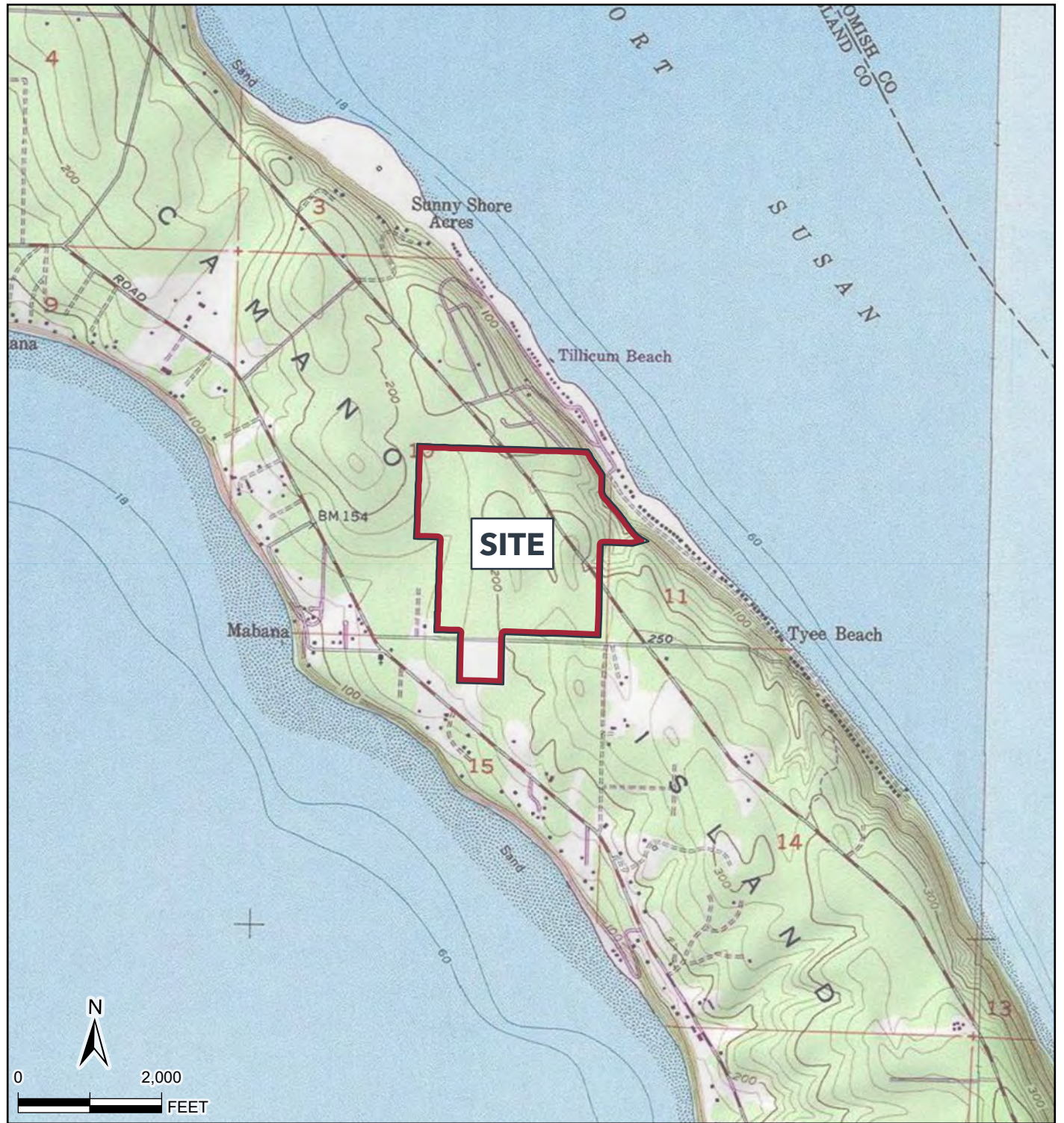
- Figure 1: Vicinity Map
- Figure 2: Existing Site and Well Locations
- Figure 3: Water Wells
- Figure 4: Hydrograph, Sea Level Aquifer (Wells 1 to 6)
- Figure 5: Hydrograph, Perched Aquifer (Well 7 and Well 8)
- Figure 6: Chloride (Wells 1 to 6)
- Figure 7: Conductivity (Wells 1 to 6)

- Attachment A: Well Logs
- Attachment B: Tabulated Water Use, Water Level, and Chloride Data
- Attachment C: Depth to Water Form

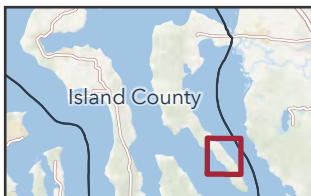
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COUNTY LOCALE



ESRI, USGS, NATIONAL GEOGRAPHIC, DELORME, NATURALVUE, I-CUBED, GEBCO, ARCGIS ONLINE BASEMAP, WADOT STATE ROUTES 24K (12/20), ISLAND CO.: PARCELS (4/23), ROADS (12/21).

NOTE: LOCATION AND DISTANCES SHOWN ARE APPROXIMATE. BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION.

LOCATION



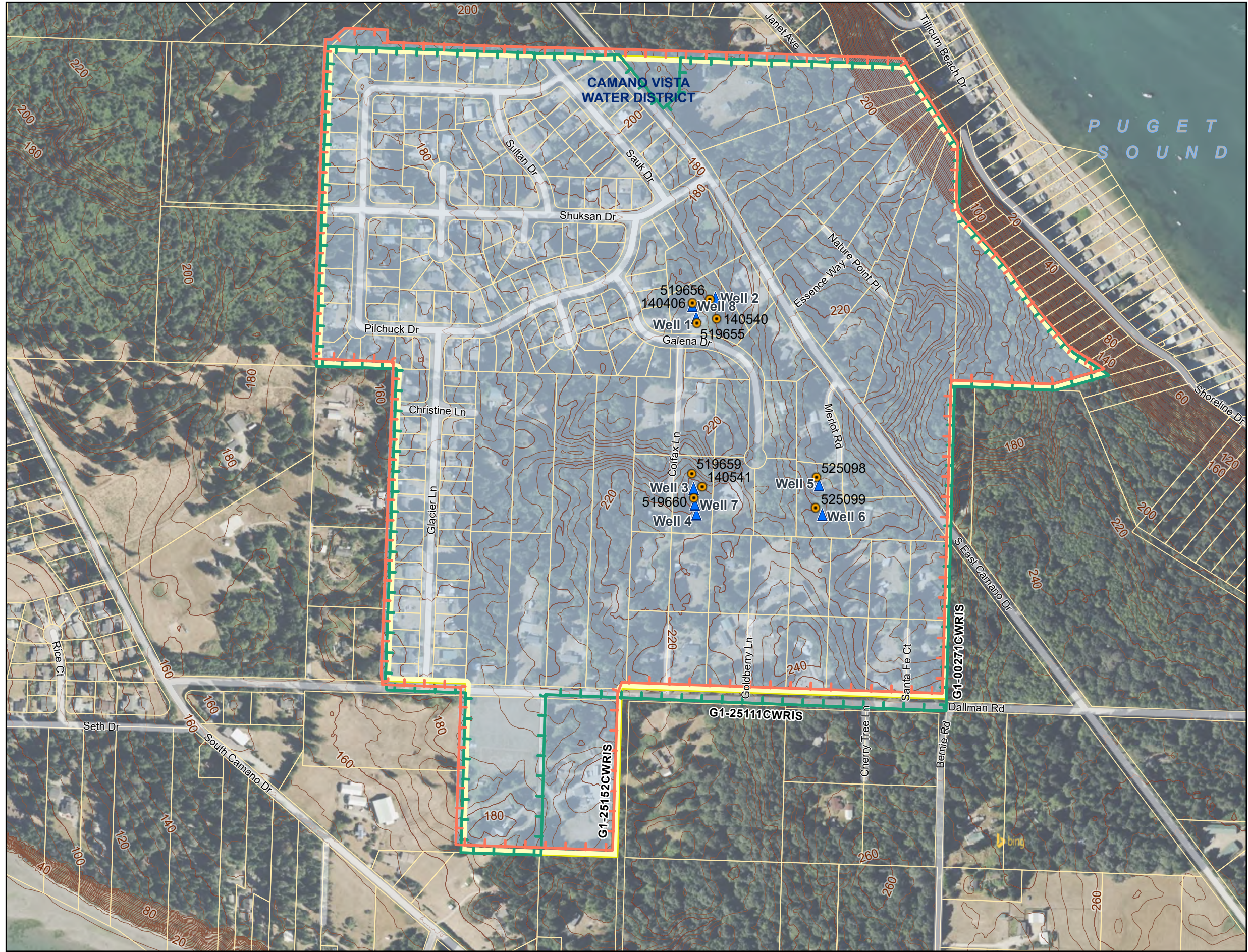
associated
earth sciences
incorporated

VICINITY MAP

CAMANO VISTA WATER SUPPLY ANALYSIS
ISLAND COUNTY, WASHINGTON

PROJECT NO.	DATE	FIGURE
20240073H001	7/24	1

G:\GIS_P\Projects\2024\20240073 Camano Vista Water Supply.aprx [2024/07/31 10:01:01] F2 ES Camano Vista.aprx [2024/07/31 10:01:01] F2 ES Camano Vista [2024-12-17] Infrink



LEGEND

- SITE
- CAMANO VISTA WATER DISTRICT
- WATER SUPPLY WELL
- PARCEL
- CONTOUR 5 FT
- CONTOUR 20 FT
- WATER RIGHT PLACE-OF-USE
- G1-00271CWRIS; G1-25111CWRIS
- G1-25152CWRIS
- WATER RIGHT POINT OF WITHDRAWAL
- WELL

G1-00271CWRIS:
- 519655 - 519656
- 140406

G1-25111CWRIS:
- 519659 - 519660
- 140540 - 140541

G1-25152CWRIS:
- 525098 - 525099

0 400
FEET

DATA SOURCES/REFERENCES:
ISLAND COUNTY: ROADS (11/22), PARCELS (12/21). WA DOE: GWIS (10/24). WA DNR LIDAR: ISLAND_2014 ACQUIRED MARCH TO APRIL 2014, 3' CELL SIZE. CONTOURS DERIVED FROM LIDAR. BING AERIAL IMAGERY AUG-SEP 2022.

BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION. LOCATION AND DISTANCES SHOWN ARE APPROXIMATE.

associated earth sciences incorporated

EXISTING SITE AND WELLS

CAMANO VISTA WATER SUPPLY ANALYSIS
ISLAND COUNTY, WASHINGTON

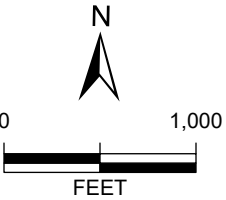
PROJECT NO. 20240073H001	DATE 12/24	FIGURE 2
-----------------------------	---------------	-------------

G:\GIS_P\Projects\2024\20073 Camano Vista Water Supply\A_aprx\20240073H001 F3 Wells_Camano Vista.aprx | 20240073H001 F3 Wells_Camano Vista | 2024-07-18 | mtop



LEGEND

- SITE
- WATER SUPPLY WELL
- DOH SWAP WELL (NAME/DOE WELL TAG)
- ISLAND COUNTY WELLS (DOE WELL TAG)
 - PRIVATE
 - PUBLIC WATER SYSTEM



DATA SOURCES/REFERENCES:
ISLAND COUNTY: ROADS (11/22), AERIAL IMAGERY (8/20), WELLS (7/24). DOE: WATERBODIES (12/15). DOH: WELLS (6/19).

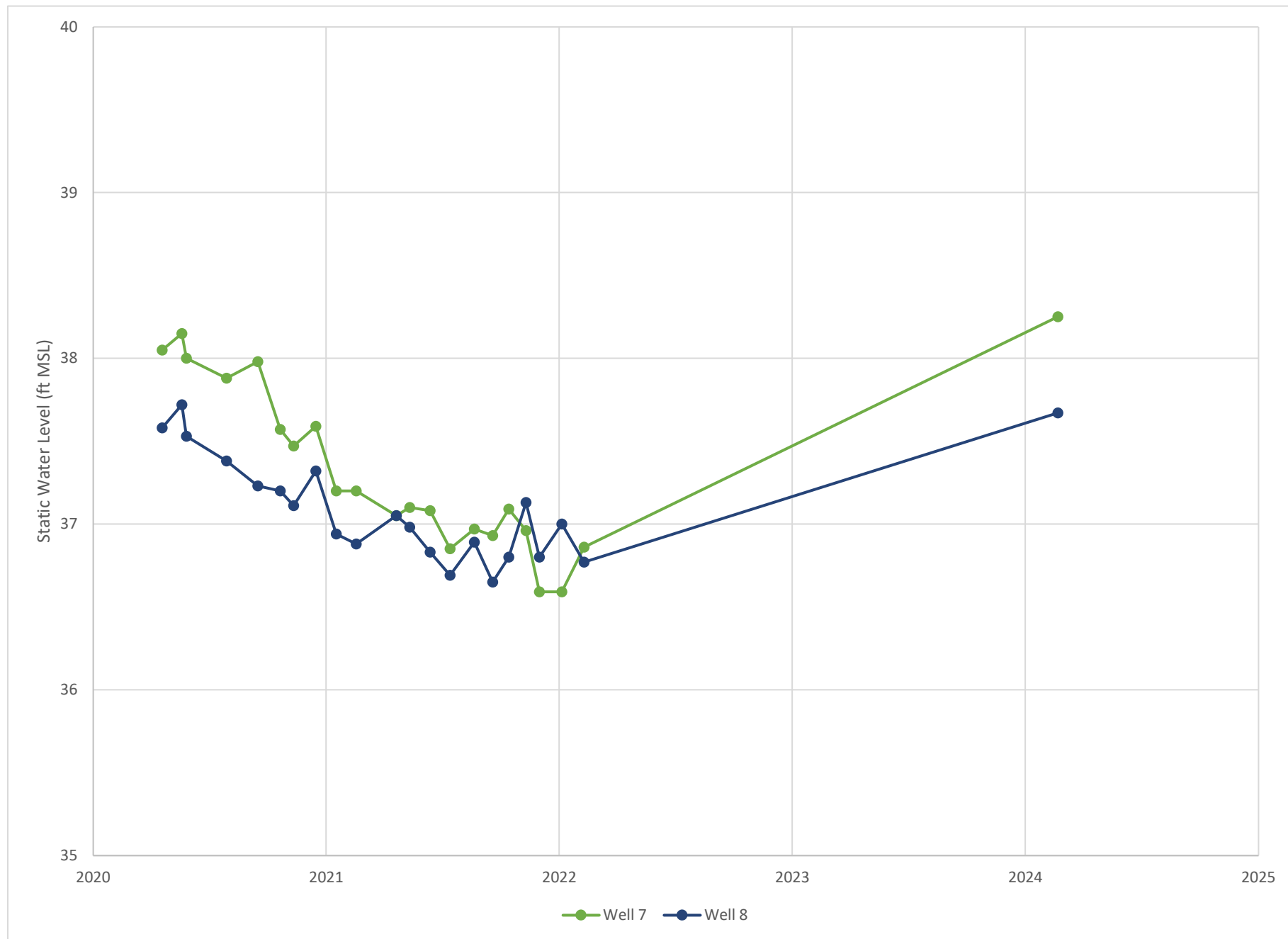
BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY
REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION.
LOCATION AND DISTANCES SHOWN ARE APPROXIMATE.

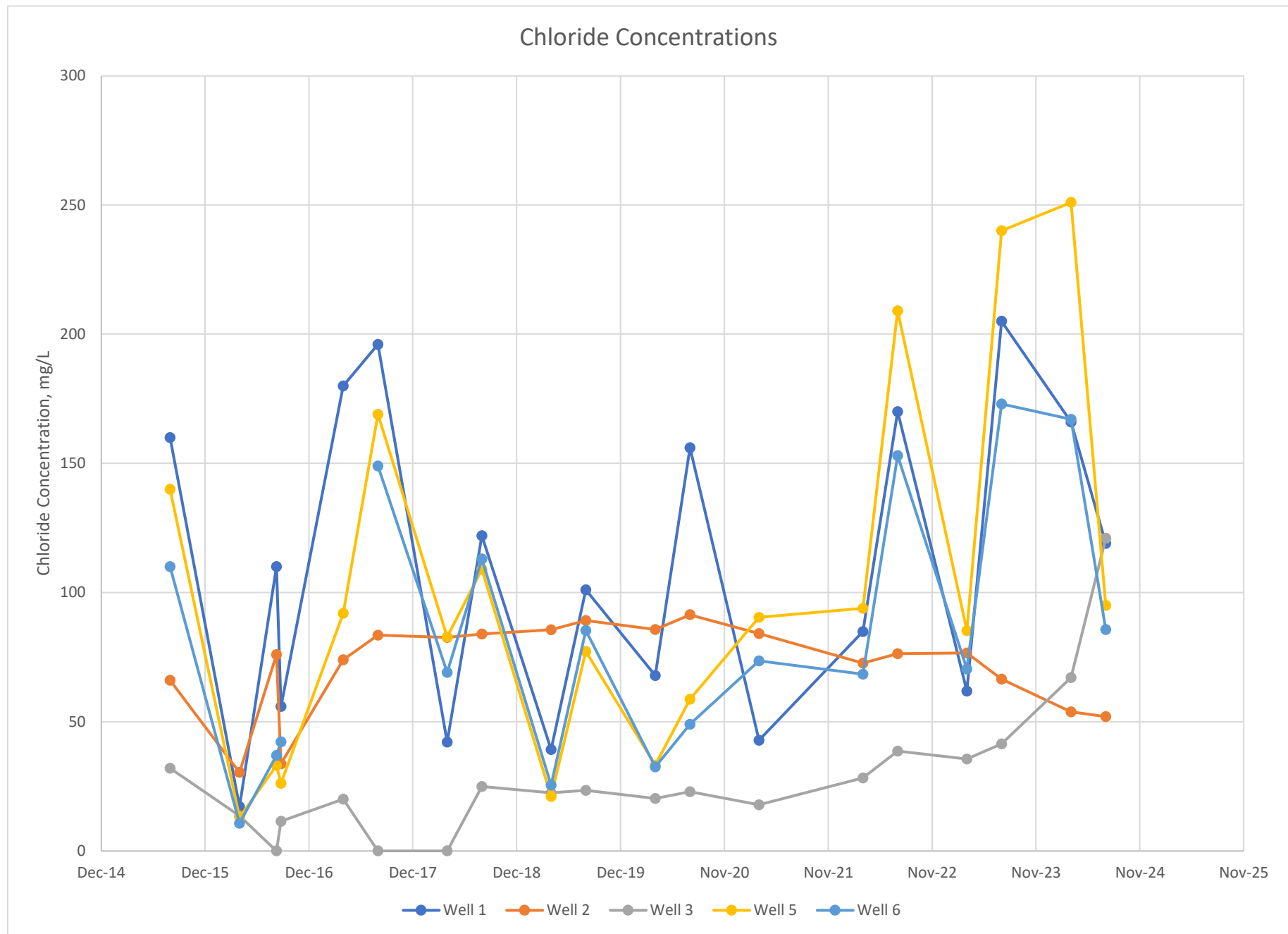


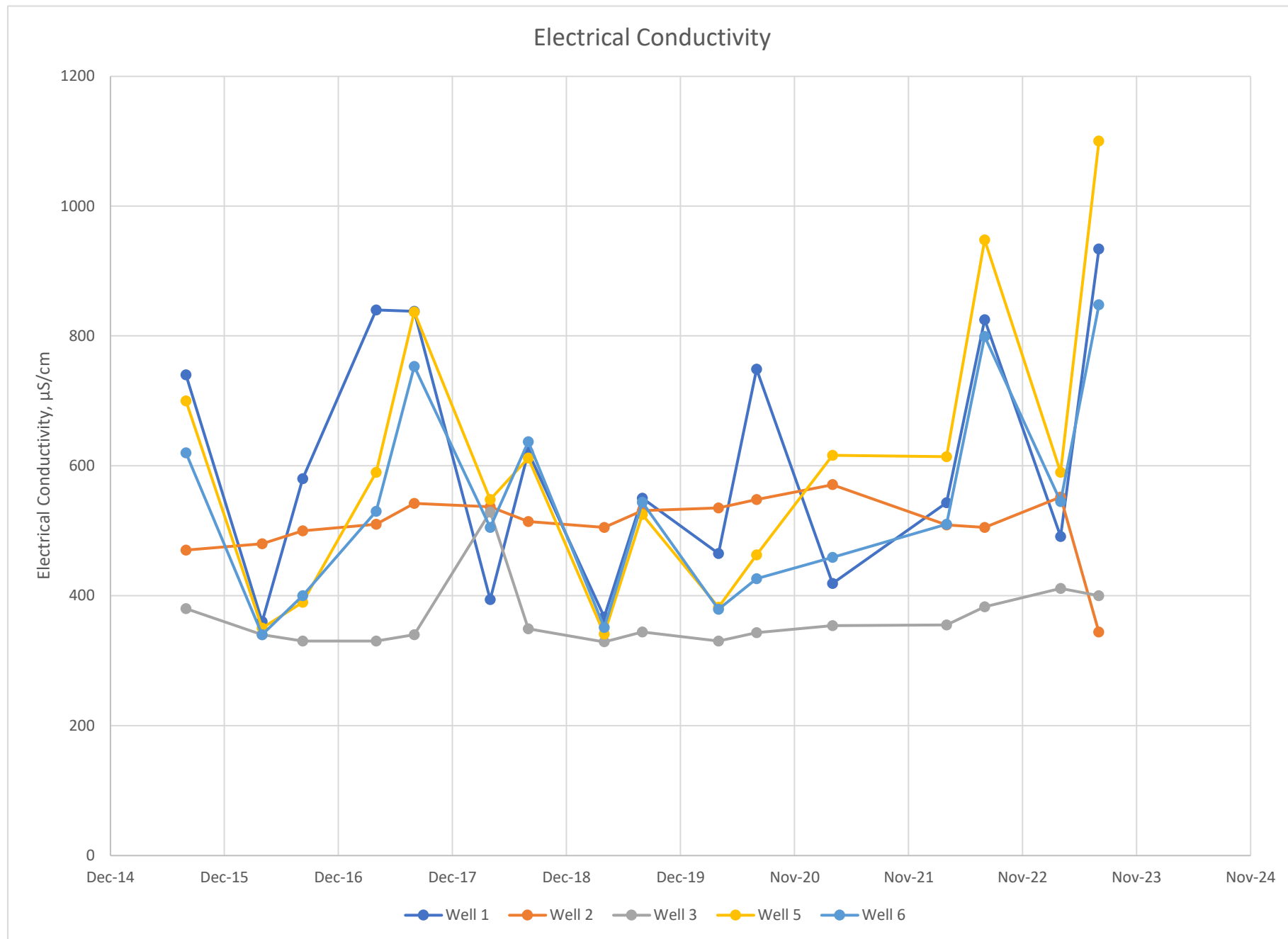
WATER WELLS

CAMANO VISTA WATER SUPPLY ANALYSIS
ISLAND COUNTY, WASHINGTON

PROJECT NO.	DATE	FIGURE
20240073H001	7/24	3







ATTACHMENT A

Well Logs

WATER WELL REPORT

STATE OF WASHINGTON

Application No. _____

Permit No. _____

File Original and First Copy with
Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's Copy

OWNER: Name: John Vista Address: _____

LOCATION OF WELL: County: _____ 1/4 Sec. _____ T. _____ N. R. _____ W.M.

Bearing and distance from section or subdivision corner _____

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐(4) TYPE OF WORK: Owner's number of well _____
(If more than one) _____
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 0.6 ft. Depth of completed well 260 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 8 " Diam. from 0 ft. to 249 ft.
Threaded ☐ " Diam. from _____ ft. to _____ ft.
Welded ☐ " Diam. from _____ ft. to _____ ft.Perforations: Yes ☐ No ☒Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.Screens: Yes ☐ No ☒Manufacturer's Name: Johnson
Type: 5 Tapplet Model No. _____
Diam. 5 Slot size 14 from 244 ft. to 249 ft.
Diam. 1 Slot size 28 from 249 ft. to 260 ft.Gravel packed: Yes ☐ No ☒ Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.Surface seal: Yes ☐ No ☒ To what depth: _____ ft.Material used in seal _____
Did any strata contain unusable water? Yes ☐ No ☒
Type of water: _____ Depth of strata: _____
Method of sealing strata off _____(7) PUMP: Manufacturer's Name _____
Type: _____ H.P. _____(8) WATER LEVELS: Land-surface elevation 204.7 ft.
above mean sea level _____
Static level 265 ft. below top of well Date 5/4/49
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____
(Cap, valve, etc.)(9) WELL TESTS: Drawdown is amount water level is
lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom: Driller
Yield 200 gal/min. with _____ ft. drawdown after 4 hrs.Recovery data (time taken as zero when pump turned off) (water level
measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test 5/4/49

Bailer test _____ gal/min. with _____ ft. drawdown after _____ hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water _____ Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and
show thickness of aquifers and the kind and nature of the material in each
stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
dry sand		
fine sand + water	0	175
Blue clay	175	185
fine sand	185	231
med. sand	231	245
	245	260

Avg. 236 to 260
- 32 to - 56Work started 4/23/49, 19 _____ Completed 5/4/49, 19 _____

WELL DRILLER'S STATEMENT:

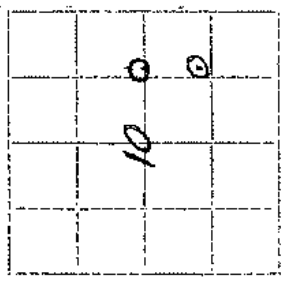
This well was drilled under my jurisdiction and this report is
true to the best of my knowledge and belief.NAME Kounkel Well Drilling
(Person, firm, or corporation) (Type or print)Address 292 N. Smith St. Camas, Wash.(Signed) Larry Kounkel
(Well Driller)License No. 1174 Date 5/25/49, 19 _____

STATE OF WASHINGTON Per. 9663
DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

30, 3 10 J
File number

WELL LOG

Record by D. J. Miller
Source Well report
Location: State of WASHINGTON
County Island
Area
Map
SW NE 1/4 SE 1/4 sec. 10 T. 30 N., R. 3 E. W
Drilling Co. A. G. Kounkel
Address Box 216 Stanwood, Wash.
Method of Drilling Rotary Date May 6, 1969
Owner Leonard N. Clever
Address 11301 5th NE Seattle, Wash.
Land surface, datum 200 ft above sea level
SWL: 205 Date May 1969 Dims. 8" x 260



CORRELATION	MATERIAL	From (feet)	To (feet)
	<u>Domestic</u>		
	<u>Sand, dry</u>	<u>0</u>	<u>175</u>
	<u>Sand, fine</u>	<u>175</u>	<u>185</u>
	<u>Clay, blue</u>	<u>185</u>	<u>236</u>
	<u>Sand, fine (water bearing)</u>	<u>236</u>	<u>245</u>
	<u>Sand, med (water bearing)</u>	<u>245</u>	<u>260</u>
	<u>Casing installed: 8" diam from 0 to 244', welded.</u>		
	<u>No perforations.</u>		
	<u>Screens: Stainless steel</u>		
	<u>Diam 6" slot size #10 from 245' to 250'</u>		
	<u>" 6" " " #25 " 250' to 260'</u>		

WELL LOG.—Continued

No. /.

[illegible]



Well Tagging Form

Unique Well Tag No: AAF 245

RECORD VERIFICATION (check one)

- ☐ Well Report available (please attach this form to the well report and submit it to the Ecology Regional Office near you)
- ☐ Verification inconclusive *See #1*
- ☐ Well Report not available

WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

First Name Lamano Vota W. Dist Last Name _____
10748-3
 Street Address _____
 City _____ State _____

LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address END OF CALENA
 City _____ County _____
 T _____ N R _____ W M Sec _____ 1/4 of the _____

FOR AGENCY USE ONLY

Latitude _____
 Longitude _____

Elevation at land surface _____ feet/meters (circle one)

Additional information, if available.

- ☐ GPS
- ☐ Topographic Map
- ☐ Survey
- ☐ Computer generated
- ☐ Digital Altimeter
- ☐ Topographic Map
- ☐ Other _____

- ☐ Location marked on topographic map (please attach)
- ☐ Location marked on air photo (please attach)

FOR AGENCY USE ONLY

WELL CHARACTERISTICS

Physical Description of well (size of casing type of well housing etc)

8" CASING INSIDE CINDERBLOCK HOUSE W/METAL LID ADJ
TO 2 HOUSES (GREY W/METAL ROOF) & 2 OCTAGONAL RES
CHAIN LINK FENCE

Location of Well Identification Tag

Long

Is supplemental tag needed for ease of identifying well?

☐

Yes

☒

No

Where was tag placed?

D	C	B	A
E	F	G	H
I	L	K	J
M	P	Q	R

Scale 1 24 000 (1' = 2 000)

Indicate the location of the well within the Section by drawing a dot at that point

SECTION _____

Comments

FOR ECOLOGY WATER RESOURCES PROGRAM ONLY

Right # _____

Date Issued _____

One Application Permit Certificate Claim Exempt

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with
Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No.

(1) OWNER: Name Camano Vista Water Dist Address 3026 Sullivan Dr CAMANO IS
(2) LOCATION OF WELL: County ISLAND NE 1/4 SE 1/4 Sec 10 T. 30 N. R. 35 W.M.
Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 2
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 229 ft. Depth of completed well 229 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from 2 ft. to 224 ft.
Threaded ☐ " Diam. from _____ ft. to _____ ft.
Welded ☒ " Diam. from _____ ft. to _____ ft.

Perforations: Yes ☐ No ☒

Type of perforator used _____

SIZE of perforations _____ in. by _____ in.

perforations from _____ ft. to _____ ft.

perforations from _____ ft. to _____ ft.

perforations from _____ ft. to _____ ft.

Screens: Yes ☒ No ☐

Manufacturer's Name JOHNSON

Type SS Model No. _____

Diam. 6" Slot size 20 from 224 ft. to 229 ft.

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: _____

Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.

Material used in seal Bentonite

Did any strata contain unusable water? Yes ☐ No ☒

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

(7) PUMP: Manufacturer's Name Grundfos

Type: Sub HP 3

(8) WATER LEVELS: Land-surface elevation above mean sea level _____

Static level 193.2 ft. below top of well Date 7-21-87

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? Yes ☒ No ☐ If yes, by whom? Driller

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

" 30 " 10 " 4 "

" " " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____

Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water _____ Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
TAN SAND - MED	0	32
TAN SAND w/ some CLAY	32	73
TAN SAND - MED	73	160
FINE TAN SAND w/ WATER	160	167
BLUE CLAY	167	174
FINE BLUE SAND w/ WATER	174	178
BLUE CLAY	178	180
FINE SAND w/ WATER	180	181
BLUE CLAY	181	182
SAND w/ gravel	182	183
FINE SAND w/ WATER	182	223
MED SAND w/ gravel & WATER	223	229

Work started 7-15, 1987. Completed 7-17, 1987

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

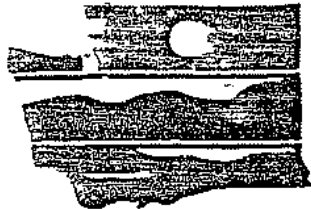
NAME Camano Well Drilling
(Person, firm, or corporation) (Type or print)

Address 215 N. Goodrich Rd Camano IS

(Signed) Joseph Thomas
(Well Driller)

License No. 0611 Date 7-21, 1987

(USE ADDITIONAL SHEETS IF NECESSARY)



WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Well Tagging Form

Unique Well Tag No: AGA713

RECORD VERIFICATION (check one)

- ☐ Well Report available (please attach this form to the well report and submit it to the Ecology Regional Office near you)
- ☐ Verification inconclusive
- ☐ Well Report not available

Sec #2

WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

First Name Camano Vista W. DIST Last Name _____
Street Address 10748-3
City _____ State _____

LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address _____
City _____ County _____
T _____ N R _____ WM Sec _____ 1/4 of the _____

FOR AGENCY USE ONLY

Latitude _____
Longitude _____

Elevation at land surface _____ feet/meters (circle one)

Additional information, if available:

- ☐ GPS
- ☐ Topographic Map
- ☐ Survey
- ☐ Computer generated
- ☐ Digital Altimeter
- ☐ Topographic Map
- ☐ Other _____

- ☐ Location marked on topographic map (please attach)
- ☐ Location marked on air photo (please attach)

FOR AGENCY USE ONLY

WELL CHARACTERISTICS

Physical Description of well (size of casing type of well housing etc.)

4" CASING ON BACKSIDE OF SOURCE #1 - OUTSIDE FENCE
 HEAD INSIDE CINDER BLOCK HOUSE (4x3x3') w/
 METAL LID

Location of Well Identification Tag

Is supplemental tag needed for ease of identifying well?

☐

Yes

☒

No

Where was tag placed?

Scale 1:24 000 (1"=2 000')

Indicate the location of the well within the Section by drawing a dot at that point.

SECTION _____

D	C	B	A
E	F	G	H
M	L	K	J
V	P	Q	R

Comments

FOR ECOLOGY WATER RESOURCES PROGRAM ONLY

Permit Right # _____

Date Issued _____

One

Application

Permit

Certificate

Claim

Exempt

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

STATE OF WASHINGTON

Permit No

Bearing and distance from section or subdivision corner

ECY 050-1-20



WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Well Tagging Form

Unique Well Tag No: AGA697

RECORD VERIFICATION (check one)

- ☐ Well Report available (please attach this form to the well report and submit it to the Ecology Regional Office near you)
- ☐ Verification inconclusive
- ☐ Well Report not available

SM #3

WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

First Name Suma Vata W. Ppt Last Name 10740-3

Street Address _____

City _____ State _____

LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address END OF COLFAX, GRAVEL DRIVE ON LEFT.

City _____ County _____

T _____ N R _____ W M Sec _____ 1/4 of the _____

FOR AGENCY USE ONLY

Latitude _____

Longitude _____

Elevation at land surface _____ feet/meters (circle one)

Additional information, if available.

- ☐ GPS
- ☐ Topographic Map
- ☐ Survey
- ☐ Computer generated
- ☐ Digital Altimeter
- ☐ Topographic Map
- ☐ Other _____

☐ Location marked on topographic map (please attach)

☐ Location marked on air photo (please attach)

FOR AGENCY USE ONLY

WELL CHARACTERISTICS

Physical Description of well (size or casing type or well housing etc.)

6" CASING INSIDE 4' x 3' x 3' CINDER BLOCK HOUSE W/ METAL

LID ADJ TO # SER # 4

Location of Well Identification Tag

Easy

Is supplemental tag needed for ease of identifying well?

☐

Yes

☒

No

Where was tag placed?

Scale 1:24,000 (1"=2,000')

Indicate the location of the well within the Section by drawing a dot at that point.

SECTION _____

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Comments

FOR ECOLOGY WATER RESOURCES PROGRAM ONLY

Right # _____ Date Issued _____

One Application Permit Certificate Claim Exempt

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with
Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

30/3-10P22
Application No. G1-25111

Permit No.

(1) OWNER: Name Camasville Water Dist Address

(2) LOCATION OF WELL: County Selma - SE 1/4 SE 1/4 Sec 10 T. 30 N. R. 3E W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☒

(4) TYPE OF WORK: Owner's number of well #4
(if more than one)
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 268 ft. Depth of completed well 268 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: " Diam. from ft. to ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ 6 " Diam. from 12 ft. to 263 ft.

Perforations: Yes ☐ No ☒

Type of perforator used
SIZE of perforations in. by in.
..... perforations from ft. to ft.
..... perforations from ft. to ft.
..... perforations from ft. to ft.

Screens: Yes ☒ No ☐

Manufacturer's Name Johnson
Type SS Model No.
Diam. Slot size from ft. to ft.
Diam. 5 7/8 Slot size 0.15 from 263 ft. to 268 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation 218.86
above mean sea level
Static level 208 ft. below top of well Date 8-27-87
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? driller
Yield: 33 gal./min. with 11 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Baller test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

Cl = 11.8 ppm

(USE ADDITIONAL SHEETS IF NECESSARY)

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Tan sand w/gravel	0	190
silty tan sand w/water	190	198
Blue Clay	198	203
silty sand w/water	203	207
Blue Clay	207	245
silt sand w/water	245	253
sand w/wood	253	257
sand w/water	257	268

Work started 8-10 1987. Completed 8-12 1987

WELL DRILLER'S STATEMENT:

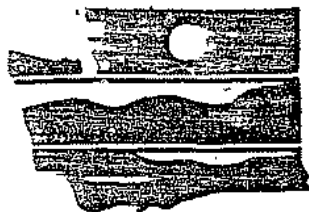
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Camas Well Drilling
(Person, firm, or corporation) (Type or print)

Address 215 N. Goodrich Rd Camas, OR

[Signed] Jayce Juma
(Well Driller)

License No. 0611 Date 8-27 1987



WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Well Tagging Form

Unique Well Tag No:

AGA 691

RECORD VERIFICATION (check one)

- ☐ Well Report available (please attach this form to the well report and submit it to the Ecology Regional Office near you)
- ☐ Verification inconclusive *See #4*
- ☐ Well Report not available

WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

First Name *Lamarco Voth W Rose* Last Name _____

Street Address *10748-3* _____

City _____ State _____

LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address *END OF COLFAX, GRAVEL RD ON L* _____

City _____ County _____

T _____ N R _____ WM Sec _____ 1/4 of the _____

FOR AGENCY USE ONLY

Latitude _____

Longitude _____

Elevation at land surface _____ feet/meters (circle one)

Additional information, if available.

- ☐ GPS
- ☐ Topographic Map
- ☐ Survey
- ☐ Computer generated
- ☐ Digital Altimeter
- ☐ Topographic Map
- ☐ Other _____

☐ Location marked on topographic map (please attach)

☐ Location marked on air photo (please attach)

FOR AGENCY USE ONLY

WELL CHARACTERISTICS

Physical Description of well (size or casing type or well housing etc.)

6" CASING INSIDE 9' X 3' X 3' CINDER BLOCK HOUSE

W/METAL LID 40J TO SRC #3

Location or Well Identification Tag

Long

Is supplemental tag needed for ease of identifying well?

☐

Yes

☒ No

Where was tag placed?

Scale 1 24 000 (1" = 2 000')

Indicate the location of the well within the Section by drawing a dot at that point.

SECTION _____

D	C	B	A
---	---	---	---

E	F	G	H
---	---	---	---

M	L	K	J
---	---	---	---

N	P	Q	R
---	---	---	---

Comments

FOR ECOLOGY WATER RESOURCES PROGRAM ONLY

Right #

Date Issued

One

Application

Permit

Certificate

Claim

Exempt

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with
Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Permit No. 680649

(1) OWNER: Name CAMANO VISTA WATER DIST Address _____
(2) LOCATION OF WELL: County ISLAND - SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 10 T. 30 N., R. 3E W.M.
Bearing and distance from section or subdivision corner (WELL #5)

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) #5
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 280 ft. Depth of completed well 280 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: _____ " Diam. from _____ ft. to _____ ft.
Threaded ☐ _____ " Diam. from _____ ft. to _____ ft.
Welded ☒ 6 " Diam. from +1 ft. to 275 ft.

Perforations: Yes ☐ No ☒

Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes ☒ No ☐

Manufacturer's Name JOHNSON
Type SS Model No. _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. 5 3/8 Slot size .015 from 275 ft. to 280 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal BEATONITE
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name GRUNDOS
Type SUB HP 3

(8) WATER LEVELS: Land-surface elevation 286.19 ft.
Static level 226 ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? DRILLER
Yield: 39 gal./min. with 3 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Ballor test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
TAN SANDY CLAY	0	10
SAND & GRAVEL	40	195
BLUE CLAY	195	220
SILTY BLUE SAND	220	232
BLUE CLAY	232	260
SILT BLUE SAND w/WOOD	260	268
BLUE CLAY	268	272
SAND GRAVEL w/WATER	272	280

RECEIVED
JAN 14 1988

DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Work started 11-21, 19____ Completed 11-24, 1987

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME CAMANO WELL DRILLING
(Person, firm, or corporation) (Type or print)

Address 215 N. GOODRICH RD. C.I.

[Signed] William J. Kelly
(Well Driller)

License No. 1525 Date _____, 19____

30/03-10R

File Original and First Copy with
Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No **G1-25152**

Permit No. ~~000645~~

(1) OWNER: Name CAMANO VISTA W/DIST Address _____

(2) LOCATION OF WELL: County ISLAND Section S.E. 1/4 Sec. 10 T.30 N., R.3E W.M.

Bearing and distance from section or subdivision corner WELL #6

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☒

(4) TYPE OF WORK: Owner's number of well (if more than one) #6
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 280 ft. Depth of completed well 280 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: " Diam. from _____ ft. to _____ ft.
Threaded ☐ " Diam. from _____ ft. to _____ ft.
Welded ☒ 6 " Diam. from +2 ft. to 275 ft.
Perforations: Yes ☐ No ☒
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
Screens: Yes ☒ No ☐
Manufacturer's Name JOHNSON
Type SS Model No. _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. 5/8 Slot size 0.15 from 175 ft. to 280 ft.
Gravel packed: Yes ☐ No ☒ Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.
Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name GRUNDIGS
Type: Sub HP 3

(8) WATER LEVELS: Land-surface elevation above mean sea level 222.26 ft.
Static level 223 ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? DRILLER
Yield: 39 gal./min. with 2.6 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

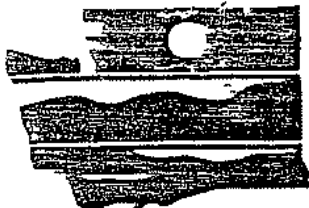
MATERIAL	FROM	TO
TAN CLAY & SAND	0	35
SAND & GRAVEL	35	190
BLUE CLAY	190	217
SILT & SAND	217	226
BLUE CLAY	226	258
SILT & SAND w/wood	258	262
BLUE CLAY	262	266
SAND GRAVEL w/WATER	266	280

RECEIVED
JAN 14 1988
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Work started 11-6, 1987. Completed 11-8, 1987.

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME CAMANO WELL DRILLING
(Person, firm, or corporation) (Type or print)
Address 215 N. 600 DRICH RD
[Signed] William J. Bailey
(Well Driller)
License No. 1525 Date 12-, 1987

(USE ADDITIONAL SHEETS IF NECESSARY)



WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Well Tagging Form

Unique Well Tag No: _____

AGAL699

RECORD VERIFICATION (check one)

☐

Well Report available (please attach this form to the well report and submit it to the Ecology Regional Office near you)

☐

Verification inconclusive

☒

Well Report not available

See #6

WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

First Name _____

Camano Lake W. Dist.

Last Name _____

10748-3

Street Address _____

City _____

State _____

LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address: _____

END OF MELLIST RD ON RT

City _____

County _____

T _____ N R _____ W M Sec _____

1/4 of the _____

FOR AGENCY USE ONLY

Latitude _____

Longitude _____

Elevation at land surface _____ feet/meters (circle one)

Additional information, if available

☐

GPS

☐

Topographic Map

☐

Survey

☐

Computer generated

☐

Digital Altimeter

☐

Topographic Map

Other _____

☐

Location marked on topographic map (please attach)

☐

Location marked on air photo (please attach)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

FOR AGENCY USE ONLY

WELL CHARACTERISTICS

1. Description of well (size or casing type or well housing etc.)

CASING INSIDE 4'x3'x3' CINDERBLOCK HOUSE w/

ETAL LID ADJ TO SEC #5

ACCESS BY DIRT DRIVE ~~ON~~ PAST RESIDENCE AT ADDRESS

2. Well Identification Tag

3. Supplemental tag needed for ease of identifying well?

☐

Yes

☒

No

4. Where was tag placed?

Scale 1:24,000 (1"=2,000')

Indicate the location of the well within the Section by drawing a dot at that point.

SECTION _____

C	B	A
F	G	H
L	K	J
P	Q	R

5. COMMENTS

FOR DEPARTMENT OF ECOLOGY WATER RESOURCES PROGRAM ONLY

6. Right #

Date Issued

7. One

Application

Permit

Certificate

Claim

Exempt

The Department of Ecology does NOT Warrant the Data and/or the Information on this Well Report.

File Original with
Department of EcologySecond Copy - Owner's Copy
Third Copy - Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent

UNIQUE WELL ID #

Water Right Permit No

W098089

AFJ 759

G1-25152C

(1) OWNER Name Camano Vista Water Dist Address P.O. Box 1515 Stanwood, WA 98292(2) LOCATION OF WELL County Island SE 1/4 SE 1/4 Sec 10 T 30 NR 2E WM(2a) STREET ADDRESS OF WELL (or nearest address) XXX Colfax Ave, Camano Isl. WA 98282

TAX PARCEL NO

30-3E-10R

(3) PROPOSED USE ☐ Domestic ☐ Industrial ☐ Municipal
☐ Irrigation ☐ Test Well ☐ Other
☐ DeWater

(4) TYPE OF WORK Owner's number of well (if more than one)

☒ New Well Method
☐ Deepened ☐ Dug ☐ Bored
☐ Reconditioned ☒ Cable ☐ Driven
☐ Decommission ☐ Rotary ☐ Jetted(5) DIMENSIONS Diameter of well 6 inches
Drilled 2 1/2 feet Depth of completed well 197 ft

(6) CONSTRUCTION DETAILS

Casing Installed

☒ Welded☐ Liner installed☐ ThreadedDiam from +2 ft to 188 ft

Diam from _____ ft to _____ ft

Diam from _____ ft to _____ ft

Perforations

☐ Yes ☒ No

Type of perforator used _____

SIZE of perforations _____ in by _____ in

_____ perforations from _____ ft to _____ ft

Screens

☒ Yes ☐ No ☐ K-Pac Location _____Manufacturer's Name JohnsonType 5. STEEL

Model No _____

Diam 5 Slot Size 04 from 187 ft to 197 ft

Diam _____ Slot Size _____ from _____ ft to _____ ft

Gravel/Filter packed ☐ Yes ☒ No ☐ Size of gravel/sand _____

Material placed from _____ ft to _____ ft

Surface seal ☒ Yes ☐ No To what depth? 18 ftMaterial used in seal Benon-TCDid any strata contain unusable water? ☐ Yes ☒ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

(7) PUMP Manufacturer's Name _____

Type _____ HP _____

(8) WATER LEVELS Land surface elevation above mean sea level _____ ft

Static level 178 ft below top of well Date _____

Artesian pressure _____ lbs per square inch Date _____

Artesian water is controlled by _____
(Cap, valve, etc.)

(9) WELL TESTS Drawdown is amount water level is lowered below static level

Was a pump test made? ☒ Yes ☐ No If yes, by whom Quality WaterYield 5 gal/min with 12 ft drawdown after 48 hrs

Yield _____ gal/min with _____ ft drawdown after _____ hrs

Yield _____ gal/min with _____ ft drawdown after _____ hrs

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test _____

Bailer test _____ gal/min with _____ ft drawdown after _____ hrs

Airtest _____ gal/min with _____ ft drawdown after _____ hrs

Artesian flow _____ gpm Date _____

Temperature of water 52 Was a chemical analysis made? ☒ Yes ☐ No(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION
Formation Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered

MATERIAL	FROM	TO
Top-soil	0	2
Tan sand-gravel	2	32
Grey sand-gravel	32	187
Fine sand-water (Grey)	187	197
Blue clay	197	212

this well meets all state &
Co. Rules and reg. at time
it was drilled

Here Hall

RECEIVED

MAR 27 2001

DEPT OF ECOLOGY

Work Started 9-22-00 Completed 10-3-00

WELL CONSTRUCTION CERTIFICATION

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Type or Print Name _____ License No _____
(Licensed Driller/Engineer)

Trance Name _____ License No _____

Drilling Company GENE'S Well Drilling(Signed) Here Hall License No 0186

(Licensed Driller/Engineer)

Address 5115 26th N.W. Stanwood, WA.

Contractor's

Registration No GENES W0071CC Date 10-16-00

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407 6600. The TDD number is (360) 407 6006.



WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle) 200736

☒ Construction

☐ Decommission ORIGINAL INSTALLATION Notice of Intent Number _____

Well 8 AFJ760

30-3E-100R

CURRENT

Notice of Intent No. W098090

Unique Ecology Well ID Tag No. AFJ 760

Water Right Permit No. GE 25111C

Property Owner Name Camano Vista Water Dist.

Well Street Address _____

City Camano Is. County Island

Location SE 1/4-1/4 SE 1/4 Sec 10 Twn 30 R3E BWM or WWM circle one

Lat/Long (s, t, r) Lat Deg _____ Lat Min/Sec _____

Still **REQUIRED** Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Top-soil	0	2
sandy-clay	2	26
Dry sand-gravel	26	178
water sand	178	181
Blue clay	181	197
RECEIVED JUN 23 2006 DEPT. OF ECOLOGY		
<u>Well siting per</u> <u>Island Co. code</u> <u>8.09.07 C-D&E</u>		
Start Date	<u>4/10/06</u>	Completed Date <u>5/8/06</u>

PROPOSED USE: ☐ DeWater ☐ Domestic ☐ Irrigation ☐ Industrial ☐ Test Well ☒ Municipal ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) _____
☒ New well ☐ Reconditioned ☐ Deepened Method: ☐ Dug ☐ Bored ☐ Driven ☒ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 197 ft.
 Depth of completed well 182 ft.

CONSTRUCTION DETAILS
 Casing ☒ Welded 6 " Diam. from 12 ft. to 174 ft.
 Installed: ☐ Liner installed " Diam. from _____ ft. to _____ ft.
☐ Threaded " Diam. from _____ ft. to _____ ft.

Perforations: ☐ Yes ☒ No
 Type of perforator used _____
 SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: ☒ Yes ☐ No ☐ K-Pac Location 171
 Manufacturer's Name Alloy
 Type S-Steel Model No. _____
 Diam. 5 Slot size 4 from 172 ft. to 182 ft.
 Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☐ Yes ☒ No ☐ Size of gravel/sand _____ ft. to _____ ft.
 Materials placed from _____ ft. to _____ ft.

Surface Seal: ☒ Yes ☐ No To what depth? 36 ft.
 Material used in seal Benomite
 Did any strata contain unusable water? ☐ Yes ☒ No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

PUMP: Manufacturer's Name Goulds
 Type SUB H.P. 172

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
 Static level 168-7 ft. below top of well Date 5/8/06
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
 Was a pump test made? ☒ Yes ☐ No If yes, by whom? Gene's
 Yield: 5 gal./min. with 11 ft. drawdown after 8 hrs.
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

 Date of test _____
 Bailor test _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
 Artesian flow _____ g.p.m. Date _____
 Temperature of water _____ Was a chemical analysis made? ☒ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Gene Hitt

Driller/Engineer/Trainee Signature Gene Hitt

Driller or trainee License No. 0186

IF TRAINEE,

Driller's Licensed No. _____

Driller's Signature _____

Drilling Company Gene's Well Drilling

Address 5115 268th St. N.W.

City, State, Zip Stanwood, WA 98292

Contractor's

Registration No. GENESWD071CC Date 5/15/06

Ecology is an Equal Opportunity Employer.

ATTACHMENT B

Tabulated Water Use, Water Level, and Chloride Data

Year	Month	Chloride (mg/L)						
		Well 1	Well 2	Well 3	Well 5	Well 6	Well 7	Well 8
2015	August	160	66	32	140	110	20	29
2016	April	17.1	30.4	13.6	13	10.7	15.2	14.6
2016	August (8/9/2016)	110	76	ND	33	37	ND	25
2016	August (8/25/2016)	55.9	33.7	11.5	26.1	42.2	14.9	15.1
2017	April	180	74	20	92		20	20
2017	August	196	83.5	ND	169	149	21.8	26.7
2018	April	42.1	82.6	ND	82.8	69.1	21.7	29
2018	August	122	83.9	24.9	109	113	22.3	30.7
2019	April	39.2	85.6	22.5	21.1	25.4	23.4	32.9
2019	August	101	89.2	23.4	77.2	85.3	21	29.8
2020	April	67.9	85.7	20.3	33.2	32.5	21	29.7
2020	August	156	91.4	22.9	58.7	49	21	31.5
2021	April	42.8	84.1	17.8	90.4	73.5	20.5	28
2021	August	--	--	--	--	--	--	--
2022	April	84.9	72.7	28.2	93.9	68.4	20.4	26.3
2022	August	170	76.3	38.6	209	153	19.3	28.9
2023	April	61.8	76.6	35.6	85.2	70.4	ND	26.4
2023	August	205	66.5	41.4	240	173	ND	29.2
2024	April	166	53.8	67.1	251	167	18.3	35.2
2024	August	119	52	121	95	85.7	17.8	38.1

Year	Month	Conductivity (µS/cm)						
		Well 1	Well 2	Well 3	Well 5	Well 6	Well 7	Well 8
2015	August	740	470	380	700	620	440	700
2016	April	360	480	340	350	340	430	470
2016	August	580	500	330	390	400	420	450
2017	April	840	510	330	590	530	440	460
2017	August	838	542	340	837	753	446	469
2018	April	394	537	529	548	505	440	485
2018	August	621	514	349	612	637	442	487
2019	April	367	505	329	341	351	432	481
2019	August	550	531	344	525	544	438	487
2020	April	465	535	330	382	379	432	481
2020	August	749	548	343	463	426	445	487
2021	April	419	571	354	616	459	474	507
2021	August	--	--	--	--	--	496	--
2022	April	543	509	355	614	510	435	460
2022	August	825	505	383	948	799	423	457
2023	April	491	552	411	590	545	469	527
2023	August	934	344	400	1100	848	428	508
2024	April	--	--	--	--	--	--	--
2024	August	--	--	--	--	--	--	--

Date	Water Use (gal)								Water Use per Water Right Certificate		
									G1-00271C	G1-25111C	G1-25152C
									Acre feet limit: 75.2	Acre feet limit: 20.9	Acre feet limit: 20.9
	Well 1	Well 2	Well 3	Well 5	Well 6	Well 7	Well 8	Total Water Use, Monthly	Well 1, 2, 8	Well 3, 4, 7	Well 5, 6
Jan-22	4,077.00	279,428.00	170,782.00	92,071.00	68,970.00	141,790.00	7,695.00	764,813.00	4,100,315 gal, 12.6 acre feet	3,315,057 gal, 10.2 acre feet	1,712,834 gal, 5.3 acre feet
Feb-22	24,222.00	247,970.00	134,851.00	92,172.00	71,442.00	127,965.00	0.00	698,622.00			
Mar-22	27,489.00	255,223.00	112,189.00	102,944.00	82,226.00	132,381.00	11,744.00	724,196.00			
Apr-22	13,495.00	260,580.00	78,302.00	51,899.00	40,161.00	135,290.00	105,630.00	685,357.00			
May-22	15,966.00	326,570.00	94,630.00	60,766.00	47,112.00	171,196.00	150,268.00	866,508.00			
Jun-22	13,055.00	246,494.00	80,262.00	49,126.00	38,068.00	127,322.00	112,430.00	666,757.00			
Jul-22	30,935.00	248,312.00	189,426.00	116,541.00	90,013.00	120,339.00	110,935.00	906,501.00			
Aug-22	42,911.00	310,704.00	279,084.00	160,987.00	123,025.00	153,239.00	143,748.00	1,213,698.00			
Sep-22	23,726.00	244,130.00	151,748.00	89,415.00	68,259.00	124,686.00	112,453.00	814,417.00			
Oct-22	12,943.00	253,752.00	82,865.00	49,131.00	37,242.00	132,604.00	116,356.00	684,893.00			
Nov-22	24,921.00	306,570.00	166,325.00	63,390.00	42,033.00	155,121.00	141,338.00	899,698.00			
Dec-22	19,928.00	247,524.00	130,621.00	75,791.00	50.00	122,039.00	114,129.00	710,082.00			
2022 TOTAL	253,668.00	3,227,257.00	1,671,085.00	1,004,233.00	708,601.00	1,643,972.00	1,126,726.00	9,635,542.00	4,505,054 gal, 13.8 acre feet	3,095,919 gal, 9.5 acre feet	2,524,936 gal, 7.7 acre feet
Jan-23	10,074.00	252,729.00	65,271.00	38,207.00	28,652.00	132,059.00	115,786.00	642,778.00			
Feb-23	7,540.00	186,730.00	49,755.00	28,589.00	21,337.00	97,554.00	85,483.00	476,988.00			
Mar-23	10,115.00	256,171.00	66,457.00	37,879.00	28,311.00	132,997.00	116,016.00	647,946.00			
Apr-23	14,500.00	283,476.00	93,850.00	53,529.00	40,082.00	146,956.00	129,594.00	761,987.00			
May-23	31,420.00	281,170.00	191,520.00	119,720.00	90,330.00	133,980.00	128,760.00	976,900.00			
Jun-23	47,190.00	198,770.00	85,190.00	179,500.00	139,310.00	66,320.00	91,670.00	807,950.00			
Jul-23	69,070.00	256,070.00	91,950.00	267,200.00	212,690.00	134,600.00	118,630.00	1,150,210.00			
Aug-23	51,400.00	253,620.00	205,710.00	206,000.00	156,300.00	126,700.00	117,340.00	1,117,070.00			
Sep-23	30,780.00	277,320.00	179,300.00	104,300.00	75,300.00	140,800.00	127,640.00	935,440.00			
Oct-23	41,310.00	195,850.00	255,260.00	155,490.00	112,680.00	89,840.00	91,190.00	941,620.00			
Nov-23	35,450.00	149,270.00	225,062.00	132,310.00	96,520.00	66,860.00	69,220.00	774,692.00			
Dec-23	31,430.00	234,220.00	197,958.00	116,600.00	84,100.00	119,970.00	108,050.00	892,328.00			
2023 TOTAL	380,279.00	2,825,396.00	1,707,283.00	1,439,324.00	1,085,612.00	1,388,636.00	1,299,379.00	10,125,909.00			
Jan-24	66,330.00	245,330.00	198,090.00	125,200.00	60,580.00	121,570.00	80,530.00	897,630.00			
Feb-24	5,690.00	206,560.00	93,330.00	137,850.00	101,750.00	103,680.00	125,710.00	774,570.00			
Mar-24	37,030.00	213,660.00	240,430.00	141,740.00	99,820.00	10,470.00	77,810.00	820,960.00			
Apr-24	43,320.00	219,050.00	270,860.00	158,260.00	103,250.00	108,320.00	77,150.00	980,210.00			
May-24	48,900.00	207,780.00	305,930.00	178,850.00	136,780.00	100,120.00	95,310.00	1,073,670.00			
Jun-24	42,350.00	188,550.00	263,290.00	152,020.00	109,000.00	91,480.00	86,860.00	933,550.00			
Jul-24	76,150.00	195,760.00	359,980.00	211,550.00	147,680.00	91,090.00	91,540.00	1,173,750.00			

Depth to Water															
Well	Well 1		Well 2		Well 3		Well 5		Well 6		Well 7		Well 8		Comment
Monitoring Point															
Elevation	205.61		193.13		218.31		226.59		222.61		218		205		
	DTW (ft)	WL Elev (ft MSL)	DTW (ft)	WL Elev (ft MSL)	DTW (ft)	WL Elev (ft MSL)	DTW (ft)	WL Elev (ft MSL)	DTW (ft)	WL Elev (ft MSL)	DTW (ft)	WL Elev (ft MSL)	DTW (ft)	WL Elev (ft MSL)	
1/4/2011	202.4	3.21	189.8	3.33	216	2.31	223.6	2.99	219.2	3.41	198.6	19.4	173.7	31.3	
2/7/2011	202.2	3.41	196.1	-2.97	217.6	0.71	224.1	2.49	233.8	-11.19	188.5	29.5	175.3	29.7	
3/7/2011	205.5	0.11	199.5	-6.37	220.6	-2.29	226.8	-0.21	235.8	-13.19	188.1	29.9	175.6	29.4	
4/4/2011	205.2	0.41	198.9	-5.77	219.7	-1.39	228	-1.41	228.4	-5.79	198.1	19.9	175.7	29.3	
5/2/2011	205	0.61	199.5	-6.37	220.4	-2.09	226.4	0.19	236.4	-13.79	188.4	29.6	175.5	29.5	
6/6/2011	206.1	-0.49	200.6	-7.47	221	-2.69	226.1	0.49	236.2	-13.59	187.2	30.8	175.3	29.7	
7/18/2011	206.1	-0.49	199.9	-6.77	220.6	-2.29	226.1	0.49	235.6	-12.99	187.2	30.8	175.2	29.8	
8/1/2011	207.3	-1.69	201.6	-8.47	221.7	-3.39	229.2	-2.61	235.6	-12.99	186.5	31.5	174.4	30.6	
9/12/2011	206.1	-0.49	200.1	-6.97	221.1	-2.79	227.3	-0.71	236.8	-14.19	186.6	31.4	175.1	29.9	
12/3/2011	202.3	3.31	197.2	-4.07	218.5	-0.19	224.9	1.69	234.8	-12.19	186.6	31.4	174.7	30.3	
11/7/2011	204.7	0.91	199.4	-6.27	220.3	-1.99	224.9	1.69	234.8	-12.19	186.5	31.5	175.6	29.4	
12/5/2011	204.6	1.01	199.2	-6.07	220.1	-1.79	226.5	0.09	235.8	-13.19	181.3	36.7	174.5	30.5	
															Data gap
2/24/2017	201.5	4.11	189	4.13	215.5	2.81	223.2	3.39	219	3.61	179.1	38.9	165.4	39.6	
7/31/2017	203.1	2.51	190.6	2.53	216.8	1.51	224.6	1.99	220.3	2.31	178.8	39.2	167	38	
9/29/2017	203.4	2.21	190.8	2.33	216.4	1.91	225	1.59	220.8	1.81	178.8	39.2	167	38	
															Data gap
6/26/2020	205.51	0.1	192.5	0.63	219.45	-1.14	226.55	0.04	222.77	-0.16	179.95	38.05	167.42	37.58	
7/27/2020	206.48	-0.87	192.83	0.3	219.45	-1.14	226.52	0.07	222.91	-0.3	179.85	38.15	167.28	37.72	
8/3/2020	206.08	-0.47	192.81	0.32	222.19	-3.88	230.8	-4.21	225.23	-2.62	180	38	167.47	37.53	
10/5/2020	205.5	0.11	192.39	0.74	219.06	-0.75	226.25	0.34	222.53	0.08	180.12	37.88	167.62	37.38	
11/23/2020	202.49	3.12	190.11	3.02	217.39	0.92	224.51	2.08	221.1	1.51	180.02	37.98	167.77	37.23	
12/28/2020	202.39	3.22	190.61	2.52	217.7	0.61	225.24	1.35	221.52	1.09	180.43	37.57	167.8	37.2	
1/18/2021	205.15	0.46	190.57	2.56	217.6	0.71	225.08	1.51	221.31	1.3	180.53	37.47	167.89	37.11	
2/22/2021	205.17	0.44	191.26	1.87	217.34	0.97	225.68	0.91	221.84	0.77	180.41	37.59	167.68	37.32	
3/26/2021	203.15	2.46	193.25	-0.12	220.08	-1.77	227.3	-0.71	223.17	-0.56	180.8	37.2	168.06	36.94	
4/26/2021	205.76	-0.15	194.77	-1.64	221.14	-2.83	227.94	-1.35	223.98	-1.37	180.8	37.2	168.12	36.88	
6/28/2021	208.4	-2.79	191.01	2.12	217.95	0.36	225.32	1.27	221.5	1.11	180.95	37.05	167.95	37.05	
7/19/2021	208.36	-2.75	194.56	-1.43	221.9	-3.59	228.73	-2.14	224.85	-2.24	180.9	37.1	168.02	36.98	
8/20/2021	208.3	-2.69	194.29	-1.16	221.27	-2.96	227.99	-1.4	224.12	-1.51	180.92	37.08	168.17	36.83	
9/20/2021	208.44	-2.83	194.48	-1.35	220.83	-2.52	227.41	-0.82	223.6	-0.99	181.15	36.85	168.31	36.69	
10/28/2021	205.22	0.39	189.12	4.01	217.2	1.11	224.56	2.03	220.88	1.73	181.03	36.97	168.11	36.89	
11/26/2021	208.14	-2.53	190.04	3.09	218.07	0.24	225.44	1.15	221.77	0.84	181.07	36.93	168.35	36.65	
12/21/2021	206.8	-1.19	189.05	4.08	219	-0.69	224.31	2.28	220.7	1.91	180.91	37.09	168.2	36.8	
1/17/2022	207.67	-2.06	189.99	3.14	217.74	0.57	224.99	1.6	221.17	1.44	181.04	36.96	167.87	37.13	
2/7/2022	207.9	-2.29	189.88	3.25	217.81	0.5	225.33	1.26	221.55	1.06	181.41	36.59	168.2	36.8	
3/14/2022	208.26	-2.65	190.84	2.29	218.73	-0.42	230.5	-3.91	222.21	0.4	181.41	36.59	168	37	
4/18/2022	207.9	-2.29	194.36	-1.23	221.5	-3.19	234.11	-7.52	224.3	-1.69	181.14	36.86	168.23	36.77	
4/29/2024	203.25	2.36	191.08	2.05	217.5	0.81	225.75	0.84	221.17	1.44	179.75	38.25	167.33	37.67	
8/13/2024	207.56	-1.95	220.9	-27.77	219.71	-1.4	225.9	0.69	232.46	-9.85	185.33	32.67	172.92	32.08	Measured by AESI (pumps active)

ATTACHMENT C

Depth to Water Form

