



PUBLIC NOTICE

Date posted: 9/10/2024

DEQ Requests Comments on Proposed City of La Pine Recycled Water Use Plan

HOW TO PROVIDE PUBLIC COMMENT

Facility name: La Pine Wastewater Treatment Facility

Permit type: Recycled Water Use Plan for a Water Pollutions Control Facility Permit

Comments due by: Tuesday, Oct. 15, 2024 at 5 p.m.

Send written comments to:

By mail: Water Quality Permit Coordinator, Oregon DEQ, 800 SE Emigrant Ave., Suite 330, Pendleton, OR 97801

By email: Water.permitER@deq.oregon.gov

The Oregon Department of Environmental Quality invites the public to provide written comments on the City of La Pine's Recycled Water Use Plan.

Summary

The Recycled Water Use Plan allows La Pine to land apply treated wastewater to grass hay for harvest. Part of the review process is an opportunity for public comment. Subject to public review and comment, DEQ plans to approve La Pine's Recycled Water Use Plan to be used in conjunction with La Pine's Water Pollution Control Facility Permit.

About the facility

La Pine currently manages a wastewater treatment facility that has historically discharged treated wastewater to a 75-acre pivot immediately west of the existing treatment facility. Recently, La Pine connected additional areas to their sewage collection system, which resulted in increased production of treated effluent. To accommodate flow increases La Pine has proposed to develop a new land application site with a total area of 193 acres. As part of the approval process, the City is required to submit an approvable Recycled Water Use Plan to DEQ and allow time for public comment.

Recycled water refers to the treated wastewater discharge from a municipal wastewater treatment system that is suitable for reuse. DEQ may permit the use of recycled water for beneficial purposes that are protective of human health and the environment. The City's Water Pollution Control Facilities permit allows for land application of recycled water.

What is in the plan?

The Recycled Water Use Plan describes how the wastewater treatment system owner will comply with Oregon's recycled water regulations, such as:

- A detailed description of the treatment methods that will be used to achieve a specific level of recycled water treatment;

Translation or other formats

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- The estimated quantity of recycled water to be provided by the wastewater treatment system owner to the use, at what frequency and for what beneficial use;
- Monitoring and sampling procedures;
- A maintenance plan that describes how the wastewater treatment system equipment and facility processes will be maintained and serviced;
- A description of how the public and personnel at the use area will be notified;
- A description and identification of the land application site(s), including a site map identifying sensitive features and setbacks;
- A description of the irrigation system, including storage, distribution methods, application methods and rates, and shutoff procedures.

How does DEQ monitor compliance with the permit requirements?

The permit and an approved Recycled Water Use Plan requires the facility to monitor for pollutants discharged using approved monitoring practices and standards. DEQ reviews the facility's discharge monitoring reports and annual summary reports to check for compliance with permit limits. The permittee is required to report non-compliance to DEQ as a permit condition. These plans are specific to each facility and are considered an extension of the facility's wastewater permit. DEQ's approval letter of the Recycled Water Use Plan will require the facility to monitor pollutants discharged using approved monitoring practices and standards as well as submit an annual report. DEQ reviews the facility's reports to check for compliance.

What happens next?

DEQ will hold a public hearing if DEQ receives a written request for a public hearing within 14 days of posting the public notice from at least 10 people or from an organization representing at least 10 people. An additional public notice would be published to advertise the public hearing.

If a public hearing is not requested, DEQ will consider and respond to all comments received and may require the city to revise its Recycled Water Use Plan based on comments received.

For more information

View information about this proposed permitting action and underlying documents online or by contacting the DEQ permit coordinator Patty Isaak at Water.PermitER@deq.oregon.gov to make an appointment to review the documents in person.

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities. Visit DEQ's [Civil Rights and Environmental Justice page](#).

RECYCLED WATER USE PLAN

AUGUST 2024



Prepared for the
City of La Pine, Oregon

DRAFT

RECYCLED WATER USE PLAN

FOR

CITY OF LA PINE, OREGON

AUGUST 2024



ANDERSON PERRY & ASSOCIATES, INC.

La Grande, Redmond, Hermiston, and Enterprise, Oregon
Walla Walla, Washington

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Section 1 - Introduction

The City of La Pine is a community of approximately 2,376 people located in Deschutes County, Oregon. The City's existing wastewater system consists of a septic tank effluent gravity (STEG) collection system, a facultative waste stabilization lagoon wastewater treatment facility (WWTF), and an effluent disposal outfall to a 75-acre recycled water irrigation system regulated by the Oregon Department of Environmental Quality (DEQ). The City currently operates under Water Pollution Control Facilities (WPCF) Permit No. 102069. Pursuant to its WPCF Permit, the City's treated effluent is land-applied during summer months by an irrigation system and the remainder is stored when not being land-applied. The City does not currently discharge to any surface water.

The City is pursuing improvements to its existing wastewater system, which includes construction of new STEG collection sewer to serve the Cagle and Glenwood Acres areas, four new wastewater lift stations, a new storage lagoon, new 30-inch high density polyethylene chlorine contact pipe, irrigation pump station improvements, septage receiving station improvements, and discontinuation and relocation of the existing 75-acre land application site to an approximately 193-acre irrigation site located east of the existing WWTF. The location and vicinity maps for the City, various components of the improved facultative lagoon WWTF, new land application site, and process schematic are presented on Figures 1-1 through 1-3. Relocation and construction of the new recycled water land application site is estimated to be completed in fall 2024. This Recycled Water Use Plan (RWUP) outlines how the new irrigation system will operate.

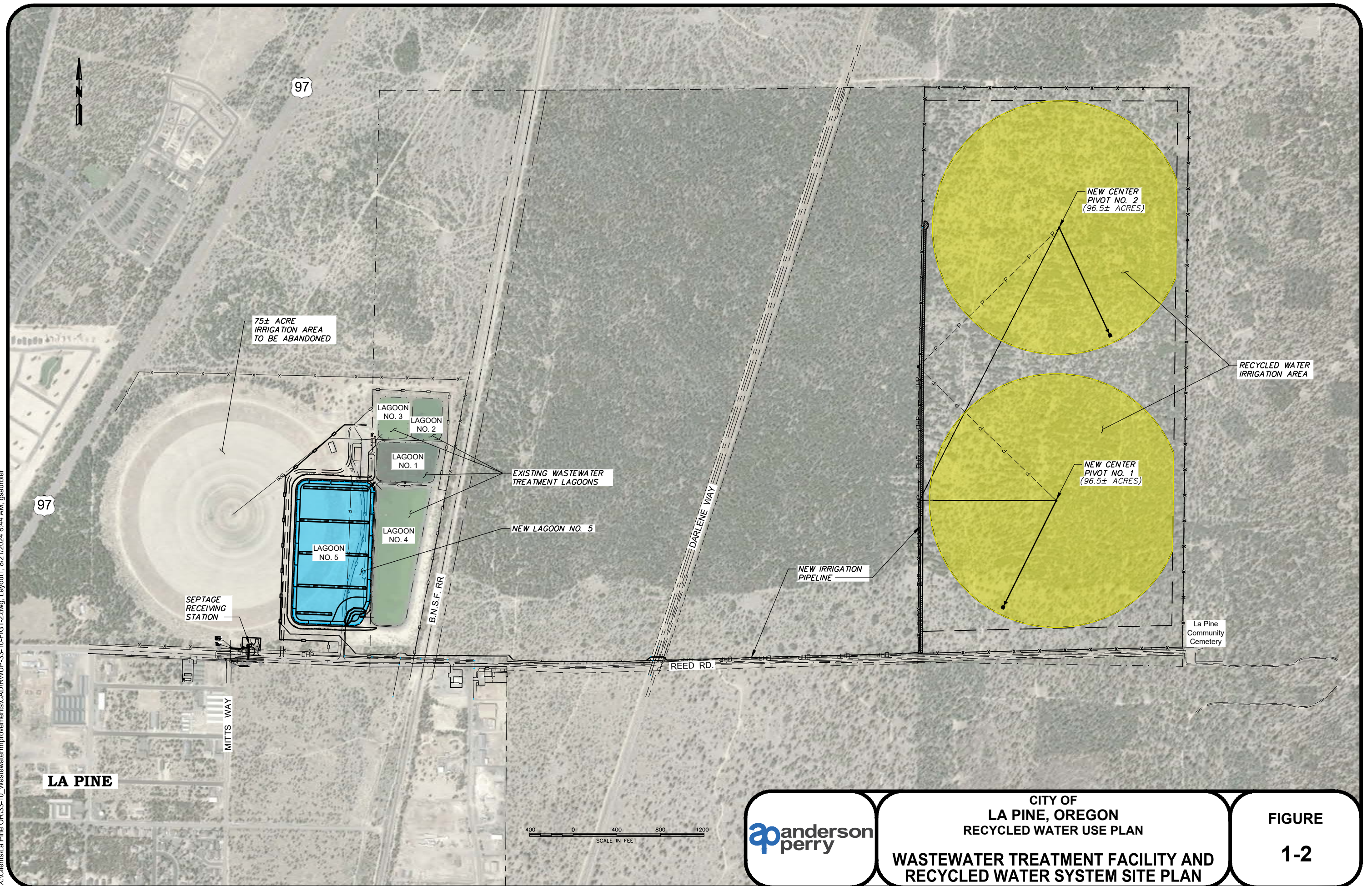
This RWUP provides guidance to City staff for operation of the wastewater treatment and disposal systems and the recycled water program and supersedes all previously prepared plans. The RWUP is governed under Oregon Administrative Rules (OAR) Chapter 340 Division 055 (OAR 340-055) as managed by the DEQ. For reference purposes, a copy of OAR 340-055 is included in Appendix A. Preparation of this RWUP is in accordance with the DEQ publication "Internal Management Directive - Implementing Oregon's Recycled Water Use Rules," dated June 2009.

The City's recycled water program is managed and administered by the City, with land application occurring at City-owned sites. The authority of the City is as follows:

- City: Produces recycled water of the required quality for seasonal irrigation
 - o Contact: Kelly West, Public Works Director, 541-419-5625

In addition to this RWUP, the City has completed a Groundwater Monitoring Plan, which the DEQ has approved, in relation to four new monitoring wells constructed at the new recycled water land application site prior to application of recycled water. The monitoring wells have been constructed to monitor groundwater quality to show compliance with monitoring requirements outlined in the WPCF Permit and in accordance with OAR 690-240.

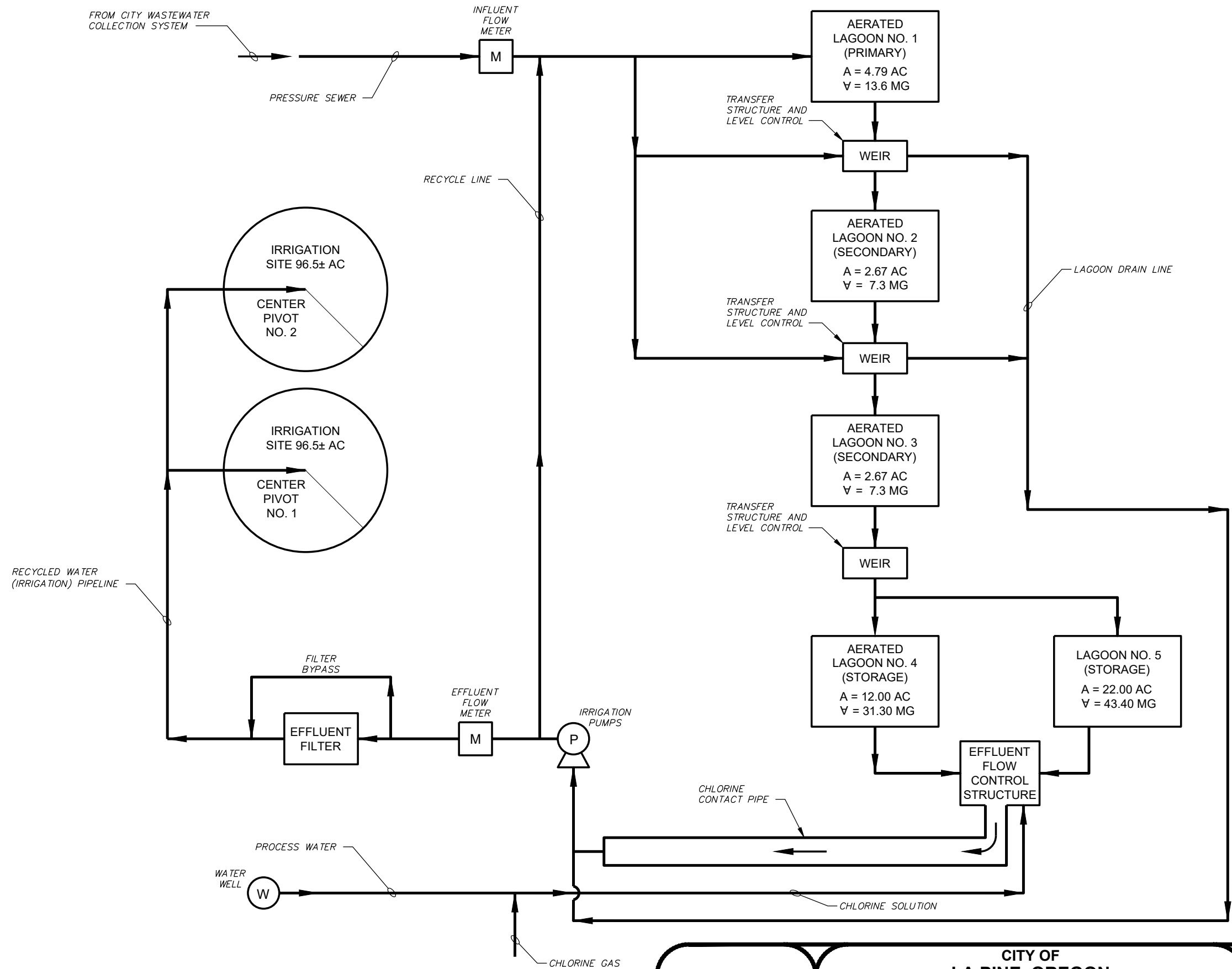
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CITY OF
LA PINE, OREGON
RECYCLED WATER USE PLAN

WASTEWATER TREATMENT FACILITY AND
RECYCLED WATER SYSTEM SITE PLAN

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Section 2 - Beneficial Purposes

The recycled water currently produced by the City of La Pine is applied for beneficial use at the new recycled water irrigation site. Two fields located at the site comprise a combined area of approximately 193 acres, which are located approximately 0.85 mile east of the existing wastewater treatment facility (WWTF). The former 75-acre land application site utilized Class C recycled water for the irrigation of Timothy hay to dispose of treated wastewater. Upon approval of this Recycled Water Use Plan, the new application site will utilize Class D recycled water for irrigation of pasture grass to dispose of the wastewater.

The 193-acre irrigation site utilizes two pumps. When Class D effluent is applied via one of the two field pivots, it is pumped at a rate of 560 gallons per minute (gpm). When both pivots are utilized to irrigate each field, Class D water is pumped at a rate of 1,120 gpm.

As discussed in Section 1, the recycled water irrigation system is managed and administered by the City. With relation to the irrigation system, it is also the City's responsibility to manage the septic tank effluent gravity collection system, lift stations, facultative lagoon WWTF, and pumping system that delivers recycled water to the irrigation site.

The details of beneficial recycled water use are presented on Table 2-1. As discussed, the City previously provided Class C recycled water to the former irrigation site and will now produce Class D recycled water to the new site after the proposed improvements are complete. In accordance with Oregon Administrative Rule (OAR) 340-055 and other permitted beneficial uses for Class D, recycled water allowed by the OARs may be utilized in the future. The City will notify the Oregon Department of Environmental Quality in writing of any changes in beneficial use before they occur.

TABLE 2-1
BENEFICIAL PURPOSES OF RECYCLED WATER USE

Site	Beneficial Purpose	Class of Recycled Water	Quantity (gpm)	Frequency	Address	Phone Number
Recycled Water Irrigation Area, Pivot No. 1 (96.5 acres)	Pasture Grass Irrigation	D	560	Daily, April through October ^{1,2}	16800 Reed Road, La Pine, Oregon 97739	541-419-5625
Recycled Water Irrigation Area, Pivot No. 2 (96.5 acres)	Pasture Grass Irrigation	D	560	Daily, April through October ^{1,2}	16800 Reed Road, La Pine, Oregon 97739	541-419-5625

¹Provided the ground is not frozen and no prolonged ponding or surface runoff of recycled water occurs.

²Assuming a crop is available to irrigate.

Section 3 - Wastewater Treatment

The City of La Pine's facultative lagoon wastewater treatment facility (WWTF) receives and processes septic tank effluent from a mix of residential, commercial, and industrial sources. The average annual flow to the facultative lagoon WWTF is approximately 0.184 million gallons per day. The anticipated monthly design flows used in this Recycled Water Use Plan were based on the average monthly flow obtained from the WWTF discharge monitoring reports from January 2018 through December 2023.

The WWTF is located adjacent to the Burlington Northern Santa Fe Railroad and Reed Road and includes the treatment and storage lagoons, a septage receiving station, an operation and maintenance (O&M) building that houses the irrigation pump station, and a wastewater disposal (irrigation) site.

The City currently treats wastewater using a three-cell partially aerated facultative lagoon secondary treatment system, with a fourth cell used for storing treated wastewater. As part of the ongoing improvements, the City has constructed an additional 39.5 million gallon storage lagoon, which is now in operation. The City's treatment lagoons are considered facultative lagoons, meaning both aerobic and anaerobic processes are used to treat the wastewater. The original WWTF and pivot irrigation system were constructed in 1989, with upgrades to the WWTF occurring in 1998 and 2003. The new irrigation site is located east of the existing WWTF and consists of two irrigation pivots and approximately 193 acres of land application area. The City is now capable of land applying the treated and disinfected wastewater.

Currently, influent enters the lagoon system from two pressure sewer lines. Influent flow is recorded by an electromagnetic meter located inside the O&M building. The City's lagoons are equipped with an aeration and mixing system, as well as a gas chlorination system. The normal process flow is a series operation from Lagoon No. 1 to Lagoon No. 2 to Lagoon No. 3. From Lagoon No. 3, treated effluent enters Lagoons No. 4 and 5, the storage lagoons, where it is then disinfected and pumped to the irrigation disposal area. Lagoons No.1 and 2 are equipped with a drain line that allows for the isolation and draining of each lagoon in the event maintenance is required. The undisinfected wastewater can be bypassed around the chlorine contact pipe where it enters the irrigation pump station. A series of shutoff valves at the pump station and within the lines prevent the discharge of undisinfected wastewater to the application site. The effluent is then pumped to the influent line where it can be redirected with shutoff valves to either Lagoon No. 1 or 2 while maintenance at the lagoons occurs. Refer to Figure 1-3 for a complete process schematic, including system upgrades.

Septage is transported to the existing WWTF utilizing septic tank pumping trucks. The current septage receiving station is outdated and requires septage haulers to complete manual operations to process raw septage. As part of the wastewater system improvements, the existing septage receiving station has been replaced with a new unit to provide a safe and sanitary working environment for septage haulers and City employees. The design criteria of the existing wastewater treatment and disposal system are presented on Table 3-1.

**TABLE 3-1
DESIGN CRITERIA**

Current Population (July 1, 2023, certified estimate)	3,126
20-year estimated population, 2043	5,122
20-year estimated flows Estimated AAF	0.233 MGD
Facultative lagoon WWTF - Current estimated BOD, loading 20-year estimated BOD, loading - Current Estimated TSS, Loading 20-year estimated TSS, Loading	127 lbs BOD/day 208 lbs BOD/day 38 lbs TSS/day 68 lbs TSS/day
Chlorine Contact Pipe - Approximate volume - Detention time at 1,120 gpm	47,800 gallons 43 minutes
Irrigation Water Characteristics - Average pH - Average TKN - Average NO₂ + NO₃ - N - Average NH₃ - N	7.7 S.U. 27.9 mg/L 0.31 mg/L 16.2 mg/L
Irrigation Water Reservoir Maximum volume	70.8 MG
New Irrigation Site - Typical pumping rate - Maximum rated pumping rate - Number of pumps - Irrigated area	560 gpm 1,120 gpm 2 193 acres

BOD = biochemical oxygen demand

gpm = gallons per minute

lbs BOD/day = pounds BOD per day

MG = million gallons

mg/L = milligrams per liter

NO₂ - NO₃ - N = nitrite nitrate nitrogen

S.U. = standard units

TKN = total Kjeldahl nitrogen

TSS = total suspended solids

The quality of recycled water produced by the facultative WWTF for irrigation is consistent with Class D wastewater (as described in Oregon Administrative Rules 340-055; see Appendix A). Class D recycled water is not to exceed a 30-day log mean of 126 *E. coli* organisms per 100 milliliters (ml), and 406 *E. coli* organisms per 100 ml in any single sample. No known non-residential users are located within the City of La Pine with unusually high strength or toxic wastewater that would have a negative impact on irrigation water quality. The City's maximum possible annual effluent total nitrogen concentration (TKN plus NO₂ + NO₃ - N) during the past five years is estimated to be approximately 40 mg/L. With the City's projected recycled water irrigation volume needed to utilize the entirety of the land application site, this results in approximately 110 pounds of nitrogen per acre (assuming 85 percent irrigation efficiency) being applied annually to the new 193-acre irrigation site.

To meet the City's current and future wastewater treatment needs, improvements to the City's facultative lagoon WWTF are currently being completed. The improvements are anticipated to be completed by fall 2024.

Section 4 - Recycled Water Monitoring and Sampling

The City of La Pine's current facility operates under a Water Pollution Control Facilities Permit (WPCF), as it does not discharge treated wastewater to surface water. The WPCF Permit outlines the requirements for monitoring and sampling the treated effluent for recycled water use. To satisfy the WPCF Permit, water monitoring requirements must be followed (see Appendix B).

The estimated quantity of recycled water to be produced was determined by using the average monthly flows from January 2018 through December 2023. Effluent flows for recycled water irrigation are assumed to be approximately 63.7 million gallons annually.

Recycled water flow is measured by a 6-inch magnetic flowmeter located on the discharge header of the irrigation pump station. During the months the system is in use, the total measured monthly flow irrigated is combined with the irrigation area to determine the quantity irrigated in inches per acre (in/acre). Recycled water quality is monitored in accordance with the City's WPCF Permit through samples collected from the wastewater effluent and sent to a laboratory for testing. Table 4-1 provides a summary of the recycled water monitoring and reporting requirements set forth in the WPCF Permit for the irrigation of recycled wastewater.

TABLE 4-1
WATER POLLUTION CONTROL FACILITIES PERMIT
EFFLUENT MONITORING AND REPORTING REQUIREMENTS

Parameter	Minimum Frequency	Type of Sample	Sample Location
Total Flow (MGD)	Daily	Record	Irrigation Pump Station
Total Chlorine Residual	Daily	Grab	Irrigation Pump Station
Quantity Irrigated (in/acre)	Daily	Calculation	N/A
TKN, NO ₂ + NO ₃ - N, NH ₄ - N, P	Annually	Grab	Irrigation Pump Station
Total Coliform	Weekly (Class C)	Grab	Irrigation Pump Station
<i>E. coli</i>	Weekly (Class D)	Grab	Irrigation Pump Station
Supplemental Fertilizer Applied	As Applied	Record Amounts	N/A
Total Nitrogen Loading Rate (lbs/acre-year)	Annually	Calculation	N/A
TDS (mg/L)	Annually	Grab	Irrigation Pumps Station
pH	Two times per week	Grab	Irrigation Pump Station

lbs = pounds

MGD = million gallons per day

mg/L = milligrams per liter

N/A = not applicable

NH₄ - N = ammonium nitrogen

NO₂ = nitrogen dioxide

NO₂ + NO₃ - N = nitrite nitrate nitrogen

P = phosphorus

TDS = total dissolved solids

TKN = total Kjeldahl nitrogen

When recycled water is land-applied at the irrigation site, samples are tested in accordance with the requirements of the WPCF Permit. All samples are collected at the sample locations outlined on Table 4-1. All probes and measurement devices are regularly calibrated according to manufacturer specifications. Records of chlorine use are recorded on data sheets. Nutrient analysis is required twice annually during the irrigation season, with samples sent to the lab to determine quantities of nitrate and nitrite nitrogen, TKN, and total phosphorus. The lab performing the sample analyses will follow their own respective quality assurance/quality control procedures. The methods used for testing parameters are outlined on Table 4-2.

TABLE 4-2
RECYCLED WATER ANALYTICAL TESTING METHODS

Parameter	Analytical Method
NO ₂ + NO ₃ - N	E353.2
TKN	E351.2
P	A4500-P-E
Total Coliform	9223 B
pH	Professional series YSI Multiparameter Instrument

Soil samples for plant available nitrogen will be taken from the irrigation site before and after each irrigation season. Table 4-3 provides a summary of the soil monitoring requirements as required by the Oregon Department of Environmental Quality (DEQ) during the review of this Recycled Water Use Plan. Soil samples will be collected according to protocols published by Oregon State University (OSU) or by the American Society of Agronomy. The OSU Extension Service's *Guide to Collecting Soil Samples for Farms and Gardens*, EC 628, Revised 2018, may be used as a guide. At minimum, as outlined in the WPCF Permit, soil samples will be collected in the spring and fall. The City must collect samples from at least three locations in the application area and composited according to depth. Each representative soil sample shall be from the top 5 feet of the soil column, and each sample will be analyzed using accepted laboratory methods for the parameters outlined on Table 4-3. Agronomic soil test procedures used for each soil test parameter, including soil water holding capacity, are outlined on Table 4-4. Other agronomic soil test procedures may be used; however, they must be equivalent methods determined acceptable by the DEQ. In addition to soil samples, soil water holding capacity must be determined by a scientific method and approved by the DEQ. Samples for determining soil water holding capacity will be sent to a qualified professional. The water holding capacity is not expected to change. Therefore, only one initial determination will be made, until evidence suggests that further testing is required. As outlined in the WPCF Permit, "once approved by the DEQ, the water holding capacity for each of the top 5 feet of soil column for each land application site may not be changed or modified without DEQ approval." While not explicitly stated in the WPCF Permit, the DEQ recommends soil samples from ten different locations throughout the combined application area. Samples will be composited into two samples: one from 0 to 12 inches in depth to test for calcium, magnesium, sodium, and potassium; and one from 0 to 6 inches in depth to test for pH.

TABLE 4-3
SOIL MONITORING REQUIREMENTS

Item or Parameter	Minimum Frequency	Type of Sample
Soil Water Holding Capacity	Annually	Composite
NO ₃ -N	Twice Annually - Prior to Irrigation Season and in Fall	Composite
NH ₄ -N	Twice Annually - Prior to Irrigation Season and in Fall	Composite
pH	Twice Annually - Prior to Irrigation Season and in Fall	Composite

NH₄-N = ammonium

NO₃-N = nitrate nitrogen

TABLE 4-4
SOIL ANALYTICAL TESTING METHODS

Item or Parameter	Method
Soil Water Holding Capacity	Saxton Method
NO ₃ -N	S - 3.10
NH ₄ -N	S - 3.50
pH	S - 2.10

Soil Moisture Monitoring

Soil moisture monitoring will be conducted as part of the irrigation practices at the new land application site. Soil moisture will be determined through the use of suitable soil moisture monitoring sensors located at each pivot field site. The City may use a qualified consultant to specify the soil moisture monitoring equipment that best meets the needs of crops grown with relation to the soils at the application site.

Irrigation scheduling will rely on factors such as the soil's water holding capacity around the crop's effective rooting depth and the crop's water needs. As part of this Recycled Water Use Plan, the City will monitor the soil moisture approximately once per week, during times of recycled water application to adjust times and rates of application to prevent overwatering, exceeding the soil water holding capacity, and impacts to groundwater.

Crop Monitoring

As discussed in previous sections, recycled water will be land-applied and utilized for the irrigation of pasture grasses, which will be harvested and stored for beneficial use. The DEQ requires the monitoring of crops harvested to determine parameters, such as crop tissue total nitrogen and the amount of nitrogen removed by the crop. Table 4-5 provides a summary of the site crop monitoring and reporting requirements set forth in the WPCF Permit.

TABLE 4-5
WATER POLLUTION CONTROL FACILITIES PERMIT
CROP MONITORING AND REPORTING REQUIREMENTS

Parameter	Minimum Frequency	Type of Sample	Report
Crops Grown	When Planted and Harvested	Record Dates	Recycled Water Annual Report
Crop Tissue Total Nitrogen (percent)	At Harvest	Calculation/Record Amounts	Recycled Water Annual Report
Crop Nitrogen Removal	At Harvest	Calculation	Recycled Water Annual Report
Crop Yield (lbs/ac or tons/ac)	At Harvest	Record Amounts	Recycled Water Annual Report

lbs/ac = pounds per acre

tons/ac = tons per acre

Section 5 - System Maintenance and Contingency Procedures

The City of La Pine's new irrigation system shall require routine maintenance to ensure proper function. The new irrigation system will be maintained as follows. As part of the system maintenance and contingency procedures outlined in this section, an operation and maintenance (O&M) Manual for the wastewater treatment facility (WWTF) is being completed as part of the Wastewater System Improvements (WWSI) project. When performing routine maintenance, refer to the O&M Manual and current Record Drawings for a complete overview and guidance.

Irrigation Water Storage Lagoons

The recycled water storage lagoons, referred to herein as Lagoons No. 4 and 5, will be checked by facility operators on a weekly basis. The inlet pipe should be inspected to ensure it is flowing freely. The outlet structure needs to be cleaned of debris whenever it is accessible, and when debris appears in the structure. Any leakage or dampness identified around the lagoons shall be recorded in the operator's daily logbook and efforts shall be made to repair the lagoons as soon as possible. Lagoons and their dikes shall be maintained to present a neat and orderly appearance, and to provide preventative maintenance against vegetation, weeds, and rodent control around the dikes. The 12-inch inlet plug valve and outlet structure slide gates should be exercised annually.

Gas Chlorination System

Inspection of the gas chlorination system should be performed annually. Prior to disinfection, inspection of the tanks, vacuum pumping system, ejectors, and vacuum regulators shall be performed to ensure components are operating as intended. At the end of irrigation season, gas cylinders shall be shut off.

Chlorine Contact Pipe

Inspection of the chlorine contact pipe should be completed annually by removing the access cover on one of the four cleaning ports and inspecting the interior of the pipe. Cleaning should be completed as needed.

Irrigation Pump System

The irrigation pump system will need routine maintenance for the pumps, variable frequency drive (VFD), soft starter, valves, flowmeter, air release valve, treated effluent filter, and building environmental control systems. The pumps should receive service as outlined in the manufacturer's service manual to include lubrication, cleaning, and monitoring of the pump seals. The VFD and soft starter should receive electrical preventative maintenance through annual cleaning and tightening of wire connections and should have the cabinet air filters checked on a regular basis as operating conditions warrant. All valves should be exercised and inspected twice a year to keep them operational and to address leaks. The flowmeter does not have any serviceable parts but should receive service and calibration by a factory representative as required by the City's Water Pollution Control Facilities Permit. Operation of the building heating, ventilation, and air conditioning system should be checked during

regular rounds in addition to scheduled maintenance in accordance with the operator's manual. Specifications, part numbers, operation, etc., should be referenced in the equipment O&M Manual.

Irrigation Distribution System

The irrigation main lines will be drained once the irrigation season has ended. Once draining of the irrigation main lines is complete, the drain valves should be closed to prevent rodent infestation. To extend the life of the irrigation machines, methods outlined in the manufacturer's O&M Manual for parking the machines shall be conducted when the irrigation machines are not in use. Winterization of the system will be performed in accordance with the O&M Manual provided as part of the improvements project.

Alarm System

The WWTF is equipped with a cellular-based supervisory control and data acquisition system. The system is connected to various operations throughout the WWTF, including the irrigation pivots and irrigation pump station. In the event of failure of system components, facility operators will be notified of the location where the failure has occurred.

Irrigation System Maintenance

The pivots will be evaluated annually prior to irrigation for improper wear, proper tracking of pivot wheels, and coverage of the irrigated crop. Inspection of the pivots will include looking for oil leaks, tire inflation, pivot mechanical connections, and water leakage. Control system operation will be confirmed, including pivot start/pump start, pivot stop/pump stop, and wind sensor shutdown of the pivot and pump, and the operation warning light operation will be confirmed. Emergency shutdown switches located at each pivot tower will be tested to confirm proper operation. As discussed prior in this section, refer to the O&M Manual for specific requirements when performing routine maintenance.

Irrigation System Inspection

Various components of the irrigation system will undergo routine inspection prior to and during irrigation. The irrigation pump system will be inspected twice annually: once prior to irrigation season and once during irrigation season. As previously discussed, this includes the valves being exercised and inspected twice per year to keep them operational and to address leaks. Annually, at the beginning of the irrigation season, the irrigation pivot system will undergo a complete inspection prior to irrigation. During the irrigation season, the irrigation pivot system should be inspected at least weekly to ensure the system is tracking properly and no disruptions to the system have occurred. As discussed in previous sections, methods should be conducted as outlined in the O&M Manual.

Contingency

At the WWTF, power is required at the headworks, the irrigation pump station, the septage receiving station, and the chlorination system. No emergency backup power generators are located at the WWTF for use in the event of a power outage. In the event of a power outage at the WWTF, influent flow from the collection system is maintained via wastewater lift stations that pump wastewater into the WWTF. The wastewater lift stations are equipped with standby power generation systems. WWTF operators manually maintain screening at the headworks until power is reestablished. During normal operation, approximately 1.5 feet of operational storage (more than one month) should remain in the storage

lagoons. This provides additional contingency should the City ever experience issues with their utility power and, consequently, have an interruption in effluent discharge.

Section 6 - Recycled Water Transmission, Storage, Distribution, and Plumbing

Recycled water is pumped directly from the storage lagoons. The systems for storage, transmission, and distribution of recycled water are presented below.

Recycled Water Storage

Recycled water is stored in Lagoons No. 4 and 5 at the existing wastewater treatment facility. Both lagoons have a cumulative storage volume of approximately 71 million gallons. Lagoon No. 4 is lined with 60 mil high density polyethylene (HDPE) and Lagoon No. 5 is lined with 40 mil reinforced polyethylene. Water is stored during the winter months, then discharged during the spring and summer months. At the beginning of the irrigation season, irrigation water is pumped to the new irrigation site at the appropriate agronomic application rate.

Recycled Water Disinfection

The chlorination system uses chlorine gas and is located in a separate room in the operation and maintenance building. Treated effluent from Lagoons No. 4 and 5 enters an effluent control structure where it is then discharged into the 30-inch chlorine contact pipe. Chlorine solution is injected at the effluent flow control structure just prior to entering the chlorine contact pipe. Water supply for chlorination and washdown is obtained from a groundwater well located adjacent to the wastewater treatment facility. The chlorination system consists of two, 150-pound gas cylinders and a vacuum gas chlorination system. A design feature located at the irrigation pump station allows for the recirculation of disinfected effluent in the event that effluent disinfection limits are not being met. If sampling determines that effluent is not meeting permit limits, effluent is then recirculated back to Lagoon No. 1 and the treatment process continues until adequate treatment and disinfection has been achieved.

Chlorine Contact Pipe

The chlorine contact pipe consists of a 30-inch HDPE pipe, approximately 1,310 feet long, located in the common dike between Lagoons No. 4 and 5. Four maintenance and cleaning ports are installed on the contact pipe that are accessible at ground level. A groundwater well provides process water for the gas chlorination system, which is injected into the control structure between the two storage lagoons. Effluent is chlorinated in the control structure where it then travels through the chlorine contact pipe, allowing proper contact time to occur prior to it reaching the irrigation pump station. The chlorine contact pipe uses gravity flow, and at the maximum irrigation rate of 1,120 gallons per minute (gpm) it provides 43 minutes of contact time.

Recycled Water Transmission

The irrigation pump station is operated during the effluent reuse discharge season. Recycled water flows through the chlorine contact pipe into the irrigation pump station when irrigation is underway. This is controlled by the outlet structure slide gates for Lagoons No. 4 and 5. The station operates off 3-phase power from overhead lines along the north side of Reed Road.

The irrigation pump station houses two pumps that supply treated effluent to the new irrigation site. The City has the capability to supply water to one of two pivots at the new site, herein referred to as Pivots 1 and 2. Pump 1 is a 40 horsepower (Hp) pump rated at 560 gpm at 150 feet of total dynamic head (TDH). Pump 2 is a 100 Hp pump rated at 1,120 gpm at 205 feet of TDH. If both pivots run simultaneously, Pump 2 will be utilized to supply irrigation water to both pivots at the new irrigation site.

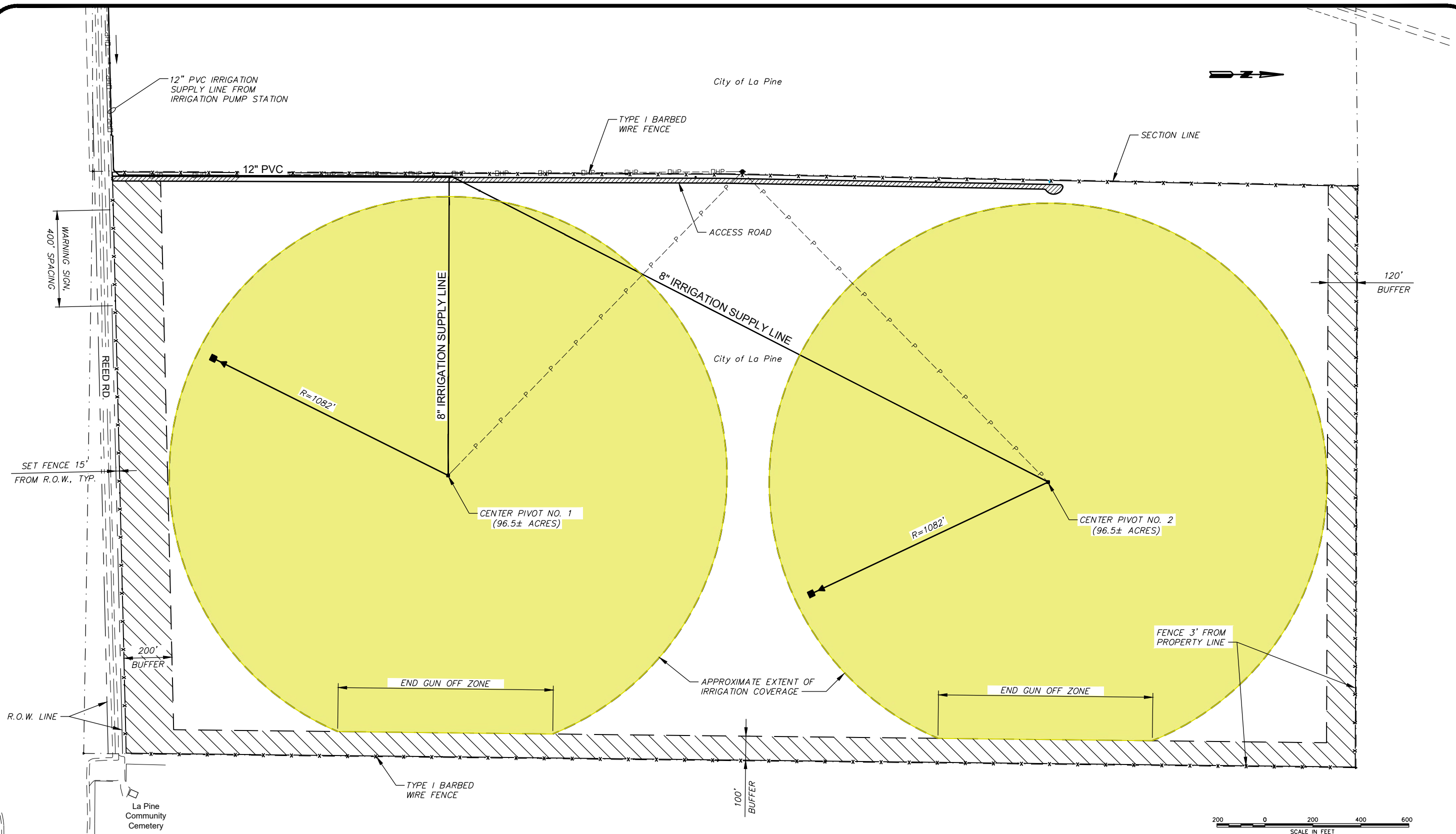
Irrigation Distribution

The new irrigation site covers an area of approximately 193 acres with a buffer zone varying from 100 to 200 feet. The recycled water irrigation system consists of an irrigation pipeline and two irrigation pivots. The irrigation pipelines are approximately 8,800 feet of 12-inch and 4,100 feet of 8-inch polyvinyl chloride pipe with two air/vacuum release valves and three pipeline drains. The irrigation system consists of two Valley Irrigation center pivot irrigation systems rated for 560 gpm each. The pivots are 1,082 feet in length with an end gun. The end gun has an 80-foot spray radius and a 2 Hp booster pump. The pivots are also equipped with a high wind speed shutdown and a low-pressure shutdown. The pivots operate off 3-phase power from overhead lines along Reed Road. See Figure 6-1 for the new irrigation site and associated piping.

Groundwater Monitoring

As discussed in Section 1, the City has developed a Groundwater Monitoring Plan in relation to the application of recycled water at the new irrigation site. In addition, the City has constructed four new wells for sampling and monitoring groundwater quality. Sampling and testing will occur prior to the first application of recycled water to determine background groundwater quality.

X:\Clients\La Pine OR\33-10_WastewaterImprovements\CAD\RWUP-33-10-FIG6-1.dwg, Layout1, 8/21/2024 8:49 AM, gsaubier



LEGEND

- 0.65" NELSON SR100 END GUN WITH 80 FOOT SPRAY RADIUS, 89.5 GPM
- ▲ BERKLEY 2HP BOOSTER PUMP



**CITY OF
LA PINE, OREGON**

RECYCLED WATER USE PLAN

NEW IRRIGATION SYSTEM

**FIGURE
6-1**

Section 7 - Public Health and Environmental Controls

The application of recycled water for irrigation has the potential to affect public health and the surrounding environment. Public health could be affected due to exposure to aerosols or direct contact during or after an irrigation cycle. Environmental effects could occur to area groundwater or surface water sources. Therefore, the requirements of Oregon Administrative Rules (OAR) 340-055-0012-(4) for the use of Class D recycled water apply.

To ensure no direct contact with irrigated effluent occurs, irrigation at the new site will occur within a 4-foot tall, barbed wire fence to prevent public access. Warning Signs will be placed every 400 feet warning that recycled water is used for irrigation, is not safe for drinking, and that public access is restricted. An example of the signage is shown below on Table 7-1. Furthermore, due to Oregon's significant Spanish-speaking population, Spanish signage will be installed with the same message as the English signage.

**TABLE 7-1
NEW REUSE SITE WARNING SIGNAGE**

English Signage	Spanish Signage
NO TRESPASSING RECYCLED WATER (TREATED WASTEWATER) USED ON THIS SITE FOR IRRIGATION DO NOT ENTER DO NOT DRINK AVOID CONTACT CITY OF LA PINE	ENTRADO PROHIBIDO AGUA RECICLADA (AGUAS RESIDUALES TRADADAS) UTILIZADO EN ESTE SITIO PARA IRRIGACIÓN NO ENTRAR NO BEBAS EVITAR CONTACTO CIUDAD DE LA PINE

Setback distances to site property lines and surface water are maintained to reduce the chance of inadvertent exposure to recycled water. Based on OAR 340-055, a 100- to 200-foot setback distance has been established and maintained from the property lines. No residences are located near the new irrigation site. The nearest residence is located approximately 0.75 mile east of the irrigation site. Figure 7-1 shows the irrigation site and setback distances mentioned herein.

Workers at the irrigation site should use caution when performing irrigation system maintenance. The irrigation system should be flushed with well water prior to performing maintenance to reduce the possibility of contact with recycled water.

Careful consideration is made to prevent aerosol drifting from the irrigation sites, and wind speeds are monitored through use of anemometers. If wind speeds consistently exceed ten miles per hour, irrigation will be automatically stopped to avoid aerosol drift off site.

Environmental protections for surface water and groundwater are provided by limiting irrigation to agronomic rates. With the application of irrigation water consistent with the rates accommodated by the soil, ponding and overland flow of recycled water are eliminated. Additionally, water uptake of the crop will prevent infiltration past effective root depths of the vegetation.

Currently, no harvest restrictions apply to the City's irrigation sites, as none of the crops are grown for human consumption.

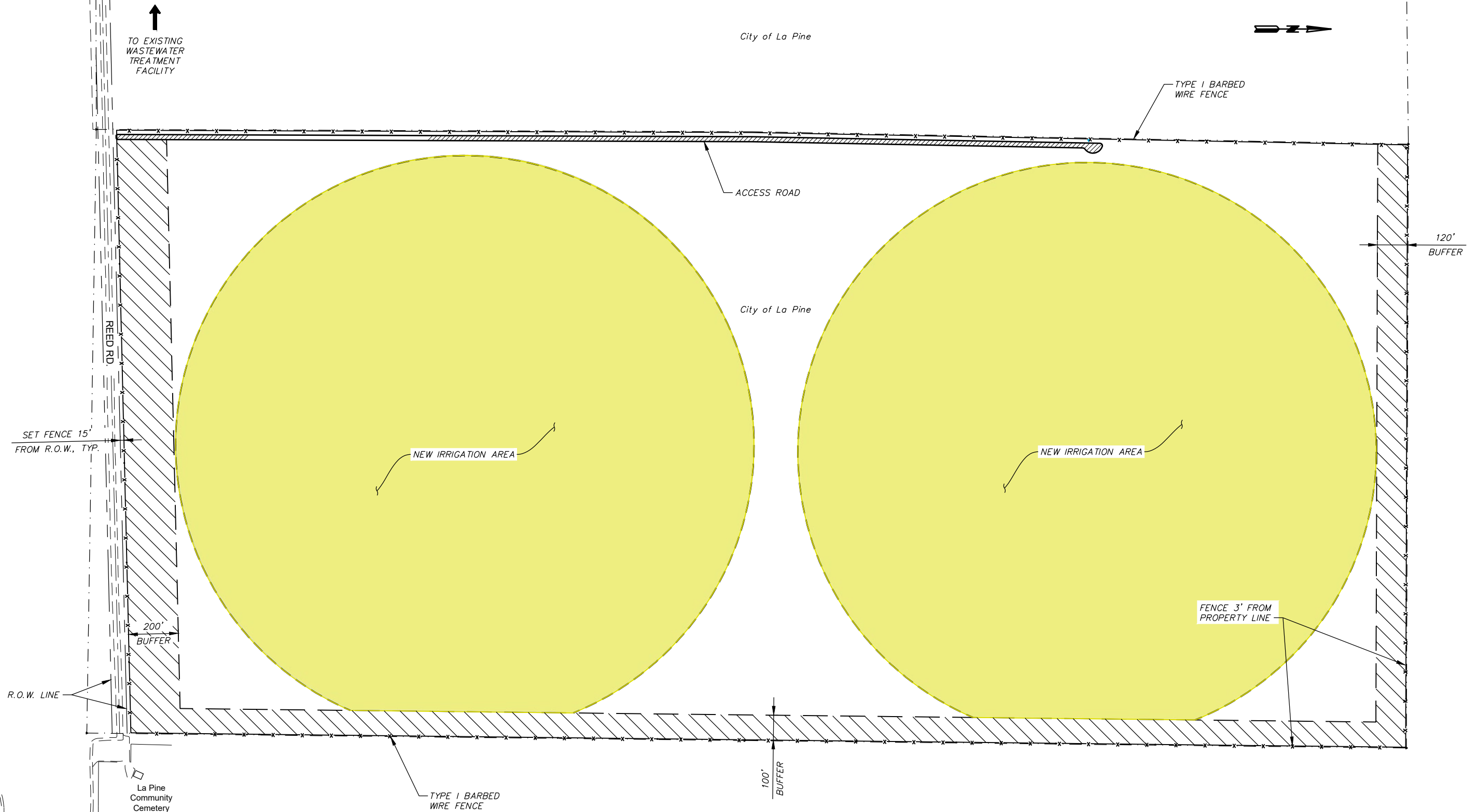
Groundwater Monitoring

In accordance with the City's current Water Pollution Control Facilities Permit, the City shall sample groundwater quality at the recycled water irrigation site. Monitoring shall comply with the Groundwater Monitoring Plan (GWMP) approved by the Oregon Department of Environmental Quality (DEQ). Unless otherwise approved by the DEQ, monitoring must be conducted at the monitoring wells identified in the GWMP. Table 7-2 details the monitoring and reporting requirements.

TABLE 7-2
WATER POLLUTION CONTROL FACILITIES PERMIT
GROUNDWATER MONITORING AND REPORTING REQUIREMENTS

Parameter	Minimum Frequency	Type of Sample	Report
Nitrate, Nitrite, Nitrogen	Quarterly	Grab	Quarterly Value Annual Report
Total Dissolved Solids	Quarterly	Grab	Quarterly Value Annual Report
Sulfate	Quarterly	Grab	Quarterly Value Annual Report
Chloride	Quarterly	Grab	Quarterly Value Annual Report
Conductivity	Quarterly	Field Measurement	Quarterly Value Annual Report
Temperature	Quarterly	Field Measurement	Quarterly Value Annual Report
pH	Quarterly	Field Measurement	Quarterly Value Annual Report
Water Level	Quarterly	Field Measurement	Quarterly Value Annual Report

X:\Clients\La Pine OR\33-10 La Pine Recycled Water Use Plan\CAD\RWUP-33-10-FIG7-1.dwg, Layout1, 3/13/2024 10:46 AM, gsaubier



200 0 200 400 600
SCALE IN FEET



CITY OF
LA PINE, OREGON
RECYCLED WATER USE PLAN

IRRIGATION SITE WITH BUFFER ZONE

FIGURE
7-1

Section 8 - Land Application Plan

In accordance with Oregon Administrative Rules 340-055-0025(2)(a)-I, this section addresses the various aspects of the land application program, including characterization of the land application sites, the irrigation system, the soils and crops, site management practices, and public access control or notification.

Land Use Compatibility

The City of La Pine's wastewater treatment facility (WWTF) and recycled water site were established and approved by the City of La Pine and Deschutes County. The land use zone is permitted for the wastewater facultative lagoons and the effluent reuse site. The current proposed land uses are consistent with the area, and nothing in the foreseeable future is expected to change this area to a different land use type. The City of La Pine previously submitted to the Oregon Department of Environmental Quality a completed and signed Land Use Compatibility Statement (LUCS) for the irrigation site. See Appendix C for the current LUCS.

Site Description

The La Pine irrigation site is zoned as Public Facility in Deschutes County. Surrounding properties are zoned Industrial, Mixed-Use Commercial, and Master Plan Residential. The current land uses in the area are consistent with these zonings. At this time, it is not anticipated that this area will change to different land use types in the near future.

A tax lot map showing the irrigation site is presented on Figure 8-1. The new irrigation site is on City-owned property located in Township 22 South, Range 10 East, Section 7, Tax Lot 100.

Site Characterization

Climate, Topography, and Hydrology

The City of La Pine lies in the high desert region of central Oregon and has a mild, dry climate, with an average precipitation of approximately 21.3 inches per year, according to the Western Regional Climate Center. Typically, the months of October through June receive more than 1 inch of monthly precipitation, with no month averaging more than 3.65 inches of precipitation. The mean annual temperature is 58° Fahrenheit (F), with historic minimum and maximum temperatures of -40°F and 106°F, respectively. Average monthly precipitation is presented on Table 8-1.

TABLE 8-1
AVERAGE MONTHLY PRECIPITATION

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average Annual Total
Average Precipitation (inches)	3.11	2.55	1.74	1.36	1.28	1.01	0.74	0.67	0.71	1.42	3.08	3.65	21.33

The City lies in southern Deschutes County, approximately 30 miles south of Bend. The City is relatively flat with minimal changes in elevation and is surrounded by forested areas. Elevations within the city limits range between approximately 4,200 and 4,250 feet above mean sea level (AMSL). The City's facultative lagoon WWTF is located adjacent to Highway 97 directly east in the northeast portion of the City at an approximate elevation of 4,237 feet AMSL. Due to the City's relatively flat topography, the wastewater collection system requires lift stations and pressure sewers to be able to convey wastewater to the facultative lagoon WWTF. The new irrigation site is located northeast of the City at approximately 4,256 feet AMSL. The wind at the recycled water reuse site predominantly comes from the southwest.

Soils

A Natural Resources Conservation Service Custom Soil Resource Report was developed for the land application site (see Appendix D). The Custom Soil Resource Report shows the soil at the irrigation site is mapped as Shanahan loamy coarse sand. Shanahan loamy coarse sand has moderately high to high soil transmissivity, with Ksat values ranging between 1.98 and 5.95 inches per hour. Based on measurements taken from the four groundwater monitoring wells located at the irrigation site, the depth to groundwater varies from 72 to 99 feet below ground surface, and the available water supply, 0 to 60 inches is high, at approximately 9.8 inches, as outlined in the Custom Soil Resource Report.

Crops

The land surrounding the new irrigation site has historically been designated as a public facility as determined by the City of La Pine's current zoning map. The new irrigation site will utilize recycled water for pasture grass irrigation.

The pasture grass grown at the application site will consist of a seed mixture of Latar orchardgrass, Andes tetraploid annual ryegrass, fawn forage tall fescue, and amba orchardgrass. According to Oregon State University (OSU) Extension Service publication EM 9399 (see Appendix E), the effective rooting depth for most established perennial forage grasses is approximately 3 feet. Sprinkler irrigation via pivots will be applied seasonally as needed to dispose of effluent from the facultative lagoon WWTF and to maintain crop health while protecting groundwater resources. At the time of preparing this Recycled Water Use Plan (RWUP), no known fertilizer applications have occurred at the new site. The application of recycled water begins early in the season to provide water and nitrogen for crop growth. The recycled water irrigation site is managed to provide the water needed by the crop, using evapotranspiration (ET) data obtained from Oregon Crop Water Use and Irrigation Requirements, OSU Extension Service publication EM 8530 (see Appendix F).

To establish the irrigation requirements of crops in the area, pasture grass ET data were used. With the gathered ET data, precipitation data, and assuming 85 percent irrigation efficiency, irrigation requirements were determined and are presented on Table 8-2.

TABLE 8-2
CROP IRRIGATION REQUIREMENTS

	Apr.	May	June	July	Aug.	Sept.	Oct.	Season
Net Irrigation (inches)	0.65	3.78	4.25	6.68	5.38	3.80	0.65	26.38

The recommended amount of nitrogen to be applied annually for pasture grass is published in the Nutrient Management for Pastures: Western Oregon and Western Washington, OSU Extension Service pamphlet (EM 9224), included in Appendix G. The OSU Extension Service suggests that the crop being grown requires 25 pounds of nitrogen per acre three times per year. This equates to 75 pounds of nitrogen per acre per year (N/acre/yr). Depending on factors such as local elk populations grazing the crops as discussed below, it can be anticipated that average yield will be approximately 1.7 tons per acre per year or 164 tons per year per each pivot. While yields may vary year to year, these values coincide with reported average yields from past harvests. If eventualities arise that cause crop production to fall below the anticipated target yield or soil sampling indicates an excess buildup of nitrate and ammonium in the soil, the City will revisit the current application rates and make adjustments as needed.

New Recycled Water Irrigation System

The new irrigation site utilizes a pivot system for application of recycled water. The new system consists of two areas: Pivot 1 and Pivot 2 and applies recycled water to approximately 96.5 acres at each pivot. Between April and October, the City is scheduled to irrigate daily to reduce influent that was stored in the lagoons during the winter months and maintain storage capacity through the irrigation season. The new irrigation site can irrigate 24 hours per day, with no constraints limiting the times recycled water can be applied. However, recycled water will not be applied beyond the agronomic rates of the planted crop. The new irrigation system was designed using the performance criteria shown on Table 8-3.

TABLE 8-3
NEW IRRIGATION PERFORMANCE CRITERIA

Flow Rate (per pivot)	560 gpm
Application Schedule	24 hours per day
Total Irrigated Acreage	193 acres

gpm = gallons per minute

The 193-acre irrigation site located east of the existing WWTF has 240 I-WOB2 sprinklers, two Nelson SR100 end guns, and is divided into two 96.5-acre irrigation pivots. Each pivot consists of 120 sprinklers and one end gun supplied at a rate of 560 gpm with a capacity of 5.59 gpm per acre or 0.30 inch per day.

Prior to starting the irrigation system for the irrigation season, the outlet structure of the storage lagoons is inspected and cleaned of any debris, the drain valves in the irrigation system are closed, the disinfection system is inspected, and the gas tanks are turned on. Access covers on one of the four cleaning ports of the chlorine contact pipe are removed and inspection of the interior of the pipe is conducted. During the initial startup, each pivot is pressurized, and all sprinklers are checked for faults. At the end of the irrigation season, the drain valves in the irrigation system are opened, the treated effluent filter is cleaned, and the air release valve is left open to allow the system to drain.

Crop Storage for Beneficial Use

At the new irrigation site, pasture grass is harvested approximately every two months, assuming conditions allow. Pasture grass is baled and stored on site in a hay shed located at the existing

WWTF. Continuing with practices established at the old recycled water application site, the production of pasture grass will be set aside for community assistance needs for hardship situations with livestock and to support the local elk population during the winter months, as outlined in the Annual Recycled Water Reuse Reports. Yield will vary by year based on past reports, as the City has indicated that local elk populations graze on the crops during the growing season.

New Recycled Water Irrigation Site

The new irrigation site consists of a 12-inch main line to the irrigation site from the pump station, which splits into two 8-inch lines that lead to each central pivot. The irrigation site utilizes two central pivots and 1,082-foot spans to irrigate. The 1,082-foot irrigation spans are equipped with a Nelson SR100 end gun with a spray radius of 80 feet and 89.5 gpm. In addition, the irrigation spans include 120 evenly spaced Senninger I-WOB2 sprinklers that flow at varying rates from 1.2 to 8.4 gpm. The flow rate of one pivot system is 560 gpm with 121 sprinklers operating at any given time (including the end gun), or 1,120 gpm and 242 sprinklers if both pivots are utilized. The irrigation site is typically irrigated between eight to 12 hours per day at each irrigation pivot. This would equate to approximately 0.1 inch applied per eight hours.

Application Rates and Irrigation Scheduling

Pumping at 560 gpm, with daily duration based on crop need, from the beginning of April to the end of October, the irrigation system is theoretically capable of applying approximately 24.3 inches of water to one pivot, or approximately 63.7 million gallons (MG) of recycled water to one irrigation pivot each year. However, times of irrigation may vary based on time of year and crop water needs. This capacity assumes the system operates full time and that treated wastewater is available. The eight hour irrigation schedule can be increased or decreased depending on the water needs of the pasture grass. To help prevent environmental impacts to the site, two areas of concern regarding irrigation practices need to be recognized: 1) the potential to exceed crop nutrient needs with nitrogen concentrations on a particular site, and 2) the risks of exceeding the hydraulic or agronomic loading rates of a site. Soil moisture monitoring will be conducted at each pivot as discussed in Section 4 and be used to determine application rates for the crop's required water needs.

Nutrient Loading

Based on discharge monitoring report data, the City's average annual total nitrogen effluent concentration is approximately 28.2 milligrams per liter (mg/L). The DEQ recommends that when determining nitrogen loading, all nitrogen in the effluent is considered available. For the basis of this RWUP, the total nitrogen effluent concentration of 28.2 mg/L was used in determining nitrogen loading rates.

Based on Figure 8-2, at the current influent flows occurring at the WWTF, it is estimated that the City may have approximately 63.7 MG of recycled water available to irrigate the new site. Referring to a study conducted by Daniel Geisseler with the University of California, Davis (see Appendix H), proposed crops grown at the new application site, which consist of fescue, ryegrass, and orchardgrass, have an average nitrogen uptake of 50.8, 54.9, and 54.5 pounds per ton (lbs/ton) respectively. As a conservative approach for the basis of this RWUP, it can be assumed that the average crop nitrogen uptake is 50 lbs/ton. Based on a projected yield of 1.6 tons per acre and two cuttings per year, the total nitrogen removed is 160 pounds per acre

(lbs/acre) annually. If the City were to utilize the entirety of one pivot with a combined acreage of 96.5 irrigatable acres utilizing the end gun, the total nitrogen applied would be approximately 14,997 pounds or 155 lbs/acre. Assuming two cuttings are harvested, this equates to 15,440 pounds of nitrogen removed by the crop annually.

Table 8-4 shows the total nitrogen applied through recycled water application, the approximate nitrogen removed by the crop, and the net difference. Any remaining nitrogen required by the pasture grass can be applied using fertilizers.

TABLE 8-4
PASTURE GRASS NITROGEN BALANCE

Total Nitrogen from Effluent Applied for Pasture Grass (lbs/acre/yr)	Approximate Nitrogen Removed by the Crop (lbs/acre/yr)	Remaining Nitrogen Required by Pasture Grass (lbs/acre/yr)
155	160	5

lbs/acre/yr = pounds per acre per year

At the time of this RWUP, the 155 pounds of N/acre/yr applied is below the typical agronomic uptake for pasture grass grown at the recycled water application site. Therefore, groundwater should be protected at the current conditions, provided the combination of commercial fertilizer and recycled water nutrient loads applied do not surpass the agronomic amount needed. These total nutrient loadings are to be tracked and recorded in the annual Recycled Water Use Reports to ensure agronomic nutrient loading rates are being maintained. It is important to note that depending on growth and available water, values detailed above may be adjusted annually. Factors such as fertilization may affect nutrient loading rates. Furthermore, as flows to the WWTF increase and more effluent is available for irrigation, the second irrigation pivot can be utilized. Irrigation pivots can be controlled by specifying the amount of acreage recycled water will be applied to.

Samples will be taken before and after the irrigation season to verify that nitrogen loading is not exceeding agronomic rates. If agronomic rates are being exceeded, irrigation rates shall be adjusted for the following irrigation season.

Hydraulic and Agronomic Loading

Currently, based on existing influent flows to the WWTF, the recycled water irrigation system does not have the ability to apply sufficient water to exceed agronomic rates presented on Figure 8-2. However, regardless of these agronomic rates, the system operator will be responsible for ensuring prolonged ponding or surface runoff does not occur due to irrigation.

The irrigation water balance presented on Figure 8-2 was prepared with irrigation application at the agronomic rate. Based on average precipitation quantities, net monthly irrigation requirements, and 85 percent irrigation efficiency, the irrigation columns present the allowed agronomic rate, in inches, and the corresponding irrigation volume for each month in MG (for comparison with metered flow). Irrigation at the new site will be maintained at or below these agronomic quantities for total water applied each month. The City will monitor precipitation and

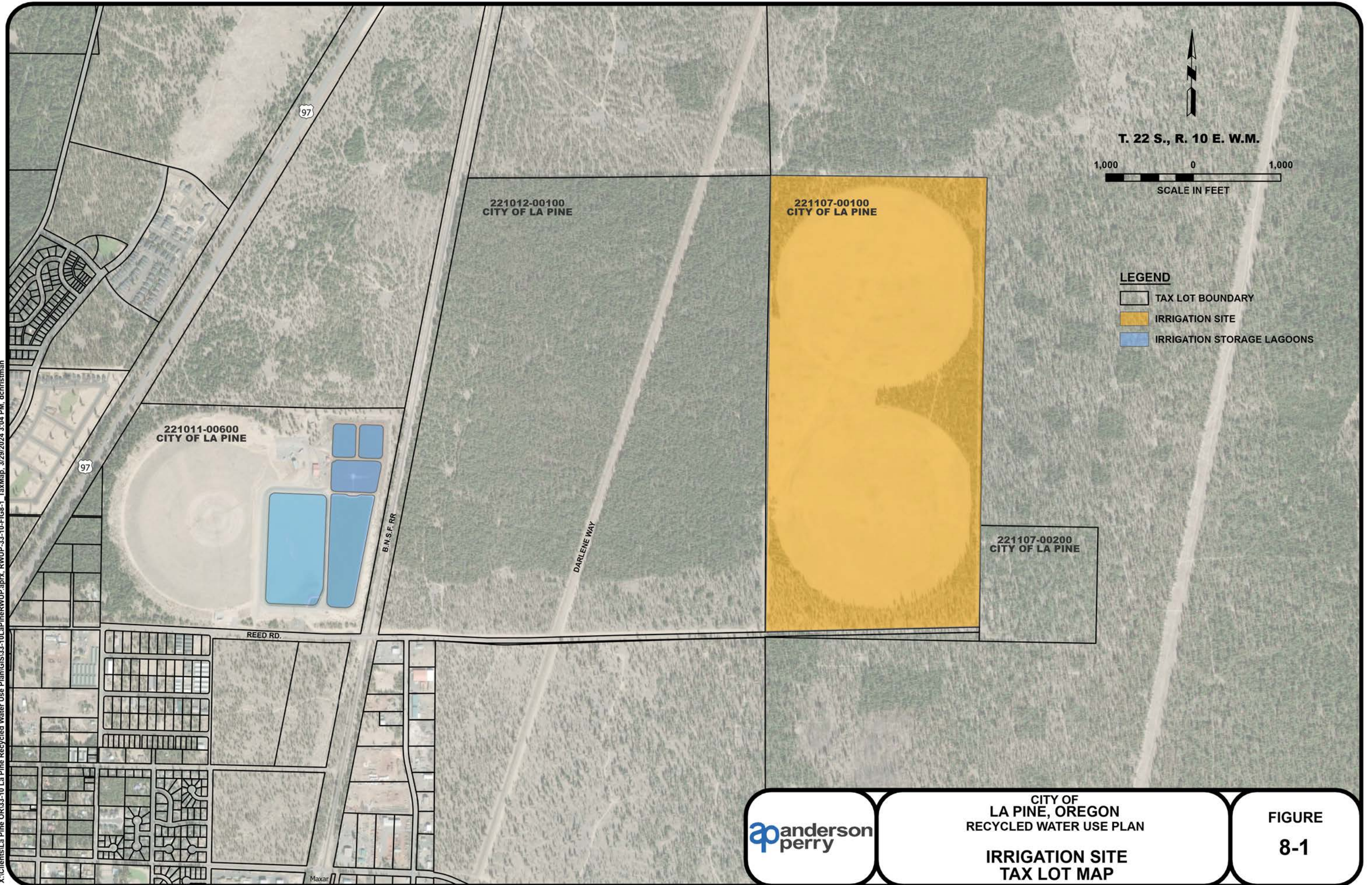
up to date (daily) ET values from the AgriMet Bend “BEWO” station to adjust the quantity of recycled water applied to maintain agronomic rates.

Site Monitoring Plan

When discharging recycled water for storage and future irrigation, the following monitoring program will be followed to verify that public health, regulatory, and agronomic objectives are met.

- Recycled Water Limitations - Total coliform organisms samples will be taken and evaluated weekly while transferring recycled water to storage. Samples shall not exceed a 30-day log mean of 126 *E. coli* organisms per 100 milliliters and 406 *E. coli* organisms per 100 milliliters in any single sample.
- Recycled Water Outfall - Total flow of recycled water irrigated at the irrigation site will be recorded from the effluent flowmeter.
- Recycled Water Disinfection - The quantity of chlorine used along with the resulting chlorine residual will be recorded.
- Recycled Water Nutrients - Samples of recycled water will be taken quarterly during the irrigation season and tested for total Kjeldahl nitrogen, nitrite nitrogen, and nitrate nitrogen.
- Recycled Water Irrigation - Monthly records of the quantity of recycled water irrigated in inches per acre will be maintained. To verify agronomic rates, soil testing will be completed in the spring prior to irrigation on sites where a crop has been harvested.
- Crop Yields - Crop yields, as applicable, will be recorded.
- Groundwater Monitoring - Per the Groundwater Monitoring Plan.

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**CITY OF LA PINE, OREGON
RECYCLED WATER USE PLAN
WATER BALANCE WITH EFFLUENT IRRIGATION
2023 POPULATION, PLUS CAGLE AND WEST CAGLE AREAS**

Month	Influent ¹ (MG)	Septage ¹ (MG)	Precipitation ²		Evaporation ³		Seepage ⁴ (MG)	Irrigation Crop: Acreage: (in)	Pasture Grass 89 (MG)	Storage Volume (+/-) (MG)	Cumulative Storage Volume (MG)
			(in)	(MG)	(in)	(MG)					
January	5.88	0.09	3.11	3.57	0.00	0.00	0.00	-	0.00	9.54	32.55
February	5.41	0.07	2.55	2.93	0.00	0.00	0.00	-	0.00	8.41	40.96
March	6.03	0.11	1.74	2.00	0.00	0.00	0.00	-	0.00	8.14	49.10
April	5.73	0.13	1.36	1.56	2.09	2.41	0.00	0.67	1.62	3.40	52.50
May	5.95	0.16	1.28	1.47	3.60	4.14	0.00	3.78	9.12	-5.67	46.83
June	5.52	0.18	1.01	1.16	4.52	5.20	0.00	5.25	12.67	-11.00	35.82
July	5.02	0.17	0.74	0.85	5.59	6.43	0.00	6.86	16.56	-16.95	18.88
August	5.29	0.20	0.67	0.77	4.79	5.50	0.00	5.38	12.98	-12.22	6.65
September	5.31	0.16	0.71	0.82	3.28	3.77	0.00	3.80	9.17	-6.65	0.00
October	5.55	0.12	1.42	1.63	1.72	1.98	0.00	0.65	1.56	3.76	3.76
November	5.61	0.11	3.08	3.54	0.00	0.00	0.00	-	0.00	9.26	13.02
December	5.71	0.08	3.65	4.20	0.00	0.00	0.00	-	0.00	9.99	23.01
TOTALS	67.01		21.32	24.50	25.59	29.41	0.00	26.38	63.68	0.00	

Crop Usage Data - Alfalfa Hay

	Acres	Square Feet	MG
Cell 1 Area	4.79	208,652	13.27
Cell 2 Area	2.67	116,305	7.39
Cell 3 Area	2.67	116,305	7.39
Cell 4 Area	12.00	522,720	31.28
Cell 5 Area	20.20	879,912	39.49
Total	42.33	1,843,895	98.83

Month	Precip. (in)	Evapotran. ⁷ (in)	Net Irrigation Req'd. (in)	85 Percent Efficiency
				(in)
Apr	1.36	1.93	0.57	0.67
May	1.28	4.49	3.21	3.78
Jun	1.01	5.47	4.46	5.25
Jul	0.74	6.57	5.83	6.86
Aug	0.67	5.24	4.57	5.38
Sep	0.71	3.94	3.23	3.80
Oct	1.42	1.97	0.55	0.65

Notes:

¹ Influent. Influent flows are based on average monthly flow from January 2018 through December 2023. Data were obtained from the City's Discharge Monitoring Reports.

² Precipitation. Utilized precipitation on record with the WRCC for the Wickiup Dam weather station from 1981 through 2010. Mean rainfall used for each month.

³ Evaporation. Utilized pan evaporation data obtained from the WRCC for Wickiup Dam weather station, with a pan coefficient of 0.70.

⁴ Seepage. Existing lagoons are lined and seepage is assumed to be 0.

⁵ Total storage available in storage lagoon (Cell 4) equals 31.3 MG.

⁶ Total storage available in storage lagoon (Cell 5) equals 39.5 MG

⁷ Evapotranspiration. Based on data from Oregon Crop Water Use and Irrigation Requirements, Oregon State University Extension Publication 8530.

in = inches

MG = million gallons

WRCC = Western Regional Climate Center



CITY OF
LA PINE, OREGON
RECYCLED WATER USE PLAN
WATER BALANCE WITH EFFLUENT IRRIGATION
2023 POPULATION, PLUS CAGLE AND
WEST CAGLE AREAS

**FIGURE
8-2**

Section 9 - Records and Reporting

Recycled water operations are recorded on a regular basis, with reporting requirements on a monthly and annual schedule. Additionally, notice to the Oregon Department of Environmental Quality (DEQ) is required within 24 hours if it is determined that the treated effluent is being used in a manner not in compliance with Oregon Administrative Rules (OAR) 340-055.

Data Sheets

Data sheets are maintained by City of La Pine staff to help the City track operation of the recycled water system. The records maintained on these data sheets will include irrigation quantities, sampling events, records of various management operations, and observations of the operators. Specific operations to be noted in these records include service and maintenance records, operational changes, site monitoring trends, irrigation dates and locations, etc. These records will provide the operator with the information needed to assist in the day-to-day operational decisions and identify issues that may need to be addressed. The records will also provide a history of the facultative wastewater treatment facility's ability to maintain required water quality permit perimeters and stay in compliance with the City's Water Pollution Control Facilities Permit. Tracking information will provide data necessary to prepare the monthly reports.

Monthly Reporting

Monthly reporting is required by the DEQ on Discharge Monitoring Report (DMR) forms, which include recycled water quality and quantity records. The DMR forms are submitted monthly to the DEQ by the 15th day of the following month.

Annual Reporting

An annual report on recycled water use for each year following operations will be submitted to the DEQ on the date required by the WPCF Permit. The report will comply with this Recycled Water Use Plan, the requirements of OAR 340-055, and in accordance with the City's WPCF Permit. The elements listed below represent the minimum information that should be included.

- Total recycled water flow (million gallons) and quantity irrigated (inches per acre)
- Quantities of nitrogen
- Amount and type of commercial fertilizer applied
- Crop information, including type and harvest records
- Failures causing unauthorized discharges
- Violations of the RWUP
- Changes to the facultative lagoon WWTF, recycled water processes, or water reuse operations
- Soil testing results (pounds nitrogen per acre)
- Groundwater monitoring

Notice of Use Not in Compliance

In the event the City becomes aware of treated effluent being used in a manner not in compliance with OAR 340-055, notice shall be given to the DEQ within 24 hours. When department offices are not open, the City will report the incident of non-compliance to the Oregon Emergency Response System at telephone number 1-800-452-0311.

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APPENDIX A
Oregon Administrative Rules 340-055



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Department of Environmental Quality

Chapter 340

Division 55

RECYCLED WATER USE

[340-055-0005](#)

Purpose

These rules (OAR 340-055-0005 to 340-055-0030) prescribe requirements for the use of recycled water for beneficial purposes. The purpose of this division is to protect the environment and public health in the State of Oregon.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.015 & 468B.020

History:

DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

[340-055-0007](#)

Policy

It is the policy of the Environmental Quality Commission to encourage the use of recycled water for domestic, agricultural, industrial, recreational, and other beneficial purposes in a manner which protects public health and the environment of the state. The use of recycled water for beneficial purposes will improve water quality by reducing discharge of treated effluent to surface waters, reduce the demand on drinking water sources for uses not requiring potable water, and may conserve stream flows by reducing withdrawal for out-of-stream use.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.015

History:

DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

[340-055-0010](#)

Definitions

The following definitions apply to this division of rules:

- (1) "Artificial Groundwater Recharge" means the intentional addition of water diverted from another source to a groundwater reservoir.
- (2) "Beneficial Purpose" means a purpose where recycled water is utilized for a resource value, such as nutrient content or moisture, to increase productivity or to conserve other sources of water.
- (3) "Department" means the Oregon Department of Environmental Quality.
- (4) "Disinfected Wastewater" means wastewater that has been treated by a chemical, physical or biological process and meets the criteria if applicable to its classification for use as recycled water.
- (5) "Filtered Wastewater" means an oxidized wastewater that meets the criteria defined in OAR 340-055-0012(7)(c).
- (6) "Human Consumption" means water used for drinking, personal or oral hygiene, bathing, showering, cooking, or dishwashing.

- (7) "Landscape Impoundment" means a body of water used for aesthetic purposes or other function that does not include public contact through activities such as boating, fishing, or body-contact recreation. Landscape impoundments include, but are not limited to, golf course water ponds or non-residential landscape ponds.
- (8) "Nonrestricted Recreational Impoundment" means a constructed body of water for which there are no limitations on body-contact water recreation activities. Nonrestricted recreational impoundments include, but are not limited to, recreational lakes, water features accessible to the public, and public fishing ponds.
- (9) "NPDES Permit" means a National Pollutant Discharge Elimination System permit as defined in OAR chapter 340, division 45.
- (10) "Oxidized Wastewater" means a treated wastewater in which the organic matter is stabilized and nonputrescible, and which contains dissolved oxygen.
- (11) "Person" means the United States and agencies thereof, any state, any individual, public or private corporation, political subdivision, governmental agency, municipality, copartnership, association, firm, trust estate, or any other legal entity.
- (12) "Processed Food Crops" means those crops that undergo thermoprocessing sufficient to kill spores of *Clostridium botulinum*.
- (13) "Recycled Water" means treated effluent from a wastewater treatment system which as a result of treatment is suitable for a direct beneficial purpose. Recycled water includes reclaimed water as defined in ORS 537.131.
- (14) "Restricted Recreational Impoundment" means a constructed body of water that is limited to fishing, boating, and other non-body contact water recreation activities.
- (15) "Sprinkler Irrigation" means the act of applying water by means of perforated pipes or nozzles operated under pressure so as to form a spray pattern.
- (16) "Wastewater" or "Sewage" means the water-carried human or animal waste from residences, buildings, industrial establishments or other places, together with such groundwater infiltration and surface water as may be present. The admixture with sewage of wastes or industrial wastes shall also be considered "wastewater" within the meaning of this division.
- (17) "Wastewater Treatment System" or "Sewage Treatment System" means an approved facility or equipment used to alter the quality of wastewater by physical, chemical or biological means or a combination thereof that reduces the tendency of the wastewater to degrade water quality or other environmental conditions.
- (18) "Waters of the State" means lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon, and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters which do not combine or effect a junction with natural surface or underground waters) that are located wholly or partially within or bordering the state or within its jurisdiction.
- (19) "WPCF Permit" means a Water Pollution Control Facilities permit as defined in OAR chapter 340, division 45.
- (20) "Wetlands" means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.005, 468B.030 & 468B.050

History:

DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

340-055-0012

Recycled Water Quality Standards and Requirements

- (1) Any person having control over the treatment or distribution or both of recycled water may distribute recycled water only for the beneficial purposes described in this rule, and must take all reasonable steps to ensure that the recycled water is used only in accordance with the standards and requirements of the rules of this division.
- (2) Any person who uses recycled water may use recycled water only for the beneficial purposes described in this rule, and must comply with the standards and requirements of this rule and the rules of this division.
- (3) The following requirements apply to nondisinfected recycled water.
- (a) Beneficial Purposes. Nondisinfected recycled water may be used only for the following beneficial purposes and only if the rules of this division are met:

- (A) Irrigation for growing fodder, fiber, seed crops not intended for human ingestion, or commercial timber; and
- (B) Any beneficial purpose authorized in writing by the department pursuant to OAR 340-055-0016(6).
- (b) Treatment. Nondisinfected recycled water must be an oxidized wastewater.
- (c) Criteria. There are no disinfection criteria for nondisinfected recycled water.
- (d) Monitoring. Monitoring must be in accordance with the wastewater treatment system owner's NPDES or WPCF permit.
- (e) Setback Distances. There must be a minimum of 150 feet from the edge of the irrigation site to a water supply source used for human consumption. Other site specific setback distances for irrigation necessary to protect public health and the environment must be established in the recycled water use plan and must be met when irrigating.
- (f) Access and Exposure. Public access to the irrigation site must be prevented.
- (g) Site Management.
- (A) Irrigation with recycled water is prohibited for 30 days before harvesting.
- (B) Sprinkler irrigation is prohibited unless authorized in advance and in writing by the department based on demonstration that public health and the environment will be adequately protected from aerosols.
- (4) The following requirements apply to Class D recycled water.
- (a) Beneficial Purposes. Class D recycled water may be used only for the following beneficial purposes and only if the rules of this division are met:
 - (A) Any beneficial purpose defined in subsection (3)(a) of this rule;
 - (B) Irrigation of firewood, ornamental nursery stock, Christmas trees, sod, or pasture for animals; and
 - (C) Any beneficial purpose authorized in writing by the department pursuant to OAR 340-055-0016(6).
- (b) Treatment. Class D recycled water must be an oxidized and disinfected wastewater that meets the numeric criteria in subsection (c) of this section.
- (c) Criteria. Class D recycled water must not exceed a 30-day log mean of 126 E. coli organisms per 100 milliliters and 406 E. coli organisms per 100 milliliters in any single sample.
- (d) Monitoring. Monitoring for E. coli organisms must occur once per week at a minimum.
- (e) Setback Distances.
 - (A) Where an irrigation method is used to apply recycled water directly to the soil, there must be a minimum of 10 feet from the edge of the site used for irrigation and the site property line.
 - (B) Where sprinkler irrigation is used, there must be a minimum of 100 feet from the edge of the site used for irrigation and the site property line.
 - (C) There must be a minimum of 100 feet from the edge of an irrigation site to a water supply source used for human consumption.
 - (D) Where sprinkler irrigation is used, recycled water must not be sprayed within 70 feet of an area where food is prepared or served, or where a drinking fountain is located.
- (f) Access and Exposure.
- (A) Animals used for production of milk must be restricted from direct contact with the recycled water.
- (B) When using recycled water for irrigation of sod, ornamental nursery stock, or Christmas trees, the personnel at the use area must be notified that the water used is recycled water and is not safe for drinking. The recycled water use plan must specify how notification will be provided.
- (g) Site Management.
 - (A) When irrigating, signs must be posted around the perimeter of the irrigation site stating recycled water is used and is not safe for drinking.
 - (B) Irrigation of fodder, fiber, seed crops not intended for human ingestion, sod, commercial timber, firewood, ornamental nursery stock, or Christmas trees is prohibited for three days before harvesting.
- (5) The following requirements apply to Class C recycled water.

- (a) Beneficial Purposes. Class C recycled water may be used only for the following beneficial purposes and only if the rules of this division are met:
- (A) Any beneficial purpose defined in subsection (4)(a) of this rule;
 - (B) Irrigation of processed food crops;
 - (C) Irrigation of orchards or vineyards if an irrigation method is used to apply recycled water directly to the soil;
 - (D) Landscape irrigation of golf courses, cemeteries, highway medians, or industrial or business campuses;
 - (E) Industrial, commercial, or construction uses limited to: industrial cooling, rock crushing, aggregate washing, mixing concrete, dust control, nonstructural fire fighting using aircraft, street sweeping, or sanitary sewer flushing;
 - (F) Water supply source for landscape impoundments; and
 - (G) Any beneficial purpose authorized in writing by the department pursuant to OAR 340-055-0016(6).
- (b) Treatment. Class C recycled water must be an oxidized and disinfected wastewater that meets the numeric criteria in subsection (c) of this section.
- (c) Criteria. Class C recycled water must not exceed a median of 23 total coliform organisms per 100 milliliters, based on results of the last seven days that analyses have been completed, and 240 total coliform organisms per 100 milliliters in any two consecutive samples.
- (d) Monitoring. Monitoring for total coliform organisms must occur once per week at a minimum.
- (e) Setback Distances.
- (A) Where an irrigation method is used to apply recycled water directly to the soil, there must be a minimum of 10 feet from the edge of the site used for irrigation and the site property line.
 - (B) Where sprinkler irrigation is used, there must be a minimum of 70 feet from the edge of the site used for irrigation and the site property line.
 - (C) There must be a minimum of 100 feet from the edge of an irrigation site to a water supply source used for human consumption.
 - (D) Where sprinkler irrigation is used, recycled water must not be sprayed within 70 feet of an area where food is being prepared or served, or where a drinking fountain is located.
- (f) Access and Exposure.
- (A) When irrigating for a beneficial purpose defined in subsection (4)(a) of this rule, the access and exposure requirements defined in subsection (4)(f) of this rule must be met.
 - (B) During irrigation of a golf course, a cemetery, a highway median, or an industrial or business campus, the public must be restricted from direct contact with the recycled water.
 - (C) If aerosols are generated when using recycled water for an industrial, commercial, or construction purpose, the aerosols must not create a public health hazard.
 - (D) When using recycled water for an agricultural or horticultural purpose where sprinkler irrigation is used, or an industrial, commercial, or construction purpose, the public and personnel at the use area must be notified that the water used is recycled water and is not safe for drinking. The recycled water use plan must specify how notification will be provided.
- (g) Site Management.
- (A) When irrigating for a beneficial purpose defined in subsection (4)(a) of this rule, the site management requirements defined in subsection (4)(g) of this rule must be met.
 - (B) When using recycled water for a landscape impoundment or for irrigating a golf course, cemetery, highway median, or industrial or business campus, signs must be posted at the use area and be visible to the public. The signs must state that recycled water is used and is not safe for drinking.
 - (C) Irrigation of processed food crops is prohibited for three days before harvesting.
 - (D) When irrigating an orchard or vineyard, the edible portion of the crop must not contact the ground, and fruit or nuts may not be harvested off the ground.
 - (E) When using recycled water for a landscape impoundment, aerators or decorative fixtures that may generate aerosols are allowed only if authorized in writing by the department.

(6) The following requirements apply to Class B recycled water.

(a) Beneficial Purposes. Class B recycled water may be used only for the following beneficial purposes and only if the rules of this division are met:

(A) Any beneficial purpose defined in subsection (5)(a) of this rule;

(B) Stand-alone fire suppression systems in commercial and residential buildings, non-residential toilet or urinal flushing, or floor drain trap priming;

(C) Water supply source for restricted recreational impoundments; and

(D) Any beneficial purpose authorized in writing by the department pursuant to OAR 340-055-0016(6).

(b) Treatment. Class B recycled water must be an oxidized and disinfected wastewater that meets the numeric criteria in subsection (c) of this section.

(c) Criteria. Class B recycled water must not exceed a median of 2.2 total coliform organisms per 100 milliliters, based on results of the last seven days that analyses have been completed, and 23 total coliform organisms per 100 milliliters in any single sample.

(d) Monitoring. Monitoring for total coliform organisms must occur three times per week at a minimum.

(e) Setback Distances.

(A) Where an irrigation method is used to apply recycled water directly to the soil, there are no setback requirements.

(B) Where sprinkler irrigation is used, there must be a minimum of 10 feet from the edge of the site used for irrigation and the site property line.

(C) There must be a minimum of 50 feet from the edge of the irrigation site to a water supply source used for human consumption.

(D) Where sprinkler irrigation is used, recycled water must not be sprayed within 10 feet of an area where food is being prepared or served, or where a drinking fountain is located.

(f) Access and Exposure.

(A) During irrigation of a golf course, the public must be restricted from direct contact with the recycled water.

(B) If aerosols are generated when using recycled water for an industrial, commercial, or construction purpose, the aerosols must not create a public health hazard.

(C) When using recycled water for an agricultural or horticultural purpose where sprinkler irrigation is used, or an industrial, commercial, or construction purpose, the public and personnel at the use area must be notified that the water used is recycled water and is not safe for drinking. The recycled water use plan must specify how notification will be provided.

(g) Site Management.

(A) When irrigating for a beneficial purpose defined in subsection (4)(a) of this rule, the site management requirements defined in subsection (4)(g) of this rule must be met.

(B) When using recycled water for a landscape impoundment or for irrigating a golf course, cemetery, highway median, or industrial or business campus, signs must be posted at the use area and be visible to the public. The signs must state recycled water is used and is not safe for drinking.

(C) Irrigation of processed food crops is prohibited for three days before harvesting.

(D) When irrigating an orchard or vineyard, the edible portion of the crop must not contact the ground, and fruit or nuts may not be harvested off the ground.

(7) The following requirements apply to Class A recycled water.

(a) Beneficial Purposes. Class A recycled water may be used only for the following beneficial purposes and only if the rules of this division are met:

(A) Any beneficial purpose defined in subsection (6)(a) of this rule;

(B) Irrigation for any agricultural or horticultural use;

(C) Landscape irrigation of parks, playgrounds, school yards, residential landscapes, or other landscapes accessible to the public;

(D) Commercial car washing or fountains when the water is not intended for human consumption;

- (E) Water supply source for nonrestricted recreational impoundments;
- (F) Artificial groundwater recharge by surface infiltration methods or by subsurface injection in accordance with OAR chapter 340, division 44. Direct injection into an underground source of drinking water is prohibited unless allowed by OAR chapter 340, division 44; and
- (G) Any beneficial purpose authorized in writing by the department pursuant to OAR 340-055-0016(6).
- (b) Treatment. Class A recycled water must be an oxidized, filtered and disinfected wastewater that meets the numeric criteria in subsection (c) of this section are met.
- (c) Criteria. Class A recycled water must not exceed the following criteria:
 - (A) Before disinfection, unless otherwise approved in writing by the department, the wastewater must be treated with a filtration process, and the turbidity must not exceed an average of 2 nephelometric turbidity units (NTU) within a 24-hour period, 5 NTU more than five percent of the time within a 24-hour period, and 10 NTU at any time, and
 - (B) After disinfection, Class A recycled water must not exceed a median of 2.2 total coliform organisms per 100 milliliters, based on results of the last seven days that analyses have been completed, and 23 total coliform organisms per 100 milliliters in any single sample.
- (d) Monitoring.
 - (A) Monitoring for total coliform organisms must occur once per day at a minimum.
 - (B) Monitoring for turbidity must occur on an hourly basis at a minimum.
- (e) Setback Distances. Where sprinkler irrigation is used, recycled water must not be sprayed onto an area where food is being prepared or served, or onto a drinking fountain.
- (f) Access and Exposure. When using recycled water for an agricultural or horticultural purpose where spray irrigation is used, or an industrial, commercial, or construction purpose, the public and personnel at the use area must be notified that the water used is recycled water and is not safe for drinking. The recycled water use plan must specify how notification will be provided.
- (g) Site Management. When using recycled water for a landscape impoundment, restricted recreational impoundment, nonrestricted recreational impoundment, or for irrigating a golf course, cemetery, highway median, industrial or business campus, park, playground, school yard, residential landscape, or other landscapes accessible to the public, signs must be posted at the use area or notification must be made to the public at the use area indicating recycled water is used and is not safe for drinking. The recycled water use plan must specify how notification will be provided.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.030 & 468B.050

History:

Renumbered from 340-055-0015, DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

340-055-0013

Exempted Use of Recycled Water

Recycled water used by a wastewater treatment system owner for landscape irrigation or for in plant processes at a wastewater treatment system is exempt from the rules of this division if:

- (1) The recycled water is an oxidized and disinfected wastewater;
- (2) The recycled water is used at the wastewater treatment system site where it is generated or at an auxiliary wastewater or sludge treatment facility that is subject to the same NPDES or WPCF permit as the wastewater treatment system. Contiguous property to the parcel of land upon which the treatment system is located is considered the wastewater treatment system site if under the same ownership;
- (3) Spray or drift or both from the use does not occur off the site; and
- (4) Public access to the site is restricted.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.050

History:

DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

340-055-0016**General Requirements for Permitting the Use of Recycled Water**

- (1) NPDES or WPCF permit. A wastewater treatment system owner may not provide any recycled water for use unless authorized by a NPDES or WPCF permit issued by the department pursuant to OAR chapter 340, division 045.
- (2) Recycled water use plan.
- (a) Except for use of recycled water authorized by a NPDES or WPCF permit, a wastewater treatment system owner may not provide any recycled water for distribution or use or both until a recycled water use plan meeting the requirements of OAR 340-055-0025 has been approved in writing by the department. Upon approval of the plan, the permittee must comply with the conditions of the plan.
- (b) Before approving or modifying any plan for the use of Class C, Class D, or nondisinfected recycled water, the department will submit the proposed plan to the Oregon Department of Human Services for comment.
- (c) For use of recycled water previously authorized under a NPDES or WPCF permit but without a department approved recycled water use plan, the wastewater treatment system owner must submit a recycled water use plan to the department within one year of the effective date of these rules.
- (3) Land application on land zoned exclusive farm use. A recycled water use plan will not be approved for the land application of recycled water on land zoned exclusive farm use until the requirements of ORS 215.213(1)(bb) and 215.283(1)(y) for recycled water are met.
- (4) Compliance with this division. When the rules of this division require a limitation or a condition or both that conflicts with a limitation or a condition or both in an existing permit, the existing permit controls until the permit is modified or renewed by the department. When the existing permit is modified or renewed, the permittee will be given a reasonable compliance schedule to achieve new requirements if necessary.
- (5) Additional permit limitations and conditions. The department may include additional permit limitations or conditions or both if it determines or has reason to believe additional requirements for the use of recycled water are necessary to protect public health or the environment or both.
- (6) Authorization of other recycled water uses. The department may authorize through a NPDES or WPCF permit a use of recycled water for a beneficial purpose not specified in this division. When the department considers the authorization, it may request information and include permit limitations or conditions or both necessary to assure protection of public health and the environment. The department will confer with the Oregon Department of Human Services before authorizing other uses of Class C, Class D, or nondisinfected recycled water under this section.
- (7) Setback distances. The department may consider and approve, on a case-by-case basis, a setback distance other than what is required in this division. For a reduced setback distance, it must be demonstrated to the department that public health and the environment will be adequately protected. The recycled water use plan must include any approved alternative setback distance.
- (8) Public outreach and sign posting. When the rules of this division require the posting of signs at a use area, the department may, on a case-by-case basis, approve an alternative method for public outreach where it considers the method will assure an equivalent degree of public protection.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.030 & 468B.050

History:

Renumbered from 340-055-0015, DEQ 6-2008, f. & cert. ef. 5-5-08
DEQ 32-1990, f. & cert. ef. 8-15-90

340-055-0017**Treatment and Use of Recycled Water**

- (1) Alternative treatment process. The department may approve in writing an alternative wastewater treatment process not specified in the rules of this division if it is demonstrated that the treatment is equivalent to and can achieve the recycled water criteria required for a specific beneficial purpose.
- (2) Additional treatment. A person using recycled water from a wastewater treatment system may provide additional treatment for a different class of recycled water that is identified in this division. The wastewater treatment system owner providing the additional treatment is subject to the rules of this division and must have a NPDES or WPCF permit issued by the department.
- (3) Blending recycled water. The department may approve on a case-by-case basis blending recycled water with other water if proposed by a wastewater treatment system owner. Before blending recycled water, the owner must obtain written authorization from the department. In obtaining authorization, the wastewater treatment system owner must submit to the department, at a minimum the following:

- (a) An operations plan,
 - (b) A description of any additional treatment process,
 - (c) A description of blending volumes, and
 - (d) A range of final recycled water quality at the compliance point identified in the NPDES or WPCF permit.
- (4) Water right. The rules of this division do not create a water right under ORS chapters 536, 537, 539 or 540. A person must contact the Oregon Water Resources Department to determine water right requirements for the use of recycled water.
- (5) Prohibited use for human consumption. The use of recycled water for direct human consumption, regardless of the treatment class, is prohibited unless approved in writing by the Oregon Department of Human Services, and after public hearing, and it is so authorized by the Environmental Quality Commission.
- (6) Prohibited use for a public pool. The use of recycled water as a source of supply for a public pool, spa, or bathhouse is prohibited unless authorized in writing by the department and with written approval from the Oregon Department of Human Services. Public pools are subject to the requirements of ORS 448 and the Oregon Department of Human Services administrative rules.
- (7) Transporting recycled water. A vehicle used to transport or distribute recycled water must not be used to transport water for human consumption, unless authorized in writing by the department. The vehicle must be clearly identified with the words "nonpotable water" written in letters at least six inches high and displayed on each side and rear of the vehicle unless otherwise authorized by the department.
- (8) Impoundments. Constructed landscape, and restricted and nonrestricted recreational impoundments approved for use under the rules of this division are not considered waters of the state for water quality purposes. Impoundments used for wastewater treatment are subject to ORS 215.213 and 215.283.
- (9) Wetlands.
- (a) The term "waters of the state" as provided in OAR 340-055-0012(18) includes, but is not limited to, the following wetlands and discharge to any of these wetlands requires a NPDES permit issued by the Department pursuant to OAR chapter 340, division 45:
- (A) Enhanced or restored wetlands;
 - (B) Existing natural wetlands; and
 - (C) Wetlands created as mitigation for loss of wetlands under the Clean Water Act, Section 404.
- (b) Wetlands constructed on non-wetland sites and managed for wastewater treatment are exempt from the rules of this division and are not considered waters of the state for water quality purposes.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.030 & 468B.050

History:

Renumbered from 340-055-0015, DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

340-055-0020

Groundwater Quality Protection

Recycled water will not be authorized for use unless all groundwater quality protection requirements in OAR chapter 340, division 40 are met. The requirements in OAR chapter 340, division 40 are considered to be met if the wastewater treatment system owner demonstrates recycled water will be used or land applied in a manner and at a rate that minimizes the movement of contaminants to groundwater and does not adversely impact groundwater quality. If the use of recycled water occurs within a designated groundwater management area, the department may require additional conditions to be met.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.150 - 468B.190

History:

DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

340-055-0022

Monitoring and Reporting

- (1) The department will include in a NPDES or WPCF permit authorizing the use of recycled water, at a minimum, the monitoring requirements in OAR 340-055-0012.
- (2) When chlorine or a chlorine compound is used as a disinfecting agent, the department may specify in the NPDES or WPCF permit a minimum chlorine residual concentration. When other disinfecting agents are used, the department may require additional monitoring requirements to assure adequate disinfection.
- (3) The department will include in a NPDES or WPCF permit authorizing the use of recycled water, a requirement that the wastewater treatment system owner submit an annual report to the department describing the effectiveness of the system to comply with the approved recycled water use plan, the rules of this division, and the permit limits and conditions for recycled water.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.030 & 468B.050

History:

Renumbered from 340-055-0015, DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

340-055-0025

Recycled Water Use Plan

- (1) A recycled water use plan must describe how the wastewater treatment system owner will comply with the rules of this division and must include, but is not limited to, the following:
 - (a) A description of the wastewater treatment system, including treatment efficiency capability;
 - (b) A detailed description of the treatment methods that will be used to achieve a specific class of recycled water and for what beneficial purpose;
 - (c) The estimated quantity of recycled water to be provided by the wastewater treatment system owner to the user, and at what frequency and for what beneficial purpose;
 - (d) A description of contingency procedures that ensure the requirements of this division are met when recycled water is provided for use;
 - (e) Monitoring and sampling procedures;
 - (f) A maintenance plan that describes how the wastewater treatment system equipment and facility processes will be maintained and serviced;
 - (g) If notification is required by the rules of this division, a description of how the public and personnel at the use area will be notified; and
 - (h) A description of any measuring and reporting requirements identified by the Oregon Water Resources Department after consultation with that agency.
- (2) If Class B, C, or D, or nondisinfected recycled water is to be used for irrigation, a recycled water use plan must also include, but is not limited to, the following:
 - (a) A description and identification of the land application site, including the zoned land use of the irrigation site and surrounding area, a site map with setbacks, and distances of nearest developed property from all boundaries of the irrigation site;
 - (b) A description of the irrigation system, including storage, distribution methods, application methods and rates, and shut off procedures;
 - (c) A description of the soils and crops or vegetation grown at the land application site;
 - (d) A description of site management practices including, but not limited to, the timing of application, methods used to mitigate potential aerosol drift, and if required by this division, posting of signs or public outreach; and
 - (e) If public access control or notification is required by this division, descriptions of public access control and how the public and personnel will be notified.
- (3) If Class A recycled water is to be used for the beneficial purpose of artificial groundwater recharge, a recycled water use plan must also include, but is not limited to, the following:
 - (a) A groundwater monitoring plan in accordance with OAR 340-040-0030(2);
 - (b) A determination if the recharge will be to a drinking water protection area;
 - (c) A description of the soils and characteristics;

(d) The distance from the recharge area to the nearest point of withdrawal and the retention time in the aquifer until the time of withdrawal; and

(e) Verification from Oregon Water Resources Department that a request for authorization for this use has been initiated.

(4) Conditions contained in a department approved recycled water use plan are NPDES or WPCF permit requirements.

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.030 & 468B.050

History:

DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

340-055-0030

Operational Requirements for the Treatment and Distribution of Recycled Water

(1) Bypassing. The intentional diversion of wastewater from any unit process in the wastewater treatment system for a beneficial purpose is not allowed, unless with the unit process out of service the recycled water meets the criteria of this division for a specific class and beneficial purpose described in the recycled water use plan.

(2) Alarm devices. Alarm devices are required to provide warning of power loss and failure of process equipment essential to the proper operation of the wastewater treatment system and compliance with this division.

(3) Standby power. Unless otherwise approved in writing by the department, a wastewater treatment system providing recycled water for use must have sufficient standby power to fully operate all essential treatment processes. The department may grant an exception to this section only if the wastewater treatment system owner demonstrates that power failure will not result in inadequately treated water being provided for use and will not result in any violation of an NPDES or WPCF permit limit or condition or Oregon Administrative Rule.

(4) Redundancy. A wastewater treatment system that provides recycled water for use must have a sufficient level of redundant treatment facilities and monitoring equipment to prevent inadequately treated recycled water from being used or discharged to public waters.

(5) Distribution system requirements. Unless otherwise approved in writing by the department, all piping, valves, and other portions of the recycled water use system that is outside a building must be constructed and marked in a manner to prevent cross-connection with a potable water system. Unless otherwise approved in writing by the department or as required by the rules of this division, construction and marking must be consistent with sections (2), (3), (4), and (5) of the 1992 "Guidelines for the Distribution of Nonpotable Water" of the California-Nevada Section of the American Water Works Association.

(6) Cross-connection control. Connection between a potable water supply system and a recycled water distribution system is not authorized unless the connection is through an air gap separation approved by the department. A reduced pressure principle backflow prevention device may be used only when approved in writing by the department and the potable water system owner.

[Publications: Publications referenced are available from the agency.]

Statutory/Other Authority: ORS 468.020, 468.705 & 468.710

Statutes/Other Implemented: ORS 468B.030 & 468B.050

History:

DEQ 6-2008, f. & cert. ef. 5-5-08

DEQ 32-1990, f. & cert. ef. 8-15-90

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APPENDIX B

Water Pollution Control Facilities Permit

**WATER POLLUTION CONTROL FACILITIES PERMIT**

Oregon Department of Environmental Quality

Eastern Region – Pendleton Office

800 SE Emigrant, #330

Pendleton, OR 97801

Telephone: 541-276-4063

Issued pursuant to ORS 468B.050

ISSUED TO:	SOURCES COVERED BY THIS PERMIT:		
City of La Pine PO Box 2460 La Pine, OR 97739	Type of Waste	Outfall Number	Location
	Domestic Wastewater	001	43.677670/-121.485373
	Recycled Water	002	As specified in Recycled Water Use Plan

FACILITY TYPE AND LOCATION:

Aerated Lagoons and Reuse Land Application

16800 Reed Rd.

La Pine, Oregon, 97739

County: Deschutes

RIVER BASIN INFORMATION:

WRD Basin: Deschutes

USGS Sub-Basin: Little Deschutes

Nearest surface water body name: Little Deschutes River

LLID: 1214536438546-20.3311-N

Issued in response to Application No. 950148 received December 14, 2020. This permit is issued based on the land use findings in the permit record.

Shannon DavisShannon Davis, Regional Administrator,
Eastern RegionJune 7, 2022

Issuance Date

August 1, 2022

Effective Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify or operate a wastewater collection, treatment, control and disposal system in conformance with the requirements, limits, and conditions set forth in this permit.

Unless specifically authorized by this permit, by another NPDES or WPCF permit, or by Oregon statute or administrative rule, any direct or indirect discharge of pollutants to waters of the state is prohibited.

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SCHEDULE A: WASTE DISCHARGE LIMITS

1. Permitted System

The City of La Pine is authorized to operate and maintain a domestic wastewater treatment facility consisting of a septic tank effluent gravity collection system, three aerated treatment lagoons, and two aerated storage lagoons. The City is authorized to apply either Class C or Class D recycled water for irrigation on two land application sites in accordance with a recycled water use plan.

The average dry weather design flow (ADWDF) for the facility is 0.25 million gallons per day (MGD).

2. Surface Water Protection

Direct discharge to navigable waters as defined in OAR Chapter 340 Division 045 Section 0010 (13) is prohibited.

3. Groundwater Protection

Any activity that has an adverse affect on existing or potential beneficial uses of groundwater is prohibited. All wastewater and wastewater solids must be managed and disposed in a manner that will prevent a violation of the Groundwater Quality Protection Rules (OAR Chapter 340, Division 40). If warranted, at any time, DEQ may evaluate the need for or require a full assessment of the facility's affect on groundwater quality.

4. Use of Recycled Water

The Permittee is authorized in OAR Chapter 340 Division 055 Section 0012 to distribute recycled water if it is:

- a. Treated and used according to the criteria listed in Table A1.
- b. Managed in accordance with its DEQ-approved Recycled Water Use Plan unless exempt as provided in Schedule D.
- c. Used in a manner and applied at a rate that does not adversely affect groundwater quality.
- d. Applied at a rate and in accordance with site management practices that ensure continued agricultural, horticultural, or silvicultural production and does not reduce the productivity of the site.
- e. Irrigated using sound irrigation practices to prevent:
 - i. Offsite surface runoff or subsurface drainage through drainage tile;
 - ii. Creation of odors, fly and mosquito breeding, or other nuisance conditions; and
 - iii. Overloading of land with nutrients, organics, or other pollutants.

Table A1: Recycled Water Limits

Class	Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
C.	Class C recycled water must be oxidized and disinfected. Total coliform may not exceed: A median of 23 total coliform organisms per 100 mL, based on results of the last 7 days that analyses have been completed. 240 total coliform organisms per 100 mL in any two consecutive samples.	Class C recycled water may be used for: - Class D and nondisinfected uses. - Irrigation of processed food crops; irrigation of orchards or vineyards if an irrigation method is used to apply recycled water directly to the soil. - Landscape irrigation of golf courses, cemeteries, highway medians, or industrial or business campuses. Industrial, commercial, or construction uses limited to: industrial cooling, rock crushing, aggregate washing, mixing concrete, dust control, nonstructural firefighting using aircraft, street sweeping, or sanitary sewer flushing.
D.	Class D recycled water must be oxidized and disinfected. <i>E. coli</i> may not exceed: - A 30-day geometric mean of 126 organisms per 100 mL. 406 organisms per 100 mL in any single sample.	Class D recycled water may be used for: - Nondisinfected uses. - Irrigation of firewood, ornamental nursery stock, Christmas trees, sod, or pasture for animals.

5. **Agronomic rates for Nutrient Loading**

Crop and site specific agronomic loading rates for nutrients will be approved by DEQ only after consideration of agronomic rates published in appropriate, region specific, fertilizer guides and proposed by the Permittee. DEQ may require adjustment to the allowable agronomic rates after review of annual reporting and to ensure adequate protection of public waters, including groundwater. The Recycled Water Use Plan must list the approved agronomic rates for each proposed crop.

6. **Biosolids**

The Permittee may land apply biosolids or provide biosolids for sale or distribution, subject to OAR 340; Division 50 and 40 CFR Part 503, and the following conditions:

- The Permittee must manage biosolids in accordance with its DEQ-approved Biosolids Management Plan and Land Application Plan.
- The Permittee must apply biosolids at or below the agronomic rates approved by DEQ in order to minimize potential groundwater degradation. DEQ may require adjustment to the allowable agronomic rate after review of annual reporting and to ensure adequate protection of public waters, including groundwater.
- The Permittee must obtain written site authorization from DEQ for each land application site prior to land application (see Schedule D) and follow the site-specific management conditions in the DEQ-issued site authorization letter.

- d. Prior to application, the Permittee must ensure that biosolids meet one of the pathogen reduction standards under 40 CFR 503.32 and one of the vector attraction reduction standards under 40 CFR 503.33.
- e. The Permittee must not apply biosolids containing pollutants in excess of the ceiling concentrations shown in the table below. The Permittee may apply biosolids containing pollutants in excess of the pollutant concentrations, but below the ceiling concentrations, however, the total quantity of biosolids applied cannot exceed the cumulative pollutant loading rates in the table below.

Table A2: Biosolids Limits

Pollutant (See note a.)	Ceiling concentrations (mg/kg)	Pollutant concentrations (mg/kg)	Cumulative pollutant loading rates (kg/ha)
Arsenic	75	41	41
Cadmium	85	39	39
Copper	4300	1500	1500
Lead	840	300	300
Mercury	57	17	17
Molybdenum	75	N/A	N/A
Nickel	420	420	420
Selenium	100	100	100
Zinc	7500	2800	2800
Note: a. Biosolids pollutant limits are described in 40 CFR 503.13, which uses the terms <i>ceiling concentrations</i> , <i>pollutant concentrations</i> , and <i>cumulative pollutant loading rates</i> .			

7. Hauled Waste Requirements

The Permittee may not accept hauled wastes, including but not limited to wastewater solids from another treatment facility, domestic septage, grease trap wastes, portable and chemical toilet wastes, landfill leachate, groundwater remediation wastewater, and commercial or industrial wastewater at this facility for treatment or processing without a DEQ-approved hauled waste management plan and written approval from DEQ.

SCHEDULE B: MINIMUM MONITORING AND REPORTING REQUIREMENTS

1. Reporting Requirements

The Permittee must submit to DEQ monitoring results and reports as listed below.

Table B1: Reporting Requirements and Due Dates

Reporting Requirement	Frequency	Due Date (See note a)	Report Form (See note b)	Submit To: (See note c & d)
Tables B2, B3, and B4 Influent Monitoring, Lagoon Monitoring, and Recycled Water Monitoring	Monthly	By the 15 th of the following month monitoring period	Specified in Schedule B, Section 2 of this permit	As directed by DEQ
Table B7: Groundwater Well Monitoring	Quarterly	By the 15 th of the following month monitoring period	Specified in Schedule B, Section 7 of this permit	As directed by DEQ
Recycled Water Annual Report (see Schedule D) (Tables B4, B5, and B6)	Annually	January 15	Electronic copy in the DEQ- approved format	Electronic copy to DEQ Water Reuse Program Coordinator
Groundwater Well Monitoring Annual Report (see Schedule D)	Annually beginning the first year after irrigation activities begin	March 31	Specified in Schedule B, Section 7 of this permit	Paper copy to DEQ Pendleton Office and Electronic copy to DEQ Regional Hydrologist
Wastewater solids and Biosolids annual report (see Schedule D)	Annually	February 19	Electronic copy in the DEQ- approved format	Electronic copy to DEQ Biosolids Program Coordinator
Sludge Depth Survey Report (See Schedule D – Lagoon Solids)	One Time	Submit by August 15, 2022	Electronic copy in a DEQ- approved format	As directed by DEQ
Inflow and infiltration report (see Schedule D)	Annually	February 15	Electronic copy in a DEQ- approved format	As directed by DEQ
Hauled Waste Control Plan (see Schedule D)	One time	Submit by August 15, 2022	Electronic copy in a DEQ- approved format	As directed by DEQ
Hauled Waste Annual Report (see Schedule D)	Annually	January 15	Electronic copy in the DEQ- approved format	As directed by DEQ
Industrial User Survey Report (see Schedule D)	One time	Submit by 12/15/2024	Electronic copy in the DEQ- approved format	As directed by DEQ

Reporting Requirement	Frequency	Due Date (See note a)	Report Form (See note b)	Submit To: (See note c & d)
Notes: a. For submittals that are provided to DEQ by mail, the postmarked date must not be later than the due date. b. All reporting requirements are to be submitted in a DEQ approved format, unless otherwise specified in writing. c. Electronic reporting information is provided on DEQ's web page (https://www.oregon.gov/deq/wq/wqpermits/Pages/NPDES-E-Reporting.aspx). d. Email address for biosolids and recycled water coordinator are provided on DEQ's biosolids web page (https://www.oregon.gov/deq/wq/programs/Pages/Biosolids.aspx).				

2. Monitoring and Reporting Protocols

a. Paper Submissions

When submitting paper copies as required by Table B1, the Permittee must submit to DEQ the results of the monitoring in a paper format as specified below.

- i. Until directed by DEQ all Discharge Monitoring Reports (DMRs) must be submitted in an approved paper format:
 - (A) The reporting period is the calendar month.
 - (B) The Permittee must submit monitoring data and other information required by this permit for all compliance points by the 15th day of the month following the reporting period unless specified otherwise in this permit or as specified in writing by DEQ.
- ii. Until directed by DEQ, the Permittee must submit any required Pretreatment Program Reports, Wastewater Solids and Biosolids Annual Report, Recycled Water Annual Report, Sanitary Sewer Overflow/Bypass Event Reports, and other required information to DEQ.

The Permittee must sign and certify submittals of Discharge Monitoring Reports (DMRs), reports, and other information in accordance with the requirements of Section D8 within Schedule F of this permit.

b. Electronic Submissions

When submitting electronic copies as required by Table B1, the Permittee must submit to DEQ the results of monitoring in an electronic format as specified below.

- i. When directed by DEQ, the Permittee must submit monitoring results required by this permit via DEQ-approved web-based Electronic Discharge Monitoring Report (DMR) forms.
- ii. The reporting period is the calendar month.
- iii. The Permittee must submit monitoring data and other information required by this permit for all compliance points by the 15th day of the month following the reporting period unless specified otherwise in this permit or as specified in writing by DEQ.
- iv. When directed by DEQ, the Permittee must submit electronic reports for any required Pretreatment Program Reports, Wastewater Solids and Biosolids Annual Report, Recycled Water Annual Report, Sewer Overflow/Bypass Event Reports, and other required information to DEQ via designated web-based reporting process.

- v. On an annual basis, the Permittee must submit an electronic copy of the analytical and water level data from the groundwater monitoring program.

c. **Test Methods**

The Permittee must conduct monitoring according to test procedures in 40 CFR part 136 and 40 CFR part 503 for biosolids or other approved procedures as per Schedule F.

d. **Quality Assurance and Quality Control**

- i. Quality Assurance Plan – The Permittee must develop and implement a written Quality Assurance Plan that details the facility sampling procedures. This plan should include any equipment calibration and maintenance, analytical methods, quality control activities and laboratory data handling and reporting if the Permittee conducts any of their own analytical work. The QA/QC program must conform to the requirements of 40 CFR 136.7.
- ii. If QA/QC requirements are not met for any analysis, the Permittee must re-analyze the sample. If the sample cannot be re-analyzed, the Permittee must re-sample and analyze at the earliest opportunity. If the Permittee is unable to collect a sample that meets QA/QC requirements, then the Permittee must include the result in the discharge monitoring report (DMR) along with a notation (data qualifier). In addition, the Permittee must explain how the sample does not meet QA/QC requirements. The Permittee may not use the result that failed the QA/QC requirements in any calculation required by the permit unless authorized in writing by DEQ.
- iii. Flow measurement, field measurement, and continuous monitoring devices - The Permittee must:
 - (A) Establish verification and calibration frequency for each device or instrument in the quality assurance plan that conforms to the frequencies recommended by the manufacturer.
 - (B) Verify at least once per year that flow-monitoring devices are functioning properly according to manufacturer's recommendation. Calibrate as needed according to manufacturer's recommendations.
 - (C) Verify at least weekly that the continuous monitoring instruments are functioning properly according to manufacturer's recommendation unless the Permittee demonstrates a longer period is sufficient and such longer period is approved by DEQ in writing.

e. **Reporting Sample Results**

- i. The Permittee must report the same number of significant digits as the permit limit for a given parameter.

3. Monitoring and Reporting Requirements

- a. The Permittee must monitor influent at the influent flow control structure and report results in accordance with the table below:

Table B2: Influent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action (See note b.)	Report Statistic (See note a.)
Flow (50050)	MGD	Year-round	Daily	Metered	Monthly Average Daily Maximum
BOD ₅ (00310)	mg/L	Year-round	Monthly	Grab	Monthly Average
TSS (00530)	mg/L	Year-round	Monthly	Grab	Monthly Average
pH (00400)	Standard Units SU	Year-round	2/week	Grab	Monthly Maximum Monthly Minimum
Septage Received	Gallons	Year-round	Daily	Amount Received	Monthly Total Annual Report
Notes: a. When submitting DMRs electronically, all data used to determine summary statistics shall be submitted in a DEQ-approved format unless otherwise directed by DEQ. If submitting paper DMRs, all data collected shall be reported on each DMR. b. In the event of equipment failure or loss, the Permittee must notify DEQ and repair or replace effected equipment to minimize interruption of data collection. If the equipment cannot be immediately repaired or replaced, the Permittee must perform grab measurements daily.					

- b. The Permittee must monitor the wastewater lagoon system and report results in accordance with Table B1 and the table below:

Table B3: Lagoon Monitoring

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/Required Action	Report Statistic
Perimeter Inspection (see note a.)	N/A	Year-round	5 days/week	Visual	Observation
Depth of Wastewater per Lagoon (see note b.)	Gauge Units (feet or inches)	Year-round	Weekly	Staff gauge measurement	Record Measurement
Lagoon Solids Accumulation	N/A	N/A	Once per permit cycle	Measurement	Record Measurement
Notes: a. A perimeter inspection is a sight surveillance of the lagoon dikes looking for the presence of muskrats, rock chucks, or other rodents whose burrowing could threaten the structural integrity of the dike. b. Lagoon depth measurements will be required after the installation of depth gauges as required in Schedule D of this permit.					

4. Recycled Water Monitoring Requirements: Outfall 002

The Permittee must monitor recycled water for Outfall 002 as listed below only when land applying recycled water. The samples must be representative of the recycled water delivered for beneficial reuse at locations identified in the Recycled Water Use Plan.

Table B4: Recycled Water Monitoring

Item or Parameter	Minimum Frequency	Sample Type/ Required Action	Report
Total Flow (MGD)	Daily	Measurement	Monthly Annual Report
Quantity Irrigated (inches/acre)	Daily	Calculation	Monthly per field Annual Report
Chlorine, Total Residual (mg/L)	Daily	Grab	Monthly Annual Report
pH	2/Week	Grab	Monthly Annual Report
Total Coliform (see note a.)	Weekly Class C	Grab	Weekly Median Monthly Annual Report
<i>E. coli</i>	Weekly Class D	Grab	Monthly Annual Report
Total Nitrogen Loading Rate (lbs/acre-year)	Annually	Calculation	Monthly Value Annual Report
Supplemental Fertilizer Applied	As applied	Record Amounts	Monthly Value Annual Report
Total Dissolved Solids, TDS (mg/L)	Annually	Grab	Monthly Value Annual Report
Total Kjeldahl Nitrogen, TKN (mg/L)	Annually	Grab	Monthly Value Annual Report
Nitrate + Nitrite – N (NO ₂ +NO ₃ -N)	Annually	Grab	Monthly Value Annual Report
Total Ammonia (as N)	Annually	Grab	Monthly Value Annual Report
Total Phosphorus	Annually	Grab	Monthly Value Annual Report

5. Soil Monitoring

At each approved recycled water land application site, the Permittee must collect representative soil samples from each of the top 5-feet of the soil column and analyze each, by accepted laboratory methods, for the parameters in Table B5. A representative sample requires that at least three locations in the field are collected and composited according to depth.

Table B5: Application Site Soil Monitoring

Item or Parameter	Minimum Frequency	Sample Type/ Required Action	Report
Soil Water Holding Capacity (see note a.)	Annually	Report value for each foot (inches water/ft for top 5 feet of soil)	Recycled Water Annual Report
Soil Monitoring Parameters: - Nitrate – Nitrogen ($\text{NO}_3 - \text{N}$) - Ammonium-Nitrogen ($\text{NH}_4\text{-N}$) - pH (see note b.)	Twice Annually. Prior to irrigation and in fall after end-season crop harvest/prior to being tilled under.	In accordance with the Recycled Water Use Plan	Recycled Water Annual Report
Notes: a. The soil water holding capacity must be determined by a scientific method standard to the agricultural industry and approved by DEQ. Once approved by DEQ, the water holding capacity for each of the top five feet of the soil column for each land application site may not be changed or modified without DEQ approval. b. pH is to be monitored in the top six (6) inches of soil.			

6. Crop Monitoring

The Permittee must monitor and record crop information, for each crop and authorized application site, as follows:

Table B6: Application Site Crop Monitoring

Item or Parameter	Minimum Frequency	Sample Type/Action	Report
Crops grown	When planted and harvested	Record dates	Recycled Water Annual Report
Crop Tissue Total Nitrogen (%)	At harvest	Calculation/Record amounts	Recycled Water Annual Report
Crop Nitrogen removal (see note a.)	At harvest	Calculation	Recycled Water Annual Report
Crop Yield (lb./ac or tons/ac)	At harvest	Record amounts	Recycled Water Annual Report
Note: To be calculated based on % Total N from crop tissue sampling and recorded crop yield.			

7. Groundwater Monitoring

The Permittee shall comply with DEQ's approved Groundwater Monitoring Plan as described in Schedule D.12. Data collected, and submitted shall include but not be limited to the following parameters and minimum frequencies as established in the Groundwater Monitoring Plan. The Groundwater Monitoring Plan may include additional requirements.

Unless otherwise approved by DEQ in writing, the Permittee must conduct groundwater monitoring at the monitoring wells identified in DEQ approved Groundwater Monitoring Plan and reported as follows:

Table B7: Groundwater Monitoring

Item or Parameter	Minimum Frequency	Sample Type	Report
NO ₂ + NO ₃ – N	Quarterly	Grab	Quarterly Value Annual Report
Total Dissolved Solids	Quarterly	Grab	Quarterly Value Annual Report
Sulfate	Quarterly	Grab	Quarterly Value Annual Report
Chloride	Quarterly	Grab	Quarterly Value Annual Report
Conductivity	Quarterly	Field Measurement	Quarterly Value Annual Report
Temperature	Quarterly	Field Measurement	Quarterly Value Annual Report
pH	Quarterly	Field Measurement	Quarterly Value Annual Report
Water Level	Quarterly	Field Measurement	Quarterly Value Annual Report

a. **Quarterly Reporting Requirements**

- i. Quarterly reporting: Analytical results of groundwater shall be reported quarterly in a Department approved format. At a minimum, the report shall contain the quarterly reporting information identified in the approved monitoring plan (Schedule D.12). Reports are due to DEQ by the 15th day of the first full month following the sampling event.

- b. **Annual Data Analysis and Reporting:** An annual data analysis report shall be submitted to DEQ by March 31st following each year of monitoring. The annual report shall contain the annual data analysis and reporting information identified in the approved monitoring plan.

c. **Groundwater Monitoring Resampling Requirements**

- i. If monitoring indicates a significant increase (increase or decrease for pH) in the value of a parameter monitored, the Permittee shall immediately resample. A significant change will be deemed to have occurred for any parameter if the change is not within three standard deviations of the running average for that parameter. If the resampling confirms the change in water quality, the Permittee shall
 - (A) Report the results to DEQ within 10 days of receipt of the laboratory data; and
 - (B) Prepare and submit to DEQ within 30 days a plan for developing a preliminary assessment unless another time schedule is approved by DEQ.

SCHEDULE C: COMPLIANCE SCHEDULE

There is no compliance schedule included in this permit.

SCHEDULE D: SPECIAL CONDITIONS

1. Inflow and Infiltration

The Permittee must submit to DEQ an annual inflow and infiltration report on a DEQ approved form as directed in Table B1. The report must include the following:

- a. An assessment of the facility's I/I issues based on a comparison of summer and winter flows to the plant.
- b. Details of activities performed in the previous year to identify and reduce inflow and infiltration.
- c. Details of activities planned for the following year to identify and reduce inflow and infiltration.
- d. A summary of sanitary sewer overflows that occurred during the previous year. This should include the following: date of the SSO, location, estimated volume, cause, follow-up actions and if performed, the results of receiving stream monitoring.

2. Emergency Response and Public Notification Plan

The Permittee must develop an Emergency Response and Public Notification Plan ("plan"), or ensure the facility's existing plan is current and accurate, per Schedule F, Section B, and Condition 8 within 6 months of permit effective date. The Permittee must update the plan annually to ensure all information contained in the plan, including telephone and email contact information for applicable public agencies, is current and accurate. An updated copy of the plan must be kept on file at the facility for DEQ review. The latest plan revision date must be listed on the plan cover along with the reviewer's initials or signature.

3. Recycled Water Use Plan

In order to distribute recycled water, the Permittee must develop and maintain a DEQ-approved Recycled Water Use Plan meeting the requirements in OAR 340-055-0025. The Permittee must submit this plan or any significant modifications to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to distribution of recycled water. The Permittee is prohibited from distributing recycled water prior to receipt of written approval of its Recycled Water Use Plan from DEQ. The Permittee must keep the plan updated. All plan revisions require written authorization from DEQ and are effective upon Permittee's receipt of DEQ written approval. No significant modifications can be made to a plan for an administratively extended permit (after the permit expiration date). Conditions in the plan are enforceable requirements under this permit. DEQ will provide an opportunity for public review and comment on any significant plan modifications prior to approving or denying. Public review is not required for minor modifications, changes to utilization dates or changes in use within the recycled water class.

4. Exempt Wastewater Reuse at the Treatment System

Recycled water used for landscape irrigation within the property boundary or in-plant processes at the wastewater treatment system is exempt from the requirements of OAR 340-055 if all of the following conditions are met:

- a. The recycled water is an oxidized and disinfected wastewater.
- b. The recycled water is used at the wastewater treatment system site where it is generated or at an auxiliary wastewater or sludge treatment facility that is subject to the same NPDES or WPCF permit as the wastewater treatment system.
- c. Spray and/or drift from the use does not migrate off the site.
- d. Public access to the site is restricted.

5. Wastewater Solids and Biosolids Annual Report

The Permittee must submit a Wastewater Solids and Biosolids Annual Report each year documenting removal of wastewater solids from the facility during the previous calendar year. The permittee must use the DEQ approved wastewater solids and biosolids annual report form. This report must include the volume of material removed and the name of the permitted facility that received the solids.

6. Wastewater Solids Transfers

- a. *Within state.* The permittee may transfer wastewater solids including Class A and Class B biosolids, to another facility permitted to process or dispose of wastewater solids, including but not limited to: another wastewater treatment facility, landfill, or incinerator. The permittee must satisfy the requirements of the receiving facility. The permittee must report the name of the receiving facility and the quantity of material transferred in the wastewater solids annual report identified in Schedule B.
- b. *Out of state.* If wastewater solids, including Class A and Class B biosolids, are transferred out of state for use or disposal, the permittee must obtain written authorization from DEQ, meet Oregon requirements for the use or disposal of wastewater solids, notify in writing the receiving state of the proposed use or disposal of wastewater solids, and satisfy the requirements of the receiving state.

7. Biosolids Management Plan

Prior to distributing biosolids to the public, the Permittee must develop and maintain a Biosolids Management Plan and Land Application Plan meeting the requirements in OAR 340-050-0031. The permittee must submit these plans and any significant modification of these plans to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to removing biosolids from the facility. The permittee must keep the plans updated. All plan revisions require written authorization from DEQ and are effective upon permittee's receipt of DEQ written approval. No significant modifications can be made to a plan for an administratively extended permit (after the permit expiration date). Conditions in the plans are enforceable requirements under this permit.

8. Hauled Waste Control Plan

The Permittee may accept hauled wastes at discharge points designated by the POTW after receiving written DEQ approval of a Hauled Waste Control Plan. Hauled wastes may include wastewater solids from another wastewater treatment facility, septage, grease trap wastes, portable and chemical toilet wastes, landfill leachate, groundwater remediation wastewaters and commercial/industrial wastewaters.

9. Lagoon Solids

By the date listed in Table B1, the Permittee must submit to DEQ a sludge depth survey report. The report must include a comparison of the design sludge depth to the actual sludge depth. If the actual sludge depth exceeds the design sludge depth, the permittee must submit a plan to reduce or remove the sludge. Prior to the removal of accumulated solids from the lagoon, the permittee must submit to DEQ a biosolids management plan as required in conditions 5 and 7 respectively. The permittee must follow the conditions in the approved plan.

10. Operator Certification

- a. Definitions
 - i. "Supervise" means to have full and active responsibility for the daily on site technical operation of a wastewater treatment system or wastewater collection system.
 - ii. "Supervisor" or "designated operator", means the operator delegated authority by the permittee for establishing and executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system in accordance with the policies of the owner of the system and any permit requirements.
 - iii. "Shift Supervisor" means the operator delegated authority by the permittee for executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system when the system is operated on more than one daily shift.
 - iv. "System" includes both the collection system and the treatment systems.
- b. The Permittee must comply with OAR Chapter 340, Division 49, "Regulations Pertaining to Certification of Wastewater System Operator Personnel" and designate a supervisor whose certification corresponds with the classification of the collection and/or treatment system as specified in the DEQ Supervisory Wastewater Operator Status Report. DEQ may revise the permittee's classification in writing at any time to reflect changes in the collection or treatment system. This reclassification is not considered a permit modification and may be made after the permit expiration date provided the permit has been administratively extended by DEQ. If a facility is re-classified, a certified letter will be mailed to the system owner from the DEQ Operator Certification Program. Current system classifications are publicized on the DEQ Supervisory Wastewater Operator Status Report found on the [DEQ Wastewater Operator Certification Homepage](#).
- c. The Permittee's wastewater system may be without the designated supervisor for up to 30 consecutive days if another person who is certified at no more than one grade lower than the classification of the wastewater system supervises. The permittee must delegate authority to this operator to supervise the operation of the system.
- d. If the wastewater system has more than one daily shift, the permittee must have another properly certified operator available to supervise operation of the system. Each shift supervisor must be certified at no more than one grade lower than the system classification.
- e. The Permittee is not required to have a supervisor on site at all times; however, the supervisor must be available to the permittee and operator at all times.
- f. The Permittee must notify DEQ in writing of the name of the system supervisor by completing and submitting the Supervisory Wastewater System Operator Designation Form along with the Delegated Authority form?). The most recent version of this form may be found on the [DEQ Wastewater Operator Certification homepage](#) *NOTE: This form is different from the Delegated Authority form. The permittee may replace or re-designate the system supervisor with another properly certified operator at any time and must notify DEQ in writing within 30 days of replacement or re-designation of the operator in charge. As of this writing, the notice of replacement or re-designation must be sent to Water Quality Division, Operator Certification Program, 700 NE Multnomah St, Suite 600, Portland, OR 97232-4100. This address may be updated in writing by DEQ during the term of this permit.
- g. When compliance with item (e) of this section is not possible or practicable because the system supervisor is not available or the position is vacated unexpectedly, and another certified operator is not qualified to assume supervisory responsibility, the Director may grant a time extension for compliance with the requirements in response to a written request from the system

owner. The Director will not grant an extension longer than 120 days unless the system owner documents the existence of extraordinary circumstances.

11. Industrial User Survey

- a. By the date listed in Table B1, the Permittee must conduct an industrial user survey as described in 40CFR 403.8(f)(2)(i-iii) to determine the presence of any industrial users discharging wastewaters subject to pretreatment and submit a report on the findings to DEQ. The purpose of the survey is to identify whether there are any industrial users discharging to the POTW, and ensure regulatory oversight of these discharges to state waters.
- a. By the date listed in Table B1, the Permittee must conduct an industrial user survey as described in 40CFR 403.8(f)(2)(i-iii) to determine the presence of any industrial users discharging wastewaters subject to pretreatment and submit a report on the findings to DEQ. The purpose of the survey is to identify whether there are any industrial users discharging to the POTW, and ensure regulatory oversight of these discharges to state waters.
- b. Should the DEQ determine that a pretreatment program is required, the permit must be reopened and modified in accordance with 40 CFR 403.8(e)(1) to incorporate a compliance schedule for development of a pretreatment program. The compliance schedule must be developed in accordance with the provisions of 40 CFR 403.12(k), and must not exceed twelve (12) months.

12. Groundwater

a. Groundwater Monitoring Plan

- i. The Permittee must prepare and submit an updated groundwater monitoring plan to DEQ that is specific to the Permittee's proposed land application site as described in the Recycled Water Use Plan. The groundwater monitoring plan must be submitted and approved by DEQ before any modifications are incorporated. The Permittee must implement all conditions of the final DEQ-approved groundwater monitoring plan. The plan must be submitted to DEQ within 60 days of planned irrigation activities.
- ii. This plan will include but not be limited to: Sampling and reporting frequency, Sampling method, Criteria for determining sample is representative of target aquifer, Target analytes and analytical method, Field parameters and instrument calibration, Sample collection quality assurance and quality control, Purge water management, Well construction, Well development, and Well placement.

b. Groundwater Well Management

- i. The Permittee must protect and maintain each groundwater monitoring well such that representative samples of the targeted aquifer can be collected.
- ii. All monitoring well abandonment, replacement, and installation must be conducted in compliance with the Oregon Water Resources Department Rules OAR Chapter 690, Division 240 and with DEQ's Guidelines for Groundwater Monitoring Well Drilling, Construction, and Decommissioning. All monitoring well repair, abandonment, replacement, and installation must be documented in a report prepared by a State of Oregon registered geologist.
- iii. If a monitoring well becomes damaged or inoperable, the Permittee shall notify DEQ in writing within 14 days of discovery. The written report shall describe what has occurred, the remedial measures that have been or will be taken to correct the problem, and the measures taken to prevent its recurrence. DEQ may require the replacement of inoperable monitoring wells.

- iv. New or replacement monitoring well placement or design must be approved by DEQ prior to installation. Well logs and a well completion report must be submitted to DEQ within 30 days of installation of the well. The report must include a survey drawing showing the location of all monitoring wells, adjacent structures and water bodies.
- v. An abandonment plan for existing wells deemed unsuitable for groundwater monitoring must be submitted for Department approval prior to abandonment.

13. Re-opener Clause

This permit may be re-opened and modified to include new or revised discharge limitations, monitoring, or reporting requirements, compliance conditions and schedules, and special conditions. If necessary, DEQ will commence modification of this permit by notifying the Permittee and seeking public comment on the proposed modifications.

14. Lagoon Depth Gauge Installation

- a. The permittee must submit to DEQ a plan for construction and installation of lagoon depth gauges for each cell within 180 days of permit effective date.
- b. Within 180 days of DEQ approval of the installation plan, the permittee must complete installation of lagoon depth gauges for each cell.
- c. Lagoon depth monitoring is required to be reported on the discharge monitoring reports as required by Schedule B within 30 days of installation.

SCHEDULE F: WPCF GENERAL CONDITIONS

SECTION A. STANDARD CONDITIONS

1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and grounds for an enforcement action. Failure to comply is also grounds for DEQ to modify, revoke, or deny renewal of a permit.

2. Property Rights and Other Legal Requirements

Issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other rights, or any infringement of federal, tribal, state, or local laws or regulations.

3. Liability

DEQ or its officers, agents, or employees may not sustain any liability on account of the issuance of this permit or on account of the construction or maintenance of facilities or systems because of this permit.

4. Permit Actions

After notice by DEQ, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including but not limited to the following:

- a. Violation of any term or condition of this permit, any applicable rule or statute, or any order of the Commission;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts.

5. Transfer of Permit

This permit may not be transferred to a third party without prior written approval from DEQ. DEQ may approve transfers where the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of this permit and the rules of the Commission. A transfer application and filing fee must be submitted to DEQ.

6. Permit Fees

The permittee must pay the fees required by Oregon Administrative Rules.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

At all times the permittee must maintain in good working order and properly operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to comply with the terms and conditions of this permit.

2. Standard Operation and Maintenance

All waste collection, control, treatment, and disposal facilities or systems must be operated in a manner consistent with the following:

- a. At all times, all facilities or systems must be operated as efficiently as possible in a manner that will prevent discharges, health hazards, and nuisance conditions.

- b. All screenings, grit, and sludge must be disposed of in a manner approved by DEQ to prevent any pollutant from the materials from reaching waters of the state, creating a public health hazard, or causing a nuisance condition.
- c. Bypassing untreated waste is generally prohibited. Bypassing may not occur without prior written permission from DEQ except where unavoidable to prevent loss of life, personal injury, or severe property damage.

3. Noncompliance and Notification Procedures

If the permittee is unable to comply with conditions of this permit because of surfacing sewage; a breakdown of equipment, facilities or systems; an accident caused by human error or negligence; or any other cause such as an act of nature, the permittee must:

- a. Immediately take action to stop, contain, and clean up the unauthorized discharges and correct the problem.
- b. Immediately notify DEQ's Regional office so that an investigation can be made to evaluate the impact and the corrective actions taken, and to determine any additional action that must be taken.
- c. Within 5 days of the time the permittee becomes aware of the circumstances, the permittee must submit to DEQ a detailed written report describing the breakdown, the actual quantity and quality of waste discharged, corrective action taken, steps taken to prevent a recurrence, and any other pertinent information.

Compliance with these requirements does not relieve the permittee from responsibility to maintain continuous compliance with the conditions of this permit or liability for failure to comply.

4. Wastewater System Personnel

The permittee must provide an adequate operating staff that is duly qualified to carry out the operation, maintenance, and monitoring requirements to assure continuous compliance with the conditions of this permit.

5. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (e.g., public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed under General Condition B.6. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

6. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from overflows, bypasses or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

- a. Ensure that the permittee is aware (to the greatest extent possible) of such events;
- b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
- c. Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;
- d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
- e. Provide emergency operations; and
- f. Ensure that DEQ is notified of the public notification steps taken.

SECTION C. MONITORING AND RECORDS

1. Inspection and Entry

The permittee must at all reasonable times allow authorized representatives of DEQ to:

- a. Enter upon the permittee's premises where a waste source or disposal system is located or where any records are required to be kept under the terms and conditions of this permit;
- b. Have access to and copy any records required by this permit;
- c. Inspect any treatment or disposal system, practices, operations, monitoring equipment, or monitoring method regulated or required by this permit; or
- d. Sample or monitor any substances or permit parameters at any location at reasonable times for the purpose of assuring permit compliance or as otherwise authorized by state law...

2. Averaging of Measurements

Calculations of averages of measurements required for all parameters except bacteria must use an arithmetic mean; bacteria must be averaged as specified in the permit.

3. Monitoring Procedures

Monitoring must be conducted according to test procedures specified in the most recent edition of **Standard Methods for the Examination of Water and Wastewater**, unless other test procedures have been approved in writing by DEQ and specified in this permit.

4. Representative Sampling

Sampling and measurements taken as required herein must be representative of the volume and nature of the monitored discharge when discharging or land applying. Monitoring points must not be changed without notification to and the approval of DEQ.

5. Retention of Records

The permittee must retain records of all monitoring and maintenance information, including all calibrations, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. DEQ may extend this period at any time.

SECTION D. REPORTING REQUIREMENTS

1. Plan Submittal

Pursuant to Oregon Revised Statute 468B.055, unless specifically exempted by rule, construction, installation, or modification of disposal systems, treatment works, or sewerage systems may not commence until plans and specifications are submitted to and approved in writing by DEQ. All construction, installation, or modification shall be in strict conformance with DEQ's written approval of the plans.

2. Change in Discharge

Whenever a facility expansion, production increase, or process modification is expected to result in a change in the character of pollutants to be discharged or in a new or increased discharge that will exceed the conditions of this permit, a new application must be submitted together with the necessary reports, plans, and specifications for the proposed changes. A change may not be made until plans have been approved and a new permit or permit modification has been issued.

3. Signatory Requirements

All applications, reports, or information submitted to DEQ must be signed and certified by the official applicant of record (owner) or authorized designee.

4. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) to DEQ or to the Oregon Emergency Response System (1-800-452-0311) as specified below within 24 hours from the time the permittee becomes aware of the circumstances.

a. Overflows.

Oral Reporting within 24 hours.

- i. For overflows other than basement backups, the following information must be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311. For basement backups, this information should be reported directly to DEQ.

The location of the overflow;

The receiving water (if there is one);

An estimate of the volume of the overflow;

A description of the sewer system component from which the release occurred (e.g., manhole, constructed overflow pipe, crack in pipe); and

The estimated date and time when the overflow began and stopped or will be stopped.

The following information must be reported to DEQ's Regional office within 24 hours, or during normal business hours, whichever is first:

- a) The OERS incident number (if applicable) along with a brief description of the event.

(2) Written reporting within 5 days.

- i. The following information must be provided in writing to DEQ's Regional office within 5 days of the time the permittee becomes aware of the overflow:

a) The OERS incident number (if applicable);

b) The cause or suspected cause of the overflow;

c) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;

d) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps; and

e) (for storm-related overflows) The rainfall intensity (inches/hour) and duration of the storm associated with the overflow.

DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

b. Other instances of noncompliance.

- (1) The following instances of noncompliance must be reported:

- i. Any unanticipated bypass that exceeds any effluent limitation in this permit;
 - ii. Any upset that exceeds any effluent limitation in this permit;
 - iii. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
 - iv. Any noncompliance that may endanger human health or the environment.
- (2) During normal business hours, DEQ's Regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).
- (3) A written submission must be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:
 - i. A description of the noncompliance and its cause;
 - ii. The period of noncompliance, including exact dates and times;
 - iii. The estimated time noncompliance is expected to continue if it has not been corrected;
 - iv. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
 - v. Public notification steps taken, pursuant to General Condition B.6.
- (4) DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

SECTION E. DEFINITIONS

1. *BOD₅* means five-day biochemical oxygen demand.
2. *TSS* means total suspended solids.
3. *FC* means fecal coliform bacteria.
4. *NH₃-N* means Ammonia Nitrogen.
5. *NO₃-N* means Nitrate Nitrogen.
6. *NO₂-N* means Nitrite Nitrogen.
7. *TKN* means Total Kjeldahl Nitrogen.
8. *Cl* means Chloride.
9. *TN* means Total Nitrogen.
10. "*Bacteria*" includes but is not limited to fecal coliform bacteria, total coliform bacteria, and E. coli bacteria.
11. *Total residual chlorine* means combined chlorine forms plus free residual chlorine.
12. *mg/l* means milligrams per liter.
13. *ug/l* means micrograms per liter.
14. *kg* means kilograms.
15. *GPD* means gallons per day.
16. *MGD* means million gallons per day.
17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
18. *Composite sample* means a combination of samples collected, generally at equal flow or time intervals over a 24-hour period.
19. *Week* means a calendar week of Sunday through Saturday.
20. *Month* means a calendar month.
21. *Quarter* means January through March, April through June, July through September, or October through December.

Signature: Shannon Davis
Shannon Davis (Jun 9, 2022 12:40 PDT)

Email: shannon.davis@deq.oregon.gov

102069-PERM-LAPINE20220607

Final Audit Report

2022-06-09

Created:	2022-06-07
By:	Patty Isaak (patty.isaak@deq.oregon.gov)
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-  Document created by Patty Isaak (patty.isaak@deq.oregon.gov)
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-  Agreement completed.
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APPENDIX C
Land Use Compatibility Statement



Land Use Compatibility Statement

What is a Land Use Compatibility Statement?

A LUCS is a form developed by DEQ to determine whether a DEQ permit or approval will be consistent with local government comprehensive plans and land use regulations.

Why is a LUCS required?

DEQ and other state agencies with permitting or approval activities that affect land use are required by Oregon law to be consistent with local comprehensive plans and have a process for determining consistency. DEQ activities affecting land use and the requirement for a LUCS may be found in Oregon Administrative Rules (OAR) Chapter 340, Division 18.

When is a LUCS required?

A LUCS is required for nearly all DEQ permits and certain approvals of plans or related activities that affect land use prior to issuance of a DEQ permit or approval. These permits and activities are listed in section 1.D on p. 2 of this form. A single LUCS can be used if more than one DEQ permit or approval is being applied for concurrently.

Permit modifications or renewals also require a LUCS when any of the following applies:

1. Physical expansion on the property or proposed use of additional land;
2. Alterations, expansions, improvements or changes in method or type of disposal at a solid waste disposal site as described in OAR 340-093-0070(4)(b);
3. A significant increase in discharges to water;
4. A relocation of an outfall outside of the source property; or
5. Any physical change or change of operation of an air pollutant source that results in a net significant emission rate increase as defined in OAR 340-200-0020.

How to complete a LUCS:

Step	Who does it?	What happens?
1.	Applicant	Applicant completes Section 1 of the LUCS and submits it to the appropriate city or county planning office.
2.	City or County Planning Office	City or county planning office completes Section 2 of the LUCS to indicate whether the activity or use is compatible with the acknowledged comprehensive plan and land use regulations, attaches written findings supporting the decision of compatibility, and returns the signed and dated LUCS to the applicant.
3.	Applicant	Applicant submits the completed LUCS and any supporting information provided by the city or county to DEQ along with the DEQ permit application or approval request.

Where to get help:

For questions about the LUCS process, contact the DEQ staff responsible for processing the permit or approval. DEQ staff may be reached at 1-800-452-4011 (toll-free, inside Oregon) or 503-229-5630. For general questions, please contact DEQ land use staff listed on our [Land Use Compatibility Statement page](#) online.

Cultural resources protection laws:

Applicants involved in ground-disturbing activities should be aware of federal and state cultural resources protection laws. ORS 358.920 prohibits the excavation, injury, destruction, or alteration of an archeological site or object or removal of archeological objects from public and private lands without an archeological permit issued by the State Historic Preservation Office. 16 USC 470, Section 106, National Historic Preservation Act of 1966 requires a federal agency, prior to any undertaking, to take into account the effect of the undertaking that is included on or eligible for inclusion in the National Register. For further information, contact the State Historic Preservation Office at 503-378-4168, ext. 232.

Land Use Compatibility Statement

Section 1 – To be completed by the applicant

1A. Applicant Name: City of La Pine, Oregon	1B. Project Name: Recycled Water Use Plan
Contact Name: Geoff Wullschlager, City Manager	Physical Address: New irrigation area east end of Reed Road
Mailing Address: 16345 Sixth St. / P.O. Box 2460	City, State, Zip: La Pine, Oregon 97739
City, State, Zip: La Pine, Oregon 97739	Tax Lot #: 600
Telephone: 541-536-1432	Township: 22 S. Range: 11 E. Section: 7
Tax Account #:	Latitude: 43 deg.40'55.79"N
	Longitude: 121 deg.27'44.36"W

1C. Describe the project, include the type of development, business, or facility and services or products provided (attach additional information if necessary):

Recycled Water Use Plan (RWUP). RWUP required as a condition of the City's renewed WPCF Permit.

1D. Check the type of DEQ permit(s) or approval(s) being applied for at this time.

☐ Air Quality Notice of Construction	☐ Clean Water State Revolving Fund Loan Request
☐ Air Contaminant Discharge Permit	☐ Wastewater/Sewer Construction Plan/ Specifications (includes review of plan changes that require use of new land)
☐ Air Quality Title V Permit	☐ Water Quality NPDES Individual Permit
☐ Air Quality Indirect Source Permit	☒ Water Quality WPCF Individual Permit (for onsite construction-installation permits use the DEQ Onsite LUCS form)
☐ Parking/Traffic Circulation Plan	☐ Water Quality NPDES Stormwater General Permit (1200-A, 1200-C, 1200-CA, 1200-COLS, and 1200-Z)
☐ Solid Waste Land Disposal Site Permit	☐ Water Quality General Permit (all general permits, except 600, 700-PM, 1700-A, and 1700-B when they are mobile)
☐ Solid Waste Treatment Facility Permit	☐ Water Quality 401 Certification for federal permit or license
☐ Solid Waste Composting Facility Permit (includes Anaerobic Digester)	
☐ Conversion Technology Facility Permit	
☐ Solid Waste Letter Authorization Permit	
☐ Solid Waste Material Recovery Facility Permit	
☐ Solid Waste Energy Recovery Facility Permit	
☐ Solid Waste Transfer Station Permit	
☐ Waste Tire Storage Site Permit	
☐ Pollution Control Bond Request	
☐ Hazardous Waste Treatment, Storage or Disposal Permit	

This application is for: ☐ Permit Renewal ☐ New Permit ☐ Permit Modification ☒ Other: Recyled Water Use Plan

Section 2 – To be completed by city or county planning officialApplicant name: **City of La Pine, Oregon**Project name: **Recycled Water Use Plan**

Instructions: Written findings of fact for all local decisions are required; written findings from previous actions are acceptable. For uses allowed outright by the acknowledged comprehensive plan, DEQ will accept written findings in the form of a reference to the specific plan policies, criteria, or standards that were relied upon in rendering the decision with an indication of why the decision is justified based on the plan policies, criteria, or standards.

2A. The project proposal is located: ☒ Inside city limits ☐ Inside UGB ☐ Outside UGB2B. Name of the city or county that has land use jurisdiction (the legal entity responsible for land use decisions for the subject property or land use): **City of La Pine, Oregon**2C. ☒ This project is not within the jurisdiction of any other land use, zoning, or planning entity☐ This project is also within the jurisdiction of the following land use, zoning, or planning entity _____2D. Is the activity allowed under Measure 49 (2007)? ☒ No, Measure 49 is not applicable ☐ Yes, if yes, then check one:☐ Express; approved by DLCD order #:☐ Conditional; approved by DLCD order #:☐ Vested; approved by local government decision or court judgment docket or order #:

2E. Is the activity a composting facility?

☒ No ☐ Yes; Senate Bill 462 (2013) notification requirements have been met.

2F. Is the activity or use compatible with your acknowledged comprehensive plan as required by OAR 660-031?

Please complete this form to address the activity or use for which the applicant is seeking approval (see 1.C on the previous page). If the activity or use is to occur in multiple phases, please ensure that your approval addresses the phases described in 1C. For example, if the applicant's project is described in 1C. as a subdivision and the LUCS indicates that only clearing and grading are allowed outright but does not indicate whether the subdivision is approved, DEQ will delay permit issuance until approval for the subdivision is obtained from the local planning official.

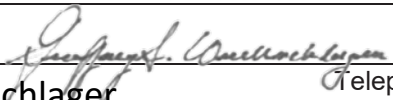
☐ The activity or use is specifically exempt by the acknowledged comprehensive plan; explain:☐ Yes, the activity or use is pre-existing nonconforming use allowed outright by (provide reference for local ordinance):☐ Yes, the activity or use is allowed outright by (provide reference for local ordinance):☐ Yes, the activity or use received preliminary approval that includes requirements to fully comply with local requirements; findings are attached.☒ Yes, the activity or use is allowed; findings are attached.☐ No, see 2D. above, activity or use allowed under Measure 49; findings are attached.☐ No, (complete below or attach findings for noncompliance and identify requirements the applicant must comply with before compatibility can be determined):

Relevant specific plan policies, criteria, or standards:

Provide the reasons for the decision:

Additional comments (attach additional information as needed):

N/A

Planning Official Signature: Title: **City Manager**Print Name: **Geoff Wullschlager**Telephone #: **(541)280-8787**Date: **06/03/2024**

If necessary, depending upon city/county agreement on jurisdiction outside city limits but within UGB:

Planning Official Signature:

Title:

Print Name:

Telephone #:

Date:

Alternative formats

DEQ can provide documents in an alternate format or in a language other than English upon request. Call DEQ at 800-452-4011 or email deqinfo@deq.state.or.us.



Findings – City of La Pine LUCS (Recycled Water Use Plan)

06/03/2024

Comprehensive Plan:

Narrative: The City of La Pine’s Comprehensive Plan directly supports the implementation of a Recycled Water Use Plan (RWUP) as a condition of the WPCF Permit. As the Comprehensive Plan demonstrates, the City endeavors to improve ground water quality through the expansion and modernization of its wastewater system which includes ground application of treated effluent through its STEG (Septic Tank Effluent Gravity) system and associated waste water treatment processes. This support is found in the following two sections of the plan.

Pg. - 47. LPCP

Water Quality Although La Pine has a domestic water system, many residences still utilize wells constructed prior to the establishment of the water system. Some wells are very shallow and draw water from an aquifer that is associated with evidence of contamination in the recent past. Over the past 10 years, through their Regional Problem Solving effort, Deschutes County has found that groundwater in and around the La Pine area is at risk for groundwater contamination due to the amount of nitrates found in samples taken from around the region – the cause it thought to be from the large number of on-site septic systems that discharge to the ground, in combination with the high water table. Typically, wells from shallow sources have shown such evidence of contamination while deeper wells have not. As a result of the concern Deschutes County has worked jointly with the US Environmental Protection Agency, the Oregon Department of Environmental Quality and the US Geological Survey to study, map and find solutions to this problem – this effort is called the La Pine Demonstration Project. Overall, the primary solution to such contamination and the provision of clean water within the urban area will be the expansion of the La Pine Water and Sewer Systems (the water and Sewer Systems are discussed in the Public Facilities and Services Chapter). The local riparian, wetland and flood plain areas within the community are resources that will be enhanced and protected. The interrelationship with other water resources and community health is significant. Thus, the balance between protection and management of growth will be an ongoing effort. Stormwater management is a goal of the City and inventories of street condition and runoff are underway with completion in 2013.

Pp. 64. – 65. LPCP

Public Sewer Systems The City of La Pine does not provide a municipal owned and run sewer system. Rather, the La Pine Sewer District provides collection and treatment to more than 650 customers. The service area includes most, but not all of the area within the City limits.

The District does have plans for expansion of the system to serve all of the urban area, dependent upon adequate funding sources. Their plan identifies existing community needs, necessary capital improvements, funding and implementation,

accommodation of new growth, reduction in septic fields, new connections, and future land needs for the community treatment plant. The City plans to preserve adequate land on the City's east side for an expansion of the La Pine Sewer Districts sewage treatment facility. A goal of the City of La Pine is to have all residences within the City eventually connect to the sewer system, including a requirement for all new construction to connect to the sewer system. Thus, based on the information provided in the La Pine Sewer Page 65 La Pine Comprehensive Plan Adopted 12/12/2018 Districts Capital Facilities Plan, a major expansion will be necessary in order to provide capacity for the anticipated growth. For cost effectiveness and efficiency, expansion on vacant land adjacent to the existing treatment facility will be necessary. For this reason, the City of La Pine and Deschutes County have been working with the BLM to acquire and preserve land (via a land transfer) for such expansion.

Many developed residential lots outside of the City limits and UGB surround the City. It is anticipated that these lots, (more than 3,000) will need to be connected to municipal sewer services. Because La Pine has the closest treatment plant and anticipates obtaining additional lands from the BLM, it is likely that collections lines will need to be extended to the outlying areas. This action, when determined to be needed, may require special approval from the State of Oregon. Note: The City is currently investigating the ways and means of incorporating the water and sewer district into the local government operations.

La Pine Zoning Code:

La Pine Development Code Chapter 15.24 - Industrial and Public Facility Zones

Narrative: The City's current zoning code supports the implementation of a Recycled Water Use Plan (RWUP) as a condition of the WPCF Permit. This is found with the conditional permit use allowed for the application area under Public Facility Zoning, which is evidenced by the following code excerpts, and the associated location as designated on the City's zoning map (attached).

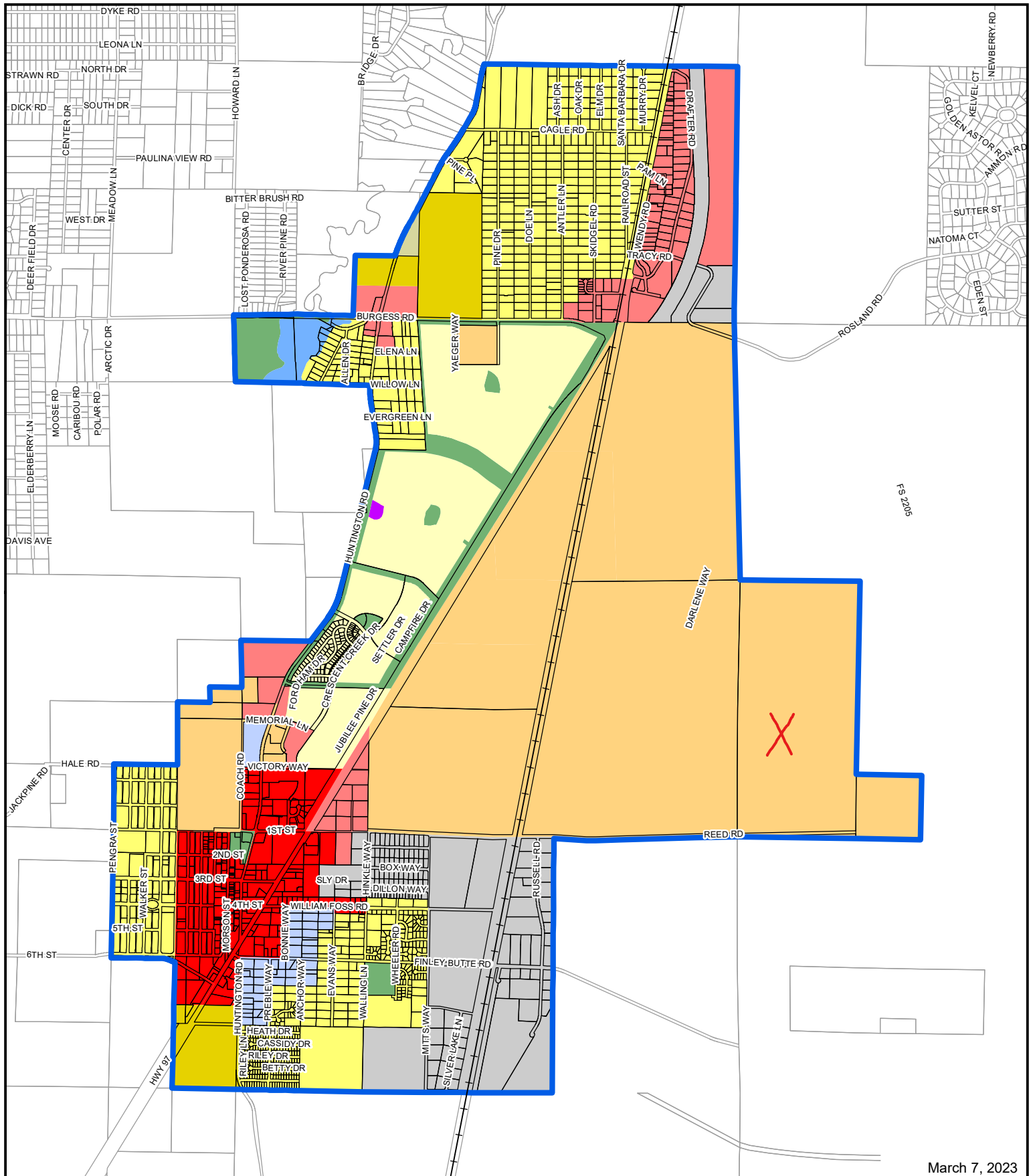
Table 15.24-1.

Industrial Use Categories – Public Facility Zone

- Waste treatment and recycling – Conditional Use Permitted

La Pine Zoning Map (see attached)

City of La Pine - Zoning



March 7, 2023

 Traditional Commercial	 Commercial / Residential Mixed Use	 Master Plan Residential	 Riparian Area - Little Deschutes River
 Mixed Use Commercial	 Public Facility	 Residential Single-Family	 Open Space & Park
 Neighborhood Commercial	 Industrial	 Residential Multi-Family	 Exclusive Farm Use

APPENDIX D
Natural Resources Conservation Service
Custom Soil Resource Report



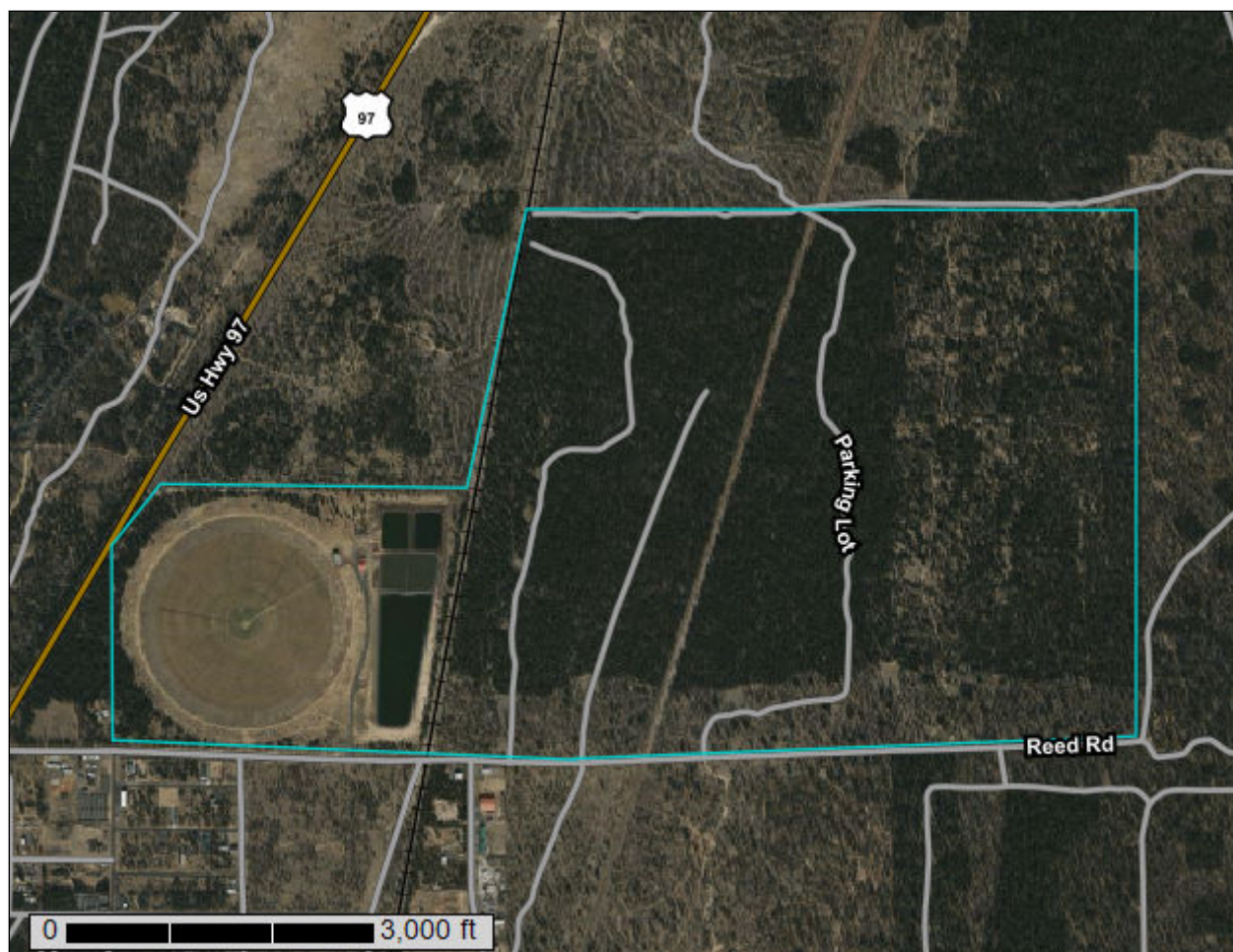
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties
Survey Area Data: Version 21, Sep 8, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 1, 2019—Nov 4, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
114C	Shanahan loamy coarse sand, 0 to 15 percent slopes	154.4	16.0%
115A	Shanahan loamy coarse sand, low, 0 to 3 percent slopes	809.3	84.0%
Totals for Area of Interest		963.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties

114C—Shanahan loamy coarse sand, 0 to 15 percent slopes

Map Unit Setting

National map unit symbol: 23z9

Elevation: 4,500 to 6,000 feet

Mean annual precipitation: 18 to 25 inches

Mean annual air temperature: 40 to 44 degrees F

Frost-free period: 20 to 50 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Shanahan and similar soils: 90 percent

Minor components: 1 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shanahan

Setting

Landform: Lava plains

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Volcanic ash over old alluvium

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

H1 - 1 to 9 inches: loamy coarse sand

H2 - 9 to 14 inches: gravelly loamy coarse sand

H3 - 14 to 21 inches: coarse sand

H4 - 21 to 27 inches: loamy coarse sand

H5 - 27 to 38 inches: sandy loam

H6 - 38 to 45 inches: gravelly sandy loam

H7 - 45 to 62 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: F006XY712OR - Cryic Xeric Pumice Uplands 18-25 PZ

Hydric soil rating: No

Minor Components

Cryaquolls

Percent of map unit: 1 percent

Landform: Terraces

Ecological site: R006XB102OR - COLD WET MEADOW

Hydric soil rating: Yes

115A—Shanahan loamy coarse sand, low, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 23zd

Elevation: 4,000 to 4,500 feet

Mean annual precipitation: 18 to 25 inches

Mean annual air temperature: 40 to 44 degrees F

Frost-free period: 10 to 30 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Shanahan, low, and similar soils: 90 percent

Minor components: 1 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shanahan, Low

Setting

Landform: Lava plains

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Volcanic ash over old alluvium

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

H1 - 1 to 9 inches: loamy coarse sand

H2 - 9 to 14 inches: gravelly loamy coarse sand

H3 - 14 to 21 inches: coarse sand

H4 - 21 to 27 inches: loamy coarse sand

H5 - 27 to 38 inches: sandy loam

H6 - 38 to 45 inches: gravelly sandy loam

H7 - 45 to 62 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches

Custom Soil Resource Report

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: F006XY718OR - Cryic Xeric Pumice Basins 18-25 PZ

Hydric soil rating: No

Minor Components

Cryaquolls

Percent of map unit: 1 percent

Landform: Terraces

Ecological site: R006XB102OR - COLD WET MEADOW

Hydric soil rating: Yes

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APPENDIX E
Efficient Irrigation of Perennial Forages with
Wheel Lines in the Pacific Northwest

Efficient Irrigation of Perennial Forages with Wheel Lines in the Pacific Northwest

Ian McGregor, María Isabel Zamora Re, Gordon B. Jones and Troy Peters

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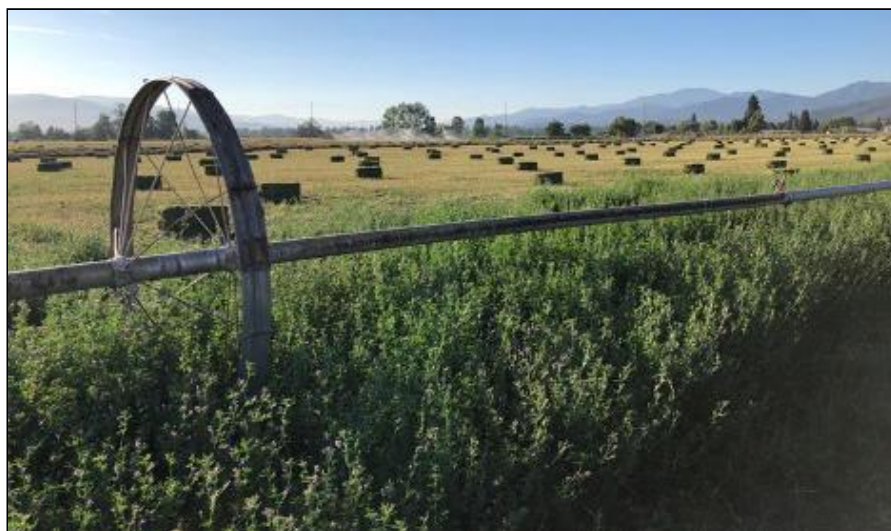
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Wheel lines are commonly used to irrigate forages in the Pacific Northwest.

Credit: Gordon Jones, © Oregon State University

Introduction

Forage-based industries are essential to food supply and local economies across the Pacific Northwest. Wheel lines are commonly used to irrigate forages in the Pacific Northwest. A substantial decline in snowpack levels in the western United States will force many agricultural irrigators to work with a less-than-ideal water supply and use water-efficient strategies to maintain satisfactory production levels. Aside from the water shortage, irrigators should consider how mismanaged irrigation can reduce profits. Every gallon of water pumped results in higher energy bills. Mismanaged irrigation is also likely to prevent crops from reaching their optimal yields, encourage nutrient leaching and runoff, and lead to a less-than-optimal cost-to-return ratio. Managing water resources efficiently greatly benefits irrigators and other community water users.

Wheel lines consist of moveable irrigation systems, usually stationary for 12- or 24-hour sets. These systems have unique management challenges. It can take several days to water an entire field. Irrigators must consider the rate at

which moisture is depleted from the soil and the rate at which the wheel line applies water across the field. These considerations determine optimal irrigation set times, how many wheel lines are needed to adequately irrigate a field, and an irrigation schedule throughout the growing season. This publication provides step-by-step guidance to help irrigators design an irrigation program tailored to their scenario, as well as other general tips for enhancing wheel-line irrigation efficiency.

Terminology

Saturation: Soil water status in which the soil pore spaces are filled with water. Excess water is lost through drainage.

Field capacity (FC): After a rainfall or irrigation event, soil water status in which the excess water has drained and the rate of downward water movement has decreased.

Permanent wilting point (PWP): Soil water status in which the water is no longer available for plant uptake.

Available water: Total amount of water that can be stored in a soil profile, typically defined as the range between FC and the PWP.

Maximum allowable depletion (MAD): The amount of water (in percentage) that can be depleted before irrigation is required to prevent crop water stress. This value varies across crops and crop growth stages.

Soil water holding capacity (SWHC): The amount of water that can fit into the soil profile before runoff occurs.



Illustration of saturation, field capacity and permanent wilting point.

Credit: Maria Zamora Re, © Oregon State University

Irrigation application rate: step-by-step calculations

Each irrigation event should apply enough water to prevent crop water stress until the next irrigation event while minimizing water loss through deep percolation. In other words, irrigators must maintain soil moisture levels between maximum allowable depletion (MAD) and field capacity (FC).

To do this:

Step 1. Determine the rate at which your wheel line can apply water (measured in inches per hour or inches per set).

Step 2. Determine how many inches of water the soil can hold in the rooting depth of the forage crop (soil water holding capacity, or SWHC).

Step 3. Determine how much water (measured in inches per day) is pulled out of the soil (transpired) each day by the forage crop based on values from a nearby AgriMet weather station.

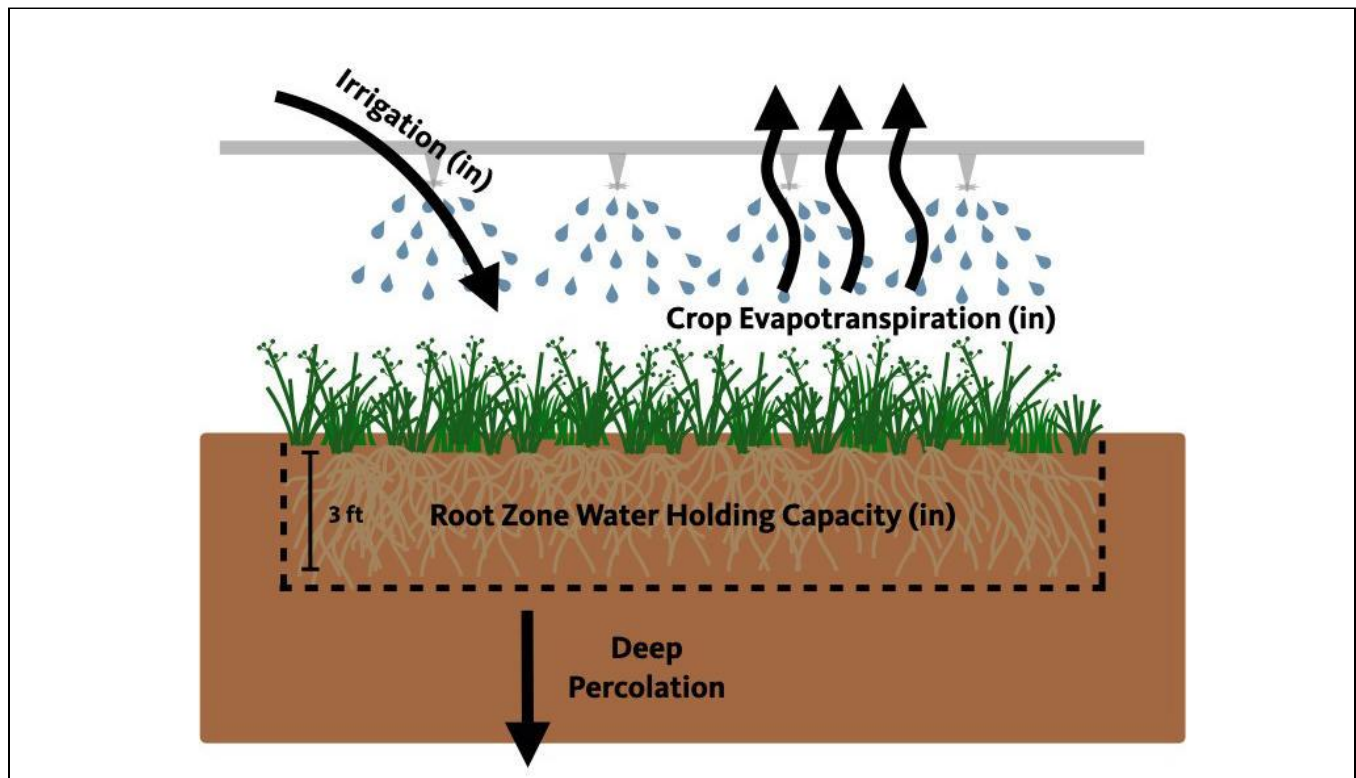


Figure 1. Irrigation management can be simplified into three basic values: irrigation application rate (inches/hour), water holding capacity within the root zone (inches) and crop evapotranspiration (inches/day). These three values can determine how much water should be applied to meet the crop needs without excess water being lost through deep percolation beyond the root zone.

Note: Stand-alone calculations can be found in Appendix A.

Credit: Gordon Jones, © Oregon State University

Step 1: Determine the rate at which your wheel line can apply water

1A: Calculate the amount of water (in gallons) applied per irrigation set: Fixed run times for wheel lines are typically 12 or 24 hours. The goal in selecting a run time is to time your wheel-line positioning so that the amount of water the soil profile can hold is similar to what your irrigation system can apply in a 12- or 24-hour set. In other words, the goal is to reach *field capacity* in a fixed irrigation time. Field capacity occurs when the soil holds as much moisture as it can after drainage ceases following an irrigation or rainfall event. If the sprinklers on a wheel line apply water at a rate of 6 gallons per minute (GPM), the amount of water leaving the sprinklers for a 12- and 24-hour set can be calculated:

Sprinkler water application rate in GPM x minutes in an hour = gallons applied in an hour per sprinkler

6 GPM x 60 minutes/hour = 360 gallons applied per hour per sprinkler

360 gallons/hour x 12 hours = 4,320 gallons applied per sprinkler in a 12-hour set

360 gallons/hour x 24 hours = 8,640 gallons applied per sprinkler in a 24-hour set

The impact of leaks

The picture on the right shows a leak in a wheel line that was leaking at a rate of 8 gallons per minute (130% the flow rate of a normal 6-gallon-per-minute sprinkler). This means you have to compensate for this leak by pumping more water. See the example below.

Five-sprinkler wheel line:

We account for 5 sprinklers on this line

$$1 + 1 + 1 + 1 + 1 = 5$$

With the leak, we now have to pump enough water for 6.3 sprinklers to apply the water we wanted with 5 sprinklers

$$1 + 1 + 1 + 1 + 1 + 1.3 = 6.3$$

We must pump an extra 26% water to account for the leak.

$$6.3 \div 5 = 1.26$$



A leaking wheel line.

Credit: Ian McGregor, © Oregon State University

1B: Determine how much water is being applied, considering wheel-line inefficiencies: Given the nature of wheel-line sprinklers, water droplets spend a considerable amount of time in the air after leaving the sprinkler. Water droplets suspended in the air are susceptible to evaporation and wind drift. It has been estimated that wheel-line irrigation system efficiency is between 60% to 75%, with 70% generally used as a season-long average. This means that only 70% of the water leaving the sprinkler of the wheel line is making it to the ground. Therefore, only 3,024 gallons of water are efficiently applied with a 12-hour set, and 6,048 gallons of water are efficiently applied with a 24-hour set, using the previous example with sprinklers that run at 6 GPM.

1C: Convert the total amount of water applied (in gallons) to inches by considering the area where sprinklers apply water: If risers from the main line are 48 feet apart, then the wheel line is responsible for irrigating 24 feet on both sides of the wheel line at any given position. If sprinklers on the wheel line are 30 feet apart, each sprinkler would be responsible for irrigating 15 feet on either side of the sprinkler laterally along the wheel line. The area the wheel line is responsible for irrigating can be calculated by:

Sprinkler application area = length x width

$(15 \text{ feet} + 15 \text{ feet})(24 \text{ feet} + 24 \text{ feet})$

$(30 \text{ feet})(48 \text{ feet})$

$30 \text{ feet} \times 48 \text{ feet} = 1,440 \text{ square feet}$

The area an individual wheel-line sprinkler is responsible for applying water to is 1,440 square feet. Since there are 144 square inches in a square foot, one wheel-line sprinkler applies water to 207,360 square inches. Since a gallon of water is 231 cubic inches of water, it would take 898 gallons of water to apply 1 inch of water to this area.

This means that in a 12-hour set, considering the previous example, an individual sprinkler applies 3.4 inches of water to the ground and 6.8 inches in a 24-hour set.

Another option for determining wheel-line application rates is a direct measurement using catch cans (Figure 2). This approach requires a few empty cans and a ruler. Place several straight-walled cans (empty soup, tuna or coffee cans work well; select one type) underneath your wheel line, with the cans centered between two sprinklers. Ensure the cans are level and the crop canopy will not intercept the irrigation water. Back the wheel line up to the previous riser and run the system for an hour. Move the wheel line back over the catch cans and run the system in that position for another hour. Finally, move the wheel line to one riser beyond the catch cans and run for a third hour. Now measure the water depth per can and find the average depth. Multiply this average application rate by your set time to determine inches of irrigation application.



Figure 2. Grid of catch cans.

Credit: Rob Wilson, © University of California, Davis

A local Natural Resource Conservation Service or Soil and Water Conservation District office can help determine your wheel line's application rate.

Step 2: Determine how much water the soil can hold within the rooting depth of forages (soil water-holding capacity, or SWHC)

The effective rooting depth for most established perennial forage grasses is approximately 3 feet. However, alfalfa is a noteworthy outlier, with rooting depth often exceeding 5 feet. Sometimes, if the soil is shallow or a hardpan is present, the rooting depth might be less than 3 feet. For this article, a 3-foot rooting depth is used, but beware of the various parameters in your pasture or hayfield that warrant using a number more or less than 3 for your own irrigation calculations. To find out where the bulk of the crop roots are, dig a hole using a backhoe or shovel and see how deep most of your forage roots extend into the soil.

2A: Determine the total available water in your soil: Soil texture — the proportion of sand, silt and clay — determines how much water your soil can hold (Table 1). Larger soil particles, like sand, have less surface area on which water can cling than silt and clay. For this example, we assume the soil is sandy loam holding roughly 2 inches of water per foot of soil. If we have a rooting depth of 3 feet, and the soil can hold 2 inches per foot of soil depth, then we can calculate how much water the soil can hold for forage roots to access.

$$\text{Total Available Water (in)} = \text{SWHC} \left(\frac{\text{inches of water}}{\text{ft of soil}} \right) * \text{Effective root zone (ft of soil)}$$

$$\text{Total Available Water} = \frac{2 \text{ inches of water}}{1 \text{ ft soil}} * 3 \text{ ft soil}$$

$$\text{Total Available Water} = 6 \text{ inches of water}$$

The formula for calculating how much water the soil can hold and that forage roots have access to.

Credit: Ian McGregor, © Oregon State University

Table 1. Average water holding capacity per 1 foot of root zone depth (assuming uniform soil properties throughout the profile)

Table 1. Average water holding capacity per 1 foot of root zone depth (assuming uniform soil properties throughout the profile).	
Soil type	Average soil water holding capacity (inches/foot)
Sand	1
Sandy loam	1.8
Silt loam	2.2–2.5
Clay	2.2

Source: [Pasture and Grazing Management in the Northwest](https://catalog.extension.oregonstate.edu/pnw614) (<https://catalog.extension.oregonstate.edu/pnw614>) (PNW 614).

2B: Determine the Maximum Allowable Depletion (MAD): Not all the water in the soil profile is available to plant roots for absorption. A portion of water is so tightly held by the soil that crop plants can't use it without slowing growth. Generally, when soil water content drops below 50% of capacity, forages have difficulty taking up the remaining water. Growth slows and yields drop. The point at which roots can no longer draw water from the soil profile is referred to as the *permanent wilting point*. Maximum allowable depletion is the maximum amount of moisture the soil can lose without affecting growth or yield. In forages, 50% MAD is generally used to avoid water stress. Since the 3 feet of fine sandy loam soil can hold 6 inches of water, the maximum allowable depletion in this scenario would be 3 inches. [AgriMet evapotranspiration data \(https://www.usbr.gov/pn/agrimet/etsummary.html\)](https://www.usbr.gov/pn/agrimet/etsummary.html) can be used to ensure that soil water depletion does not exceed 3 inches between irrigation events. Use a soil map to determine your soil's texture. The [NRCS Web Soil Survey \(https://websoilsurvey.sc.egov.usda.gov/\)](https://websoilsurvey.sc.egov.usda.gov/) can determine the water-holding capacity of soils on your farm or ranch.

Step 3: Use AgriMet crop water-use data to determine when your crop needs irrigation. This information can also help determine set times or if you need to buy another wheel line, etc.

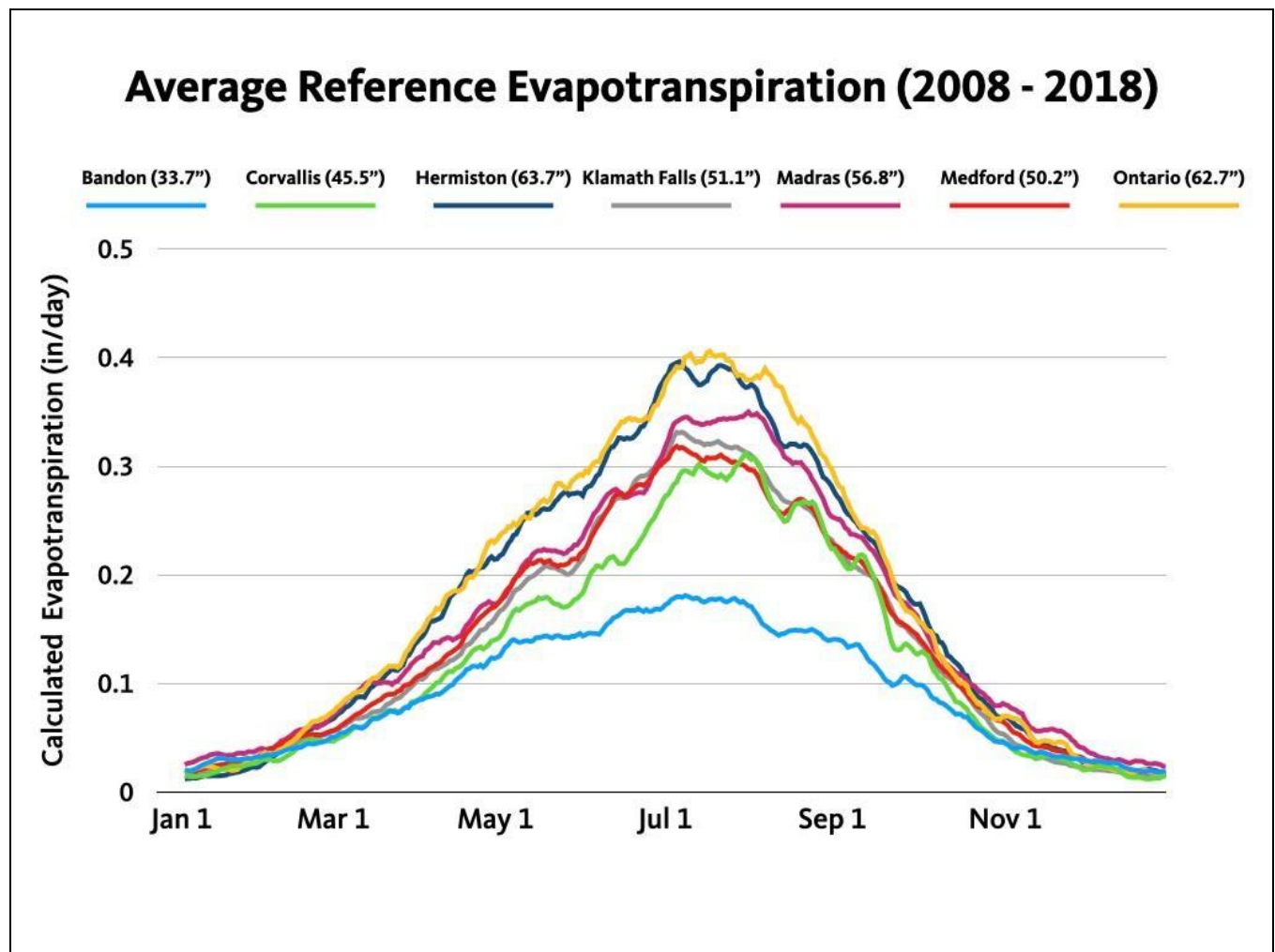


Figure 3. Ten-year average seasonal Kimberly-Penman evapotranspiration patterns for seven sites in Oregon. These reference evapotranspiration values are converted through crop coefficients to determine water use for specific crops like pasture or alfalfa. Data from Bureau of Reclamation.

Credit: Gordon Jones, © Oregon State University

Evapotranspiration measures water losses through evaporation from the soil and plant surfaces and the transpiration of the plants. Evapotranspiration varies from place to place and day to day depending on the amount of solar radiation, temperature, humidity, wind speed and other weather and management factors. Figure 4 shows a screenshot of the reference evapotranspiration (ET_r) and crop evapotranspiration estimates for pastures (ET_c ; PAST) obtained from an AgriMet station in Klamath Falls, Oregon. For pasture or forage managers, this crop evapotranspiration number would be the preferred data for practical applications. The red square highlights the daily crop evapotranspiration for 14 days (period of July 10 to July 23), which adds up to 3.31 inches, close to the 3.4 inches that can be applied in a 12-hour set from our previous example. This means that for 12-hour irrigation sets, one wheel line would be needed for every 14 risers because this is how long it takes for the amount of water that can be applied in 12 hours to transpire from the soil following an irrigation event. The green box in Figure 4 shows daily evapotranspiration for 28 days (period from July 10 to Aug.6), which adds up to 6.74 inches, which is close to the 6.8 inches that can be applied in a 24-hour set from our previous example. This means that for 24-hour irrigation sets, one wheel line would be needed for every 28 risers.

Considering the example in steps 1 and 2, 12-hour sets would be preferable. Twelve-hour sets would prevent soil moisture from decreasing below the maximum allowable depletion. Soils with higher water-holding capacities may warrant 24-hour sets. If 24-hour sets are preferable, consider replacing nozzles with ones with a slower application rate, such as 3 GPM. A longer set time could be used to save on labor.

DATE	ET_r	ALFP	ALFM	PAST
07/10	0.34	0.34	0.29	0.23
07/11	0.41	0.41	0.35	0.28
07/12	0.39	0.39	0.33	0.27
07/13	0.34	0.34	0.29	0.23
07/14	0.32	0.32	0.27	0.22
07/15	0.33	0.33	0.28	0.22
07/16	0.34	0.34	0.29	0.23
07/17	0.34	0.34	0.29	0.23
07/18	0.34	0.34	0.29	0.23
07/19	0.35	0.35	0.30	0.24
07/20	0.34	0.34	0.29	0.23
07/21	0.33	0.33	0.28	0.22
07/22	0.36	0.36	0.31	0.24
07/23	0.36	0.36	0.31	0.24
07/24	0.44	0.44	0.37	0.30
07/25	0.44	0.44	0.37	0.30
07/26	0.35	0.35	0.30	0.24
07/27	0.42	0.42	0.36	0.29
07/28	0.42	0.42	0.36	0.29
07/29	0.48	0.48	0.41	0.33
07/30	0.39	0.39	0.33	0.27
07/31	0.32	0.32	0.27	0.22
08/01	0.28	0.28	0.24	0.19
08/02	0.23	0.23	0.20	0.16
08/03	0.31	0.31	0.26	0.21
08/04	0.35	0.35	0.30	0.24
08/05	0.30	0.30	0.26	0.20
08/06	0.28	0.28	0.24	0.19
08/07	0.37	0.37	0.31	0.25
08/08	0.36	0.36	0.31	0.24
08/09	0.34	0.34	0.29	0.23
08/10	0.40	0.40	0.34	0.27

Figure 4: Example of AgriMet crop water use output data.

Credit: Ian McGregor, © Oregon State University

Given the choice between more frequent, shorter irrigation sets versus less frequent, longer irrigation sets, the less frequent irrigation sets would offer additional water savings. For every individual irrigation event, around 0.1 in of water is lost through evaporation from the forage canopy and never infiltrates the soil.

Historical AgriMet crop evapotranspiration rates (ET_c) reveal the maximum daily pasture ET_c rates during July and August, usually the months with peak evaporative demand. In Klamath Falls, ET_c rates as high as 0.3 inches per day have been recorded. If the wheel line can only apply 3.4 inches in a 12-hour set, that would cover 11 days of 0.3 inches of daily ET_c . This means that one wheel line would be needed for every 11 risers to prepare for several days of peak ET_c . Different sprinkler nozzle sizes might apply more or less water in a set such that the water applied is closer to the maximum recommended depletion.

Soil moisture sensors can help set an irrigation schedule. Place a sensor at the bottom of the rooting zone, then turn on the irrigation and time how long it takes for a soil moisture reading. This would perhaps give you a better idea of how long your irrigation sets should be with your specific soil. Also, this would tell you what your soil moisture sensor reading looks like at field capacity, which can be split in half to determine your maximum allowable depletion.

Management considerations to promote efficiency

Aside from tracking soil moisture depletion and properly timing irrigation events, ensuring application uniformity is another important consideration. In underirrigated areas, crop growth is limited and can lead to an accumulation of nitrates. However, trying to irrigate the underirrigated areas to a point of satisfactory production means that the other parts of the field are being excessively irrigated, which may result in nutrient leaching below the root zone and a higher potential for disease. Make sure the sprinklers are as level as possible. It may be worth buying sprinkler levelers (Figure 5).

Insufficient uniformity can become visually apparent (Figure 6). However, evaluating your system for uniform water application at the beginning of the growing season and in between cuttings could help improve crop water use efficiency, improve forage quality and reduce the visual evidence of non-uniform irrigation applications.

You can also use a grid of straight-walled cans to measure water application uniformity. The distance between catch cans within this grid should be no more than 10% of the water application radius of the sprinklers. (If sprinklers throw water 50 feet, the catch can distance should be equal to or less than 5 feet.) Run the wheel line for an hour at the riser before the catch cans, then run the wheel line directly over the catch cans for an hour, then run the wheel line for an hour at the riser after the catch cans. Measure the water depth (for example, using a graduated cylinder or a ruler) in each catch can and compare those measurements across catch cans to identify differences that may indicate insufficient uniformity.



Figure 5. A sprinkler with a leveler (the red part the nozzle is attached to).

Credit: Ian McGregor, © Oregon State University



Figure 6. Visual evidence of uneven irrigation distribution.

Credit: Troy Peters, © Washington State University

The publication [Determining the Application Uniformity of an Irrigation System](https://horticulture.oregonstate.edu/sites/agscid7/files/horticulture/osu-nursery-greenhouse-and-christmas-trees/measure_uniformity.pdf) (https://horticulture.oregonstate.edu/sites/agscid7/files/horticulture/osu-nursery-greenhouse-and-christmas-trees/measure_uniformity.pdf) discusses some calculations that allow the irrigator to quantify uniformity. When using Christiansen's Coefficient of Uniformity (discussed in the aforementioned publication), coefficient values less than 83% indicate poor uniformity.

The uniformity of wheel-line applications is affected by the patterns for moving wheel lines across a field. There are three general patterns for moving wheel lines across a field: TAXI, WIPE and SKIP (Figure 7). These patterns also involve human factors and labor constraints that might reduce optimal irrigation scheduling.

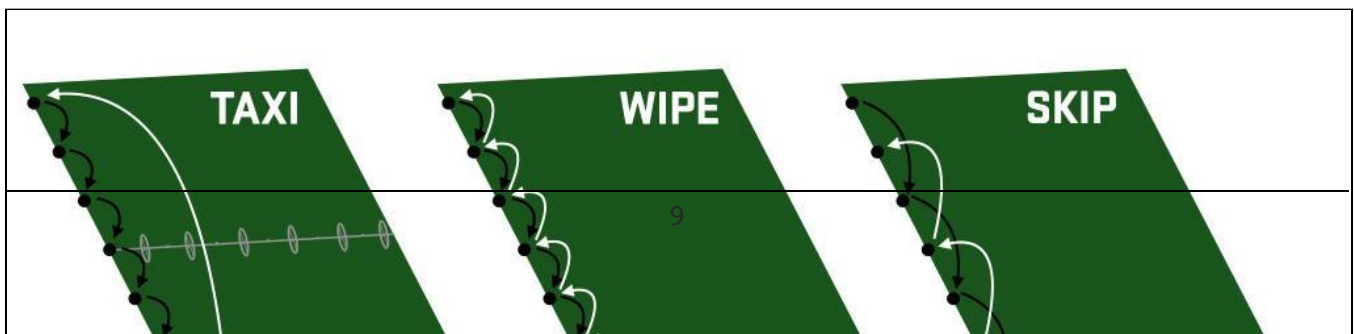


Figure 7. Three wheel-line moving patterns across a field. Each pattern has tradeoffs in terms of water distribution uniformity and labor requirements.

Credit: Troy Peters, © Washington State University

The TAXI pattern involves irrigating at each riser down the field's length and then transporting (like a taxi) the line back to its original position before starting another irrigation cycle. The TAXI pattern is the best choice for water application uniformity. However, it requires more labor on the day the line has to be moved back to its starting position. The TAXI pattern is recommended when irrigators want to optimize water use and maximize forage production.

The WIPE pattern involves irrigating at each riser in one direction down the field and then returning to each riser in the opposite direction. The WIPE pattern saves on labor but produces poor water distribution uniformity and variable return intervals. It is *not* recommended because some parts of the field will always be over-watered while others will be water stressed. This may result in nutrient leaching and in reductions in growth and yield.

The SKIP pattern involves irrigating at every other riser down one direction of the field, then irrigating at the risers that were skipped in the opposite direction down the field. The SKIP pattern involves a similar level of labor as WIPE and would appear to provide better water application uniformity. The SKIP pattern can offer an acceptable compromise between TAXI and WIPE, allowing for better soil moisture depletion and making over-irrigation less likely while reducing the need for the long return trip associated with the TAXI pattern. However, many growers have had poor experiences with the SKIP pattern, as variable winds from day to day can affect uniformity.

When the irrigation water supply is scarce, ensure you manage your wheel line efficiently. These suggestions can help you maximize forage production while ensuring optimal water use.

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Appendix A

Step 1: Determine the rate at which your wheel line can apply water

1A: Determine the individual sprinkler water application rate at which your wheel line can apply water based on your hour sets (12 or 24 hours)

Sprinkler flow rate of 6 GPM x 60 minutes in an hour

= 360 gallons applied per hour, per sprinkler

360 GPH x 12 hours = 4,320 gallons applied per sprinkler in a 12-hour set

360 GPH x 24 hours = 8,640 gallons applied per sprinkler in a 24-hour set

1B: Determine how much water actually reaches the soil. Wheel lines are roughly 70% efficient.

4,320 gallons x 0.7 = 3,024 gallons applied in a 12-hour set

8,640 gal x 0.7 = 6,048 gallons applied in a 24-hour set

1C: Convert gallons of water applied to inches of water applied.

Find the area for each sprinkler. We assume that the water leaving each sprinkler's area is equivalent to the water entering from the neighboring sprinkler or in a following or previous set.

Sprinkler application area = length x width

(15 feet + 15 feet)(24 feet + 24 feet)

(30 feet)(48 feet)

30 feet x 48 feet = 1,440 square feet

The sprinkler in this scenario covers 1,440 square feet

Convert to inches

1 foot = 12 inches

12 inches x 12 inches = 144 square inches (in²) in 1 square foot (ft²)

144 in²/ft² x 1,440 ft² = 207,360 in²

This sprinkler applies water to 207,360 square inches.

The volume of a gallon of water is 231 cubic inches (in³).

207,360 in² ÷ 231 in³/gal = 898 gal/in

It would take 898 gallons to apply 1 inch of water with this sprinkler.

3,024 gal ÷ 898 gal/in = 3.4 inches of water applied in 12-hour set

6,048 gal ÷ 898 gal/in = 6.8 inches of water applied in 24-hour set

Step 2:

2A: Determine how much water the soil can hold within the rooting depth of forages.

Soil rooting depth = 3 feet

Water holding capacity of fine sandy loam = 2 inches per foot

$$\text{Total Available Water (in)} = \text{SWHC} \left(\frac{\text{inches of water}}{\text{ft of soil}} \right) * \text{Effective root zone (ft of soil)}$$

$$\text{Total Available Water} = \frac{2 \text{ inches of water}}{1 \text{ ft soil}} * 3 \text{ ft soil}$$

$$\text{Total Available Water} = 6 \text{ inches of water}$$

The formula for calculating how much water the soil can hold and that forage roots have access to.

Credit: Ian McGregor, © Oregon State University

2B: Determine the 'maximum allowable depletion' to avoid permanent wilting point.

6 inches of water x 0.5 = 3 inches

Step 3: Track Agrimet to determine proper set times and if another wheel line may be needed to ensure the proper irrigation of forages

With the maximum allowable depletion set at 3 inches, we only want to allow 3 inches of water to become depleted from the soil. We then can apply just over 3 inches in a 12-hour set. Calculations start with the soil being saturated, and subtract daily Agrimet evapotranspiration rates from there. Use Figure 4 from Step 3 of the article.

The table below represents a field being irrigated by a wheel line, stopping to irrigate at each riser. Once the wheel line moves to the next riser, the irrigated area is at field capacity, and evapotranspiration begins. These numbers are found in the Agrimet data listed in Figure 4 from the main article. Once the cumulative evapotranspiration number reaches the predetermined value for maximum allowable depletion, the wheel line must return to this riser to irrigate before the forage in that area experiences drought stress. In this example, the maximum allowable depletion was reached after 13 days.

Riser #	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13
1	0.23	0.28	0.27	0.23	0.22	0.22	0.23	0.23	0.23	0.24	0.23	0.22	0.24
cum. evapotranspiration		0.51	0.78	1.01	1.23	1.45	1.68	1.91	2.14	2.38	2.61	2.83	3.07 > MAD
2		0.28	0.27	0.23	0.22	0.22	0.23	0.23	0.23	0.24	0.23	0.22	0.24
cum. evapotranspiration			0.55	0.78	1	1.22	1.45	1.68	1.91	2.15	2.38	2.60	2.84
3			0.27	0.23	0.22	0.22	0.23	0.23	0.23	0.24	0.23	0.22	0.24
cum. evapotranspiration				0.50	0.72	0.94	1.17	1.40	1.63	1.87	2.10	2.32	2.56
4				0.23	0.22	0.22	0.23	0.23	0.23	0.24	0.23	0.22	0.24
cum. evapotranspiration					0.45	0.67	0.90	1.13	1.36	1.60	1.83	2.05	2.29
5					0.22	0.22	0.23	0.23	0.23	0.24	0.23	0.22	0.24
cum. evapotranspiration						0.44	0.67	0.90	1.13	1.37	1.60	1.82	2.06
6						0.22	0.23	0.23	0.23	0.24	0.23	0.22	0.24
cum. evapotranspiration							0.45	0.68	0.91	1.15	1.38	1.60	1.84
7							0.23	0.23	0.23	0.24	0.23	0.22	0.24
cum. evapotranspiration								0.46	0.69	0.93	1.16	1.38	1.62
8								0.23	0.23	0.24	0.23	0.22	0.24

The table represents a field irrigated by a wheel line, stopping to irrigate at each riser.

Credit: Ian McGregor, © Oregon State University

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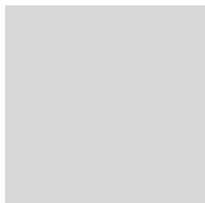
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APPENDIX F

Oregon Crop Water Use and Irrigation Requirements

Oregon Crop Water Use and Irrigation Requirements



Water Resources Engineering Team, Department of Bioresource Engineering,
Agricultural Experiment Station, and OSU Extension Service, Oregon State University;
Diputación General de Aragón, Servicio de Investigación Agraria, Zaragoza, España (Spain);
U.S. Department of Agriculture, Office of International Cooperation and Development; and
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OREGON CROP WATER USE AND IRRIGATION REQUIREMENTS

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June 1992

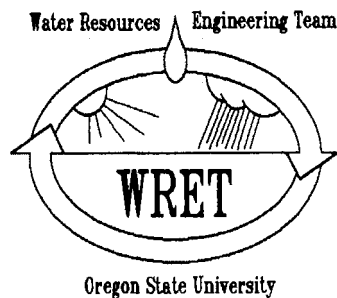


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The Office of International Cooperation and Development of the United States Department of Agriculture and the Oregon State University (OSU) Agricultural Experiment Station provided major support for this work through a cooperative project. This project brought together principal investigators from Oregon State University and the Diputación General de Aragón in northeast Spain to study crop water requirement estimating methods. As a result, we decided to revise the irrigation recommendations for Oregon and Aragón province in Spain. This report is the result of that study.

Valuable assistance was provided by Kelly Redmond, former Oregon State Climatologist and Clint Jensen of the U.S. Weather Service in Portland, Oregon. The Oregon State Water Resources Department made a significant contribution to publication costs.

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1 INTRODUCTION

1.1 CONSUMPTIVE USE

The *hydrologic cycle* describes the movement of water on, above, and below the surface of the Earth. The two major components of the hydrologic cycle on a continental scale are precipitation and *evapotranspiration*, the combined process of evaporation and transpiration. *Evaporation* can occur from wet leaf or soil surfaces, as after a rainfall, as well as from water surfaces. *Transpiration* is the term used to describe water movement in plants starting from the root zone, through the root system, up the plant stem, to the leaves, and finally into the atmosphere through small pores in the leaves. The combination of evaporation and transpiration is termed evapotranspiration (ET). *Reference Evapotranspiration* has become a commonly used term to describe the rate of ET from a green grass cover of uniform height in well-watered condition which is disease and weed free. In this case, the grass cover is termed the reference crop. Rates of reference evapotranspiration are related to a number of meteorological variables such as air temperature, solar radiation, relative humidity, and wind speed.

Reference evapotranspiration (ET_{ref}) at a location or region is used to determine the water requirements of various crops. The water requirement is calculated by multiplying ET_{ref} by a crop factor (K_c) to relate the reference value to the evapotranspiration of a particular crop. The result is termed ET_{crop} and is also called the *consumptive use* or *crop water requirement*. ET_{crop} describes the water requirement of the crop itself and must be adjusted for on-farm irrigation efficiency to determine the amount of water that needs to be delivered to the field.

Estimates of evapotranspiration are critical for irrigation system design, determination of the net irrigation requirements for a crop, and irrigation management. They are also vital to engineers, planners, and others involved in water resources management and policy decisions.

1.2 NET IRRIGATION REQUIREMENTS

The net irrigation requirement of a crop is the difference between the crop water requirement and the effective precipitation. *Effective precipitation* is any amount of precipitation that plants can use to meet the evapotranspiration of the crop during the period of interest. The amount of precipitation that goes to runoff or deep percolation below the root zone is not considered effective in reducing the irrigation requirement. If effective precipitation exceeds consumptive use over the period of interest, the net irrigation requirement is zero.

The term *net* refers to the irrigation requirements of the plant. It does not include inefficiencies of the application system such as deep percolation due to over-irrigation or nonuniform application of water to the field. Water not reaching the field due to fine spray and drift from sprinkler systems or surface runoff is also not included in the net irrigation requirement. These inefficiencies, as demonstrated later, must be considered when determining the total irrigation water requirement for a field or farm. Purposeful over-irrigation which may be necessary to avoid accumulation of salts or to leach salts out of the root zone has also not been considered. (See, for example, Cuenca (1989) for calculation of leaching fraction depending on soil and water salinity.)

2 PROJECT

2.1 BACKGROUND

The previous report on crop water requirements for Oregon was compiled by Watts, Dehlinger, Wolfe, and Shearer (1968) and entitled *Consumptive Use and Net Irrigation Requirements for Oregon* (Oregon State University, Agricultural Experiment Station Circular of Information 628). The method used to calculate evapotranspiration for that publication was the Soil Conservation Service (SCS) Blaney-Criddle method, a temperature-based method (USDA-SCS, 1964). Estimates contained in that publication have been effectively used by engineers, farmers, planners, and others for allocation of water resources in the state of Oregon for the last 25 years.

Improved estimating methods for evapotranspiration which include meteorological data in addition to temperature have been developed since Circular of Information 628 was published. In 1984, Dan Basketfield, an OSU graduate student working with Richard Cuenca, completed analysis of consumptive use and net irrigation requirement estimates for selected locations in Oregon using a revised estimating method. Basketfield found considerable difference between the previous and revised estimates (Basketfield, 1986). This prompted us to update Circular of Information 628.

A Water Resources Engineering Team (WRET) was formed by Cuenca in the Department of Bioresource Engineering to focus on water resources issues. One of the top priorities identified by the team was revision of the consumptive use and net irrigation requirements for Oregon. The goal was set to compute consumptive use and net irrigation requirements for all economically important crops in Oregon using an improved estimating method together with the computerized climatic data base available from the Oregon Office of the State Climatologist. Initial funding for this project was provided in a cooperative project with Spain by the U.S. Department of Agriculture (USDA) Office of International Cooperation and Development and the OSU Agricultural Experiment Station.

2.2 ESTIMATING METHOD

The modified Blaney-Criddle method (Doorenbos and Pruitt, 1977; Cuenca, 1989) developed at the United Nations Food and Agriculture Organization (FAO) was used to compute values of consumptive use given in the Results section. Adjustments developed at the USDA Snake River Water Conservation Research Laboratory for application in arid western states were also applied (Allen and Brockway, 1982). The FAO modified Blaney-Criddle method was selected for a number of reasons. First, this method relies predominantly on temperature data, the most common meteorological data available in Oregon. Secondly, this method represents an improvement to the SCS modified Blaney-Criddle formula used in Circular of Information 628. Cuenca (1989) compared the SCS modified Blaney-Criddle method with evapotranspiration measured by accurate weighing lysimeters. Results showed an underestimation of measured evapotranspiration, particularly for arid and high elevation sites similar to many important agricultural areas in Oregon. In a comparison of 20 evapotranspiration estimating methods with accurate lysimeter-measured evapotranspiration from 11 sites around the world (Jensen *et al.*, 1990), the FAO modified Blaney-Criddle method had a lower error than any other estimating method applicable on a state-wide basis, considering the data available in Oregon.

The FAO modified Blaney-Criddle procedure consists of first determining the reference evapotranspiration using the following equation,

$$ET_{ref} = a + b \{p (0.46T + 8.13)\} \quad (1)$$

where ET_{ref} = reference ET for grass, mm/d
 p = percent of annual sunshine during month on a daily basis, %/d
 T = mean air temperature, °C
 a, b = climatic calibration coefficients

The a and b coefficients reflect effects of local meteorological conditions other than air temperature on the evapotranspiration estimate. They are functions of the secondary meteorological parameters of minimum relative humidity (RH_{min}), ratio of actual to maximum possible sunshine hours (n/N), and daytime wind speed. The complete procedure to determine the a and b coefficients, both graphically and by equation, is indicated in Doorenbos and Pruitt (1977) and Cuenca (1989).

To calculate the consumptive use or crop water requirement, ET_{ref} is multiplied by a crop coefficient, K_c . The form of the equation is,

$$ET_{crop} = K_c (ET_{ref}) \quad (2)$$

where ET_{crop} = crop evapotranspiration, mm/d

We determined a set of crop coefficients for important crops in Oregon using the report of Doorenbos and Pruitt (1977) and from crop planting and development information collected from OSU Agricultural Extension agents throughout Oregon. The complete procedure for development of the FAO crop coefficient curve is given in Doorenbos and Pruitt (1977) and Cuenca (1989).

The last step was to calculate the net irrigation requirement by subtracting effective precipitation from ET_{crop} . We calculated effective precipitation using the Soil Conservation Service method as fully described in Cuenca (1989).

2.3 CLIMATIC DATA

We selected two hundred and forty-four Oregon weather stations with long-term temperature records for this project. The stations were distributed more or less evenly throughout the state. The longest period of record for these stations was 88 years, the shortest record was 13 years, and the average was 46 years. The lowest elevation station was at 3 m (10 ft), the highest at 1490 m (4888 ft), and the average weather station was at 671 m (2201 ft).

The secondary meteorological data of minimum relative humidity (RH_{min}), ratio of actual to maximum possible sunshine hours (n/N) and wind speed are required in Equation (1) for ET_{ref} . These data were available for 21, 32, and 25 weather stations, respectively. The state of Oregon was divided into three regions for the secondary meteorological data: (a) Coastal, (b) Willamette and southwestern valleys, and (c) east of the Cascades. We used secondary weather stations corresponding to each region to interpolate these parameters to the 244 weather stations with temperature data.

We used precipitation data from the 244 primary stations to compute effective precipitation. All meteorological data were computerized with the assistance of the Oregon Office of the State Climatologist.

2.4 CROP INFORMATION

The U. S. Weather Service has subdivided the state of Oregon into nine major climatic regions. The seven regions that are most important agriculturally were subdivided into 27 smaller regions. For consistency, the 27 agricultural regions identified in this report are identical to those used in the Circular of Information 628 (Watts *et al.*, 1968). The boundaries of the regions are shown in Figure 1.

We determined the economically significant crops for the 27 regions through 1988 harvest statistics for Oregon obtained from the OSU Agricultural Resources and Economics Department. The growing season must be expressed in terms of four stages for application of the FAO crop coefficients; (a) initial, (b) crop development, (c) mid-season, and (d) late season (Doorenbos and Pruitt, 1977; Cuenca, 1989). We sent a questionnaire to each Oregon county extension office requesting information concerning crop stage dates. We also utilized information from previous work (Basketfield, 1984; Doorenbos and Pruitt, 1977) to determine the stages for the various crops. The Crop and Soil Science Department at OSU provided assistance to determine the planting and harvest dates. Table 1 shows the growing season of the selected crops for the 27 regions. Actual dates may vary from year-to-year, thus the listed dates in Table 1 should be considered only as a general guideline.

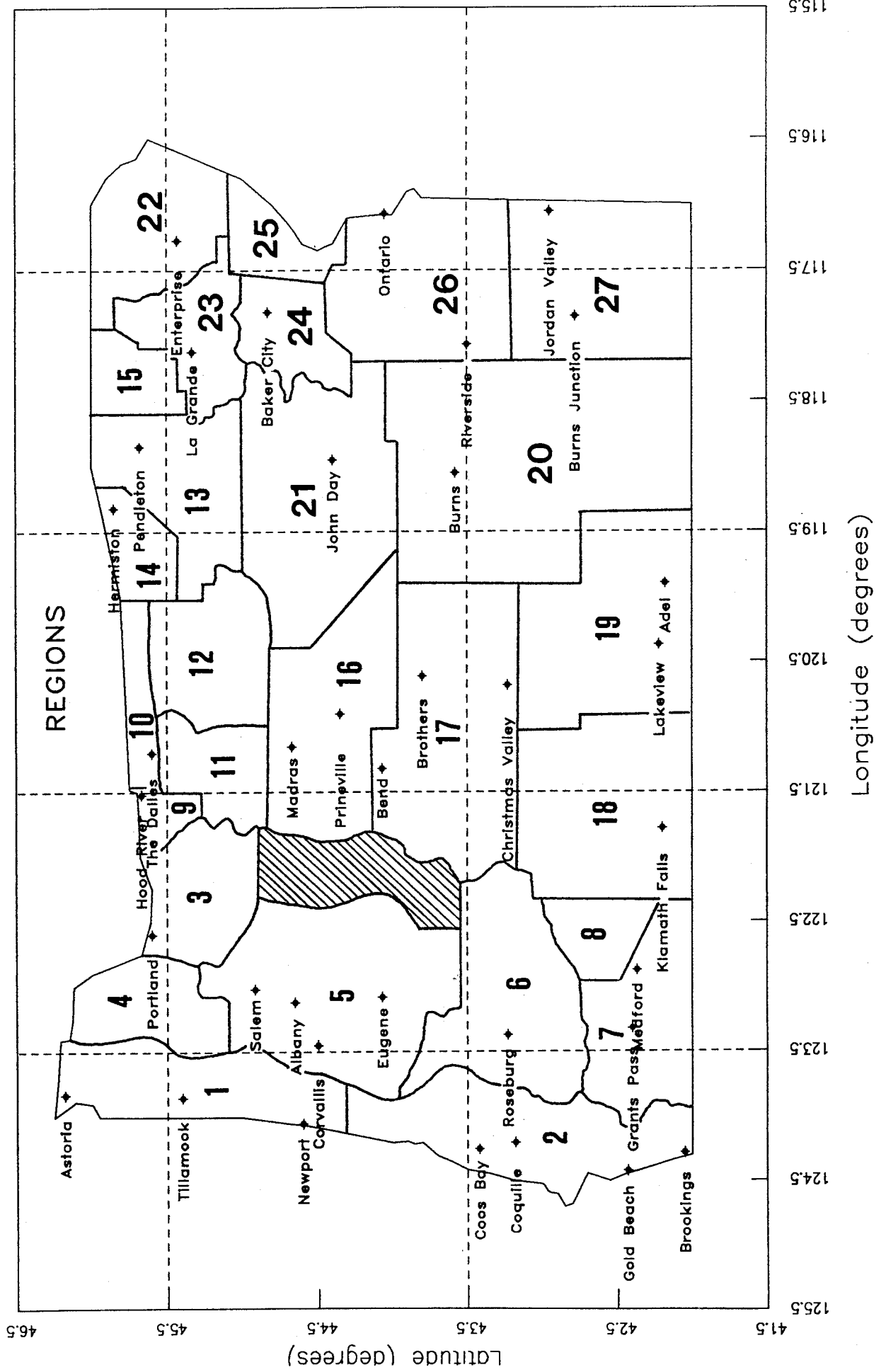


Table 1. Typical growing season of selected Oregon crops by region.

Region	Alfalfa Hay	Beans	Berries	Corn Field	Corn Stlage	Corn Sweet	Fruit Trees
Coastal							
1 North					May 05–Sep 15		*
2 South					May 20–Oct 01		*
Willamette Valley							
3 Columbia River below Hood R.	Apr 10–Nov 08	May 01–Jul 25	Apr 30–Nov 23	May 05–Sep 20	May 05–Sep 08	May 12–Sep 10	*
4 Tualatin	Apr 10–Nov 08	May 01–Jul 25	Apr 30–Nov 23	May 05–Sep 20	May 05–Sep 08	May 12–Sep 10	*
5 Willamette	Apr 10–Nov 08	May 01–Jul 25	Apr 30–Nov 23	May 05–Sep 20	May 05–Sep 08	May 12–Sep 10	*
Southwestern Valleys							
6 Umpqua River	Mar 15–Oct 01	May 01–Jul 25			May 05–Sep 08	May 01–Sep 15	*
7 Medford–Grants Pass	Mar 29–Oct 01				May 05–Sep 08		*
8 Lake Creek–Little Butte Creek	Mar 29–Oct 01				May 05–Sep 08	May 01–Sep 15	*
North Central							
9 Hood River Valley	Apr 10–Oct 01		May 21–Oct 24	May 05–Oct 01		May 15–Sep 05	*
10 Columbia River above Hood R.	Apr 10–Oct 01		May 14–Nov 07				*
11 East Slope of Mt. Hood	Apr 10–Oct 01		May 21–Oct 24				*
12 Columbia Basin Wheat Land	Apr 10–Oct 01		May 14–Nov 07				*
13 Pendleton–Heppner	Apr 10–Oct 01		May 14–Nov 07	May 05–Oct 01		May 15–Aug 20	*
14 Hermiston	Apr 10–Oct 01		May 14–Nov 07	May 05–Oct 01		May 15–Aug 20	*
15 Milton–Freewater	Mar 10–Oct 01		May 14–Nov 07			May 15–Aug 20	*
South Central							
16 Madras–Redmond	Apr 10–Oct 01				May 05–Oct 01		
17 Bend	Apr 10–Oct 01					May 15–Sep 05	
18 Klamath	May 15–Aug 30						
19 Lakeview	May 15–Aug 30						
20 Harney Valley	May 15–Aug 30						
21 Dayville–Canyon City	Apr 10–Oct 01						
Northeast							
22 Wallowa Valley	Apr 10–Oct 01						
23 Grande Ronde Valley	Apr 10–Oct 01						
24 Baker Valley	Apr 10–Oct 01			May 05–Oct 01		May 15–Sep 05	
25 Pine and Eagle Valleys	Apr 10–Oct 01			May 05–Oct 01		May 15–Sep 05	
Southeast							
26 Malheur	Apr 03–Jul 23			May 03–Oct 15	May 03–Oct 01	May 03–Aug 14	
27 Jordan Valley	Apr 03–Jul 23			May 03–Oct 15	May 03–Oct 01		

Table 1. Typical growing season of selected Oregon crops by region. (continued)

Region	Grain Spring	Grain Winter	Grass Seed Spring	Grass Seed Fall	Mint	Onions	Pasture
Coastal							
1 North							Mar 20–Oct 30
2 South							Mar 20–Oct 30
Willamette Valley							
3 Columbia River below Hood R.	Mar 15–Aug 10	Mar 05–Aug 05	Apr 01–Mar 31	Oct 01–Sep 30		Apr 15–Sep 01	Mar 10–Nov 15
4 Tualatin	Mar 15–Aug 10	Mar 05–Aug 05	Apr 01–Mar 31	Oct 01–Sep 30		Apr 15–Sep 01	Mar 10–Nov 15
5 Willamette	Mar 15–Aug 10	Mar 05–Aug 05	Apr 01–Mar 31	Oct 01–Sep 30	Mar 15–Jul 28	Apr 15–Sep 01	Mar 10–Nov 15
Southwestern Valleys							
6 Umpqua River	Mar 15–Aug 08	Mar 05–Aug 01	Apr 01–Mar 31				Mar 01–Nov 15
7 Medford–Grants Pass	Mar 15–Aug 08	Mar 05–Aug 01	Apr 01–Mar 31			Mar 15–Sep 01	Mar 01–Nov 15
8 Lake Creek–Little Butte Creek	Mar 15–Aug 08	Mar 05–Aug 01	Apr 01–Mar 31			Mar 15–Sep 01	Mar 01–Nov 15
North Central							
9 Hood River Valley	Apr 01–Aug 16	Mar 05–Jul 20				Apr 20–Sep 15	Mar 20–Oct 30
10 Columbia River above Hood R.	Apr 01–Aug 16	Mar 05–Jul 20	Apr 01–Mar 31				Mar 20–Oct 30
11 East Slope of Mt. Hood	Apr 01–Aug 16	Mar 05–Jul 20	Apr 01–Mar 31				Mar 20–Oct 30
12 Columbia Basin Wheat Land	Apr 01–Aug 16	Mar 05–Jul 20	Apr 01–Mar 31				Mar 20–Oct 30
13 Pendleton–Heppner	Apr 01–Aug 16	Mar 05–Aug 01			Mar 30–Aug 07	Mar 25–Sep 22	Mar 20–Oct 30
14 Hermiston	Mar 15–Aug 16	Mar 05–Aug 01				Mar 25–Sep 22	Mar 20–Oct 30
15 Milton–Freewater	Mar 15–Aug 28	Mar 05–Aug 01				Mar 25–Sep 22	Mar 20–Oct 30
South Central							
16 Madras–Redmond	Apr 01–Aug 16	Mar 15–Aug 10	Apr 01–Mar 31	Oct 01–Sep 30	Mar 30–Aug 07	Apr 20–Sep 15	Apr 12–Oct 24
17 Bend	Apr 01–Aug 16	Mar 15–Aug 10			Mar 30–Aug 07		Apr 12–Oct 24
18 Klamath	May 10–Sep 15	Apr 05–Aug 10					Apr 01–Oct 15
19 Lakeview	May 10–Sep 15	Apr 05–Aug 10					Apr 01–Oct 15
20 Harney Valley	May 10–Sep 15	Apr 05–Aug 10			Mar 30–Aug 07		Apr 01–Oct 15
21 Dayville–Canyon City	Apr 01–Aug 16	Mar 15–Aug 01			Mar 30–Aug 07		Apr 12–Oct 24
Northeast							
22 Wallowa Valley	Apr 01–Aug 16	Mar 15–Aug 01	Apr 01–Mar 31				Mar 20–Oct 30
23 Grande Ronde Valley	Apr 01–Aug 16	Mar 15–Aug 01	Apr 01–Mar 31	Oct 01–Sep 30	Mar 30–Aug 07		Mar 20–Oct 30
24 Baker Valley	Apr 01–Aug 16	Mar 15–Aug 01	Apr 01–Mar 31			Apr 20–Sep 15	Mar 20–Oct 30
25 Pine and Eagle Valleys	Apr 01–Aug 16	Mar 15–Aug 01	Apr 01–Mar 31			Apr 20–Sep 15	Mar 20–Oct 30
Southeast							
26 Malheur	Mar 28–Aug 08	Feb 09–Aug 01	Apr 01–Mar 31			Apr 04–Aug 28	Mar 27–Oct 31
27 Jordan Valley	Mar 28–Aug 08	Feb 09–Aug 01	Apr 01–Mar 31			Apr 04–Aug 28	Mar 27–Oct 31

Table 1. Typical growing season of selected Oregon crops by region. (continued)

Region	Peas	Potatoes	Tomatoes
Coastal			
1 North			
2 South			
Willamette Valley			
3 Columbia River below Hood R.	Mar 01 - Jun 12	Apr 25 - Oct 10	May 01 - Aug 21
4 Tualatin	Mar 01 - Jun 12	Apr 25 - Oct 10	May 01 - Aug 21
5 Willamette	Mar 01 - Jun 12	Apr 25 - Oct 10	May 01 - Aug 21
Southwestern Valleys			
6 Umpqua River	Mar 15 - Jul 01		May 01 - Aug 21
7 Medford - Grants Pass		May 15 - Oct 15	
8 Lake Creek - Little Butte Creek	Mar 15 - Jul 01		
North Central			
9 Hood River Valley	Apr 10 - Jul 25		
10 Columbia River above Hood R.		Apr 01 - Oct 10	
11 East Slope of Mt. Hood			
12 Columbia Basin Wheat Land			
13 Pendleton - Heppner	Mar 15 - Jul 20	Mar 10 - Aug 01	
14 Hermiston	Mar 15 - Jul 20	Apr 10 - Oct 01	
		Apr 25 - Oct 15	
15 Milton - Freewater	Mar 15 - Jul 20	Apr 10 - Oct 01	May 01 - Aug 21
South Central			
16 Madras - Redmond	Apr 10 - Jul 25	May 15 - Oct 15	
17 Bend	Apr 10 - Jul 25	May 15 - Oct 15	
18 Klamath		May 15 - Oct 15	
19 Lakeview			
20 Harney Valley			
21 Dayville - Canyon City			
Northeast			
22 Wallowa Valley	Apr 10 - Jul 25	May 10 - Oct 10	
23 Grande Ronde Valley	Apr 10 - Jul 25	May 10 - Oct 10	
24 Baker Valley	Apr 10 - Jul 25	May 10 - Oct 10	
25 Pine and Eagle Valleys	Apr 10 - Jul 25	May 10 - Oct 10	
Southeast			
26 Malheur		Apr 14 - Sep 20	
27 Jordan Valley		Apr 14 - Sep 20	

3 RESULTS

3.1 ET_{crop} and NET IRRIGATION TABLES

The primary and secondary meteorological data were used to compute reference evapotranspiration [ET_{ref} from Equation (1)] on a monthly basis. The FAO modified Blaney-Criddle method, although originally developed and recommended for application on a monthly basis, has shown surprisingly good comparison with more sophisticated and data-intensive methods even on a daily basis (Allen and Brockway, 1983). On a monthly basis, the error of the estimate is less than that for shorter time periods, thereby producing more reasonable estimates for irrigation planning and management purposes.

The ET_{ref} values for all weather stations within a region were averaged to compute the regional value. Equation 2 was used to compute estimates of the crop water requirement, ET_{crop} , on a monthly basis using the values of K_c developed for Oregon crops. The results are indicated by region and by crop in the tables that make up the remainder of this section. These tables are presented on a probability basis to be more useful for irrigation system design and management. For each crop, monthly ET_{crop} values are listed on the basis of 5 out of 10 years (the mean or average), 6 out of 10 years, 7 out of 10 years, 8 out of 10 years, 9 out of 10 years, and 19 out of 20 years, corresponding to the water requirement with a 50, 60, 70, 80, 90 and 95 percent probability. The amount of water required increases with the probability level. For example, at 70 percent probability or 7 out of 10 years, the ET_{crop} value listed would be equal to or more than the expected requirement for all but 3 years out of 10. Only 3 years out of 10 would we expect a higher water requirement. The seasonal total is also given for each probability level. These probability values were determined using the actual frequency distribution given by all years of data for each month at each probability level without assuming an underlying statistical distribution. Previous studies have shown ET_{ref} to be normally distributed (Cuenca, 1989). The tabulated values are very close to a normal distribution, where one can assume that the 5 out of 10 years is the mean or average value.

Knowledge of the probability level allows farmers, designers, planners, and others to evaluate trade-offs between system cost and level of risk. For example, designing or managing an irrigation system at the 70 percent probability, or 7 out of 10 year level, suggests that for 3 out of 10 years the system will not have enough capacity, causing a potential reduction in crop yield. However, the added cost to design the system at a higher level of probability than 70 percent could prove to be more than the possible losses due to expected yield reduction in 3 years out of 10. The most appropriate probability level depends on the value of the crop, its susceptibility to yield reduction due to water stress, and the acceptable level of risk on the part of the grower. Guidelines are shown in the Examples section.

We computed the net irrigation requirement by subtracting the corresponding level of effective precipitation (described in the Introduction section) from the crop water requirement for each month. We used the actual frequency distribution of effective precipitation from analysis of all years of available data for each probability level at each site. In this manner, no underlying statistical distribution was assumed for effective precipitation. Net seasonal and monthly irrigation requirements include the combined probability of ET_{ref} based on meteorological data and effective precipitation based on precipitation data.

To locate your region and crop of interest, find the region number closest to the site of interest from Figure 1. Table 1, with crop season dates, also lists major towns and region names. Table 2 lists the region numbers, major town or region name, and the corresponding pages for these regions in the results tables. Once the correct pages for the region of interest are located in the results tables, the most economically important crops in that region are listed alphabetically. Example applications for irrigation design and management purposes are given in the Examples section.

Table 2. Index to ETcrop and Net Irrigation Requirement tables by region for Oregon.

NUMBER	REGION	PAGES
1	North Coastal	13 - 15
2	South Coastal	16 - 18
3	Columbia River below Hood River	19 - 29
4	Tualatin Valley	29 - 39
5	Willamette Valley	40 - 50
6	Umpqua River	51 - 58
7	Medford-Grants Pass	59 - 64
8	Lake Creek-Little Butte Creek	65 - 71
9	Hood River Valley	71 - 78
10	Columbia River above Hood River	79 - 85
11	East Slope of Mt. Hood	86 - 90
12	Columbia Basin Wheat Land	91 - 95
13	Pendleton-Heppner	96 - 102
14	Hermiston	102 - 110
15	Milton-Freewater	111 - 117
16	Madras-Redmond	118 - 123
17	Bend	123 - 127
18	Klamath	128 - 130
19	Lakeview	130 - 132
20	Harney Valley	132 - 134
21	Dayville-Canyon City	135 - 137
22	Wallowa Valley	137 - 140
23	Grande Ronde Valley	141 - 144
24	Baker Valley	145 - 149
25	Pine and Eagle Valleys	150 - 154
26	Malheur	155 - 159
27	Jordan Valley	160 - 163

REGION: 1 North Coast
CROP: Apples

MONTH	5 out of 10 years	6 out of 10 years	7 out of 10 years	8 out of 10 years	9 out of 10 years	19 out of 20 years
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	35 (1.38)	0 (0.00)	37 (1.46)	0 (0.00)	39 (1.54)	0 (0.00)
April	61 (2.40)	1 (0.04)	62 (2.44)	2 (0.08)	63 (2.48)	2 (0.08)
May	92 (3.62)	13 (0.51)	95 (3.74)	23 (0.91)	97 (3.82)	44 (1.73)
June	101 (3.98)	38 (1.50)	104 (4.09)	51 (2.01)	107 (4.21)	73 (2.87)
July	112 (4.41)	89 (3.50)	114 (4.49)	93 (3.66)	116 (4.57)	102 (4.02)
Aug	96 (3.78)	70 (2.76)	96 (3.78)	75 (2.95)	100 (3.94)	85 (3.35)
Sep	77 (3.03)	12 (0.47)	78 (3.07)	21 (0.83)	80 (3.15)	29 (1.14)
Oct	42 (1.65)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	3 (0.12)
Nov	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	20 (0.79)	0 (0.00)
Season 633	(24.92)	225 (8.86)	648 (25.51)	267 (10.52)	655 (25.79)	304 (11.97)
					667 (26.27)	356 (14.02)
					683 (26.90)	418 (16.46)
					695 (27.37)	471 (18.56)

REGION: 1 North Coast
CROP: Cherries

MONTH	5 out of 10 years	6 out of 10 years	7 out of 10 years	8 out of 10 years	9 out of 10 years	19 out of 20 years
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	35 (1.38)	0 (0.00)	37 (1.46)	0 (0.00)	39 (1.54)	0 (0.00)
April	61 (2.40)	1 (0.04)	62 (2.44)	2 (0.08)	63 (2.48)	2 (0.08)
May	92 (3.62)	13 (0.51)	95 (3.74)	23 (0.91)	97 (3.82)	44 (1.73)
June	101 (3.98)	38 (1.50)	104 (4.09)	51 (2.01)	107 (4.21)	73 (2.87)
July	112 (4.41)	89 (3.50)	114 (4.49)	93 (3.66)	116 (4.57)	102 (4.02)
Aug	96 (3.78)	70 (2.76)	96 (3.78)	75 (2.95)	100 (3.94)	85 (3.35)
Sep	77 (3.03)	12 (0.47)	78 (3.07)	21 (0.83)	80 (3.15)	29 (1.14)
Oct	42 (1.65)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	3 (0.12)
Nov	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	20 (0.79)	0 (0.00)
Season 633	(24.92)	225 (8.86)	648 (25.51)	267 (10.52)	655 (25.79)	304 (11.97)
					667 (26.27)	356 (14.02)
					683 (26.90)	418 (16.46)
					695 (27.37)	471 (18.56)

REGION: 1 North Coast
CROP: Corn (Silage)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	23 (0.91)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	25 (0.98)	1 (0.04)	25 (0.98)	3 (0.12)	25 (0.98)	3 (0.12)
June	56 (2.20)	4 (0.16)	57 (2.24)	8 (0.31)	57 (2.24)	15 (0.59)	58 (2.28)	30 (1.18)	58 (2.28)	30 (1.18)	58 (2.28)	30 (1.18)	60 (2.36)	36 (1.42)	60 (2.36)	42 (1.65)	60 (2.36)	42 (1.65)
July	103 (4.06)	81 (3.19)	106 (4.17)	86 (3.39)	106 (4.17)	90 (3.54)	107 (4.21)	95 (3.74)	107 (4.21)	95 (3.74)	108 (4.25)	101 (3.98)	111 (4.37)	101 (3.98)	111 (4.37)	107 (4.21)	111 (4.37)	107 (4.21)
Aug	91 (3.58)	65 (2.56)	91 (3.58)	70 (2.76)	91 (3.58)	76 (2.99)	93 (3.66)	80 (3.15)	93 (3.66)	80 (3.15)	94 (3.70)	85 (3.35)	97 (3.82)	85 (3.35)	97 (3.82)	87 (3.43)	97 (3.82)	87 (3.43)
Sep	35 (1.38)	5 (0.20)	35 (1.38)	9 (0.35)	37 (1.46)	13 (0.51)	37 (1.46)	22 (0.87)	37 (1.46)	22 (0.87)	38 (1.50)	30 (1.18)	38 (1.50)	30 (1.18)	38 (1.50)	32 (1.26)	38 (1.50)	32 (1.26)
Season	308 (12.13)	156 (6.15)	313 (12.31)	174 (6.85)	315 (12.39)	195 (7.67)	319 (12.55)	228 (8.98)	325 (12.79)	253 (9.97)	331 (13.03)	271 (10.67)						

REGION: 1 North Coast
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)
April	64 (2.52)	2 (0.08)	65 (2.56)	2 (0.08)	65 (2.56)	2 (0.08)	66 (2.60)	3 (0.12)	66 (2.60)	3 (0.12)	67 (2.64)	9 (0.35)	67 (2.64)	9 (0.35)	69 (2.72)	22 (0.87)	69 (2.72)	22 (0.87)
May	87 (3.43)	8 (0.31)	89 (3.50)	20 (0.79)	90 (3.54)	27 (1.06)	92 (3.62)	38 (1.50)	92 (3.62)	38 (1.50)	95 (3.74)	55 (2.17)	95 (3.74)	55 (2.17)	96 (3.78)	62 (2.44)	96 (3.78)	62 (2.44)
June	87 (3.43)	27 (1.06)	89 (3.50)	36 (1.42)	90 (3.54)	45 (1.77)	92 (3.62)	61 (2.40)	92 (3.62)	61 (2.40)	93 (3.66)	67 (2.64)	93 (3.66)	67 (2.64)	94 (3.70)	72 (2.83)	94 (3.70)	72 (2.83)
July	96 (3.78)	74 (2.91)	98 (3.86)	79 (3.11)	99 (3.90)	83 (3.27)	99 (3.90)	87 (3.43)	99 (3.90)	87 (3.43)	101 (3.98)	94 (3.70)	101 (3.98)	94 (3.70)	103 (4.06)	99 (3.90)	103 (4.06)	99 (3.90)
Aug	84 (3.31)	57 (2.24)	84 (3.31)	62 (2.44)	84 (3.31)	68 (2.68)	86 (3.39)	73 (2.87)	86 (3.39)	73 (2.87)	86 (3.39)	77 (3.03)	86 (3.39)	77 (3.03)	88 (3.46)	79 (3.11)	88 (3.46)	79 (3.11)
Sep	69 (2.72)	7 (0.28)	70 (2.76)	13 (0.51)	72 (2.83)	21 (0.83)	72 (2.83)	40 (1.57)	72 (2.83)	40 (1.57)	73 (2.87)	53 (2.09)	73 (2.87)	53 (2.09)	74 (2.91)	60 (2.36)	74 (2.91)	60 (2.36)
Oct	47 (1.85)	2 (0.08)	48 (1.89)	3 (0.12)	49 (1.93)	3 (0.12)	49 (1.93)	3 (0.12)	49 (1.93)	3 (0.12)	51 (2.01)	4 (0.16)	51 (2.01)	4 (0.16)	51 (2.01)	20 (0.79)	51 (2.01)	20 (0.79)
Season	550 (21.67)	177 (6.96)	560 (22.05)	215 (8.47)	566 (22.28)	249 (9.81)	574 (22.60)	305 (12.01)	585 (23.04)	359 (14.14)	594 (23.39)	414 (16.30)						

REGION: 1 North Coast
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	35 (1.38)	0 (0.00)	37 (1.46)	0 (0.00)	38 (1.50)	0 (0.00)	39 (1.54)	0 (0.00)	42 (1.65)	0 (0.00)	43 (1.69)	0 (0.00)	43 (1.69)	0 (0.00)	43 (1.69)	0 (0.00)	43 (1.69)	0 (0.00)
April	58 (2.28)	1 (0.04)	58 (2.28)	1 (0.04)	59 (2.32)	2 (0.08)	60 (2.36)	2 (0.08)	61 (2.40)	3 (0.12)	62 (2.44)	3 (0.12)	62 (2.44)	3 (0.12)	62 (2.44)	3 (0.12)	62 (2.44)	3 (0.12)
May	83 (3.27)	8 (0.31)	84 (3.31)	18 (0.71)	85 (3.35)	26 (1.02)	88 (3.46)	36 (1.42)	91 (3.58)	52 (2.05)	92 (3.62)	59 (2.32)	92 (3.62)	59 (2.32)	92 (3.62)	59 (2.32)	92 (3.62)	59 (2.32)
June	92 (3.62)	28 (1.10)	94 (3.70)	38 (1.50)	95 (3.74)	50 (1.97)	96 (3.78)	65 (2.56)	97 (3.82)	72 (2.83)	100 (3.94)	78 (3.07)	100 (3.94)	78 (3.07)	100 (3.94)	78 (3.07)	100 (3.94)	78 (3.07)
July	101 (3.98)	78 (3.07)	104 (4.09)	83 (3.27)	104 (4.09)	87 (3.43)	105 (4.13)	92 (3.62)	106 (4.17)	99 (3.90)	109 (4.29)	105 (4.13)	109 (4.29)	105 (4.13)	109 (4.29)	105 (4.13)	109 (4.29)	105 (4.13)
Aug	89 (3.50)	62 (2.44)	89 (3.50)	68 (2.68)	89 (3.50)	72 (2.83)	91 (3.58)	77 (3.03)	91 (3.58)	82 (3.23)	93 (3.66)	85 (3.35)	93 (3.66)	85 (3.35)	93 (3.66)	85 (3.35)	93 (3.66)	85 (3.35)
Sep	70 (2.76)	7 (0.28)	71 (2.80)	13 (0.51)	73 (2.87)	22 (0.87)	73 (2.87)	40 (1.57)	74 (2.91)	53 (2.09)	75 (2.95)	59 (2.32)	75 (2.95)	59 (2.32)	75 (2.95)	59 (2.32)	75 (2.95)	59 (2.32)
Oct	41 (1.61)	2 (0.08)	42 (1.65)	2 (0.08)	42 (1.65)	2 (0.08)	43 (1.69)	3 (0.12)	44 (1.73)	3 (0.12)	45 (1.77)	13 (0.51)	45 (1.77)	13 (0.51)	45 (1.77)	13 (0.51)	45 (1.77)	13 (0.51)
Nov	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)
Season	586 (23.07)	186 (7.32)	596 (23.46)	223 (8.79)	604 (23.77)	261 (10.28)	615 (24.20)	315 (12.40)	626 (24.63)	364 (14.34)	639 (25.15)	415 (16.33)	639 (25.15)	415 (16.33)	639 (25.15)	415 (16.33)	639 (25.15)	415 (16.33)

REGION: 1 North Coast
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	35 (1.38)	0 (0.00)	37 (1.46)	0 (0.00)	38 (1.50)	0 (0.00)	39 (1.54)	0 (0.00)	42 (1.65)	0 (0.00)	43 (1.69)	0 (0.00)	43 (1.69)	0 (0.00)	43 (1.69)	0 (0.00)	43 (1.69)	0 (0.00)
April	58 (2.28)	1 (0.04)	58 (2.28)	1 (0.04)	59 (2.32)	2 (0.08)	60 (2.36)	2 (0.08)	61 (2.40)	3 (0.12)	62 (2.44)	3 (0.12)	62 (2.44)	3 (0.12)	62 (2.44)	3 (0.12)	62 (2.44)	3 (0.12)
May	83 (3.27)	8 (0.31)	84 (3.31)	18 (0.71)	85 (3.35)	26 (1.02)	88 (3.46)	36 (1.42)	91 (3.58)	52 (2.05)	92 (3.62)	59 (2.32)	92 (3.62)	59 (2.32)	92 (3.62)	59 (2.32)	92 (3.62)	59 (2.32)
June	92 (3.62)	28 (1.10)	94 (3.70)	38 (1.50)	95 (3.74)	50 (1.97)	96 (3.78)	65 (2.56)	97 (3.82)	72 (2.83)	100 (3.94)	78 (3.07)	100 (3.94)	78 (3.07)	100 (3.94)	78 (3.07)	100 (3.94)	78 (3.07)
July	101 (3.98)	78 (3.07)	104 (4.09)	83 (3.27)	104 (4.09)	87 (3.43)	105 (4.13)	92 (3.62)	106 (4.17)	99 (3.90)	109 (4.29)	105 (4.13)	109 (4.29)	105 (4.13)	109 (4.29)	105 (4.13)	109 (4.29)	105 (4.13)
Aug	89 (3.50)	62 (2.44)	89 (3.50)	68 (2.68)	89 (3.50)	72 (2.83)	91 (3.58)	77 (3.03)	91 (3.58)	82 (3.23)	93 (3.66)	85 (3.35)	93 (3.66)	85 (3.35)	93 (3.66)	85 (3.35)	93 (3.66)	85 (3.35)
Sep	70 (2.76)	7 (0.28)	71 (2.80)	13 (0.51)	73 (2.87)	22 (0.87)	73 (2.87)	40 (1.57)	74 (2.91)	53 (2.09)	75 (2.95)	59 (2.32)	75 (2.95)	59 (2.32)	75 (2.95)	59 (2.32)	75 (2.95)	59 (2.32)
Oct	41 (1.61)	2 (0.08)	42 (1.65)	2 (0.08)	42 (1.65)	2 (0.08)	43 (1.69)	3 (0.12)	44 (1.73)	3 (0.12)	45 (1.77)	13 (0.51)	45 (1.77)	13 (0.51)	45 (1.77)	13 (0.51)	45 (1.77)	13 (0.51)
Nov	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)
Season	586 (23.07)	186 (7.32)	596 (23.46)	223 (8.79)	604 (23.77)	261 (10.28)	615 (24.20)	315 (12.40)	626 (24.63)	364 (14.34)	639 (25.15)	415 (16.33)	639 (25.15)	415 (16.33)	639 (25.15)	415 (16.33)	639 (25.15)	415 (16.33)

REGION: 2 South Coast
CROP: Apples

MONTH	5 out of 10 years				6 out of 10 years				7 out of 10 years				8 out of 10 years				9 out of 10 years				19 out of 20 years			
	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.
March	35 (1.38)	0 (0.00)	35 (1.38)	0 (0.00)	35 (1.38)	0 (0.00)	36 (1.42)	0 (0.00)	37 (1.46)	0 (0.00)	40 (1.57)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)
April	58 (2.28)	2 (0.08)	59 (2.32)	3 (0.12)	59 (2.32)	3 (0.12)	59 (2.32)	3 (0.12)	60 (2.36)	9 (0.35)	62 (2.44)	21 (0.83)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)
May	86 (3.39)	23 (0.91)	86 (3.39)	30 (1.18)	87 (3.43)	42 (1.65)	87 (3.43)	42 (1.65)	89 (3.50)	55 (2.17)	90 (3.54)	64 (2.52)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)
June	103 (4.06)	69 (2.72)	103 (4.06)	77 (3.03)	105 (4.13)	85 (3.35)	105 (4.13)	85 (3.35)	106 (4.17)	91 (3.58)	106 (4.17)	98 (3.86)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)
July	111 (4.37)	104 (4.09)	112 (4.41)	106 (4.17)	112 (4.41)	109 (4.29)	113 (4.45)	111 (4.37)	113 (4.45)	111 (4.37)	117 (4.61)	114 (4.49)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)
Aug	95 (3.74)	85 (3.35)	96 (3.78)	89 (3.50)	96 (3.78)	92 (3.62)	98 (3.86)	94 (3.70)	98 (3.86)	94 (3.70)	98 (3.86)	97 (3.82)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)
Sep	76 (2.99)	35 (1.38)	76 (2.99)	41 (1.61)	78 (3.07)	51 (2.01)	79 (3.11)	64 (2.52)	79 (3.11)	64 (2.52)	79 (3.11)	71 (2.80)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)
Oct	47 (1.85)	3 (0.12)	48 (1.89)	3 (0.12)	49 (1.93)	4 (0.16)	50 (1.97)	4 (0.16)	50 (1.97)	4 (0.16)	50 (1.97)	11 (0.43)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)
Nov	22 (0.87)	0 (0.00)	22 (0.87)	0 (0.00)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)
Season 633 (24.93)	321 (12.65)	637 (25.09)	349 (13.73)	645 (25.40)	387 (15.24)	655 (25.79)	429 (16.89)	665 (26.18)	477 (18.79)	681 (26.81)	543 (21.39)													

REGION: 2 South Coast
CROP: Cherries

MONTH	5 out of 10 years				6 out of 10 years				7 out of 10 years				8 out of 10 years				9 out of 10 years				19 out of 20 years			
	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.
March	35 (1.38)	0 (0.00)	35 (1.38)	0 (0.00)	35 (1.38)	0 (0.00)	36 (1.42)	0 (0.00)	37 (1.46)	0 (0.00)	40 (1.57)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)	42 (1.65)	0 (0.00)
April	58 (2.28)	2 (0.08)	59 (2.32)	3 (0.12)	59 (2.32)	3 (0.12)	59 (2.32)	3 (0.12)	60 (2.36)	9 (0.35)	62 (2.44)	21 (0.83)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)	63 (2.48)	36 (1.42)
May	86 (3.39)	23 (0.91)	86 (3.39)	30 (1.18)	87 (3.43)	42 (1.65)	87 (3.43)	42 (1.65)	89 (3.50)	55 (2.17)	90 (3.54)	64 (2.52)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)	94 (3.70)	76 (2.99)
June	103 (4.06)	69 (2.72)	103 (4.06)	77 (3.03)	105 (4.13)	85 (3.35)	105 (4.13)	85 (3.35)	106 (4.17)	91 (3.58)	106 (4.17)	98 (3.86)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)	108 (4.25)	102 (4.02)
July	111 (4.37)	104 (4.09)	112 (4.41)	106 (4.17)	112 (4.41)	109 (4.29)	113 (4.45)	111 (4.37)	113 (4.45)	111 (4.37)	117 (4.61)	114 (4.49)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)	118 (4.65)	116 (4.57)
Aug	95 (3.74)	85 (3.35)	96 (3.78)	89 (3.50)	96 (3.78)	92 (3.62)	98 (3.86)	94 (3.70)	98 (3.86)	94 (3.70)	98 (3.86)	97 (3.82)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)
Sep	76 (2.99)	35 (1.38)	76 (2.99)	41 (1.61)	78 (3.07)	51 (2.01)	79 (3.11)	64 (2.52)	79 (3.11)	64 (2.52)	79 (3.11)	71 (2.80)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)	81 (3.19)	75 (2.95)
Oct	47 (1.85)	3 (0.12)	48 (1.89)	3 (0.12)	49 (1.93)	4 (0.16)	50 (1.97)	4 (0.16)	50 (1.97)	4 (0.16)	50 (1.97)	11 (0.43)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)	52 (2.05)	39 (1.54)
Nov	22 (0.87)	0 (0.00)	22 (0.87)	0 (0.00)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)
Season 633 (24.93)	321 (12.65)	637 (25.09)	349 (13.73)	645 (25.40)	387 (15.24)	655 (25.79)	429 (16.89)	665 (26.18)	477 (18.79)	681 (26.81)	543 (21.39)													

REGION: 2 South Coast
CROP: Corn (Silage)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	17 (0.67)	1 (0.04)	18 (0.71)	2 (0.08)	18 (0.71)	3 (0.12)	18 (0.71)	9 (0.35)	18 (0.71)	9 (0.35)	18 (0.71)	12 (0.47)	19 (0.75)	15 (0.59)	19 (0.75)	15 (0.59)	19 (0.75)	15 (0.59)
June	59 (2.32)	28 (1.10)	59 (2.32)	37 (1.46)	60 (2.36)	42 (1.65)	60 (2.36)	47 (1.85)	60 (2.36)	47 (1.85)	60 (2.36)	55 (2.17)	61 (2.40)	58 (2.28)	61 (2.40)	58 (2.28)	61 (2.40)	58 (2.28)
July	94 (3.70)	88 (3.46)	95 (3.74)	91 (3.58)	96 (3.78)	93 (3.56)	96 (3.78)	95 (3.74)	96 (3.78)	95 (3.74)	96 (3.78)	97 (3.82)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)
Aug	91 (3.58)	81 (3.19)	92 (3.62)	85 (3.35)	92 (3.62)	88 (3.46)	94 (3.70)	90 (3.54)	94 (3.70)	90 (3.54)	94 (3.70)	93 (3.66)	95 (3.74)	94 (3.70)	95 (3.74)	94 (3.70)	95 (3.74)	94 (3.70)
Sep	72 (2.83)	32 (1.26)	72 (2.83)	36 (1.42)	74 (2.91)	45 (1.77)	75 (2.95)	61 (2.40)	75 (2.95)	61 (2.40)	75 (2.95)	68 (2.68)	77 (3.03)	71 (2.80)	77 (3.03)	71 (2.80)	77 (3.03)	71 (2.80)
Season	333 (13.10)	230 (9.05)	336 (13.22)	251 (9.89)	340 (13.38)	271 (10.66)	343 (13.50)	302 (11.88)	345 (13.58)	325 (12.80)	351 (13.82)	336 (13.23)	351 (13.82)	336 (13.23)	351 (13.82)	336 (13.23)	351 (13.82)	336 (13.23)

REGION: 2 South Coast
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)
April	61 (2.40)	3 (0.12)	62 (2.44)	3 (0.12)	63 (2.48)	4 (0.16)	63 (2.48)	11 (0.43)	66 (2.60)	24 (0.94)	67 (2.64)	39 (1.54)	67 (2.64)	39 (1.54)	67 (2.64)	39 (1.54)	67 (2.64)	39 (1.54)
May	81 (3.19)	19 (0.75)	83 (3.27)	28 (1.10)	84 (3.31)	39 (1.54)	85 (3.35)	51 (2.01)	87 (3.43)	60 (2.36)	90 (3.54)	71 (2.80)	90 (3.54)	71 (2.80)	90 (3.54)	71 (2.80)	90 (3.54)	71 (2.80)
June	89 (3.50)	55 (2.17)	89 (3.50)	65 (2.56)	91 (3.58)	70 (2.76)	91 (3.58)	77 (3.03)	92 (3.62)	84 (3.31)	93 (3.66)	88 (3.46)	93 (3.66)	88 (3.46)	93 (3.66)	88 (3.46)	93 (3.66)	88 (3.46)
July	94 (3.70)	89 (3.50)	96 (3.78)	92 (3.62)	96 (3.78)	94 (3.70)	97 (3.82)	96 (3.78)	99 (3.90)	98 (3.86)	100 (3.94)	99 (3.90)	100 (3.94)	99 (3.90)	100 (3.94)	99 (3.90)	100 (3.94)	99 (3.90)
Aug	82 (3.23)	72 (2.83)	83 (3.27)	76 (2.99)	83 (3.27)	79 (3.11)	85 (3.35)	81 (3.19)	85 (3.35)	84 (3.31)	86 (3.39)	85 (3.35)	86 (3.39)	85 (3.35)	86 (3.39)	85 (3.35)	86 (3.39)	85 (3.35)
Sep	69 (2.72)	29 (1.14)	70 (2.76)	34 (1.34)	70 (2.76)	42 (1.65)	71 (2.80)	56 (2.20)	71 (2.80)	64 (2.52)	73 (2.87)	68 (2.68)	73 (2.87)	68 (2.68)	73 (2.87)	68 (2.68)	73 (2.87)	68 (2.68)
Oct	51 (2.01)	3 (0.12)	51 (2.01)	4 (0.16)	53 (2.09)	4 (0.16)	54 (2.13)	5 (0.20)	54 (2.13)	17 (0.67)	56 (2.20)	43 (1.69)	56 (2.20)	43 (1.69)	56 (2.20)	43 (1.69)	56 (2.20)	43 (1.69)
Season	543 (21.38)	270 (10.63)	550 (21.66)	302 (11.89)	557 (21.94)	332 (13.08)	563 (22.18)	377 (14.84)	572 (22.54)	431 (16.97)	584 (22.99)	493 (19.42)	584 (22.99)	493 (19.42)	584 (22.99)	493 (19.42)	584 (22.99)	493 (19.42)

REGION: 2 South Coast
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.	
March	35 (1.38)	0 (0.00)		35 (1.38)	0 (0.00)		36 (1.42)	0 (0.00)		37 (1.46)	0 (0.00)		40 (1.57)	0 (0.00)		42 (1.65)	0 (0.00)	
April	55 (2.17)	2 (0.08)		55 (2.17)	3 (0.12)		56 (2.20)	3 (0.12)		56 (2.20)	6 (0.24)		59 (2.32)	18 (0.71)		59 (2.32)	32 (1.26)	
May	77 (3.03)	17 (0.67)		79 (3.11)	24 (0.94)		80 (3.15)	35 (1.38)		81 (3.19)	49 (1.93)		83 (3.27)	57 (2.24)		84 (3.31)	68 (2.68)	
June	94 (3.70)	61 (2.40)		94 (3.70)	68 (2.68)		95 (3.74)	74 (2.91)		96 (3.78)	81 (3.19)		96 (3.78)	88 (3.46)		98 (3.86)	92 (3.62)	
July	101 (3.98)	94 (3.70)		103 (4.06)	96 (3.78)		104 (4.09)	99 (3.90)		104 (4.09)	101 (3.98)		106 (4.17)	104 (4.09)		107 (4.21)	106 (4.17)	
Aug	86 (3.39)	78 (3.07)		87 (3.43)	81 (3.19)		87 (3.43)	84 (3.31)		89 (3.50)	86 (3.39)		89 (3.50)	88 (3.46)		90 (3.54)	89 (3.50)	
Sept	70 (2.76)	30 (1.18)		70 (2.76)	34 (1.34)		72 (2.83)	42 (1.65)		73 (2.87)	55 (2.17)		73 (2.87)	65 (2.56)		75 (2.95)	69 (2.72)	
Oct	46 (1.81)	2 (0.08)		46 (1.81)	3 (0.12)		46 (1.81)	3 (0.12)		47 (1.85)	4 (0.16)		47 (1.85)	10 (0.39)		49 (1.93)	37 (1.46)	
Nov	22 (0.87)	0 (0.00)		22 (0.87)	0 (0.00)		23 (0.91)	1 (0.04)		23 (0.91)	1 (0.04)		23 (0.91)	1 (0.04)		24 (0.94)	1 (0.04)	
Season	586 (23.09)	284 (11.18)		591 (23.29)	309 (12.17)		599 (23.58)	341 (13.43)		606 (23.85)	383 (15.10)		616 (24.24)	431 (16.95)		628 (24.71)	494 (19.45)	

REGION: 2 South Coast
CROP: plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	35 (1.38)	0 (0.00)	35 (1.38)	0 (0.00)	36 (1.42)	0 (0.00)	37 (1.46)	0 (0.00)	40 (1.57)	0 (0.00)	42 (1.65)	0 (0.00)						
April	55 (2.17)	2 (0.08)	55 (2.17)	3 (0.12)	56 (2.20)	3 (0.12)	56 (2.20)	6 (0.24)	59 (2.32)	18 (0.71)	59 (2.32)	32 (1.26)						
May	77 (3.03)	17 (0.67)	79 (3.11)	24 (0.94)	80 (3.15)	35 (1.38)	81 (3.19)	49 (1.93)	83 (3.27)	57 (2.24)	84 (3.31)	68 (2.68)						
June	94 (3.70)	61 (2.40)	94 (3.70)	68 (2.68)	95 (3.74)	74 (2.91)	96 (3.78)	81 (3.19)	96 (3.78)	88 (3.46)	98 (3.86)	92 (3.62)						
July	101 (3.98)	94 (3.70)	103 (4.06)	96 (3.78)	104 (4.09)	99 (3.90)	104 (4.09)	101 (3.98)	106 (4.17)	104 (4.09)	107 (4.21)	106 (4.17)						
Aug	86 (3.39)	78 (3.07)	87 (3.43)	81 (3.19)	87 (3.43)	84 (3.31)	89 (3.50)	86 (3.39)	89 (3.50)	88 (3.46)	90 (3.54)	89 (3.50)						
Sep	70 (2.76)	30 (1.18)	70 (2.76)	34 (1.34)	72 (2.83)	42 (1.65)	73 (2.87)	55 (2.17)	73 (2.87)	65 (2.56)	75 (2.95)	69 (2.72)						
Oct	46 (1.81)	2 (0.08)	46 (1.81)	3 (0.12)	46 (1.81)	3 (0.12)	47 (1.85)	4 (0.16)	47 (1.85)	10 (0.39)	49 (1.93)	37 (1.46)						
Nov	22 (0.87)	0 (0.00)	22 (0.87)	0 (0.00)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	24 (0.94)	1 (0.04)						
Season	586 (23.09)	284 (11.18)	591 (23.29)	309 (12.17)	599 (23.58)	341 (13.43)	606 (23.85)	383 (15.10)	616 (24.24)	431 (16.95)	628 (24.71)	494 (19.45)						

REGION: 3 Columbia River below Hood River
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	52 (2.05)	3 (0.12)	53 (2.09)	3 (0.12)	55 (2.17)	4 (0.16)	57 (2.24)	7 (0.28)	58 (2.28)	25 (0.98)	60 (2.36)	32 (1.26)						
May	106 (4.17)	35 (1.38)	107 (4.21)	40 (1.57)	110 (4.33)	45 (1.77)	113 (4.45)	51 (2.01)	115 (4.53)	66 (2.60)	118 (4.65)	72 (2.83)						
June	116 (4.57)	56 (2.20)	118 (4.65)	71 (2.80)	120 (4.72)	83 (3.27)	122 (4.80)	90 (3.54)	125 (4.92)	102 (4.02)	126 (4.96)	110 (4.33)						
July	134 (5.28)	118 (4.65)	135 (5.31)	124 (4.88)	137 (5.39)	128 (5.04)	138 (5.43)	133 (5.24)	140 (5.51)	140 (5.51)	143 (5.63)	143 (5.63)						
Aug	115 (4.53)	90 (3.54)	116 (4.57)	98 (3.86)	117 (4.61)	105 (4.13)	118 (4.65)	110 (4.33)	124 (4.88)	116 (4.57)	126 (4.96)	123 (4.84)						
Sep	87 (3.43)	29 (1.14)	88 (3.46)	36 (1.42)	90 (3.54)	47 (1.85)	91 (3.58)	61 (2.40)	93 (3.66)	79 (3.11)	94 (3.70)	87 (3.43)						
Oct	54 (2.13)	3 (0.12)	54 (2.13)	4 (0.16)	54 (2.13)	5 (0.20)	55 (2.17)	5 (0.20)	58 (2.28)	20 (0.79)	59 (2.32)	38 (1.50)						
Nov	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)						
Season	669 (26.36)	334 (13.15)	676 (26.62)	376 (14.81)	688 (27.09)	417 (16.42)	700 (27.56)	457 (18.00)	719 (28.30)	548 (21.58)	732 (28.82)	605 (23.82)						

REGION: 3 Columbia River below Hood River
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	43 (1.69)	0 (0.00)	44 (1.73)	0 (0.00)	45 (1.77)	0 (0.00)	48 (1.89)	1 (0.04)	50 (1.97)	1 (0.04)	53 (2.09)	3 (0.12)						
April	78 (3.07)	4 (0.16)	80 (3.15)	5 (0.20)	83 (3.27)	5 (0.20)	85 (3.35)	11 (0.43)	88 (3.46)	38 (1.50)	90 (3.54)	49 (1.93)						
May	125 (4.92)	52 (2.05)	127 (5.00)	59 (2.32)	130 (5.12)	64 (2.52)	134 (5.28)	69 (2.72)	137 (5.39)	82 (3.23)	140 (5.51)	94 (3.70)						
June	151 (5.94)	85 (3.35)	153 (6.02)	101 (3.98)	156 (6.14)	113 (4.45)	159 (6.26)	122 (4.80)	165 (6.50)	137 (5.39)	167 (6.57)	145 (5.71)						
July	175 (6.89)	158 (6.22)	176 (6.93)	167 (6.57)	178 (7.01)	171 (6.73)	179 (7.05)	176 (6.93)	186 (7.32)	180 (7.09)	190 (7.48)	187 (7.36)						
Aug	148 (5.83)	126 (4.96)	150 (5.91)	133 (5.24)	151 (5.94)	141 (5.55)	155 (6.10)	147 (5.79)	161 (6.34)	154 (6.06)	164 (6.46)	161 (6.34)						
Sep	107 (4.21)	48 (1.89)	108 (4.25)	58 (2.28)	110 (4.33)	69 (2.72)	115 (4.53)	84 (3.31)	118 (4.65)	101 (3.98)	119 (4.69)	110 (4.33)						
Oct	53 (2.09)	3 (0.12)	54 (2.13)	4 (0.16)	55 (2.17)	5 (0.20)	55 (2.17)	5 (0.20)	57 (2.24)	19 (0.75)	57 (2.24)	37 (1.46)						
Nov	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)						
Season	896 (35.27)	476 (18.75)	908 (35.75)	527 (20.75)	925 (36.42)	568 (22.37)	949 (37.38)	615 (24.22)	982 (38.66)	712 (28.04)	1000 (39.37)	786 (30.95)						

REGION: 3 Columbia River below Hood River
CROP: Beans (Dry Field)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	61 (2.40)	3 (0.12)	62 (2.44)	4 (0.16)	62 (2.44)	8 (0.31)	63 (2.48)	12 (0.47)	64 (2.52)	24 (0.94)	65 (2.56)	32 (1.26)						
June	124 (4.88)	64 (2.52)	126 (4.96)	79 (3.11)	129 (5.08)	89 (3.50)	132 (5.20)	97 (3.82)	134 (5.28)	111 (4.37)	135 (5.31)	119 (4.69)						
July	109 (4.29)	99 (3.90)	110 (4.33)	104 (4.09)	113 (4.45)	107 (4.21)	114 (4.49)	111 (4.37)	115 (4.53)	115 (4.53)	120 (4.72)	119 (4.69)						
Season	294 (11.57)	166 (6.54)	298 (11.73)	187 (7.36)	304 (11.97)	204 (8.02)	309 (12.17)	220 (8.66)	313 (12.33)	250 (9.84)	320 (12.59)	270 (10.64)						

REGION: 3 Columbia River below Hood River
CROP: Berries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	64 (2.52)	4 (0.16)	64 (2.52)	5 (0.20)	66 (2.60)	9 (0.35)	67 (2.64)	14 (0.55)	68 (2.68)	25 (0.98)	69 (2.72)	34 (1.34)						
June	80 (3.15)	25 (0.98)	83 (3.27)	38 (1.50)	84 (3.31)	50 (1.97)	86 (3.39)	56 (2.20)	87 (3.43)	65 (2.56)	88 (3.46)	74 (2.91)						
July	104 (4.09)	92 (3.62)	105 (4.13)	96 (3.78)	106 (4.17)	100 (3.94)	107 (4.21)	103 (4.06)	110 (4.33)	109 (4.29)	113 (4.45)	112 (4.41)						
Aug	90 (3.54)	69 (2.72)	91 (3.58)	76 (2.99)	92 (3.62)	82 (3.23)	95 (3.74)	87 (3.43)	98 (3.86)	91 (3.58)	100 (3.94)	96 (3.78)						
Sep	68 (2.68)	11 (0.43)	68 (2.68)	21 (0.83)	70 (2.76)	29 (1.14)	73 (2.87)	43 (1.69)	74 (2.91)	57 (2.24)	75 (2.95)	68 (2.68)						
Oct	42 (1.65)	3 (0.12)	43 (1.69)	3 (0.12)	44 (1.73)	4 (0.16)	45 (1.77)	4 (0.16)	46 (1.81)	10 (0.39)	46 (1.81)	27 (1.06)						
Nov	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	12 (0.47)	0 (0.00)	12 (0.47)	0 (0.00)						
Season	458 (18.02)	204 (8.03)	465 (18.30)	239 (9.42)	473 (18.62)	274 (10.79)	484 (19.05)	307 (12.09)	495 (19.49)	357 (14.04)	503 (19.80)	411 (16.18)						

REGION: 3 Columbia River below Hood River
CROP: Cherries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	43 (1.69)	0 (0.00)	44 (1.73)	0 (0.00)	45 (1.77)	0 (0.00)	48 (1.89)	1 (0.04)	50 (1.97)	1 (0.04)	53 (2.09)	3 (0.12)	53 (2.09)	3 (0.12)	53 (2.09)	3 (0.12)	53 (2.09)	3 (0.12)
April	78 (3.07)	4 (0.16)	80 (3.15)	5 (0.20)	83 (3.27)	5 (0.20)	85 (3.35)	11 (0.43)	88 (3.46)	38 (1.50)	90 (3.54)	49 (1.93)	90 (3.54)	49 (1.93)	90 (3.54)	49 (1.93)	90 (3.54)	49 (1.93)
May	125 (4.92)	52 (2.05)	127 (5.00)	59 (2.32)	130 (5.12)	64 (2.52)	134 (5.28)	69 (2.72)	137 (5.39)	82 (3.23)	140 (5.51)	94 (3.70)	137 (5.39)	82 (3.23)	140 (5.51)	94 (3.70)	140 (5.51)	94 (3.70)
June	151 (5.94)	85 (3.35)	153 (6.02)	101 (3.98)	156 (6.14)	113 (4.45)	159 (6.26)	122 (4.80)	165 (6.50)	137 (5.39)	167 (6.57)	145 (5.71)	165 (6.50)	137 (5.39)	167 (6.57)	145 (5.71)	167 (6.57)	145 (5.71)
July	175 (6.89)	158 (6.22)	176 (6.93)	167 (6.57)	178 (7.01)	171 (6.73)	179 (7.05)	176 (6.93)	186 (7.32)	180 (7.09)	190 (7.48)	187 (7.36)	186 (7.32)	180 (7.09)	190 (7.48)	187 (7.36)	190 (7.48)	187 (7.36)
Aug	148 (5.83)	126 (4.96)	150 (5.91)	133 (5.24)	151 (5.94)	141 (5.55)	155 (6.10)	147 (5.79)	161 (6.34)	154 (6.06)	164 (6.46)	161 (6.34)	161 (6.34)	154 (6.06)	164 (6.46)	161 (6.34)	164 (6.46)	161 (6.34)
Sep	107 (4.21)	48 (1.89)	108 (4.25)	58 (2.28)	110 (4.33)	69 (2.72)	115 (4.53)	84 (3.31)	118 (4.65)	101 (3.98)	119 (4.69)	110 (4.33)	118 (4.65)	101 (3.98)	119 (4.69)	110 (4.33)	119 (4.69)	110 (4.33)
Oct	53 (2.09)	3 (0.12)	54 (2.13)	4 (0.16)	55 (2.17)	5 (0.20)	55 (2.17)	5 (0.20)	57 (2.24)	19 (0.75)	57 (2.24)	37 (1.46)	57 (2.24)	19 (0.75)	57 (2.24)	37 (1.46)	57 (2.24)	37 (1.46)
Nov	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)
Season	896 (35.27)	476 (18.75)	908 (35.75)	527 (20.75)	925 (36.42)	568 (22.37)	949 (37.38)	615 (24.22)	982 (38.66)	712 (28.04)	1000 (39.37)	786 (30.95)	982 (38.66)	712 (28.04)	1000 (39.37)	786 (30.95)	1000 (39.37)	786 (30.95)

REGION: 3 Columbia River below Hood River
CROP: Corn (Field)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	23 (0.91)	0 (0.00)	23 (0.91)	0 (0.00)	23 (0.91)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)
June	67 (2.64)	14 (0.55)	68 (2.68)	25 (0.98)	70 (2.76)	36 (1.42)	70 (2.76)	42 (1.65)	71 (2.80)	52 (2.05)	73 (2.87)	57 (2.24)	71 (2.80)	52 (2.05)	73 (2.87)	57 (2.24)	73 (2.87)	57 (2.24)
July	154 (6.06)	136 (5.35)	155 (6.10)	144 (5.67)	157 (6.18)	149 (5.87)	158 (6.22)	154 (6.06)	161 (6.34)	161 (6.34)	167 (6.57)	165 (6.50)	161 (6.34)	161 (6.34)	167 (6.57)	165 (6.50)	167 (6.57)	165 (6.50)
Aug	136 (5.35)	114 (4.49)	137 (5.39)	121 (4.76)	142 (5.59)	128 (5.04)	144 (5.67)	135 (5.31)	149 (5.87)	141 (5.55)	151 (5.94)	148 (5.83)	149 (5.87)	141 (5.55)	151 (5.94)	148 (5.83)	151 (5.94)	148 (5.83)
Sep	49 (1.93)	12 (0.47)	50 (1.97)	18 (0.71)	50 (1.97)	25 (0.98)	52 (2.05)	35 (1.38)	53 (2.09)	45 (1.77)	54 (2.13)	49 (1.93)	53 (2.09)	45 (1.77)	54 (2.13)	49 (1.93)	54 (2.13)	49 (1.93)
Season	429 (16.89)	276 (10.86)	433 (17.05)	308 (12.12)	442 (17.41)	339 (13.35)	448 (17.64)	367 (14.44)	458 (18.04)	400 (15.75)	469 (18.45)	420 (16.54)	458 (18.04)	400 (15.75)	469 (18.45)	420 (16.54)	469 (18.45)	420 (16.54)

REGION: 3 Columbia River below Hood River
CROP: Corn (Silage)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.
May	31 (1.22)	1 (0.04)	31 (1.22)	32 (1.26)	1 (0.04)	32 (1.26)	32 (1.26)	1 (0.04)	32 (1.26)	33 (1.30)	2 (0.08)	33 (1.30)	33 (1.30)	7 (0.28)	33 (1.30)	7 (0.28)	33 (1.30)	7 (0.28)
June	98 (3.86)	41 (1.61)	100 (3.94)	102 (4.02)	64 (2.52)	105 (4.13)	105 (4.13)	73 (2.87)	107 (4.21)	83 (3.27)	108 (4.25)	92 (3.62)	108 (4.25)	92 (3.62)	108 (4.25)	92 (3.62)	108 (4.25)	92 (3.62)
July	165 (6.50)	147 (5.79)	167 (6.57)	168 (6.61)	160 (6.30)	170 (6.30)	170 (6.30)	166 (6.54)	173 (6.81)	173 (6.81)	173 (6.81)	179 (7.05)	179 (7.05)	177 (6.97)	179 (7.05)	177 (6.97)	179 (7.05)	177 (6.97)
Aug	139 (5.47)	114 (4.49)	140 (5.51)	141 (5.55)	127 (5.00)	143 (5.63)	143 (5.63)	134 (5.28)	148 (5.83)	140 (5.51)	150 (5.91)	147 (5.79)	150 (5.91)	147 (5.79)	150 (5.91)	147 (5.79)	150 (5.91)	147 (5.79)
Sep	26 (1.02)	12 (0.47)	27 (1.06)	27 (1.06)	17 (0.67)	28 (1.10)	28 (1.10)	22 (0.87)	28 (1.10)	25 (0.98)	28 (1.10)	27 (1.06)	28 (1.10)	27 (1.06)	28 (1.10)	27 (1.06)	28 (1.10)	27 (1.06)
Season	459 (18.07)	315 (12.40)	465 (18.30)	470 (18.50)	369 (14.53)	478 (18.81)	478 (18.81)	396 (15.60)	489 (19.25)	423 (16.65)	498 (19.61)	450 (17.72)	498 (19.61)	450 (17.72)	498 (19.61)	450 (17.72)	498 (19.61)	450 (17.72)

REGION: 3 Columbia River below Hood River
CROP: Corn (Sweet)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.
May	38 (1.50)	2 (0.08)	38 (1.50)	39 (1.54)	6 (0.24)	40 (1.57)	40 (1.57)	8 (0.31)	40 (1.57)	18 (0.71)	41 (1.61)	21 (0.83)	41 (1.61)	21 (0.83)	41 (1.61)	21 (0.83)	41 (1.61)	21 (0.83)
June	99 (3.90)	41 (1.61)	101 (3.98)	103 (4.06)	66 (2.60)	105 (4.13)	105 (4.13)	74 (2.91)	107 (4.21)	83 (3.27)	109 (4.29)	92 (3.62)	109 (4.29)	92 (3.62)	109 (4.29)	92 (3.62)	109 (4.29)	92 (3.62)
July	164 (6.46)	147 (5.79)	165 (6.50)	166 (6.54)	160 (6.30)	167 (6.54)	167 (6.54)	166 (6.54)	173 (6.81)	173 (6.81)	176 (6.93)	176 (6.93)	176 (6.93)	176 (6.93)	176 (6.93)	176 (6.93)	176 (6.93)	176 (6.93)
Aug	142 (5.59)	118 (4.65)	143 (5.63)	144 (5.67)	131 (5.16)	146 (5.75)	146 (5.75)	137 (5.39)	151 (5.94)	143 (5.63)	153 (6.02)	149 (5.87)	153 (6.02)	149 (5.87)	153 (6.02)	149 (5.87)	153 (6.02)	149 (5.87)
Sep	33 (1.30)	15 (0.59)	33 (1.30)	34 (1.34)	23 (0.91)	36 (1.42)	36 (1.42)	28 (1.10)	36 (1.42)	33 (1.30)	37 (1.46)	35 (1.38)	37 (1.46)	35 (1.38)	37 (1.46)	35 (1.38)	37 (1.46)	35 (1.38)
Season	476 (18.75)	323 (12.72)	480 (18.91)	486 (19.15)	386 (15.21)	494 (19.44)	494 (19.44)	413 (16.25)	507 (19.95)	450 (17.72)	516 (20.31)	473 (18.63)	516 (20.31)	473 (18.63)	516 (20.31)	473 (18.63)	516 (20.31)	473 (18.63)

REGION: 3 Columbia River below Hood River
CROP: Filberts

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	43 (1.69)	0 (0.00)	44 (1.73)	0 (0.00)	45 (1.77)	0 (0.00)	48 (1.89)	1 (0.04)	50 (1.97)	1 (0.04)	53 (2.09)	3 (0.12)	53 (2.09)	3 (0.12)	53 (2.09)	3 (0.12)	53 (2.09)	3 (0.12)
April	78 (3.07)	4 (0.16)	80 (3.15)	5 (0.20)	83 (3.27)	5 (0.20)	85 (3.35)	11 (0.43)	88 (3.46)	38 (1.50)	90 (3.54)	49 (1.93)	90 (3.54)	49 (1.93)	90 (3.54)	49 (1.93)	90 (3.54)	49 (1.93)
May	125 (4.92)	52 (2.05)	127 (5.00)	59 (2.32)	130 (5.12)	64 (2.52)	134 (5.28)	69 (2.72)	137 (5.39)	82 (3.23)	140 (5.51)	94 (3.70)	140 (5.51)	94 (3.70)	140 (5.51)	94 (3.70)	140 (5.51)	94 (3.70)
June	151 (5.94)	85 (3.35)	153 (6.02)	101 (3.98)	156 (6.14)	113 (4.45)	159 (6.26)	122 (4.80)	165 (6.50)	137 (5.39)	167 (6.57)	145 (5.71)	167 (6.57)	145 (5.71)	167 (6.57)	145 (5.71)	167 (6.57)	145 (5.71)
July	175 (6.89)	158 (6.22)	176 (6.93)	167 (6.57)	178 (7.01)	171 (6.73)	179 (7.05)	176 (6.93)	186 (7.32)	180 (7.09)	190 (7.48)	187 (7.36)	190 (7.48)	187 (7.36)	190 (7.48)	187 (7.36)	190 (7.48)	187 (7.36)
Aug	148 (5.83)	126 (4.96)	150 (5.91)	133 (5.24)	151 (5.94)	141 (5.55)	155 (6.10)	147 (5.79)	161 (6.34)	154 (6.06)	164 (6.46)	161 (6.34)	164 (6.46)	161 (6.34)	164 (6.46)	161 (6.34)	164 (6.46)	161 (6.34)
Sep	107 (4.21)	48 (1.89)	108 (4.25)	58 (2.28)	110 (4.33)	69 (2.72)	115 (4.53)	84 (3.31)	118 (4.65)	101 (3.98)	119 (4.69)	110 (4.33)	119 (4.69)	110 (4.33)	119 (4.69)	110 (4.33)	119 (4.69)	110 (4.33)
Oct	53 (2.09)	3 (0.12)	54 (2.13)	4 (0.16)	55 (2.17)	5 (0.20)	55 (2.17)	5 (0.20)	57 (2.24)	19 (0.75)	57 (2.24)	19 (0.75)	57 (2.24)	19 (0.75)	57 (2.24)	19 (0.75)	57 (2.24)	19 (0.75)
Nov	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)
Season	896 (35.27)	476 (18.75)	908 (35.75)	527 (20.75)	925 (36.42)	568 (22.37)	949 (37.38)	615 (24.22)	982 (38.66)	712 (28.04)	1000 (39.37)	786 (30.95)	982 (38.66)	712 (28.04)	1000 (39.37)	786 (30.95)	982 (38.66)	712 (28.04)

REGION: 3 Columbia River below Hood River
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)
April	55 (2.17)	2 (0.08)	56 (2.20)	2 (0.08)	58 (2.28)	3 (0.12)	60 (2.36)	3 (0.12)	60 (2.36)	3 (0.12)	62 (2.44)	28 (1.10)	62 (2.44)	28 (1.10)	62 (2.44)	28 (1.10)	62 (2.44)	28 (1.10)
May	109 (4.29)	37 (1.46)	110 (4.33)	43 (1.69)	113 (4.45)	49 (1.93)	115 (4.53)	54 (2.13)	118 (4.65)	68 (2.68)	120 (4.72)	75 (2.95)	120 (4.72)	75 (2.95)	120 (4.72)	75 (2.95)	120 (4.72)	75 (2.95)
June	142 (5.59)	77 (3.03)	144 (5.67)	94 (3.70)	147 (5.79)	105 (4.13)	150 (5.91)	114 (4.49)	153 (6.02)	128 (5.04)	154 (6.06)	136 (5.35)	154 (6.06)	136 (5.35)	154 (6.06)	136 (5.35)	154 (6.06)	136 (5.35)
July	144 (5.67)	128 (5.04)	146 (5.75)	134 (5.28)	147 (5.79)	139 (5.47)	148 (5.83)	144 (5.67)	149 (5.87)	149 (5.87)	154 (6.06)	154 (6.06)	154 (6.06)	154 (6.06)	154 (6.06)	154 (6.06)	154 (6.06)	154 (6.06)
Aug	16 (0.63)	11 (0.43)	16 (0.63)	13 (0.51)	16 (0.63)	14 (0.55)	16 (0.63)	15 (0.59)	17 (0.67)	16 (0.63)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)
Season	483 (19.02)	255 (10.04)	489 (19.25)	286 (11.26)	499 (19.65)	310 (12.20)	507 (19.97)	330 (13.00)	516 (20.32)	377 (14.85)	527 (20.74)	410 (16.13)	516 (20.32)	377 (14.85)	527 (20.74)	410 (16.13)	516 (20.32)	377 (14.85)

REGION: 3 Columbia River below Hood River
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	28 (1.10)	0 (0.00)	28 (1.10)	0 (0.00)	29 (1.14)	0 (0.00)	31 (1.22)	0 (0.00)	32 (1.26)	0 (0.00)	33 (1.30)	0 (0.00)	33 (1.30)	0 (0.00)	33 (1.30)	0 (0.00)	33 (1.30)	0 (0.00)
April	58 (2.28)	2 (0.08)	60 (2.36)	3 (0.12)	61 (2.40)	3 (0.12)	63 (2.48)	3 (0.12)	64 (2.52)	3 (0.12)	65 (2.56)	3 (0.12)	65 (2.56)	3 (0.12)	65 (2.56)	3 (0.12)	65 (2.56)	3 (0.12)
May	111 (4.37)	40 (1.57)	113 (4.45)	46 (1.81)	116 (4.57)	51 (2.01)	118 (4.65)	56 (2.20)	121 (4.76)	70 (2.76)	122 (4.80)	77 (3.03)	122 (4.80)	77 (3.03)	122 (4.80)	77 (3.03)	122 (4.80)	77 (3.03)
June	142 (5.59)	77 (3.03)	144 (5.67)	94 (3.70)	147 (5.79)	105 (4.13)	150 (5.91)	114 (4.49)	153 (6.02)	128 (5.04)	154 (6.06)	136 (5.35)	154 (6.06)	136 (5.35)	154 (6.06)	136 (5.35)	154 (6.06)	136 (5.35)
July	137 (5.39)	123 (4.84)	138 (5.43)	129 (5.08)	139 (5.47)	134 (5.28)	141 (5.55)	139 (5.47)	143 (5.63)	143 (5.63)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)
Aug	4 (0.16)	4 (0.16)	5 (0.20)	5 (0.20)	5 (0.20)	5 (0.20)	7 (0.28)	6 (0.24)	7 (0.28)	6 (0.24)	7 (0.28)	7 (0.28)	7 (0.28)	6 (0.24)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)
Season	480 (18.89)	246 (9.68)	488 (19.21)	277 (10.91)	497 (19.57)	298 (11.74)	510 (20.09)	318 (12.52)	520 (20.47)	364 (14.34)	530 (20.87)	399 (15.71)	530 (20.87)	399 (15.71)	530 (20.87)	399 (15.71)	530 (20.87)	399 (15.71)

REGION: 3 Columbia River below Hood River
CROP: Grapes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	40 (1.57)	1 (0.04)	41 (1.61)	1 (0.04)	42 (1.65)	1 (0.04)	43 (1.69)	1 (0.04)	44 (1.73)	2 (0.08)	46 (1.81)	11 (0.43)	44 (1.73)	2 (0.08)	46 (1.81)	11 (0.43)	46 (1.81)	11 (0.43)
May	68 (2.68)	5 (0.20)	68 (2.68)	7 (0.28)	70 (2.76)	11 (0.43)	72 (2.83)	17 (0.67)	73 (2.87)	32 (1.26)	74 (2.91)	38 (1.50)	73 (2.87)	32 (1.26)	74 (2.91)	38 (1.50)	74 (2.91)	38 (1.50)
June	84 (3.31)	26 (1.02)	85 (3.35)	40 (1.57)	86 (3.39)	52 (2.05)	88 (3.46)	58 (2.28)	90 (3.54)	68 (2.68)	91 (3.58)	77 (3.03)	90 (3.54)	68 (2.68)	91 (3.58)	77 (3.03)	91 (3.58)	77 (3.03)
July	98 (3.86)	84 (3.31)	100 (3.94)	89 (3.50)	100 (3.94)	93 (3.66)	101 (3.98)	97 (3.82)	103 (4.06)	102 (4.02)	107 (4.21)	105 (4.13)	103 (4.06)	102 (4.02)	107 (4.21)	105 (4.13)	107 (4.21)	105 (4.13)
Aug	82 (3.23)	64 (2.52)	83 (3.27)	70 (2.76)	84 (3.31)	76 (2.99)	86 (3.39)	80 (3.15)	89 (3.50)	85 (3.35)	93 (3.66)	89 (3.50)	89 (3.50)	85 (3.35)	93 (3.66)	89 (3.50)	93 (3.66)	89 (3.50)
Sep	62 (2.44)	7 (0.28)	64 (2.52)	14 (0.55)	65 (2.56)	26 (1.02)	66 (2.60)	39 (1.54)	67 (2.64)	52 (2.05)	68 (2.68)	61 (2.40)	67 (2.64)	52 (2.05)	68 (2.68)	61 (2.40)	68 (2.68)	61 (2.40)
Oct	32 (1.26)	2 (0.08)	32 (1.26)	2 (0.08)	33 (1.30)	2 (0.08)	34 (1.34)	3 (0.12)	34 (1.34)	3 (0.12)	35 (1.38)	13 (0.51)	34 (1.34)	3 (0.12)	35 (1.38)	13 (0.51)	35 (1.38)	13 (0.51)
Nov	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)
Season	473 (18.63)	189 (7.45)	481 (18.94)	223 (8.78)	488 (19.22)	261 (10.27)	499 (19.64)	295 (11.62)	509 (20.03)	344 (13.56)	523 (20.58)	394 (15.50)	509 (20.03)	344 (13.56)	523 (20.58)	394 (15.50)	523 (20.58)	394 (15.50)

REGION: 3 Columbia River below Hood River
CROP: Grass Seed (Fall)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR in.	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm
Jan	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)
Feb	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)	21 (0.83)	0 (0.00)	23 (0.91)	0 (0.00)	23 (0.91)	0 (0.00)
March	43 (1.69)	0 (0.00)	44 (1.73)	0 (0.00)	45 (1.77)	0 (0.00)	47 (1.85)	1 (0.04)	47 (1.85)	1 (0.04)	49 (1.93)	1 (0.04)	49 (1.93)	1 (0.04)	51 (2.01)	3 (0.12)	51 (2.01)	3 (0.12)
April	83 (3.27)	4 (0.16)	85 (3.35)	5 (0.20)	88 (3.46)	6 (0.24)	90 (3.54)	16 (0.63)	90 (3.54)	16 (0.63)	93 (3.66)	43 (1.69)	93 (3.66)	43 (1.69)	96 (3.78)	53 (2.09)	96 (3.78)	53 (2.09)
May	130 (5.12)	56 (2.20)	131 (5.16)	63 (2.48)	135 (5.31)	67 (2.64)	139 (5.47)	72 (2.83)	139 (5.47)	72 (2.83)	142 (5.59)	84 (3.31)	142 (5.59)	84 (3.31)	145 (5.71)	93 (3.66)	145 (5.71)	93 (3.66)
June	142 (5.59)	78 (3.07)	144 (5.67)	95 (3.74)	147 (5.79)	106 (4.17)	150 (5.91)	115 (4.53)	150 (5.91)	115 (4.53)	153 (6.02)	129 (5.08)	153 (6.02)	129 (5.08)	154 (6.06)	137 (5.39)	154 (6.06)	137 (5.39)
July	164 (6.46)	146 (5.75)	165 (6.50)	155 (6.10)	166 (6.54)	160 (6.30)	167 (6.57)	166 (6.54)	167 (6.57)	166 (6.54)	173 (6.81)	173 (6.81)	173 (6.81)	173 (6.81)	176 (6.93)	176 (6.93)	176 (6.93)	176 (6.93)
Aug	126 (4.96)	103 (4.06)	127 (5.00)	110 (4.33)	129 (5.08)	116 (4.57)	132 (5.20)	122 (4.80)	132 (5.20)	122 (4.80)	137 (5.39)	128 (5.04)	137 (5.39)	128 (5.04)	139 (5.47)	134 (5.28)	139 (5.47)	134 (5.28)
Sep	50 (1.97)	4 (0.16)	50 (1.97)	5 (0.20)	51 (2.01)	14 (0.55)	52 (2.05)	26 (1.02)	52 (2.05)	26 (1.02)	54 (2.13)	41 (1.61)	54 (2.13)	41 (1.61)	55 (2.17)	49 (1.93)	55 (2.17)	49 (1.93)
Oct	41 (1.61)	2 (0.08)	42 (1.65)	3 (0.12)	43 (1.69)	3 (0.12)	44 (1.73)	4 (0.16)	44 (1.73)	4 (0.16)	45 (1.77)	11 (0.43)	45 (1.77)	11 (0.43)	45 (1.77)	27 (1.06)	45 (1.77)	27 (1.06)
Nov	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)
Dec	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)
Season	824 (32.45)	393 (15.48)	835 (32.89)	436 (17.17)	854 (33.62)	472 (18.59)	875 (34.44)	522 (20.55)	903 (35.54)	610 (24.01)	922 (36.30)	672 (26.46)						

REGION: 3 Columbia River below Hood River
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR in.	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm
Jan	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	12 (0.47)	0 (0.00)	13 (0.51)	0 (0.00)	13 (0.51)	0 (0.00)
Feb	13 (0.51)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)
March	21 (0.83)	0 (0.00)	21 (0.83)	0 (0.00)	22 (0.87)	0 (0.00)	23 (0.91)	0 (0.00)	23 (0.91)	0 (0.00)	23 (0.91)	0 (0.00)	23 (0.91)	0 (0.00)	24 (0.94)	0 (0.00)	24 (0.94)	0 (0.00)
April	46 (1.81)	1 (0.04)	47 (1.85)	2 (0.08)	47 (1.85)	2 (0.08)	49 (1.93)	2 (0.08)	49 (1.93)	2 (0.08)	50 (1.97)	6 (0.24)	50 (1.97)	6 (0.24)	50 (1.97)	17 (0.67)	50 (1.97)	17 (0.67)
May	71 (2.80)	5 (0.20)	71 (2.80)	10 (0.39)	72 (2.83)	14 (0.55)	73 (2.87)	19 (0.75)	73 (2.87)	19 (0.75)	74 (2.91)	33 (1.30)	74 (2.91)	33 (1.30)	75 (2.95)	39 (1.54)	75 (2.95)	39 (1.54)
June	99 (3.90)	41 (1.61)	101 (3.98)	56 (2.20)	104 (4.09)	67 (2.64)	105 (4.13)	75 (2.95)	105 (4.13)	75 (2.95)	109 (4.29)	87 (3.43)	109 (4.29)	87 (3.43)	110 (4.33)	93 (3.66)	110 (4.33)	93 (3.66)
July	145 (5.71)	129 (5.08)	147 (5.79)	135 (5.31)	148 (5.83)	140 (5.51)	150 (5.91)	145 (5.71)	150 (5.91)	145 (5.71)	153 (6.02)	152 (5.98)	153 (6.02)	152 (5.98)	157 (6.18)	156 (6.14)	157 (6.18)	156 (6.14)
Aug	137 (5.39)	114 (4.49)	137 (5.39)	121 (4.76)	139 (5.47)	128 (5.04)	145 (5.71)	134 (5.28)	145 (5.71)	134 (5.28)	148 (5.83)	140 (5.51)	148 (5.83)	140 (5.51)	150 (5.91)	147 (5.79)	150 (5.91)	147 (5.79)
Sep	105 (4.13)	43 (1.69)	107 (4.21)	53 (2.09)	108 (4.25)	64 (2.52)	110 (4.33)	79 (3.11)	113 (4.45)	98 (3.86)	114 (4.49)	106 (4.17)	114 (4.45)	98 (3.86)	114 (4.49)	106 (4.17)	114 (4.49)	106 (4.17)
Oct	65 (2.56)	4 (0.16)	66 (2.60)	5 (0.20)	67 (2.64)	6 (0.24)	69 (2.72)	7 (0.28)	69 (2.72)	7 (0.28)	70 (2.76)	29 (1.14)	70 (2.76)	29 (1.14)	71 (2.80)	50 (1.97)	71 (2.80)	50 (1.97)
Nov	21 (0.83)	0 (0.00)	22 (0.87)	0 (0.00)	23 (0.91)	0 (0.00)	25 (0.98)	0 (0.00)	25 (0.98)	0 (0.00)	26 (1.02)	0 (0.00)	26 (1.02)	0 (0.00)	27 (1.06)	0 (0.00)	27 (1.06)	0 (0.00)
Dec	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	13 (0.51)	0 (0.00)	13 (0.51)	0 (0.00)	13 (0.51)	0 (0.00)	13 (0.51)	0 (0.00)
Season	739 (29.10)	337 (13.27)	752 (29.61)	382 (15.03)	764 (30.07)	421 (16.58)	784 (30.86)	461 (18.16)	808 (31.81)	545 (21.46)	823 (32.40)	608 (23.94)						

REGION: 3 Columbia River below Hood River
CROP: Onions

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	25 (0.98)	1 (0.04)	25 (0.98)	1 (0.04)	25 (0.98)	1 (0.04)	25 (0.98)	1 (0.04)	26 (1.02)	1 (0.04)	27 (1.06)	8 (0.31)	27 (1.06)	8 (0.31)	27 (1.06)	13 (0.51)	27 (1.06)	13 (0.51)
May	101 (3.98)	43 (1.69)	102 (4.02)	48 (1.89)	105 (4.13)	51 (2.01)	107 (4.21)	55 (2.17)	107 (4.21)	55 (2.17)	110 (4.33)	65 (2.56)	110 (4.33)	65 (2.56)	111 (4.37)	75 (2.95)	111 (4.37)	75 (2.95)
June	129 (5.08)	74 (2.91)	131 (5.16)	88 (3.46)	134 (5.28)	98 (3.86)	137 (5.39)	107 (4.21)	137 (5.39)	107 (4.21)	139 (5.47)	117 (4.61)	139 (5.47)	117 (4.61)	140 (5.51)	124 (4.88)	140 (5.51)	124 (4.88)
July	146 (5.75)	133 (5.24)	148 (5.83)	140 (5.51)	152 (5.98)	144 (5.67)	154 (6.06)	148 (5.83)	154 (6.06)	148 (5.83)	156 (6.14)	152 (5.98)	156 (6.14)	152 (5.98)	162 (6.38)	157 (6.18)	162 (6.38)	157 (6.18)
Aug	111 (4.37)	91 (3.58)	112 (4.41)	97 (3.82)	113 (4.45)	102 (4.02)	114 (4.49)	107 (4.21)	114 (4.49)	107 (4.21)	119 (4.69)	113 (4.45)	119 (4.69)	113 (4.45)	121 (4.76)	118 (4.65)	121 (4.76)	118 (4.65)
Season	512 (20.16)	342 (13.46)	518 (20.40)	374 (14.72)	529 (20.82)	396 (15.60)	538 (21.17)	418 (16.46)	538 (21.17)	418 (16.46)	551 (21.69)	455 (17.91)	551 (21.69)	455 (17.91)	561 (22.08)	487 (19.17)	561 (22.08)	487 (19.17)

REGION: 3 Columbia River below Hood River
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	34 (1.34)	1 (0.04)	36 (1.42)	1 (0.04)	37 (1.46)	1 (0.04)	41 (1.61)	1 (0.04)	41 (1.61)	1 (0.04)	42 (1.65)	1 (0.04)	42 (1.65)	1 (0.04)	45 (1.77)	10 (0.39)	45 (1.77)	10 (0.39)
April	81 (3.19)	4 (0.16)	83 (3.27)	5 (0.20)	86 (3.39)	6 (0.24)	88 (3.46)	6 (0.24)	88 (3.46)	6 (0.24)	90 (3.54)	39 (1.54)	90 (3.54)	39 (1.54)	93 (3.66)	50 (1.97)	93 (3.66)	50 (1.97)
May	114 (4.49)	42 (1.65)	115 (4.53)	48 (1.89)	119 (4.69)	55 (2.17)	122 (4.80)	61 (2.40)	122 (4.80)	61 (2.40)	124 (4.88)	73 (2.87)	124 (4.88)	73 (2.87)	127 (5.00)	80 (3.15)	127 (5.00)	80 (3.15)
June	126 (4.96)	65 (2.56)	128 (5.04)	82 (3.23)	130 (5.12)	92 (3.62)	133 (5.24)	99 (3.90)	133 (5.24)	99 (3.90)	135 (5.31)	112 (4.41)	135 (5.31)	112 (4.41)	136 (5.35)	120 (4.72)	136 (5.35)	120 (4.72)
July	145 (5.71)	127 (5.00)	147 (5.79)	135 (5.31)	148 (5.83)	140 (5.51)	150 (5.91)	145 (5.71)	150 (5.91)	145 (5.71)	152 (5.98)	152 (5.98)	152 (5.98)	152 (5.98)	158 (6.22)	156 (6.14)	158 (6.22)	156 (6.14)
Aug	121 (4.76)	101 (3.98)	122 (4.80)	108 (4.25)	124 (4.88)	114 (4.49)	127 (5.00)	120 (4.72)	127 (5.00)	120 (4.72)	132 (5.20)	126 (4.96)	132 (5.20)	126 (4.96)	137 (5.39)	132 (5.20)	137 (5.39)	132 (5.20)
Sep	92 (3.62)	33 (1.30)	96 (3.78)	44 (1.73)	97 (3.82)	56 (2.20)	99 (3.90)	68 (2.68)	99 (3.90)	68 (2.68)	101 (3.98)	87 (3.43)	101 (3.98)	87 (3.43)	102 (4.02)	95 (3.74)	102 (4.02)	95 (3.74)
Oct	58 (2.28)	4 (0.16)	60 (2.36)	5 (0.20)	60 (2.36)	5 (0.20)	61 (2.40)	6 (0.24)	61 (2.40)	6 (0.24)	63 (2.48)	22 (0.87)	63 (2.48)	22 (0.87)	64 (2.52)	41 (1.61)	64 (2.52)	41 (1.61)
Nov	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	12 (0.47)	0 (0.00)	12 (0.47)	0 (0.00)	12 (0.47)	0 (0.00)	12 (0.47)	0 (0.00)
Season	780 (30.70)	377 (14.85)	797 (31.38)	428 (16.85)	811 (31.94)	469 (18.47)	832 (32.75)	514 (20.24)	832 (32.75)	514 (20.24)	851 (33.49)	612 (24.10)	851 (33.49)	612 (24.10)	874 (34.40)	684 (26.92)	874 (34.40)	684 (26.92)

REGION: 3 Columbia River below Hood River
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop	Net IRR		ET crop	Net IRR		ET crop	Net IRR		ET crop	Net IRR		ET crop	Net IRR		ET crop	Net IRR	
	mm in.	mm in.		mm in.	mm in.		mm in.	mm in.		mm in.	mm in.		mm in.	mm in.		mm in.	mm in.	
March	43 (1.69)	0 (0.00)		44 (1.73)	0 (0.00)		45 (1.77)	0 (0.00)		48 (1.89)	1 (0.04)		50 (1.97)	1 (0.04)		53 (2.09)	3 (0.12)	
April	74 (2.91)	3 (0.12)		76 (2.99)	4 (0.16)		79 (3.11)	5 (0.20)		81 (3.19)	7 (0.28)		83 (3.27)	35 (1.38)		85 (3.35)	46 (1.81)	
May	114 (4.49)	41 (1.61)		115 (4.53)	49 (1.93)		119 (4.69)	55 (2.17)		122 (4.80)	60 (2.36)		124 (4.88)	72 (2.83)		127 (5.00)	79 (3.11)	
June	138 (5.43)	76 (2.99)		140 (5.51)	92 (3.62)		143 (5.63)	103 (4.06)		146 (5.75)	112 (4.41)		149 (5.87)	125 (4.92)		150 (5.91)	133 (5.24)	
July	162 (6.38)	143 (5.63)		164 (6.46)	152 (5.98)		165 (6.50)	157 (6.18)		167 (6.57)	163 (6.42)		168 (6.61)	168 (6.61)		176 (6.93)	174 (6.85)	
Aug	139 (5.47)	114 (4.49)		140 (5.51)	120 (4.72)		141 (5.55)	127 (5.00)		143 (5.63)	134 (5.28)		148 (5.83)	140 (5.51)		150 (5.91)	147 (5.79)	
Sep	100 (3.94)	38 (1.50)		101 (3.98)	47 (1.85)		103 (4.06)	61 (2.40)		104 (4.09)	74 (2.91)		107 (4.21)	93 (3.66)		108 (4.25)	100 (3.94)	
Oct	50 (1.97)	3 (0.12)		51 (2.01)	4 (0.16)		52 (2.05)	4 (0.16)		52 (2.05)	5 (0.20)		54 (2.13)	17 (0.67)		54 (2.13)	32 (1.26)	
Nov	16 (0.63)	0 (0.00)		16 (0.63)	0 (0.00)		17 (0.67)	0 (0.00)		19 (0.75)	0 (0.00)		20 (0.79)	0 (0.00)		20 (0.79)	0 (0.00)	
Season	836 (32.91)	418 (16.46)		847 (33.35)	468 (18.42)		864 (34.03)	512 (20.17)		882 (34.72)	556 (21.90)		903 (35.56)	651 (25.62)		923 (36.36)	714 (28.12)	

REGION: 3 Columbia River below Hood River
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop	Net IRR		ET crop	Net IRR		ET crop	Net IRR		ET crop	Net IRR		ET crop	Net IRR		ET crop	Net IRR	
	mm in.	mm in.		mm in.	mm in.		mm in.	mm in.		mm in.	mm in.		mm in.	mm in.		mm in.	mm in.	
March	34 (1.34)	0 (0.00)		35 (1.38)	0 (0.00)		36 (1.42)	0 (0.00)		36 (1.42)	0 (0.00)		37 (1.46)	0 (0.00)		41 (1.61)	0 (0.00)	
April	81 (3.19)	4 (0.16)		83 (3.27)	5 (0.20)		86 (3.39)	6 (0.24)		88 (3.46)	14 (0.55)		91 (3.58)	40 (1.57)		93 (3.66)	57 (2.24)	
May	129 (5.08)	56 (2.20)		130 (5.12)	62 (2.44)		134 (5.28)	67 (2.64)		138 (5.43)	72 (2.83)		141 (5.55)	83 (3.27)		143 (5.63)	92 (3.62)	
June	53 (2.09)	31 (1.22)		54 (2.13)	36 (1.42)		55 (2.17)	41 (1.61)		57 (2.24)	45 (1.77)		58 (2.28)	50 (1.97)		59 (2.32)	53 (2.09)	
Season	297 (11.70)	91 (3.58)		302 (11.90)	103 (4.06)		311 (12.26)	114 (4.49)		319 (12.55)	131 (5.15)		327 (12.87)	173 (6.81)		336 (13.22)	202 (7.95)	

REGION: 3 Columbia River below Hood River
CROP: Plums

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	43 (1.69)	0 (0.00)	44 (1.73)	0 (0.00)	45 (1.77)	0 (0.00)	48 (1.89)	1 (0.04)	50 (1.97)	1 (0.04)	53 (2.09)	3 (0.12)						
April	74 (2.91)	3 (0.12)	76 (2.99)	4 (0.16)	79 (3.11)	5 (0.20)	81 (3.19)	7 (0.28)	83 (3.27)	35 (1.38)	85 (3.35)	46 (1.81)						
May	114 (4.49)	41 (1.61)	115 (4.53)	49 (1.93)	119 (4.69)	55 (2.17)	122 (4.80)	60 (2.36)	124 (4.88)	72 (2.83)	127 (5.00)	79 (3.11)						
June	138 (5.43)	76 (2.99)	140 (5.51)	92 (3.62)	143 (5.63)	103 (4.06)	146 (5.75)	112 (4.41)	149 (5.87)	125 (4.92)	150 (5.91)	133 (5.24)						
July	162 (6.38)	143 (5.63)	164 (6.46)	152 (5.98)	165 (6.50)	157 (6.18)	167 (6.57)	163 (6.42)	168 (6.61)	168 (6.61)	176 (6.93)	174 (6.85)						
Aug	139 (5.47)	114 (4.49)	140 (5.51)	120 (4.72)	141 (5.55)	127 (5.00)	143 (5.63)	134 (5.28)	148 (5.83)	140 (5.51)	150 (5.91)	147 (5.79)						
Sep	100 (3.94)	38 (1.50)	101 (3.98)	47 (1.85)	103 (4.06)	61 (2.40)	104 (4.09)	74 (2.91)	107 (4.21)	93 (3.66)	108 (4.25)	100 (3.94)						
Oct	50 (1.97)	3 (0.12)	51 (2.01)	4 (0.16)	52 (2.05)	4 (0.16)	52 (2.05)	5 (0.20)	54 (2.13)	17 (0.67)	54 (2.13)	32 (1.26)						
Nov	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)						
Season	836 (32.91)	418 (16.46)	847 (33.35)	468 (18.42)	864 (34.03)	512 (20.17)	882 (34.72)	556 (21.90)	903 (35.56)	651 (25.62)	923 (36.36)	714 (28.12)						

REGION: 3 Columbia River below Hood River
CROP: Potatoes

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
April	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	7 (0.28)	1 (0.04)	7 (0.28)	3 (0.12)	3 (0.12)	3 (0.12)		
May	52 (2.05)	3 (0.12)	53 (2.09)	3 (0.12)	54 (2.13)	4 (0.16)	54 (2.13)	7 (0.28)	55 (2.17)	19 (0.75)	55 (2.17)	19 (0.75)	55 (2.17)	26 (1.02)	26 (1.02)	26 (1.02)		
June	95 (3.74)	41 (1.61)	97 (3.82)	55 (2.17)	99 (3.90)	66 (2.60)	101 (3.98)	73 (2.87)	103 (4.06)	84 (3.31)	104 (4.09)	84 (3.31)	104 (4.09)	90 (3.54)	90 (3.54)	90 (3.54)		
July	160 (6.30)	144 (5.67)	161 (6.34)	152 (5.98)	162 (6.38)	156 (6.14)	163 (6.42)	160 (6.30)	169 (6.65)	163 (6.42)	172 (6.77)	163 (6.42)	172 (6.77)	170 (6.69)	170 (6.69)	170 (6.69)		
Aug	142 (5.59)	119 (4.69)	143 (5.63)	125 (4.92)	144 (5.67)	132 (5.20)	146 (5.75)	138 (5.43)	151 (5.94)	144 (5.67)	153 (6.02)	144 (5.67)	153 (6.02)	150 (5.91)	150 (5.91)	150 (5.91)		
Sep	96 (3.78)	42 (1.65)	97 (3.82)	51 (2.01)	99 (3.90)	60 (2.36)	101 (3.98)	74 (2.91)	103 (4.06)	89 (3.50)	104 (4.09)	89 (3.50)	104 (4.09)	97 (3.82)	97 (3.82)	97 (3.82)		
Oct	15 (0.59)	1 (0.04)	15 (0.59)	1 (0.04)	15 (0.59)	1 (0.04)	15 (0.59)	2 (0.08)	16 (0.63)	6 (0.24)	16 (0.63)	6 (0.24)	16 (0.63)	12 (0.47)	12 (0.47)	12 (0.47)		
Season	566 (22.29)	350 (13.78)	572 (22.53)	387 (15.24)	579 (22.81)	419 (16.50)	586 (23.09)	454 (17.87)	604 (23.79)	506 (19.93)	611 (24.05)	506 (19.93)	611 (24.05)	548 (21.57)	548 (21.57)	548 (21.57)		

REGION: 3 Columbia River below Hood River
CROP: Tomatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	51 (2.01)	2 (0.08)	51 (2.01)	2 (0.08)	51 (2.01)	3 (0.12)	52 (2.05)	3 (0.12)	53 (2.09)	17 (0.67)	53 (2.09)	17 (0.67)	53 (2.09)	17 (0.67)	53 (2.09)	21 (0.83)	53 (2.09)	21 (0.83)
June	118 (4.65)	57 (2.24)	120 (4.72)	74 (2.91)	122 (4.80)	84 (3.31)	125 (4.92)	92 (3.62)	127 (5.00)	105 (4.13)	128 (5.04)	112 (4.41)	129 (5.16)	120 (4.69)	131 (5.28)	133 (5.24)	134 (5.28)	133 (5.24)
July	167 (6.57)	150 (5.91)	168 (6.61)	159 (6.26)	173 (6.81)	164 (6.46)	174 (6.85)	170 (6.69)	175 (6.89)	175 (6.89)	181 (7.13)	181 (7.13)	181 (7.13)	175 (6.89)	181 (7.13)	181 (7.13)	181 (7.13)	181 (7.13)
Aug	72 (2.83)	60 (2.36)	73 (2.87)	64 (2.52)	75 (2.95)	68 (2.68)	77 (3.03)	71 (2.80)	78 (3.07)	75 (2.95)	79 (3.11)	79 (3.11)	79 (3.11)	75 (2.95)	79 (3.11)	79 (3.11)	79 (3.11)	79 (3.11)
Season	408 (16.06)	269 (10.59)	412 (16.21)	299 (11.77)	421 (16.57)	319 (12.57)	428 (16.85)	336 (13.23)	433 (17.05)	372 (14.64)	441 (17.37)	393 (15.48)	441 (17.37)	372 (14.64)	441 (17.37)	393 (15.48)	441 (17.37)	393 (15.48)

REGION: 4 Tualatin Valley
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	52 (2.05)	13 (0.51)	53 (2.09)	18 (0.71)	54 (2.13)	23 (0.91)	55 (2.17)	28 (1.10)	56 (2.20)	40 (1.57)	57 (2.24)	45 (1.77)	58 (2.28)	42 (1.50)	59 (2.32)	47 (1.81)	60 (2.36)	48 (1.85)
May	102 (4.02)	59 (2.32)	104 (4.09)	67 (2.64)	106 (4.17)	71 (2.80)	108 (4.25)	75 (2.95)	110 (4.33)	84 (3.31)	112 (4.41)	91 (3.58)	114 (4.49)	82 (3.23)	116 (4.57)	93 (3.66)	118 (4.65)	99 (3.81)
June	110 (4.33)	77 (3.03)	112 (4.41)	87 (3.43)	115 (4.53)	93 (4.08)	118 (4.65)	99 (4.13)	120 (4.69)	105 (4.13)	122 (4.72)	107 (4.17)	124 (4.76)	102 (4.02)	126 (4.84)	109 (4.29)	131 (4.92)	112 (4.41)
July	126 (4.96)	116 (4.57)	127 (5.00)	121 (4.76)	128 (5.04)	124 (4.88)	129 (5.08)	127 (5.00)	131 (5.16)	129 (5.08)	134 (5.28)	133 (5.24)	134 (5.28)	129 (5.08)	131 (5.16)	129 (5.08)	134 (5.28)	133 (5.24)
Aug	108 (4.25)	99 (3.90)	112 (4.41)	102 (4.02)	113 (4.45)	106 (4.17)	114 (4.49)	109 (4.29)	117 (4.61)	114 (4.49)	119 (4.69)	118 (4.65)	119 (4.69)	114 (4.49)	117 (4.61)	114 (4.49)	119 (4.69)	118 (4.65)
Sep	83 (3.27)	47 (1.85)	83 (3.27)	53 (2.09)	86 (3.39)	60 (2.36)	87 (3.43)	70 (2.76)	89 (3.50)	82 (3.23)	89 (3.50)	87 (3.43)	89 (3.50)	82 (3.23)	89 (3.50)	87 (3.43)	89 (3.50)	87 (3.43)
Oct	49 (1.93)	3 (0.12)	49 (1.93)	4 (0.16)	50 (1.97)	4 (0.16)	50 (1.97)	5 (0.20)	53 (2.09)	19 (0.75)	54 (2.13)	36 (1.42)	54 (2.13)	19 (0.75)	54 (2.13)	36 (1.42)	54 (2.13)	36 (1.42)
Nov	4 (0.16)	0 (0.00)	4 (0.16)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)
Season	634 (24.97)	414 (16.30)	644 (25.36)	452 (17.81)	657 (25.88)	481 (18.94)	666 (26.24)	513 (20.20)	680 (26.78)	578 (22.76)	691 (27.21)	624 (24.58)	691 (27.21)	578 (22.76)	691 (27.21)	624 (24.58)	691 (27.21)	624 (24.58)

REGION: 4 Tualatin Valley
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	2 (0.08)	43 (1.69)	2 (0.08)	44 (1.73)	2 (0.08)	47 (1.85)	3 (0.12)	48 (1.89)	3 (0.12)	48 (1.89)	3 (0.12)	51 (2.01)	7 (0.28)	51 (2.01)	7 (0.28)	51 (2.01)	7 (0.28)
April	78 (3.07)	20 (0.79)	79 (3.11)	27 (1.06)	80 (3.15)	35 (1.38)	82 (3.23)	43 (1.69)	83 (3.27)	60 (2.36)	83 (3.27)	60 (2.36)	85 (3.35)	67 (2.64)	85 (3.35)	67 (2.64)	85 (3.35)	67 (2.64)
May	122 (4.80)	77 (3.03)	123 (4.84)	83 (3.27)	125 (4.92)	89 (3.50)	128 (5.04)	97 (3.82)	130 (5.12)	107 (4.21)	130 (5.12)	107 (4.21)	136 (5.35)	113 (4.45)	136 (5.35)	113 (4.45)	136 (5.35)	113 (4.45)
June	144 (5.67)	108 (4.25)	147 (5.79)	119 (4.69)	150 (5.91)	126 (4.96)	154 (6.06)	132 (5.20)	156 (6.14)	146 (5.75)	156 (6.14)	146 (5.75)	158 (6.22)	150 (5.91)	158 (6.22)	150 (5.91)	158 (6.22)	150 (5.91)
July	166 (6.54)	155 (6.10)	168 (6.61)	159 (6.26)	170 (6.69)	164 (6.46)	171 (6.73)	168 (6.61)	174 (6.85)	173 (6.81)	174 (6.85)	173 (6.81)	178 (7.01)	177 (6.97)	178 (7.01)	177 (6.97)	178 (7.01)	177 (6.97)
Aug	143 (5.63)	131 (5.16)	148 (5.83)	137 (5.39)	150 (5.91)	141 (5.55)	152 (5.98)	145 (5.71)	155 (6.10)	150 (5.91)	155 (6.10)	150 (5.91)	158 (6.22)	156 (6.14)	158 (6.22)	156 (6.14)	158 (6.22)	156 (6.14)
Sep	104 (4.09)	62 (2.44)	105 (4.13)	69 (2.72)	109 (4.29)	77 (3.03)	110 (4.33)	93 (3.66)	112 (4.41)	103 (4.06)	112 (4.41)	103 (4.06)	113 (4.45)	109 (4.29)	113 (4.45)	109 (4.29)	113 (4.45)	109 (4.29)
Oct	48 (1.89)	3 (0.12)	48 (1.89)	4 (0.16)	49 (1.93)	4 (0.16)	49 (1.93)	5 (0.20)	52 (2.05)	18 (0.71)	52 (2.05)	18 (0.71)	53 (2.09)	35 (1.38)	53 (2.09)	35 (1.38)	53 (2.09)	35 (1.38)
Nov	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)
Season	860 (33.85)	558 (21.97)	876 (34.48)	600 (23.63)	893 (35.16)	638 (25.12)	910 (35.82)	686 (27.01)	927 (36.50)	760 (29.93)	927 (36.50)	760 (29.93)	950 (37.41)	814 (32.06)	950 (37.41)	814 (32.06)	950 (37.41)	814 (32.06)

REGION: 4 Tualatin Valley
CROP: Beans (Dry Field)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	59 (2.32)	24 (0.94)	60 (2.36)	27 (1.06)	61 (2.40)	30 (1.18)	62 (2.44)	36 (1.42)	63 (2.48)	42 (1.65)	63 (2.48)	42 (1.65)	64 (2.52)	47 (1.85)	64 (2.52)	47 (1.85)	64 (2.52)	47 (1.85)
June	119 (4.69)	85 (3.35)	120 (4.72)	95 (3.74)	123 (4.84)	101 (3.98)	126 (4.96)	108 (4.25)	128 (5.04)	119 (4.69)	128 (5.04)	119 (4.69)	129 (5.08)	123 (4.84)	129 (5.08)	123 (4.84)	129 (5.08)	123 (4.84)
July	104 (4.09)	96 (3.78)	105 (4.13)	99 (3.90)	106 (4.17)	102 (4.02)	107 (4.21)	105 (4.13)	108 (4.25)	107 (4.21)	108 (4.25)	107 (4.21)	113 (4.45)	110 (4.33)	113 (4.45)	110 (4.33)	113 (4.45)	110 (4.33)
Season	282 (11.10)	205 (8.07)	285 (11.21)	221 (8.70)	290 (11.41)	233 (9.18)	295 (11.61)	249 (9.80)	299 (11.77)	268 (10.55)	299 (11.77)	268 (10.55)	306 (12.05)	280 (11.02)	306 (12.05)	280 (11.02)	306 (12.05)	280 (11.02)

REGION: 4 Tualatin Valley
CROP: Berries

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.
May	63 (2.48)	26 (1.02)	63 (2.48)	30 (1.18)	64 (2.52)	34 (1.34)	65 (2.56)	38 (1.50)	67 (2.64)	45 (1.77)	68 (2.68)	50 (1.97)	68 (2.68)	50 (1.97)	68 (2.68)	50 (1.97)	68 (2.68)	50 (1.97)
June	78 (3.07)	44 (1.73)	79 (3.11)	52 (2.05)	81 (3.19)	61 (2.40)	83 (3.27)	67 (2.64)	84 (3.31)	76 (2.99)	85 (3.35)	80 (3.15)	85 (3.35)	80 (3.15)	85 (3.35)	80 (3.15)	85 (3.35)	80 (3.15)
July	98 (3.86)	89 (3.50)	99 (3.90)	94 (3.70)	100 (3.94)	97 (3.82)	101 (3.98)	100 (3.94)	103 (4.06)	103 (4.06)	107 (4.21)	106 (4.17)	107 (4.21)	106 (4.17)	107 (4.21)	106 (4.17)	107 (4.21)	106 (4.17)
Aug	86 (3.39)	78 (3.07)	88 (3.46)	80 (3.15)	90 (3.54)	83 (3.27)	91 (3.58)	86 (3.39)	93 (3.66)	90 (3.54)	94 (3.70)	94 (3.70)	94 (3.70)	94 (3.70)	94 (3.70)	94 (3.70)	94 (3.70)	94 (3.70)
Sep	65 (2.56)	31 (1.22)	66 (2.60)	36 (1.42)	68 (2.68)	41 (1.61)	69 (2.72)	51 (2.01)	70 (2.76)	65 (2.56)	71 (2.80)	69 (2.72)	71 (2.80)	69 (2.72)	71 (2.80)	69 (2.72)	71 (2.80)	69 (2.72)
Oct	39 (1.54)	2 (0.08)	39 (1.54)	3 (0.12)	39 (1.54)	3 (0.12)	40 (1.57)	4 (0.16)	42 (1.65)	11 (0.43)	43 (1.69)	28 (1.10)	43 (1.69)	28 (1.10)	43 (1.69)	28 (1.10)	43 (1.69)	28 (1.10)
Nov	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)
Season	438 (17.25)	270 (10.62)	443 (17.44)	295 (11.62)	452 (17.80)	319 (12.56)	460 (18.11)	346 (13.64)	470 (18.51)	390 (15.35)	479 (18.86)	427 (16.81)	479 (18.86)	427 (16.81)	479 (18.86)	427 (16.81)	479 (18.86)	427 (16.81)

REGION: 4 Tualatin Valley
CROP: Cherries

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.
March	41 (1.61)	2 (0.08)	43 (1.69)	2 (0.08)	44 (1.73)	2 (0.08)	47 (1.85)	3 (0.12)	48 (1.89)	3 (0.12)	51 (2.01)	7 (0.28)	48 (1.89)	3 (0.12)	51 (2.01)	7 (0.28)	48 (1.89)	3 (0.12)
April	78 (3.07)	20 (0.79)	79 (3.11)	27 (1.06)	80 (3.15)	35 (1.38)	82 (3.23)	43 (1.69)	83 (3.27)	60 (2.36)	85 (3.35)	67 (2.64)	83 (3.27)	60 (2.36)	85 (3.35)	67 (2.64)	83 (3.27)	60 (2.36)
May	122 (4.80)	77 (3.03)	123 (4.84)	83 (3.27)	125 (4.92)	89 (3.50)	128 (5.04)	97 (3.82)	130 (5.12)	107 (4.21)	136 (5.35)	113 (4.45)	130 (5.12)	107 (4.21)	136 (5.35)	113 (4.45)	130 (5.12)	107 (4.21)
June	144 (5.67)	108 (4.25)	147 (5.79)	119 (4.69)	150 (5.91)	126 (4.96)	154 (6.06)	132 (5.20)	156 (6.14)	146 (5.75)	158 (6.22)	150 (5.91)	156 (6.14)	146 (5.75)	158 (6.22)	150 (5.91)	156 (6.14)	146 (5.75)
July	166 (6.54)	155 (6.10)	168 (6.61)	159 (6.26)	170 (6.69)	164 (6.46)	171 (6.73)	168 (6.61)	174 (6.85)	173 (6.81)	178 (7.01)	177 (6.97)	174 (6.85)	173 (6.81)	178 (7.01)	177 (6.97)	174 (6.85)	173 (6.81)
Aug	143 (5.63)	131 (5.16)	148 (5.83)	137 (5.39)	150 (5.91)	141 (5.55)	152 (5.98)	145 (5.71)	155 (6.10)	150 (5.91)	158 (6.22)	156 (6.14)	155 (6.10)	150 (5.91)	158 (6.22)	156 (6.14)	155 (6.10)	150 (5.91)
Sep	104 (4.09)	62 (2.44)	105 (4.13)	69 (2.72)	109 (4.29)	77 (3.03)	110 (4.33)	93 (3.66)	112 (4.41)	103 (4.06)	113 (4.45)	109 (4.29)	112 (4.41)	103 (4.06)	113 (4.45)	109 (4.29)	113 (4.45)	109 (4.29)
Oct	48 (1.89)	3 (0.12)	48 (1.89)	4 (0.16)	49 (1.93)	4 (0.16)	49 (1.93)	5 (0.20)	52 (2.05)	18 (0.71)	53 (2.09)	35 (1.38)	52 (2.05)	18 (0.71)	53 (2.09)	35 (1.38)	53 (2.09)	35 (1.38)
Nov	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)
Season	860 (33.85)	558 (21.97)	876 (34.48)	600 (23.63)	893 (35.16)	638 (25.12)	910 (35.82)	686 (27.01)	927 (36.50)	760 (29.93)	950 (37.41)	814 (32.06)	927 (36.50)	760 (29.93)	950 (37.41)	814 (32.06)	950 (37.41)	814 (32.06)

REGION: 4 Tualatin Valley
CROP: Corn (Field)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	23 (0.91)	1 (0.04)	23 (0.91)	2 (0.08)	23 (0.91)	2 (0.08)	23 (0.91)	2 (0.08)	23 (0.91)	3 (0.12)	24 (0.94)	8 (0.31)	24 (0.94)	12 (0.47)	24 (0.94)	12 (0.47)	24 (0.94)	12 (0.47)
June	63 (2.48)	36 (1.42)	65 (2.56)	42 (1.65)	66 (2.60)	47 (1.85)	68 (2.68)	53 (2.09)	70 (2.76)	59 (2.32)	70 (2.76)	59 (2.32)	70 (2.76)	63 (2.48)	70 (2.76)	63 (2.48)	70 (2.76)	63 (2.48)
July	144 (5.67)	134 (5.28)	146 (5.75)	138 (5.43)	147 (5.79)	142 (5.59)	149 (5.87)	146 (5.75)	151 (5.94)	150 (5.91)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)
Aug	132 (5.20)	121 (4.76)	133 (5.24)	126 (4.96)	135 (5.31)	130 (5.12)	137 (5.39)	133 (5.24)	143 (5.63)	137 (5.39)	145 (5.71)	143 (5.63)	145 (5.71)	143 (5.63)	145 (5.71)	143 (5.63)	145 (5.71)	143 (5.63)
Sep	47 (1.85)	24 (0.94)	47 (1.85)	29 (1.14)	49 (1.93)	33 (1.30)	50 (1.97)	39 (1.54)	50 (1.97)	47 (1.85)	51 (2.01)	49 (1.93)	51 (2.01)	49 (1.93)	51 (2.01)	49 (1.93)	51 (2.01)	49 (1.93)
Season	409 (16.11)	316 (12.44)	414 (16.31)	337 (13.26)	420 (16.54)	354 (13.94)	427 (16.82)	374 (14.74)	438 (17.24)	401 (15.78)	445 (17.52)	422 (16.61)	445 (17.52)	422 (16.61)	445 (17.52)	422 (16.61)	445 (17.52)	422 (16.61)

REGION: 4 Tualatin Valley
CROP: Corn (Silage)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	31 (1.22)	3 (0.12)	31 (1.22)	4 (0.16)	31 (1.22)	7 (0.28)	32 (1.26)	11 (0.43)	32 (1.26)	17 (0.67)	33 (1.30)	20 (0.79)	33 (1.30)	20 (0.79)	33 (1.30)	20 (0.79)	33 (1.30)	20 (0.79)
June	94 (3.70)	64 (2.52)	96 (3.78)	71 (2.80)	99 (3.90)	77 (3.03)	102 (4.02)	83 (3.27)	103 (4.06)	93 (3.66)	104 (4.09)	97 (3.82)	104 (4.09)	97 (3.82)	104 (4.09)	97 (3.82)	104 (4.09)	97 (3.82)
July	154 (6.06)	144 (5.67)	156 (6.14)	149 (5.87)	157 (6.18)	153 (6.02)	159 (6.26)	157 (6.18)	161 (6.34)	160 (6.30)	168 (6.61)	164 (6.46)	168 (6.61)	164 (6.46)	168 (6.61)	164 (6.46)	168 (6.61)	164 (6.46)
Aug	131 (5.16)	120 (4.72)	132 (5.20)	126 (4.96)	134 (5.28)	129 (5.08)	139 (5.47)	133 (5.24)	142 (5.59)	138 (5.43)	144 (5.67)	143 (5.63)	144 (5.67)	143 (5.63)	144 (5.67)	143 (5.63)	144 (5.67)	143 (5.63)
Sep	25 (0.98)	17 (0.67)	25 (0.98)	19 (0.75)	26 (1.02)	21 (0.83)	27 (1.06)	23 (0.91)	27 (1.06)	26 (1.02)	27 (1.06)	27 (1.06)	27 (1.06)	27 (1.06)	27 (1.06)	27 (1.06)	27 (1.06)	27 (1.06)
Season	435 (17.12)	348 (13.70)	440 (17.32)	369 (14.54)	447 (17.60)	387 (15.24)	459 (18.07)	407 (16.03)	465 (18.31)	434 (17.08)	476 (18.73)	451 (17.76)	476 (18.73)	451 (17.76)	476 (18.73)	451 (17.76)	476 (18.73)	451 (17.76)

REGION: 4 Tualatin Valley
CROP: Corn (Sweet)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR mm	ET mm	ET crop in.	Net IRR mm	ET mm	ET crop in.	Net IRR mm	ET mm	ET crop in.	Net IRR mm	ET mm	ET crop in.	Net IRR mm
May	37 (1.46)	16 (0.63)	38 (1.50)	18 (0.71)	38 (1.50)	21 (0.83)	39 (1.54)	23 (0.91)	39 (1.54)	27 (1.06)	40 (1.57)	30 (1.18)	37 (1.46)	16 (0.63)	38 (1.50)	18 (0.71)	38 (1.50)	21 (0.83)
June	95 (3.74)	64 (2.52)	96 (3.78)	72 (2.83)	99 (3.90)	77 (3.03)	101 (3.98)	83 (3.27)	103 (4.06)	93 (3.66)	104 (4.09)	97 (3.82)	154 (6.06)	144 (5.67)	156 (6.14)	148 (5.83)	157 (6.18)	152 (5.98)
July	134 (5.28)	123 (4.84)	135 (5.31)	128 (5.04)	137 (5.39)	132 (5.20)	142 (5.59)	136 (5.35)	145 (5.71)	141 (5.55)	147 (5.79)	146 (5.75)	32 (1.26)	22 (0.87)	33 (1.30)	24 (0.94)	33 (1.34)	30 (1.18)
Sep	452 (17.80)	369 (14.53)	458 (18.03)	390 (15.35)	464 (18.27)	407 (16.02)	475 (18.71)	428 (16.85)	482 (18.99)	454 (17.87)	491 (19.33)	471 (18.55)						

REGION: 4 Tualatin Valley
CROP: Filberts

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.	ET mm	ET crop in.	Net IRR mm in.
March	41 (1.61)	2 (0.08)	43 (1.69)	2 (0.08)	44 (1.73)	2 (0.08)	47 (1.85)	3 (0.12)	48 (1.89)	3 (0.12)	51 (2.01)	7 (0.28)						
April	78 (3.07)	20 (0.79)	79 (3.11)	27 (1.06)	80 (3.15)	35 (1.38)	82 (3.23)	43 (1.69)	83 (3.27)	60 (2.36)	85 (3.35)	67 (2.64)						
May	122 (4.80)	77 (3.03)	123 (4.84)	83 (3.27)	125 (4.92)	89 (3.50)	128 (5.04)	97 (3.82)	130 (5.12)	107 (4.21)	136 (5.35)	113 (4.45)						
June	144 (5.67)	108 (4.25)	147 (5.79)	119 (4.69)	150 (5.91)	126 (4.96)	154 (6.06)	132 (5.20)	156 (6.14)	146 (5.75)	158 (6.22)	150 (5.91)						
July	166 (6.54)	155 (6.10)	168 (6.61)	159 (6.26)	170 (6.69)	164 (6.46)	171 (6.73)	168 (6.61)	174 (6.85)	173 (6.81)	178 (7.01)	177 (6.97)						
Aug	143 (5.63)	131 (5.16)	148 (5.83)	137 (5.39)	150 (5.91)	141 (5.55)	152 (5.98)	145 (5.71)	155 (6.10)	150 (5.91)	158 (6.22)	156 (6.14)						
Sep	104 (4.09)	62 (2.44)	105 (4.13)	69 (2.72)	109 (4.29)	77 (3.03)	110 (4.33)	93 (3.66)	112 (4.41)	103 (4.06)	113 (4.45)	109 (4.29)						
Oct	48 (1.89)	3 (0.12)	48 (1.89)	4 (0.16)	49 (1.93)	4 (0.16)	49 (1.93)	5 (0.20)	52 (2.05)	18 (0.71)	53 (2.09)	35 (1.38)						
Nov	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)						
Season	860 (33.85)	558 (21.97)	876 (34.48)	600 (23.63)	893 (35.16)	638 (25.12)	910 (35.82)	686 (27.01)	927 (36.50)	760 (29.93)	950 (37.41)	814 (32.06)						

REGION: 4 Tualatin Valley
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	16 (0.63)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	18 (0.71)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)
April	54 (2.13)	4 (0.16)	56 (2.20)	8 (0.31)	57 (2.24)	13 (0.51)	58 (2.28)	18 (0.71)	59 (2.32)	38 (1.50)	59 (2.32)	38 (1.50)	59 (2.32)	38 (1.50)	59 (2.32)	45 (1.77)	59 (2.32)	45 (1.77)
May	105 (4.13)	64 (2.52)	106 (4.17)	70 (2.76)	108 (4.25)	74 (2.91)	110 (4.33)	77 (3.03)	112 (4.41)	88 (3.46)	116 (4.57)	96 (3.78)	118 (4.65)	97 (3.82)	120 (4.73)	108 (4.25)	120 (4.73)	108 (4.25)
June	136 (5.35)	99 (3.90)	138 (5.43)	111 (4.37)	141 (5.55)	118 (4.65)	144 (5.67)	123 (4.84)	147 (5.79)	136 (5.35)	148 (5.83)	141 (5.55)	150 (5.91)	139 (5.47)	152 (5.99)	145 (5.71)	154 (6.07)	147 (5.79)
July	136 (5.35)	126 (4.96)	137 (5.39)	131 (5.16)	138 (5.43)	135 (5.31)	140 (5.51)	139 (5.47)	142 (5.59)	142 (5.59)	145 (5.71)	145 (5.71)	148 (5.83)	148 (5.83)	151 (5.95)	151 (5.95)	154 (6.07)	154 (6.07)
Aug	15 (0.59)	14 (0.55)	15 (0.59)	14 (0.55)	15 (0.59)	15 (0.59)	16 (0.63)	15 (0.59)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)
Season	462 (18.18)	308 (12.13)	469 (18.45)	335 (13.19)	477 (18.77)	356 (14.01)	486 (19.13)	373 (14.68)	495 (19.49)	421 (16.57)	503 (19.81)	444 (17.48)	511 (19.99)	444 (17.48)	519 (20.17)	444 (17.48)	527 (20.35)	444 (17.48)

REGION: 4 Tualatin Valley
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	28 (1.10)	1 (0.04)	28 (1.10)	1 (0.04)	29 (1.14)	1 (0.04)	30 (1.18)	1 (0.04)	31 (1.22)	2 (0.08)	33 (1.30)	2 (0.08)	33 (1.30)	2 (0.08)	33 (1.30)	2 (0.08)	33 (1.30)	2 (0.08)
April	57 (2.24)	5 (0.20)	58 (2.28)	9 (0.35)	60 (2.36)	15 (0.59)	61 (2.40)	20 (0.79)	63 (2.48)	40 (1.57)	64 (2.52)	48 (1.89)	66 (2.60)	48 (1.89)	68 (2.68)	48 (1.89)	70 (2.76)	48 (1.89)
May	108 (4.25)	67 (2.64)	109 (4.29)	72 (2.83)	111 (4.37)	75 (2.95)	113 (4.45)	79 (3.11)	115 (4.53)	90 (3.54)	118 (4.61)	97 (3.82)	120 (4.69)	97 (3.82)	122 (4.77)	97 (3.82)	124 (4.85)	97 (3.82)
June	136 (5.35)	99 (3.90)	138 (5.43)	111 (4.37)	141 (5.55)	118 (4.65)	144 (5.67)	123 (4.84)	147 (5.79)	136 (5.35)	148 (5.83)	141 (5.55)	150 (5.91)	139 (5.47)	152 (5.99)	145 (5.71)	154 (6.07)	147 (5.79)
July	130 (5.12)	121 (4.76)	131 (5.16)	126 (4.96)	133 (5.24)	129 (5.08)	134 (5.28)	133 (5.24)	136 (5.35)	136 (5.35)	139 (5.47)	139 (5.47)	142 (5.59)	139 (5.47)	145 (5.71)	145 (5.71)	148 (5.83)	145 (5.71)
Aug	3 (0.12)	3 (0.12)	4 (0.16)	4 (0.16)	5 (0.20)	5 (0.20)	5 (0.20)	5 (0.20)	6 (0.24)	6 (0.24)	7 (0.28)	6 (0.24)	7 (0.28)	6 (0.24)	7 (0.28)	6 (0.24)	7 (0.28)	6 (0.24)
Season	462 (18.18)	296 (11.66)	468 (18.42)	323 (12.71)	479 (18.86)	343 (13.51)	487 (19.18)	361 (14.22)	498 (19.61)	410 (16.13)	509 (20.05)	433 (17.05)	519 (20.17)	433 (17.05)	527 (20.35)	433 (17.05)	535 (20.53)	433 (17.05)

REGION: 4 Tualatin Valley
CROP: Grapes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	39 (1.54)	2 (0.08)	40 (1.57)	2 (0.08)	40 (1.57)	3 (0.12)	41 (1.61)	3 (0.12)	43 (1.69)	20 (0.79)	44 (1.73)	28 (1.10)	44 (1.73)	20 (0.79)	44 (1.73)	28 (1.10)	44 (1.73)	28 (1.10)
May	66 (2.60)	27 (1.06)	66 (2.60)	31 (1.22)	68 (2.68)	36 (1.42)	69 (2.72)	40 (1.57)	70 (2.76)	47 (1.85)	72 (2.83)	53 (2.09)	72 (2.83)	47 (1.85)	72 (2.83)	53 (2.09)	72 (2.83)	53 (2.09)
June	80 (3.15)	48 (1.89)	81 (3.19)	56 (2.20)	83 (3.27)	62 (2.44)	85 (3.35)	69 (2.72)	86 (3.39)	79 (3.11)	87 (3.43)	82 (3.23)	87 (3.43)	79 (3.11)	87 (3.43)	82 (3.23)	87 (3.43)	82 (3.23)
July	92 (3.62)	83 (3.27)	93 (3.66)	88 (3.46)	94 (3.70)	90 (3.54)	95 (3.74)	93 (3.66)	96 (3.78)	96 (3.78)	99 (3.90)	99 (3.90)	99 (3.90)	96 (3.78)	99 (3.90)	99 (3.90)	99 (3.90)	99 (3.90)
Aug	79 (3.11)	72 (2.83)	80 (3.15)	75 (2.95)	81 (3.19)	77 (3.03)	82 (3.23)	79 (3.11)	86 (3.39)	84 (3.31)	87 (3.43)	87 (3.43)	87 (3.43)	84 (3.31)	87 (3.43)	87 (3.43)	87 (3.43)	87 (3.43)
Sep	61 (2.40)	25 (0.98)	62 (2.44)	31 (1.22)	62 (2.44)	37 (1.46)	63 (2.48)	47 (1.85)	64 (2.52)	60 (2.36)	65 (2.56)	63 (2.48)	65 (2.56)	60 (2.36)	65 (2.56)	63 (2.48)	65 (2.56)	63 (2.48)
Oct	28 (1.10)	1 (0.04)	29 (1.14)	2 (0.08)	29 (1.14)	2 (0.08)	29 (1.14)	2 (0.08)	31 (1.22)	3 (0.12)	33 (1.30)	17 (0.67)	33 (1.30)	3 (0.12)	33 (1.30)	17 (0.67)	33 (1.30)	17 (0.67)
Nov	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)
Season	452 (17.80)	258 (10.15)	458 (18.03)	285 (11.21)	465 (18.30)	307 (12.09)	472 (18.58)	333 (13.11)	484 (19.06)	389 (15.32)	495 (19.49)	429 (16.90)	495 (19.49)	389 (15.32)	495 (19.49)	429 (16.90)	495 (19.49)	429 (16.90)

REGION: 4 Tualatin Valley
CROP: Grass Seed (Fall)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)
Feb	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)
March	41 (1.61)	2 (0.08)	42 (1.65)	2 (0.08)	44 (1.73)	2 (0.08)	46 (1.81)	3 (0.12)	48 (1.89)	3 (0.12)	51 (2.01)	7 (0.28)	51 (2.01)	3 (0.12)	51 (2.01)	7 (0.28)	51 (2.01)	7 (0.28)
April	83 (3.27)	22 (0.87)	85 (3.35)	30 (1.18)	86 (3.39)	38 (1.50)	87 (3.43)	45 (1.77)	89 (3.50)	64 (2.52)	91 (3.58)	71 (2.80)	91 (3.58)	64 (2.52)	91 (3.58)	71 (2.80)	91 (3.58)	71 (2.80)
May	126 (4.96)	80 (3.15)	127 (5.00)	86 (3.39)	129 (5.08)	92 (3.62)	132 (5.20)	101 (3.98)	134 (5.28)	110 (4.33)	140 (5.51)	116 (4.57)	140 (5.51)	110 (4.33)	140 (5.51)	116 (4.57)	140 (5.51)	116 (4.57)
June	136 (5.35)	99 (3.90)	138 (5.43)	111 (4.37)	141 (5.55)	118 (4.65)	144 (5.67)	123 (4.84)	149 (5.87)	136 (5.35)	151 (5.94)	141 (5.55)	151 (5.94)	136 (5.35)	151 (5.94)	141 (5.55)	151 (5.94)	141 (5.55)
July	154 (6.06)	143 (5.63)	156 (6.14)	148 (5.83)	157 (6.18)	152 (5.98)	159 (6.26)	156 (6.14)	161 (6.34)	160 (6.30)	165 (6.50)	164 (6.46)	165 (6.50)	160 (6.30)	165 (6.50)	164 (6.46)	165 (6.50)	164 (6.46)
Aug	119 (4.69)	110 (4.33)	123 (4.84)	114 (4.49)	125 (4.92)	117 (4.61)	126 (4.96)	120 (4.72)	129 (5.08)	125 (4.92)	131 (5.16)	130 (5.12)	131 (5.16)	125 (4.92)	131 (5.16)	130 (5.12)	131 (5.16)	130 (5.12)
Sep	48 (1.89)	14 (0.55)	49 (1.93)	19 (0.75)	49 (1.93)	25 (0.98)	51 (2.01)	34 (1.34)	51 (2.01)	45 (1.77)	52 (2.05)	49 (1.93)	52 (2.05)	45 (1.77)	52 (2.05)	49 (1.93)	52 (2.05)	49 (1.93)
Oct	38 (1.50)	2 (0.08)	38 (1.50)	3 (0.12)	39 (1.54)	3 (0.12)	39 (1.54)	4 (0.16)	41 (1.61)	10 (0.39)	42 (1.65)	27 (1.06)	42 (1.65)	10 (0.39)	42 (1.65)	27 (1.06)	42 (1.65)	27 (1.06)
Nov	12 (0.47)	0 (0.00)	13 (0.51)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)
Dec	4 (0.16)	0 (0.00)	6 (0.24)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)
Season	785 (30.91)	472 (18.59)	801 (31.54)	513 (20.21)	817 (32.18)	547 (21.54)	834 (32.85)	586 (23.07)	854 (33.63)	653 (25.70)	877 (34.52)	705 (27.77)	877 (34.52)	653 (25.70)	877 (34.52)	705 (27.77)	877 (34.52)	705 (27.77)

REGION: 4 Tualatin Valley
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	7 (0.28)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	17 (0.67)	0 (0.00)
Feb	14 (0.55)	0 (0.00)	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	26 (1.02)	1 (0.04)
March	19 (0.75)	0 (0.00)	21 (0.83)	0 (0.00)	21 (0.83)	0 (0.00)	22 (0.87)	1 (0.04)	22 (0.87)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	49 (1.93)	35 (1.38)
April	45 (1.77)	3 (0.12)	46 (1.81)	4 (0.16)	47 (1.85)	5 (0.20)	47 (1.85)	5 (0.20)	47 (1.85)	5 (0.20)	47 (1.85)	5 (0.20)	48 (1.89)	28 (1.10)	48 (1.89)	28 (1.10)	73 (2.87)	56 (2.20)
May	68 (2.68)	29 (1.14)	69 (2.72)	36 (1.42)	70 (2.76)	39 (1.54)	71 (2.80)	42 (1.65)	71 (2.80)	42 (1.65)	71 (2.80)	42 (1.65)	73 (2.87)	53 (2.09)	73 (2.87)	53 (2.09)	106 (4.17)	98 (3.86)
June	95 (3.74)	64 (2.52)	97 (3.82)	73 (2.87)	98 (3.86)	78 (3.07)	102 (4.02)	84 (3.31)	102 (4.02)	84 (3.31)	102 (4.02)	84 (3.31)	105 (4.13)	94 (3.70)	105 (4.13)	94 (3.70)	147 (5.79)	147 (5.79)
July	138 (5.43)	127 (5.00)	139 (5.47)	132 (5.20)	140 (5.51)	136 (5.35)	142 (5.59)	140 (5.51)	142 (5.59)	140 (5.51)	142 (5.59)	140 (5.51)	144 (5.67)	144 (5.67)	144 (5.67)	144 (5.67)	147 (5.79)	147 (5.79)
Aug	131 (5.16)	120 (4.72)	135 (5.31)	126 (4.96)	137 (5.39)	129 (5.08)	139 (5.47)	133 (5.24)	139 (5.47)	133 (5.24)	142 (5.59)	138 (5.43)	144 (5.67)	143 (5.63)	144 (5.67)	143 (5.63)	109 (4.29)	105 (4.13)
Sep	100 (3.94)	60 (2.36)	101 (3.98)	67 (2.64)	103 (4.06)	74 (2.91)	106 (4.17)	89 (3.50)	106 (4.17)	89 (3.50)	108 (4.25)	101 (3.98)	109 (4.29)	105 (4.13)	109 (4.29)	105 (4.13)	66 (2.60)	50 (1.97)
Oct	59 (2.32)	4 (0.16)	60 (2.36)	5 (0.20)	61 (2.40)	6 (0.24)	61 (2.40)	6 (0.24)	61 (2.40)	6 (0.24)	65 (2.56)	29 (1.14)	66 (2.60)	50 (1.97)	66 (2.60)	50 (1.97)	24 (0.94)	1 (0.04)
Nov	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	23 (0.91)	0 (0.00)	23 (0.91)	0 (0.00)	23 (0.91)	0 (0.00)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	11 (0.43)	0 (0.00)
Dec	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	783 (30.81)	636 (25.04)
Season	701 (27.61)	407 (16.02)	716 (28.19)	443 (17.45)	731 (28.79)	467 (18.39)	747 (29.41)	517 (20.35)	767 (30.18)	589 (23.19)	783 (30.81)	636 (25.04)	783 (30.81)	636 (25.04)	783 (30.81)	636 (25.04)	533 (20.99)	503 (19.81)

REGION: 4 Tualatin Valley
CROP: Onions

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	24 (0.94)	2 (0.08)	25 (0.98)	5 (0.20)	25 (0.98)	7 (0.28)	25 (0.98)	7 (0.28)	25 (0.98)	7 (0.28)	25 (0.98)	7 (0.28)	26 (1.02)	17 (0.67)	26 (1.02)	21 (0.83)	107 (4.21)	90 (3.54)
May	98 (3.86)	62 (2.44)	99 (3.90)	67 (2.64)	101 (3.98)	72 (2.83)	103 (4.06)	78 (3.07)	103 (4.06)	78 (3.07)	106 (4.17)	85 (3.35)	107 (4.21)	85 (3.35)	107 (4.21)	85 (3.35)	134 (5.28)	128 (5.04)
June	123 (4.84)	93 (3.66)	125 (4.92)	103 (4.06)	128 (5.04)	109 (4.29)	131 (5.16)	113 (4.45)	131 (5.16)	113 (4.45)	133 (5.24)	125 (5.75)	134 (5.28)	125 (5.75)	133 (5.24)	125 (5.75)	150 (5.91)	149 (5.87)
July	140 (5.51)	131 (5.16)	141 (5.55)	135 (5.31)	143 (5.63)	138 (5.43)	144 (5.67)	142 (5.59)	144 (5.67)	142 (5.59)	146 (5.75)	146 (5.75)	146 (5.75)	146 (5.75)	146 (5.75)	146 (5.75)	116 (4.57)	115 (4.53)
Aug	105 (4.13)	96 (3.78)	109 (4.29)	101 (3.98)	110 (4.33)	104 (4.09)	111 (4.37)	106 (4.17)	111 (4.37)	106 (4.17)	114 (4.49)	111 (4.37)	114 (4.49)	111 (4.37)	114 (4.49)	111 (4.37)	533 (20.99)	503 (19.81)
Season	490 (19.28)	384 (15.12)	499 (19.64)	411 (16.19)	507 (19.96)	430 (16.92)	514 (20.24)	448 (17.63)	525 (20.67)	484 (19.06)	533 (20.99)	503 (19.81)	533 (20.99)	503 (19.81)	533 (20.99)	503 (19.81)	533 (20.99)	503 (19.81)

REGION: 4 Tualatin Valley
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	35 (1.38)	1 (0.04)	36 (1.42)	2 (0.08)	37 (1.46)	2 (0.08)	39 (1.54)	2 (0.08)	41 (1.61)	3 (0.12)	43 (1.69)	12 (0.47)	43 (1.69)	3 (0.12)	43 (1.69)	12 (0.47)	43 (1.69)	3 (0.12)
April	80 (3.15)	21 (0.83)	83 (3.27)	28 (1.10)	85 (3.35)	37 (1.46)	86 (3.39)	44 (1.73)	87 (3.43)	62 (2.44)	88 (3.46)	70 (2.76)	88 (3.46)	62 (2.44)	88 (3.46)	70 (2.76)	88 (3.46)	62 (2.44)
May	110 (4.33)	70 (2.76)	112 (4.41)	74 (2.91)	114 (4.49)	78 (3.07)	116 (4.57)	82 (3.23)	118 (4.65)	93 (3.66)	121 (4.76)	101 (3.98)	121 (4.76)	93 (3.66)	121 (4.76)	101 (3.98)	121 (4.76)	93 (3.66)
June	120 (4.72)	86 (3.39)	121 (4.76)	96 (3.78)	124 (4.88)	102 (4.02)	127 (5.00)	109 (4.29)	129 (5.08)	120 (4.72)	130 (5.12)	124 (4.88)	129 (5.08)	120 (4.72)	130 (5.12)	124 (4.88)	129 (5.08)	120 (4.72)
July	136 (5.35)	127 (5.00)	137 (5.39)	132 (5.20)	139 (5.47)	136 (5.35)	140 (5.51)	140 (5.51)	142 (5.59)	142 (5.59)	146 (5.75)	146 (5.75)	146 (5.75)	142 (5.59)	146 (5.75)	146 (5.75)	146 (5.75)	142 (5.59)
Aug	117 (4.61)	108 (4.25)	119 (4.69)	112 (4.41)	120 (4.72)	115 (4.53)	124 (4.88)	118 (4.65)	127 (5.00)	123 (4.84)	129 (5.08)	128 (5.04)	129 (5.08)	123 (4.84)	129 (5.08)	128 (5.04)	129 (5.08)	123 (4.84)
Sep	90 (3.54)	52 (2.05)	90 (3.54)	59 (2.32)	94 (3.70)	66 (2.60)	95 (3.74)	79 (3.11)	96 (3.78)	89 (3.50)	97 (3.82)	93 (3.66)	97 (3.82)	89 (3.50)	97 (3.82)	93 (3.66)	97 (3.82)	89 (3.50)
Oct	53 (2.09)	3 (0.12)	53 (2.09)	4 (0.16)	54 (2.13)	5 (0.20)	54 (2.13)	10 (0.39)	58 (2.28)	26 (1.02)	59 (2.32)	44 (1.73)	59 (2.32)	26 (1.02)	59 (2.32)	44 (1.73)	59 (2.32)	26 (1.02)
Nov	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)
Season	750 (29.52)	468 (18.44)	760 (29.92)	507 (19.96)	776 (30.55)	541 (21.31)	791 (31.15)	584 (22.99)	808 (31.81)	658 (25.89)	824 (32.43)	718 (28.27)	824 (32.43)	658 (25.89)	824 (32.43)	718 (28.27)	824 (32.43)	658 (25.89)

REGION: 4 Tualatin Valley
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	2 (0.08)	43 (1.69)	2 (0.08)	44 (1.73)	2 (0.08)	47 (1.85)	3 (0.12)	48 (1.89)	3 (0.12)	51 (2.01)	7 (0.28)	48 (1.89)	3 (0.12)	51 (2.01)	7 (0.28)	48 (1.89)	3 (0.12)
April	74 (2.91)	13 (0.51)	75 (2.95)	23 (0.91)	76 (2.99)	28 (1.10)	77 (3.03)	39 (1.54)	79 (3.11)	57 (2.24)	81 (3.19)	63 (2.48)	79 (3.11)	57 (2.24)	81 (3.19)	63 (2.48)	79 (3.11)	57 (2.24)
May	110 (4.33)	70 (2.76)	112 (4.41)	74 (2.91)	114 (4.49)	78 (3.07)	116 (4.57)	82 (3.23)	118 (4.65)	91 (3.58)	121 (4.76)	99 (3.90)	118 (4.65)	91 (3.58)	121 (4.76)	99 (3.90)	121 (4.76)	91 (3.58)
June	132 (5.20)	97 (3.82)	134 (5.28)	106 (4.17)	137 (5.39)	114 (4.49)	141 (5.55)	121 (4.76)	143 (5.63)	132 (5.20)	144 (5.67)	137 (5.39)	143 (5.63)	132 (5.20)	144 (5.67)	137 (5.39)	143 (5.63)	132 (5.20)
July	152 (5.98)	142 (5.59)	153 (6.02)	147 (5.79)	155 (6.10)	151 (5.94)	157 (6.18)	154 (6.06)	159 (6.26)	157 (6.18)	165 (6.50)	161 (6.34)	159 (6.26)	157 (6.18)	165 (6.50)	161 (6.34)	165 (6.50)	157 (6.18)
Aug	131 (5.16)	120 (4.72)	132 (5.20)	126 (4.96)	134 (5.28)	129 (5.08)	139 (5.47)	133 (5.24)	142 (5.59)	138 (5.43)	144 (5.67)	143 (5.63)	142 (5.59)	138 (5.43)	144 (5.67)	143 (5.63)	144 (5.67)	138 (5.43)
Sep	95 (3.74)	55 (2.17)	96 (3.78)	63 (2.48)	99 (3.90)	70 (2.76)	101 (3.98)	84 (3.31)	102 (4.02)	94 (3.70)	103 (4.06)	99 (3.90)	102 (4.02)	94 (3.70)	103 (4.06)	99 (3.90)	103 (4.06)	94 (3.70)
Oct	45 (1.77)	3 (0.12)	46 (1.81)	3 (0.12)	46 (1.81)	4 (0.16)	47 (1.85)	4 (0.16)	50 (1.97)	17 (0.67)	50 (1.97)	33 (1.30)	50 (1.97)	17 (0.67)	50 (1.97)	33 (1.30)	50 (1.97)	17 (0.67)
Nov	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)
Season	794 (31.25)	502 (19.77)	806 (31.73)	544 (21.42)	821 (32.32)	576 (22.68)	842 (33.15)	620 (24.42)	858 (33.79)	689 (27.12)	877 (34.54)	742 (29.22)	858 (33.79)	689 (27.12)	877 (34.54)	742 (29.22)	877 (34.54)	689 (27.12)

REGION: 4 Tualatin Valley
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.
March	32 (1.26)	1 (0.04)	33 (1.30)	34 (1.34)	1 (0.04)	34 (1.34)	36 (1.42)	2 (0.08)	37 (1.46)	2 (0.08)	37 (1.46)	2 (0.08)	40 (1.57)	2 (0.08)	40 (1.57)	2 (0.08)	40 (1.57)	2 (0.08)
April	81 (3.19)	21 (0.83)	83 (3.27)	85 (3.35)	29 (1.14)	85 (3.35)	87 (3.43)	37 (1.46)	87 (3.43)	45 (1.77)	88 (3.46)	63 (2.48)	89 (3.50)	70 (2.76)	89 (3.50)	70 (2.76)	89 (3.50)	70 (2.76)
May	125 (4.92)	79 (3.11)	126 (4.96)	128 (5.04)	85 (3.35)	128 (5.04)	131 (5.16)	91 (3.58)	131 (5.16)	99 (3.90)	133 (5.24)	109 (4.29)	139 (5.47)	115 (4.53)	139 (5.47)	115 (4.53)	139 (5.47)	115 (4.53)
June	50 (1.97)	40 (1.57)	52 (2.05)	53 (2.09)	43 (1.69)	53 (2.09)	54 (2.13)	45 (1.77)	54 (2.13)	48 (1.89)	55 (2.17)	52 (2.05)	55 (2.17)	53 (2.09)	55 (2.17)	53 (2.09)	55 (2.17)	53 (2.09)
Season	288 (11.34)	141 (5.55)	294 (11.58)	300 (11.82)	158 (6.22)	300 (11.82)	308 (12.14)	174 (6.85)	308 (12.14)	194 (7.64)	313 (12.33)	226 (8.90)	323 (12.71)	240 (9.46)	323 (12.71)	240 (9.46)	323 (12.71)	240 (9.46)

REGION: 4 Tualatin Valley
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR in.
March	41 (1.61)	2 (0.08)	43 (1.69)	44 (1.73)	2 (0.08)	44 (1.73)	47 (1.85)	3 (0.12)	48 (1.89)	3 (0.12)	48 (1.89)	3 (0.12)	51 (2.01)	7 (0.28)	51 (2.01)	7 (0.28)	51 (2.01)	7 (0.28)
April	74 (2.91)	13 (0.51)	75 (2.95)	76 (2.99)	23 (0.91)	76 (2.99)	77 (3.03)	28 (1.10)	77 (3.03)	39 (1.54)	79 (3.11)	57 (2.24)	81 (3.19)	63 (2.48)	81 (3.19)	63 (2.48)	81 (3.19)	63 (2.48)
May	110 (4.33)	70 (2.76)	112 (4.41)	114 (4.49)	74 (2.91)	114 (4.49)	116 (4.57)	78 (3.07)	116 (4.57)	82 (3.23)	118 (4.65)	91 (3.58)	121 (4.76)	99 (3.90)	121 (4.76)	99 (3.90)	121 (4.76)	99 (3.90)
June	132 (5.20)	97 (3.82)	134 (5.28)	137 (5.39)	106 (4.17)	137 (5.39)	141 (5.55)	114 (4.49)	141 (5.55)	121 (4.76)	143 (5.63)	132 (5.20)	144 (5.67)	137 (5.39)	144 (5.67)	137 (5.39)	144 (5.67)	137 (5.39)
July	152 (5.98)	142 (5.59)	153 (6.02)	155 (6.10)	147 (5.79)	155 (6.10)	157 (6.18)	151 (5.94)	157 (6.18)	154 (6.06)	159 (6.26)	157 (6.18)	165 (6.50)	161 (6.34)	165 (6.50)	161 (6.34)	165 (6.50)	161 (6.34)
Aug	131 (5.16)	120 (4.72)	132 (5.20)	134 (5.28)	126 (4.96)	134 (5.28)	139 (5.47)	129 (5.08)	139 (5.47)	133 (5.24)	142 (5.59)	138 (5.43)	144 (5.67)	143 (5.63)	144 (5.67)	143 (5.63)	144 (5.67)	143 (5.63)
Sep	95 (3.74)	55 (2.17)	96 (3.78)	99 (3.90)	63 (2.48)	99 (3.90)	101 (3.98)	70 (2.76)	101 (3.98)	84 (3.31)	102 (4.02)	94 (3.70)	103 (4.06)	99 (3.90)	103 (4.06)	99 (3.90)	103 (4.06)	99 (3.90)
Oct	45 (1.77)	3 (0.12)	46 (1.81)	46 (1.81)	3 (0.12)	46 (1.81)	47 (1.85)	4 (0.16)	47 (1.85)	4 (0.16)	50 (1.97)	17 (0.67)	50 (1.97)	33 (1.30)	50 (1.97)	33 (1.30)	50 (1.97)	33 (1.30)
Nov	14 (0.55)	0 (0.00)	15 (0.59)	16 (0.63)	0 (0.00)	16 (0.63)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)
Season	794 (31.25)	502 (19.77)	806 (31.73)	821 (32.32)	544 (21.42)	821 (32.32)	842 (33.15)	576 (22.68)	842 (33.15)	620 (24.42)	858 (33.79)	689 (27.12)	877 (34.54)	742 (29.22)	877 (34.54)	742 (29.22)	877 (34.54)	742 (29.22)

REGION: 4 Tualatin Valley
CROP: Potatoes

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR mm	ET mm	crop in.	Net IRR mm	ET mm	crop in.	Net IRR mm	ET mm	crop in.	Net IRR mm	ET mm	crop in.	Net IRR mm
April	6	(0.24)	0 (0.00)	6	(0.24)	0 (0.00)	6	(0.24)	1 (0.04)	6	(0.24)	2 (0.08)	6	(0.24)	5 (0.20)	6	(0.24)	6 (0.24)
May	51	(2.01)	16 (0.63)	51	(2.01)	22 (0.87)	52	(2.05)	25 (0.98)	53	(2.09)	29 (1.14)	53	(2.09)	35 (1.38)	54	(2.13)	39 (1.54)
June	91	(3.58)	63 (2.48)	92	(3.62)	70 (2.76)	94	(3.70)	75 (2.95)	97	(3.82)	81 (3.19)	98	(3.86)	90 (3.54)	100	(3.94)	93 (3.66)
July	151	(5.94)	141 (5.55)	152	(5.98)	145 (5.71)	154	(6.06)	149 (5.87)	156	(6.14)	153 (6.02)	158	(6.22)	157 (6.18)	164	(6.46)	161 (6.34)
Aug	133	(5.24)	120 (4.72)	138	(5.43)	126 (4.96)	140	(5.51)	131 (5.16)	141	(5.55)	135 (5.31)	145	(5.71)	140 (5.51)	147	(5.79)	145 (5.71)
Sep	91	(3.58)	54 (2.13)	92	(3.62)	61 (2.40)	95	(3.74)	68 (2.68)	97	(3.82)	82 (3.23)	98	(3.86)	91 (3.58)	99	(3.90)	96 (3.78)
Oct	14	(0.55)	1 (0.04)	14	(0.55)	1 (0.04)	14	(0.55)	1 (0.04)	14	(0.55)	1 (0.04)	15	(0.59)	7 (0.28)	15	(0.59)	12 (0.47)
Season	537	(21.14)	395 (15.55)	545	(21.45)	425 (16.74)	555	(21.85)	450 (17.72)	564	(22.21)	483 (19.01)	573	(22.57)	525 (20.67)	585	(23.05)	552 (21.74)

REGION: 4 Tualatin Valley
CROP: Tomatoes

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	crop in.	Net IRR in.	ET mm	crop in.	Net IRR mm	ET mm	crop in.	Net IRR mm	ET mm	crop in.	Net IRR mm	ET mm	crop in.	Net IRR mm	ET mm	crop in.	Net IRR mm
May	50	(1.97)	15 (0.59)	50	(1.97)	18 (0.71)	51	(2.01)	22 (0.87)	51	(2.01)	26 (1.02)	52	(2.05)	33 (1.30)	52	(2.05)	38 (1.50)
June	112	(4.41)	79 (3.11)	114	(4.49)	89 (3.50)	118	(4.65)	96 (3.78)	121	(4.76)	102 (4.02)	122	(4.80)	113 (4.45)	123	(4.84)	117 (4.61)
July	158	(6.22)	148 (5.83)	160	(6.30)	152 (5.98)	161	(6.34)	156 (6.14)	163	(6.42)	160 (6.30)	165	(6.50)	164 (6.46)	172	(6.77)	168 (6.61)
Aug	69	(2.72)	64 (2.52)	71	(2.80)	66 (2.60)	72	(2.83)	68 (2.68)	73	(2.87)	71 (2.80)	75	(2.95)	74 (2.91)	77	(3.03)	76 (2.99)
Season	389	(15.32)	306 (12.05)	395	(15.56)	325 (12.79)	402	(15.83)	342 (13.47)	408	(16.06)	359 (14.14)	414	(16.30)	384 (15.12)	424	(16.69)	399 (15.71)

REGION: 5 Willamette Valley
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
April	49 (1.93)	3 (0.12)	50 (1.97)	4 (0.16)	51 (2.01)	11 (0.43)	52 (2.05)	16 (0.63)	54 (2.13)	25 (0.98)	55 (2.17)	29 (1.14)						
May	98 (3.86)	36 (1.42)	99 (3.90)	44 (1.73)	102 (4.02)	51 (2.01)	103 (4.06)	58 (2.28)	106 (4.17)	72 (2.83)	109 (4.29)	78 (3.07)						
June	115 (4.53)	70 (2.76)	118 (4.65)	78 (3.07)	120 (4.72)	89 (3.50)	122 (4.80)	100 (3.94)	123 (4.84)	108 (4.25)	123 (4.84)	112 (4.41)						
July	139 (5.47)	131 (5.16)	140 (5.51)	135 (5.31)	142 (5.59)	138 (5.43)	143 (5.63)	141 (5.55)	148 (5.83)	147 (5.79)	151 (5.94)	150 (5.91)						
Aug	114 (4.49)	103 (4.06)	117 (4.61)	106 (4.17)	119 (4.69)	110 (4.33)	121 (4.76)	114 (4.49)	123 (4.84)	121 (4.76)	127 (5.00)	124 (4.88)						
Sep	87 (3.43)	47 (1.85)	88 (3.46)	52 (2.05)	89 (3.50)	58 (2.28)	92 (3.62)	65 (2.56)	94 (3.70)	81 (3.19)	95 (3.74)	89 (3.50)						
Oct	54 (2.13)	3 (0.12)	55 (2.17)	4 (0.16)	55 (2.17)	5 (0.20)	56 (2.20)	6 (0.24)	59 (2.32)	20 (0.79)	59 (2.32)	46 (1.81)						
Nov	4 (0.16)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)						
Season	660 (26.00)	393 (15.49)	672 (26.47)	423 (16.65)	683 (26.90)	462 (18.18)	694 (27.32)	500 (19.69)	713 (28.07)	574 (22.59)	725 (28.54)	628 (24.72)						

REGION: 5 Willamette Valley
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.
March	38	(1.50)	1 (0.04)	39	(1.54)	1 (0.04)	40	(1.57)	1 (0.04)	42	(1.65)	1 (0.04)	43	(1.69)	2 (0.08)	45	(1.77)	2 (0.08)
April	73	(2.87)	5 (0.20)	75	(2.95)	6 (0.24)	76	(2.99)	17 (0.67)	78	(3.07)	24 (0.94)	82	(3.23)	37 (1.46)	84	(3.31)	44 (1.73)
May	116	(4.57)	51 (2.01)	117	(4.61)	59 (2.32)	120	(4.72)	66 (2.60)	122	(4.80)	75 (2.95)	125	(4.92)	89 (3.50)	128	(5.04)	100 (3.94)
June	152	(5.98)	103 (4.06)	155	(6.10)	114 (4.49)	158	(6.22)	123 (4.84)	160	(6.30)	132 (5.20)	162	(6.38)	142 (5.59)	162	(6.38)	148 (5.83)
July	186	(7.32)	175 (6.89)	188	(7.40)	181 (7.13)	190	(7.48)	186 (7.32)	192	(7.56)	191 (7.52)	195	(7.68)	195 (7.68)	203	(7.99)	201 (7.91)
Aug	152	(5.98)	140 (5.51)	157	(6.18)	144 (5.67)	159	(6.26)	149 (5.87)	161	(6.34)	154 (6.06)	164	(6.46)	163 (6.42)	167	(6.57)	167 (6.57)
Sep	111	(4.37)	65 (2.56)	112	(4.41)	72 (2.83)	113	(4.45)	80 (3.15)	117	(4.61)	89 (3.50)	119	(4.69)	105 (4.13)	120	(4.72)	113 (4.45)
Oct	53	(2.09)	3 (0.12)	53	(2.09)	4 (0.16)	54	(2.13)	5 (0.20)	55	(2.17)	6 (0.24)	58	(2.28)	18 (0.71)	58	(2.28)	45 (1.77)
Nov	14	(0.55)	0 (0.00)	17	(0.67)	0 (0.00)	17	(0.67)	0 (0.00)	17	(0.67)	0 (0.00)	18	(0.71)	0 (0.00)	18	(0.71)	0 (0.00)
Season	895	(35.23)	543 (21.39)	913	(35.95)	581 (22.88)	927	(36.49)	627 (24.69)	944	(37.17)	672 (26.45)	966	(38.04)	751 (29.57)	985	(38.77)	820 (32.28)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.		
May	57 (2.24)	5 (0.20)	57 (2.24)	9 (0.35)	58 (2.28)	15 (0.59)	60 (2.36)	22 (0.87)	61 (2.40)	32 (1.26)	62 (2.44)	42 (1.65)						
June	125 (4.92)	77 (3.03)	128 (5.04)	87 (3.43)	130 (5.12)	99 (3.90)	132 (5.20)	108 (4.25)	133 (5.24)	116 (4.57)	133 (5.24)	121 (4.76)						
July	116 (4.57)	109 (4.29)	117 (4.61)	112 (4.41)	119 (4.69)	115 (4.53)	120 (4.72)	118 (4.65)	122 (4.80)	122 (4.80)	125 (4.92)	125 (4.92)						
Season	298 (11.73)	191 (7.52)	302 (11.89)	208 (8.19)	307 (12.09)	229 (9.02)	312 (12.28)	248 (9.77)	316 (12.44)	270 (10.63)	320 (12.60)	288 (11.33)						

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
May	61 (2.40)	5 (0.20)	61 (2.40)	11 (0.43)	62 (2.44)	18 (0.71)	63 (2.48)	25 (0.98)	64 (2.52)	39 (1.54)	65 (2.56)	44 (1.73)						
June	82 (3.23)	37 (1.46)	82 (3.23)	47 (1.85)	84 (3.31)	56 (2.20)	85 (3.35)	64 (2.52)	87 (3.43)	70 (2.76)	87 (3.43)	79 (3.11)						
July	109 (4.29)	100 (3.94)	110 (4.33)	103 (4.06)	111 (4.37)	107 (4.21)	112 (4.41)	110 (4.33)	114 (4.49)	114 (4.49)	117 (4.61)	117 (4.61)						
Aug	90 (3.54)	78 (3.07)	91 (3.58)	83 (3.27)	94 (3.70)	86 (3.39)	95 (3.74)	90 (3.54)	97 (3.82)	95 (3.74)	98 (3.86)	98 (3.86)						
Sep	69 (2.72)	30 (1.18)	70 (2.76)	35 (1.38)	71 (2.80)	42 (1.65)	72 (2.83)	49 (1.93)	74 (2.91)	64 (2.52)	75 (2.95)	70 (2.76)						
Oct	42 (1.65)	2 (0.08)	43 (1.69)	3 (0.12)	43 (1.69)	3 (0.12)	44 (1.73)	4 (0.16)	46 (1.81)	7 (0.28)	47 (1.85)	31 (1.22)						
Nov	9 (0.35)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	12 (0.47)	0 (0.00)						
Season	462 (18.18)	252 (9.93)	468 (18.42)	282 (11.11)	476 (18.74)	312 (12.28)	482 (18.97)	342 (13.46)	493 (19.41)	389 (15.33)	501 (19.73)	439 (17.29)						

REGION: 5 Willamette Valley
CROP: Cherries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.
March	38 (1.50)	1 (0.04)	39 (1.54)	1 (0.04)	40 (1.57)	1 (0.04)	42 (1.65)	1 (0.04)	43 (1.69)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)
April	73 (2.87)	5 (0.20)	75 (2.95)	6 (0.24)	76 (2.99)	17 (0.67)	78 (3.07)	24 (0.94)	82 (3.23)	37 (1.46)	84 (3.31)	44 (1.73)	84 (3.31)	44 (1.73)	84 (3.31)	44 (1.73)	84 (3.31)	44 (1.73)
May	116 (4.57)	51 (2.01)	117 (4.61)	59 (2.32)	120 (4.72)	66 (2.60)	122 (4.80)	75 (2.95)	125 (4.92)	89 (3.50)	128 (5.04)	100 (3.94)	128 (5.04)	100 (3.94)	128 (5.04)	100 (3.94)	128 (5.04)	100 (3.94)
June	152 (5.98)	103 (4.06)	155 (6.10)	114 (4.49)	158 (6.22)	123 (4.84)	160 (6.30)	132 (5.20)	162 (6.38)	142 (5.59)	162 (6.38)	148 (5.83)	162 (6.38)	148 (5.83)	162 (6.38)	148 (5.83)	162 (6.38)	148 (5.83)
July	186 (7.32)	175 (6.89)	188 (7.40)	181 (7.13)	190 (7.48)	186 (7.32)	192 (7.56)	191 (7.52)	195 (7.68)	195 (7.68)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)
Aug	152 (5.98)	140 (5.51)	157 (6.18)	144 (5.67)	159 (6.26)	149 (5.87)	161 (6.34)	154 (6.06)	164 (6.46)	163 (6.42)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)
Sep	111 (4.37)	65 (2.56)	112 (4.41)	72 (2.83)	113 (4.45)	80 (3.15)	117 (4.61)	89 (3.50)	119 (4.69)	105 (4.13)	120 (4.72)	113 (4.45)	120 (4.72)	113 (4.45)	120 (4.72)	113 (4.45)	120 (4.72)	113 (4.45)
Oct	53 (2.09)	3 (0.12)	53 (2.09)	4 (0.16)	54 (2.13)	5 (0.20)	55 (2.17)	6 (0.24)	58 (2.28)	18 (0.71)	58 (2.28)	45 (1.77)	58 (2.28)	18 (0.71)	58 (2.28)	45 (1.77)	58 (2.28)	45 (1.77)
Nov	14 (0.55)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)
Season	895 (35.23)	543 (21.39)	913 (35.95)	581 (22.88)	927 (36.49)	627 (24.69)	944 (37.17)	672 (26.45)	966 (38.04)	751 (29.57)	985 (38.77)	820 (32.28)	985 (38.77)	751 (29.57)	985 (38.77)	820 (32.28)	985 (38.77)	820 (32.28)

REGION: 5 Willamette Valley
CROP: Corn (Field)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.	ET crop in.	Net IRR mm in.
May	22 (0.87)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	23 (0.91)	5 (0.20)	23 (0.91)	10 (0.39)	23 (0.91)	10 (0.39)
June	68 (2.68)	26 (1.02)	68 (2.68)	36 (1.42)	70 (2.76)	43 (1.69)	71 (2.80)	52 (2.05)	72 (2.83)	57 (2.24)	73 (2.87)	65 (2.56)	73 (2.87)	57 (2.24)	73 (2.87)	65 (2.56)	73 (2.87)	65 (2.56)
July	161 (6.34)	150 (5.91)	163 (6.42)	155 (6.10)	164 (6.46)	159 (6.26)	166 (6.54)	164 (6.46)	169 (6.65)	169 (6.65)	172 (6.77)	172 (6.77)	172 (6.77)	169 (6.65)	172 (6.77)	172 (6.77)	172 (6.77)	172 (6.77)
Aug	140 (5.51)	127 (5.00)	141 (5.55)	132 (5.20)	146 (5.75)	136 (5.35)	148 (5.83)	141 (5.55)	151 (5.94)	149 (5.87)	153 (6.02)	153 (6.02)	153 (6.02)	149 (5.87)	153 (6.02)	153 (6.02)	153 (6.02)	153 (6.02)
Sep	50 (1.97)	24 (0.94)	51 (2.01)	27 (1.06)	52 (2.05)	32 (1.26)	52 (2.05)	37 (1.46)	54 (2.13)	47 (1.85)	55 (2.17)	52 (2.05)	55 (2.17)	47 (1.85)	55 (2.17)	52 (2.05)	55 (2.17)	52 (2.05)
Season	441 (17.37)	328 (12.91)	446 (17.57)	351 (13.82)	455 (17.93)	371 (14.60)	460 (18.13)	395 (15.56)	469 (18.46)	427 (16.81)	476 (18.74)	452 (17.79)	476 (18.74)	427 (16.81)	476 (18.74)	452 (17.79)	476 (18.74)	452 (17.79)

REGION: 5 Willamette Valley
CROP: Corn (Silage)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.
May	30 (1.18)	1 (0.04)	31 (1.22)	2 (0.08)	31 (1.22)	2 (0.08)	31 (1.22)	2 (0.08)	31 (1.22)	2 (0.08)	31 (1.22)	2 (0.08)	31 (1.22)	2 (0.08)	31 (1.22)	32 (1.26)	17 (0.67)	
June	99 (3.90)	54 (2.13)	100 (3.94)	64 (2.52)	103 (4.06)	73 (2.87)	105 (4.13)	83 (3.27)	106 (4.17)	92 (3.62)	106 (4.17)	92 (3.62)	106 (4.17)	92 (3.62)	106 (4.17)	106 (4.17)	97 (3.82)	
July	173 (6.81)	162 (6.38)	174 (6.85)	167 (6.57)	176 (6.93)	172 (6.77)	178 (7.01)	177 (6.97)	181 (7.13)	181 (7.13)	181 (7.13)	181 (7.13)	181 (7.13)	181 (7.13)	181 (7.13)	188 (7.40)	186 (7.32)	
Aug	139 (5.47)	127 (5.00)	143 (5.63)	132 (5.20)	145 (5.71)	136 (5.35)	147 (5.79)	140 (5.51)	150 (5.91)	148 (5.83)	150 (5.91)	148 (5.83)	152 (5.98)	152 (5.98)	152 (5.98)	152 (5.98)	152 (5.98)	
Sep	26 (1.02)	18 (0.71)	27 (1.06)	20 (0.79)	27 (1.06)	21 (0.83)	28 (1.10)	23 (0.91)	29 (1.14)	27 (1.06)	29 (1.14)	27 (1.06)	29 (1.14)	27 (1.06)	29 (1.14)	29 (1.14)	29 (1.14)	
Season	467 (18.38)	362 (14.26)	475 (18.70)	385 (15.16)	482 (18.98)	404 (15.90)	489 (19.25)	425 (16.74)	497 (19.57)	460 (18.11)	507 (19.95)	481 (18.93)						

REGION: 5 Willamette Valley
CROP: Corn (Sweet)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.
May	36 (1.42)	3 (0.12)	37 (1.46)	7 (0.28)	37 (1.46)	10 (0.39)	38 (1.50)	15 (0.59)	38 (1.50)	24 (0.94)	39 (1.54)	26 (1.02)						
June	100 (3.94)	54 (2.13)	101 (3.98)	66 (2.60)	104 (4.09)	76 (2.99)	105 (4.13)	84 (3.31)	107 (4.21)	92 (3.62)	107 (4.21)	92 (3.62)	107 (4.21)	92 (3.62)	107 (4.21)	107 (4.21)	97 (3.82)	
July	173 (6.81)	162 (6.38)	174 (6.85)	167 (6.57)	176 (6.93)	172 (6.77)	178 (7.01)	177 (6.97)	181 (7.13)	181 (7.13)	181 (7.13)	181 (7.13)	181 (7.13)	181 (7.13)	181 (7.13)	185 (7.28)	185 (7.28)	
Aug	142 (5.59)	129 (5.08)	143 (5.63)	134 (5.28)	148 (5.83)	138 (5.43)	150 (5.91)	143 (5.63)	153 (6.02)	151 (5.94)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	
Sep	34 (1.34)	22 (0.87)	35 (1.38)	24 (0.94)	35 (1.38)	26 (1.02)	36 (1.42)	29 (1.14)	37 (1.46)	33 (1.30)	37 (1.46)	33 (1.30)	37 (1.46)	33 (1.30)	37 (1.46)	37 (1.46)	36 (1.42)	
Season	485 (19.10)	370 (14.58)	490 (19.30)	398 (15.67)	500 (19.69)	422 (16.60)	507 (19.97)	448 (17.64)	516 (20.32)	481 (18.93)	523 (20.59)	499 (19.64)						

REGION: 5 Willamette Valley
CROP: Filberts

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	38 (1.50)	1 (0.04)	39 (1.54)	1 (0.04)	40 (1.57)	1 (0.04)	42 (1.65)	1 (0.04)	43 (1.69)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)
April	73 (2.87)	5 (0.20)	75 (2.95)	6 (0.24)	76 (2.99)	7 (0.28)	78 (3.07)	8 (0.32)	82 (3.23)	37 (1.46)	84 (3.31)	44 (1.73)	84 (3.31)	44 (1.73)	84 (3.31)	44 (1.73)	84 (3.31)	44 (1.73)
May	116 (4.57)	51 (2.01)	117 (4.61)	59 (2.32)	120 (4.72)	66 (2.60)	122 (4.80)	75 (2.95)	125 (4.92)	89 (3.50)	128 (5.04)	100 (3.94)	128 (5.04)	100 (3.94)	128 (5.04)	100 (3.94)	128 (5.04)	100 (3.94)
June	152 (5.98)	103 (4.06)	155 (6.10)	114 (4.49)	158 (6.22)	123 (4.84)	160 (6.30)	132 (5.20)	162 (6.38)	142 (5.59)	162 (6.38)	148 (5.83)	162 (6.38)	148 (5.83)	162 (6.38)	148 (5.83)	162 (6.38)	148 (5.83)
July	186 (7.32)	175 (6.89)	188 (7.40)	181 (7.13)	190 (7.48)	186 (7.32)	192 (7.56)	191 (7.52)	195 (7.68)	195 (7.68)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)
Aug	152 (5.98)	140 (5.51)	157 (6.18)	144 (5.67)	159 (6.26)	149 (5.87)	161 (6.34)	154 (6.06)	164 (6.46)	163 (6.42)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)	167 (6.57)
Sep	111 (4.37)	65 (2.56)	112 (4.41)	72 (2.83)	113 (4.45)	80 (3.15)	117 (4.61)	89 (3.50)	119 (4.69)	105 (4.13)	120 (4.72)	113 (4.45)	120 (4.72)	113 (4.45)	120 (4.72)	113 (4.45)	120 (4.72)	113 (4.45)
Oct	53 (2.09)	3 (0.12)	53 (2.09)	4 (0.16)	54 (2.13)	5 (0.20)	55 (2.17)	6 (0.24)	58 (2.28)	18 (0.71)	58 (2.28)	18 (0.71)	58 (2.28)	18 (0.71)	58 (2.28)	18 (0.71)	58 (2.28)	18 (0.71)
Nov	14 (0.55)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)
Season	895 (35.23)	543 (21.39)	913 (35.95)	581 (22.88)	927 (36.49)	627 (24.69)	944 (37.17)	672 (26.45)	966 (38.04)	751 (29.57)	985 (38.77)	820 (32.28)	985 (38.77)	820 (32.28)	985 (38.77)	820 (32.28)	985 (38.77)	820 (32.28)

REGION: 5 Willamette Valley
CROP: Grain (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)
April	53 (2.09)	2 (0.08)	54 (2.13)	2 (0.08)	54 (2.13)	3 (0.12)	56 (2.20)	3 (0.12)	57 (2.24)	20 (0.79)	58 (2.28)	23 (0.91)	57 (2.24)	20 (0.79)	58 (2.28)	23 (0.91)	58 (2.28)	23 (0.91)
May	102 (4.02)	38 (1.50)	103 (4.06)	46 (1.81)	105 (4.13)	53 (2.09)	107 (4.21)	60 (2.36)	110 (4.33)	76 (2.99)	113 (4.45)	85 (3.35)	110 (4.33)	76 (2.99)	113 (4.45)	85 (3.35)	113 (4.45)	85 (3.35)
June	143 (5.63)	93 (3.66)	144 (5.67)	104 (4.09)	146 (5.75)	114 (4.49)	150 (5.91)	123 (4.84)	152 (5.98)	133 (5.24)	152 (5.98)	138 (5.43)	152 (5.98)	133 (5.24)	152 (5.98)	138 (5.43)	152 (5.98)	138 (5.43)
July	150 (5.91)	140 (5.51)	152 (5.98)	144 (5.67)	153 (6.02)	149 (5.87)	155 (6.10)	153 (6.02)	158 (6.22)	158 (6.22)	161 (6.34)	161 (6.34)	158 (6.22)	158 (6.22)	161 (6.34)	161 (6.34)	161 (6.34)	161 (6.34)
Aug	15 (0.59)	13 (0.51)	16 (0.63)	14 (0.55)	16 (0.63)	15 (0.59)	16 (0.63)	16 (0.63)	17 (0.67)	16 (0.63)	17 (0.67)	17 (0.67)	17 (0.67)	16 (0.63)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)
Season	478 (18.83)	286 (11.26)	484 (19.06)	310 (12.20)	490 (19.29)	334 (13.16)	501 (19.72)	355 (13.97)	511 (20.11)	403 (15.87)	519 (20.43)	424 (16.70)	511 (20.11)	403 (15.87)	519 (20.43)	424 (16.70)	519 (20.43)	424 (16.70)

REGION: 5 Willamette Valley
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	25 (0.98)	0 (0.00)	25 (0.98)	0 (0.00)	27 (1.06)	1 (0.04)	28 (1.10)	1 (0.04)	29 (1.14)	1 (0.04)	29 (1.14)	1 (0.04)	29 (1.14)	1 (0.04)	29 (1.14)	1 (0.04)	29 (1.14)	1 (0.04)
April	56 (2.20)	2 (0.08)	57 (2.24)	3 (0.12)	58 (2.28)	3 (0.12)	59 (2.32)	6 (0.24)	61 (2.40)	21 (0.83)	63 (2.48)	25 (0.98)	63 (2.48)	25 (0.98)	63 (2.48)	25 (0.98)	63 (2.48)	25 (0.98)
May	104 (4.09)	39 (1.54)	105 (4.13)	47 (1.85)	107 (4.21)	56 (2.20)	109 (4.29)	65 (2.56)	112 (4.41)	78 (3.07)	115 (4.53)	88 (3.46)	115 (4.53)	88 (3.46)	115 (4.53)	88 (3.46)	115 (4.53)	88 (3.46)
June	143 (5.63)	93 (3.56)	144 (5.67)	104 (4.09)	146 (5.75)	114 (4.49)	150 (5.91)	123 (4.84)	152 (5.98)	133 (5.24)	152 (5.98)	138 (5.43)	152 (5.98)	133 (5.24)	152 (5.98)	138 (5.43)	152 (5.98)	138 (5.43)
July	145 (5.71)	135 (5.31)	147 (5.79)	139 (5.47)	148 (5.83)	143 (5.63)	150 (5.91)	148 (5.83)	152 (5.98)	152 (5.98)	156 (6.14)	156 (6.14)	156 (6.14)	152 (5.98)	156 (6.14)	156 (6.14)	156 (6.14)	156 (6.14)
Aug	4 (0.16)	4 (0.16)	5 (0.20)	5 (0.20)	7 (0.28)	6 (0.24)	7 (0.28)	6 (0.24)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)
Season	477 (18.77)	273 (10.75)	483 (19.01)	298 (11.73)	493 (19.41)	323 (12.72)	503 (19.81)	349 (13.75)	513 (20.19)	392 (15.44)	522 (20.55)	415 (16.33)	522 (20.55)	392 (15.44)	522 (20.55)	415 (16.33)	522 (20.55)	415 (16.33)

REGION: 5 Willamette Valley
CROP: Grapes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	37 (1.46)	1 (0.04)	38 (1.50)	1 (0.04)	39 (1.54)	2 (0.08)	40 (1.57)	2 (0.08)	41 (1.61)	5 (0.20)	42 (1.65)	7 (0.28)	41 (1.61)	5 (0.20)	42 (1.65)	7 (0.28)	42 (1.65)	7 (0.28)
May	62 (2.44)	6 (0.24)	63 (2.48)	12 (0.47)	64 (2.52)	18 (0.71)	65 (2.56)	25 (0.98)	67 (2.64)	36 (1.42)	69 (2.72)	48 (1.89)	67 (2.64)	36 (1.42)	69 (2.72)	48 (1.89)	69 (2.72)	48 (1.89)
June	84 (3.31)	40 (1.57)	86 (3.39)	50 (1.97)	87 (3.43)	59 (2.32)	88 (3.46)	66 (2.60)	89 (3.50)	73 (2.87)	90 (3.54)	81 (3.19)	89 (3.50)	73 (2.87)	90 (3.54)	81 (3.19)	90 (3.54)	81 (3.19)
July	103 (4.06)	96 (3.78)	104 (4.09)	99 (3.90)	105 (4.13)	102 (4.02)	107 (4.21)	105 (4.13)	108 (4.25)	108 (4.25)	111 (4.37)	111 (4.37)	108 (4.25)	108 (4.25)	111 (4.37)	111 (4.37)	111 (4.37)	111 (4.37)
Aug	86 (3.39)	73 (2.87)	87 (3.43)	78 (3.07)	88 (3.46)	81 (3.19)	89 (3.50)	84 (3.31)	91 (3.58)	89 (3.50)	92 (3.62)	92 (3.62)	91 (3.58)	89 (3.50)	92 (3.62)	92 (3.62)	92 (3.62)	92 (3.62)
Sep	64 (2.52)	24 (0.94)	64 (2.52)	29 (1.14)	65 (2.56)	36 (1.42)	67 (2.64)	44 (1.73)	69 (2.72)	60 (2.36)	69 (2.72)	65 (2.56)	69 (2.72)	60 (2.36)	69 (2.72)	65 (2.56)	69 (2.72)	65 (2.56)
Oct	32 (1.26)	2 (0.08)	33 (1.30)	2 (0.08)	33 (1.30)	2 (0.08)	34 (1.34)	3 (0.12)	35 (1.38)	3 (0.12)	35 (1.38)	3 (0.12)	35 (1.38)	3 (0.12)	35 (1.38)	3 (0.12)	35 (1.38)	3 (0.12)
Nov	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)
Season	475 (18.72)	242 (9.52)	483 (19.02)	271 (10.67)	489 (19.25)	300 (11.82)	498 (19.59)	329 (12.95)	509 (20.03)	374 (14.72)	518 (20.39)	424 (16.70)	509 (20.03)	374 (14.72)	518 (20.39)	424 (16.70)	518 (20.39)	424 (16.70)

REGION: 5 Willamette Valley
CROP: Grass Seed (Fall)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	4 (0.16)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)
Feb	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	19 (0.75)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)
March	37 (1.46)	1 (0.04)	38 (1.50)	1 (0.04)	39 (1.54)	1 (0.04)	41 (1.61)	1 (0.04)	41 (1.61)	1 (0.04)	43 (1.69)	2 (0.08)	43 (1.69)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)
April	77 (3.03)	5 (0.20)	79 (3.11)	7 (0.28)	81 (3.19)	7 (0.28)	83 (3.27)	7 (0.28)	83 (3.27)	7 (0.28)	86 (3.39)	42 (1.65)	86 (3.39)	42 (1.65)	89 (3.50)	49 (1.93)	89 (3.50)	49 (1.93)
May	120 (4.72)	55 (2.17)	122 (4.80)	64 (2.52)	124 (4.88)	71 (2.80)	126 (4.96)	79 (3.11)	126 (4.96)	79 (3.11)	130 (5.12)	92 (3.62)	130 (5.12)	92 (3.62)	135 (5.31)	105 (4.13)	135 (5.31)	105 (4.13)
June	143 (5.63)	93 (3.66)	144 (5.67)	104 (4.09)	146 (5.75)	114 (4.49)	150 (5.91)	123 (4.84)	150 (5.91)	123 (4.84)	152 (5.98)	133 (5.24)	152 (5.98)	133 (5.24)	152 (5.98)	138 (5.43)	152 (5.98)	138 (5.43)
July	172 (6.77)	161 (6.34)	173 (6.81)	166 (6.54)	175 (6.89)	171 (6.73)	177 (6.97)	176 (6.93)	177 (6.97)	176 (6.93)	180 (7.09)	180 (7.09)	180 (7.09)	180 (7.09)	184 (7.24)	184 (7.24)	184 (7.24)	184 (7.24)
Aug	126 (4.96)	115 (4.53)	127 (5.00)	119 (4.69)	132 (5.20)	123 (4.84)	134 (5.28)	127 (5.00)	134 (5.28)	127 (5.00)	136 (5.35)	135 (5.31)	136 (5.35)	135 (5.31)	138 (5.43)	138 (5.43)	138 (5.43)	138 (5.43)
Sep	50 (1.97)	11 (0.43)	51 (2.01)	15 (0.59)	52 (2.05)	23 (0.91)	52 (2.05)	30 (1.18)	52 (2.05)	30 (1.18)	54 (2.13)	46 (1.81)	54 (2.13)	46 (1.81)	55 (2.17)	50 (1.97)	55 (2.17)	50 (1.97)
Oct	42 (1.65)	2 (0.08)	42 (1.65)	3 (0.12)	43 (1.69)	3 (0.12)	43 (1.69)	4 (0.16)	43 (1.69)	4 (0.16)	45 (1.77)	7 (0.28)	45 (1.77)	7 (0.28)	46 (1.81)	31 (1.22)	46 (1.81)	31 (1.22)
Nov	13 (0.51)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)
Dec	4 (0.16)	0 (0.00)	4 (0.16)	0 (0.00)	4 (0.16)	0 (0.00)	4 (0.16)	0 (0.00)	4 (0.16)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)
Season 803	(31.61)	443 (17.45)	818 (32.21)	479 (18.87)	834 (32.85)	527 (20.76)	852 (33.55)	571 (22.48)	877 (34.53)	637 (25.08)	897 (35.30)	697 (27.43)	897 (35.30)	697 (27.43)	897 (35.30)	697 (27.43)	897 (35.30)	697 (27.43)

REGION: 5 Willamette Valley
CROP: Grass Seed (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	7 (0.28)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)
Feb	12 (0.47)	0 (0.00)	13 (0.51)	0 (0.00)	13 (0.51)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)	16 (0.63)	0 (0.00)
March	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	20 (0.79)	0 (0.00)	21 (0.83)	0 (0.00)	21 (0.83)	0 (0.00)	22 (0.87)	0 (0.00)	22 (0.87)	0 (0.00)
April	44 (1.73)	1 (0.04)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)	46 (1.81)	2 (0.08)	46 (1.81)	2 (0.08)	47 (1.85)	11 (0.43)	47 (1.85)	11 (0.43)	48 (1.89)	15 (0.59)	48 (1.89)	15 (0.59)
May	66 (2.60)	7 (0.28)	67 (2.64)	15 (0.59)	68 (2.68)	22 (0.87)	69 (2.72)	30 (1.18)	69 (2.72)	30 (1.18)	70 (2.76)	44 (1.73)	70 (2.76)	44 (1.73)	72 (2.83)	51 (2.01)	72 (2.83)	51 (2.01)
June	101 (3.98)	54 (2.13)	102 (4.02)	66 (2.60)	104 (4.09)	76 (2.99)	106 (4.17)	85 (3.35)	106 (4.17)	85 (3.35)	107 (4.21)	93 (3.66)	107 (4.21)	93 (3.66)	108 (4.25)	97 (3.82)	108 (4.25)	97 (3.82)
July	152 (5.98)	142 (5.59)	153 (6.02)	147 (5.79)	155 (6.10)	151 (5.94)	157 (6.18)	155 (6.10)	157 (6.18)	155 (6.10)	161 (6.34)	160 (6.30)	161 (6.34)	160 (6.30)	163 (6.42)	163 (6.42)	163 (6.42)	163 (6.42)
Aug	138 (5.43)	126 (4.96)	142 (5.59)	131 (5.16)	144 (5.67)	135 (5.31)	146 (5.75)	139 (5.47)	146 (5.75)	139 (5.47)	149 (5.87)	147 (5.79)	149 (5.87)	147 (5.79)	151 (5.94)	151 (5.94)	151 (5.94)	151 (5.94)
Sep	106 (4.17)	61 (2.40)	107 (4.21)	68 (2.68)	108 (4.25)	76 (2.99)	110 (4.33)	85 (3.35)	110 (4.33)	85 (3.35)	114 (4.49)	101 (3.98)	114 (4.49)	101 (3.98)	115 (4.53)	108 (4.25)	115 (4.53)	108 (4.25)
Oct	65 (2.56)	4 (0.16)	66 (2.60)	5 (0.20)	67 (2.64)	6 (0.24)	68 (2.68)	15 (0.59)	68 (2.68)	15 (0.59)	71 (2.80)	29 (1.14)	71 (2.80)	29 (1.14)	72 (2.83)	55 (2.17)	72 (2.83)	55 (2.17)
Nov	21 (0.83)	0 (0.00)	23 (0.91)	0 (0.00)	23 (0.91)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	24 (0.94)	1 (0.04)	25 (0.98)	1 (0.04)	25 (0.98)	1 (0.04)
Dec	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)
Season 735	(28.94)	395 (15.56)	748 (29.46)	434 (17.10)	761 (29.97)	469 (18.46)	778 (30.63)	512 (20.16)	799 (31.46)	586 (23.07)	812 (31.95)	641 (25.24)	799 (31.46)	586 (23.07)	812 (31.95)	641 (25.24)	812 (31.95)	641 (25.24)

REGION: 5 Willamette Valley
CROP: Mint

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	13 (0.51)	0 (0.00)	13 (0.51)	0 (0.00)	13 (0.51)	0 (0.00)	13 (0.51)	0 (0.00)	14 (0.55)	0 (0.00)	14 (0.55)	0 (0.00)	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)
April	51 (2.01)	2 (0.08)	52 (2.05)	2 (0.08)	53 (2.09)	3 (0.12)	54 (2.13)	3 (0.12)	54 (2.13)	3 (0.12)	55 (2.17)	3 (0.12)	55 (2.17)	3 (0.12)	57 (2.24)	22 (0.87)	57 (2.24)	22 (0.87)
May	117 (4.61)	51 (2.01)	118 (4.65)	59 (2.32)	121 (4.76)	66 (2.60)	123 (4.84)	75 (2.95)	123 (4.84)	75 (2.95)	126 (4.96)	89 (3.50)	126 (4.96)	89 (3.50)	129 (5.08)	100 (3.94)	129 (5.08)	100 (3.94)
June	144 (5.67)	94 (3.70)	148 (5.83)	107 (4.21)	150 (5.91)	116 (4.57)	152 (6.06)	125 (4.92)	152 (6.06)	125 (4.92)	154 (6.12)	135 (5.31)	154 (6.12)	135 (5.31)	154 (6.12)	140 (5.51)	154 (6.12)	140 (5.51)
July	120 (4.72)	111 (4.37)	121 (4.76)	115 (4.53)	122 (4.80)	118 (4.65)	124 (4.88)	122 (4.80)	124 (4.88)	122 (4.80)	126 (4.96)	126 (4.96)	126 (4.96)	126 (4.96)	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)
Season	445 (17.52)	258 (10.16)	452 (17.80)	283 (11.14)	459 (18.07)	303 (11.94)	467 (18.38)	325 (12.79)	467 (18.38)	325 (12.79)	475 (18.70)	367 (14.44)	475 (18.70)	367 (14.44)	483 (19.01)	390 (15.36)	483 (19.01)	390 (15.36)

REGION: 5 Willamette Valley
CROP: Onions

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	24 (0.94)	2 (0.08)	25 (0.98)	3 (0.12)	25 (0.98)	3 (0.12)	25 (0.98)	3 (0.12)	25 (0.98)	3 (0.12)	25 (0.98)	11 (0.43)	25 (0.98)	11 (0.43)
May	94 (3.70)	42 (1.65)	95 (3.74)	48 (1.89)	98 (3.86)	54 (2.13)	99 (3.90)	62 (2.44)	99 (3.90)	62 (2.44)	103 (4.06)	72 (2.83)	103 (4.06)	72 (2.83)	105 (4.13)	81 (3.19)	105 (4.13)	81 (3.19)
June	129 (5.08)	89 (3.50)	133 (5.24)	99 (3.90)	134 (5.28)	106 (4.17)	136 (5.35)	114 (4.49)	136 (5.35)	114 (4.49)	138 (5.43)	122 (4.80)	138 (5.43)	122 (4.80)	138 (5.43)	127 (5.00)	138 (5.43)	127 (5.00)
July	155 (6.10)	147 (5.79)	157 (6.18)	151 (5.94)	158 (6.22)	155 (6.10)	160 (6.30)	160 (6.30)	160 (6.30)	160 (6.30)	163 (6.42)	163 (6.42)	163 (6.42)	163 (6.42)	166 (6.54)	166 (6.54)	166 (6.54)	166 (6.54)
Aug	111 (4.37)	102 (4.02)	114 (4.49)	105 (4.13)	116 (4.57)	109 (4.29)	118 (4.65)	112 (4.41)	118 (4.65)	112 (4.41)	120 (4.72)	118 (4.65)	120 (4.72)	118 (4.65)	122 (4.80)	122 (4.80)	122 (4.80)	122 (4.80)
Season	512 (20.16)	381 (15.00)	522 (20.56)	404 (15.90)	530 (20.87)	426 (16.77)	538 (21.18)	451 (17.76)	538 (21.18)	451 (17.76)	549 (21.61)	485 (19.09)	549 (21.61)	485 (19.09)	556 (21.88)	507 (19.96)	556 (21.88)	507 (19.96)

REGION: 5 Willamette Valley
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	32 (1.26)	1 (0.04)	33 (1.30)	1 (0.04)	34 (1.34)	1 (0.04)	36 (1.42)	2 (0.08)	37 (1.46)	2 (0.08)	39 (1.54)	2 (0.08)	39 (1.54)	2 (0.08)	39 (1.54)	2 (0.08)	39 (1.54)	2 (0.08)
April	75 (2.95)	5 (0.20)	77 (3.03)	6 (0.24)	78 (3.07)	18 (0.71)	80 (3.15)	27 (1.06)	84 (3.31)	40 (1.57)	86 (3.39)	47 (1.85)	86 (3.39)	47 (1.85)	86 (3.39)	47 (1.85)	86 (3.39)	47 (1.85)
May	106 (4.17)	40 (1.57)	107 (4.21)	50 (1.97)	110 (4.33)	57 (2.24)	112 (4.41)	65 (2.56)	115 (4.53)	80 (3.15)	117 (4.61)	91 (3.58)	117 (4.61)	91 (3.58)	117 (4.61)	91 (3.58)	117 (4.61)	91 (3.58)
June	127 (5.00)	78 (3.07)	128 (5.04)	88 (3.46)	130 (5.12)	99 (3.90)	131 (5.16)	108 (4.25)	133 (5.24)	116 (4.57)	133 (5.24)	121 (4.76)	133 (5.24)	121 (4.76)	133 (5.24)	121 (4.76)	133 (5.24)	121 (4.76)
July	151 (5.94)	141 (5.55)	152 (5.98)	145 (5.71)	154 (6.06)	149 (5.87)	156 (6.14)	153 (6.02)	158 (6.22)	158 (6.22)	162 (6.38)	162 (6.38)	162 (6.38)	162 (6.38)	162 (6.38)	162 (6.38)	162 (6.38)	162 (6.38)
Aug	124 (4.88)	112 (4.41)	127 (5.00)	116 (4.57)	130 (5.12)	120 (4.72)	131 (5.16)	123 (4.84)	134 (5.28)	130 (5.12)	135 (5.31)	135 (5.31)	135 (5.31)	135 (5.31)	135 (5.31)	135 (5.31)	135 (5.31)	135 (5.31)
Sep	95 (3.74)	53 (2.09)	96 (3.78)	59 (2.32)	96 (3.78)	66 (2.60)	100 (3.94)	74 (2.91)	102 (4.02)	88 (3.46)	103 (4.06)	96 (3.78)	103 (4.06)	96 (3.78)	103 (4.06)	96 (3.78)	103 (4.06)	96 (3.78)
Oct	58 (2.28)	4 (0.16)	59 (2.32)	5 (0.20)	60 (2.36)	5 (0.20)	60 (2.36)	13 (0.51)	63 (2.48)	22 (0.87)	64 (2.52)	50 (1.97)	64 (2.52)	50 (1.97)	64 (2.52)	50 (1.97)	64 (2.52)	50 (1.97)
Nov	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	12 (0.47)	0 (0.00)	12 (0.47)	0 (0.00)	12 (0.47)	0 (0.00)	12 (0.47)	0 (0.00)
Season	777 (30.57)	434 (17.09)	789 (31.05)	470 (18.51)	802 (31.57)	515 (20.28)	816 (32.13)	565 (22.23)	837 (32.97)	636 (25.04)	851 (33.52)	704 (27.71)	851 (33.52)	704 (27.71)	851 (33.52)	704 (27.71)	851 (33.52)	704 (27.71)

REGION: 5 Willamette Valley
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	38 (1.50)	1 (0.04)	39 (1.54)	1 (0.04)	40 (1.57)	1 (0.04)	42 (1.65)	1 (0.04)	43 (1.69)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)	45 (1.77)	2 (0.08)
April	69 (2.72)	4 (0.16)	71 (2.80)	5 (0.20)	72 (2.83)	12 (0.47)	74 (2.91)	21 (0.83)	77 (3.03)	35 (1.38)	79 (3.11)	41 (1.61)	79 (3.11)	41 (1.61)	79 (3.11)	41 (1.61)	79 (3.11)	41 (1.61)
May	105 (4.13)	41 (1.61)	106 (4.17)	49 (1.93)	109 (4.29)	57 (2.24)	111 (4.37)	66 (2.60)	114 (4.49)	79 (3.11)	116 (4.57)	90 (3.54)	116 (4.57)	90 (3.54)	116 (4.57)	90 (3.54)	116 (4.57)	90 (3.54)
June	139 (5.47)	90 (3.54)	142 (5.59)	101 (3.98)	144 (5.67)	111 (4.37)	146 (5.75)	120 (4.72)	148 (5.83)	130 (5.12)	148 (5.83)	135 (5.31)	148 (5.83)	135 (5.31)	148 (5.83)	135 (5.31)	148 (5.83)	135 (5.31)
July	171 (6.73)	160 (6.30)	172 (6.77)	165 (6.50)	174 (6.85)	170 (6.69)	176 (6.93)	175 (6.89)	179 (7.05)	179 (7.05)	186 (7.32)	184 (7.24)	186 (7.32)	184 (7.24)	186 (7.32)	184 (7.24)	186 (7.32)	184 (7.24)
Aug	139 (5.47)	127 (5.00)	143 (5.63)	132 (5.20)	146 (5.75)	136 (5.35)	148 (5.83)	141 (5.55)	151 (5.94)	149 (5.87)	153 (6.02)	153 (6.02)	153 (6.02)	153 (6.02)	153 (6.02)	153 (6.02)	153 (6.02)	153 (6.02)
Sep	101 (3.98)	58 (2.28)	102 (4.02)	64 (2.52)	103 (4.06)	71 (2.80)	106 (4.17)	80 (3.15)	108 (4.25)	95 (3.74)	109 (4.29)	103 (4.06)	109 (4.29)	103 (4.06)	109 (4.29)	103 (4.06)	109 (4.29)	103 (4.06)
Oct	49 (1.93)	3 (0.12)	50 (1.97)	4 (0.16)	51 (2.01)	4 (0.16)	51 (2.01)	5 (0.20)	54 (2.13)	13 (0.51)	54 (2.13)	36 (1.42)	54 (2.13)	13 (0.51)	54 (2.13)	36 (1.42)	54 (2.13)	36 (1.42)
Nov	14 (0.55)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)	18 (0.71)	0 (0.00)
Season	825 (32.48)	484 (19.05)	842 (33.16)	521 (20.53)	856 (33.70)	562 (22.12)	871 (34.29)	609 (23.98)	892 (35.12)	682 (26.86)	908 (35.75)	744 (29.28)	908 (35.75)	744 (29.28)	908 (35.75)	744 (29.28)	908 (35.75)	744 (29.28)

REGION: 5 Willamette Valley
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	30 (1.18)	1 (0.04)	31 (1.22)	1 (0.04)	32 (1.26)	1 (0.04)	33 (1.30)	1 (0.04)	34 (1.34)	1 (0.04)	35 (1.38)	1 (0.04)	36 (1.42)	1 (0.04)	37 (1.46)	1 (0.04)	38 (1.50)	1 (0.04)
April	76 (2.99)	5 (0.20)	78 (3.07)	6 (0.24)	79 (3.11)	6 (0.24)	80 (3.15)	6 (0.24)	81 (3.19)	6 (0.24)	82 (3.23)	6 (0.24)	83 (3.27)	6 (0.24)	84 (3.31)	6 (0.24)	85 (3.35)	6 (0.24)
May	119 (4.69)	54 (2.13)	120 (4.72)	63 (2.48)	123 (4.84)	70 (2.76)	125 (4.92)	79 (3.11)	131 (5.16)	91 (3.58)	133 (5.24)	103 (4.06)	135 (5.31)	103 (4.06)	137 (5.39)	103 (4.06)	139 (5.47)	103 (4.06)
June	53 (2.09)	37 (1.46)	53 (2.09)	41 (1.61)	54 (2.13)	45 (1.77)	56 (2.20)	48 (1.89)	57 (2.24)	51 (2.01)	58 (2.28)	53 (2.09)	59 (2.32)	53 (2.09)	60 (2.36)	53 (2.09)	61 (2.40)	53 (2.09)
Season	278 (10.95)	97 (3.83)	282 (11.10)	111 (4.37)	288 (11.34)	134 (5.28)	295 (11.61)	158 (6.22)	306 (12.05)	184 (7.24)	313 (12.33)	205 (8.08)	320 (12.61)	184 (7.24)	327 (12.89)	205 (8.08)	334 (13.17)	205 (8.08)

REGION: 5 Willamette Valley
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	38 (1.50)	1 (0.04)	39 (1.54)	1 (0.04)	40 (1.57)	1 (0.04)	42 (1.65)	1 (0.04)	43 (1.69)	2 (0.08)	45 (1.77)	2 (0.08)	47 (1.85)	2 (0.08)	49 (1.93)	2 (0.08)	51 (2.01)	2 (0.08)
April	69 (2.72)	4 (0.16)	71 (2.80)	5 (0.20)	72 (2.83)	12 (0.47)	74 (2.91)	21 (0.83)	77 (3.03)	35 (1.38)	79 (3.11)	41 (1.61)	81 (3.19)	41 (1.61)	83 (3.27)	41 (1.61)	85 (3.35)	41 (1.61)
May	105 (4.13)	41 (1.61)	106 (4.17)	49 (1.93)	109 (4.29)	57 (2.24)	111 (4.37)	66 (2.60)	114 (4.49)	79 (3.11)	116 (4.57)	90 (3.54)	119 (4.69)	79 (3.11)	121 (4.77)	90 (3.54)	123 (4.84)	90 (3.54)
June	139 (5.47)	90 (3.54)	142 (5.59)	101 (3.98)	144 (5.67)	111 (4.37)	146 (5.75)	120 (4.72)	148 (5.83)	130 (5.12)	151 (5.94)	149 (5.87)	153 (6.02)	130 (5.12)	155 (6.10)	149 (5.87)	157 (6.18)	149 (5.87)
July	171 (6.73)	160 (6.30)	172 (6.77)	165 (6.50)	174 (6.85)	170 (6.69)	176 (6.93)	175 (6.89)	179 (7.05)	179 (7.05)	186 (7.32)	184 (7.24)	188 (7.40)	179 (7.05)	195 (7.67)	184 (7.24)	197 (7.75)	184 (7.24)
Aug	139 (5.47)	127 (5.00)	143 (5.63)	132 (5.20)	146 (5.75)	136 (5.35)	148 (5.83)	141 (5.55)	151 (5.94)	149 (5.87)	153 (6.02)	153 (6.02)	157 (6.10)	149 (5.87)	164 (6.37)	153 (6.02)	166 (6.45)	153 (6.02)
Sep	101 (3.98)	58 (2.28)	102 (4.02)	64 (2.52)	103 (4.06)	71 (2.80)	106 (4.17)	80 (3.15)	108 (4.25)	95 (3.74)	109 (4.29)	103 (4.06)	111 (4.33)	95 (3.74)	118 (4.60)	103 (4.06)	120 (4.68)	103 (4.06)
Oct	49 (1.93)	3 (0.12)	50 (1.97)	4 (0.16)	51 (2.01)	4 (0.16)	52 (2.05)	5 (0.20)	54 (2.13)	13 (0.51)	56 (2.21)	13 (0.51)	58 (2.29)	13 (0.51)	60 (2.37)	13 (0.51)	62 (2.45)	13 (0.51)
Nov	14 (0.55)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)
Season	825 (32.48)	484 (19.05)	842 (33.16)	521 (20.53)	856 (33.70)	562 (22.12)	871 (34.29)	609 (23.98)	892 (35.12)	682 (26.86)	908 (35.75)	744 (29.28)	923 (36.33)	682 (26.86)	938 (36.91)	744 (29.28)	953 (37.49)	744 (29.28)

REGION: 5 Willamette Valley
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.
April	6 (0.24)	0 (0.00)	0 (0.24)	6 (0.24)	0 (0.00)	0 (0.24)	6 (0.24)	0 (0.00)	0 (0.24)	6 (0.24)	0 (0.00)	0 (0.24)	6 (0.24)	2 (0.08)	6 (0.24)	6 (0.24)	3 (0.12)	3 (0.12)
May	49 (1.93)	4 (0.16)	50 (1.97)	50 (1.97)	4 (0.16)	50 (1.97)	50 (1.97)	10 (0.39)	51 (2.01)	51 (2.01)	17 (0.67)	52 (2.05)	52 (2.05)	26 (1.02)	52 (2.05)	52 (2.05)	32 (1.26)	32 (1.26)
June	96 (3.78)	55 (2.17)	97 (3.82)	97 (3.82)	63 (2.48)	100 (3.94)	100 (3.94)	73 (2.87)	101 (3.98)	101 (3.98)	82 (3.23)	102 (4.02)	102 (4.02)	89 (3.50)	102 (4.02)	102 (4.02)	92 (3.62)	92 (3.62)
July	168 (6.61)	159 (6.26)	170 (6.69)	170 (6.69)	163 (6.42)	172 (6.77)	172 (6.77)	168 (6.61)	174 (6.85)	174 (6.85)	172 (6.77)	177 (6.97)	177 (6.97)	177 (6.97)	183 (7.20)	183 (7.20)	182 (7.17)	182 (7.17)
Aug	142 (5.59)	131 (5.16)	143 (5.63)	143 (5.63)	135 (5.31)	148 (5.83)	148 (5.83)	139 (5.47)	150 (5.91)	150 (5.91)	144 (5.67)	153 (6.02)	153 (6.02)	151 (5.94)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)
Sep	97 (3.82)	57 (2.24)	98 (3.86)	98 (3.86)	63 (2.48)	99 (3.90)	99 (3.90)	70 (2.76)	103 (4.06)	103 (4.06)	79 (3.11)	105 (4.13)	105 (4.13)	93 (3.66)	106 (4.17)	106 (4.17)	100 (3.94)	100 (3.94)
Oct	15 (0.59)	1 (0.04)	16 (0.63)	16 (0.63)	1 (0.04)	16 (0.63)	16 (0.63)	1 (0.04)	16 (0.63)	16 (0.63)	2 (0.08)	16 (0.63)	16 (0.63)	6 (0.24)	16 (0.63)	16 (0.63)	13 (0.51)	13 (0.51)
Season	573 (22.56)	407 (16.03)	580 (22.84)	429 (16.89)	591 (23.28)	461 (18.14)	601 (23.68)	496 (19.53)	611 (24.06)	544 (21.41)	620 (24.41)	577 (22.72)						

REGION: 5 Willamette Valley
CROP: Tomatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.	ET crop	Net IRR	mm in.
May	48 (1.89)	3 (0.12)	49 (1.93)	49 (1.93)	4 (0.16)	49 (1.93)	49 (1.93)	6 (0.24)	50 (1.97)	50 (1.97)	13 (0.51)	51 (2.01)	51 (2.01)	26 (1.02)	51 (2.01)	51 (2.01)	32 (1.26)	32 (1.26)
June	120 (4.72)	72 (2.83)	122 (4.80)	122 (4.80)	81 (3.19)	124 (4.88)	124 (4.88)	91 (3.58)	126 (4.96)	126 (4.96)	103 (4.06)	127 (5.00)	127 (5.00)	111 (4.37)	127 (5.00)	127 (5.00)	116 (4.57)	116 (4.57)
July	178 (7.01)	167 (6.57)	180 (7.09)	180 (7.09)	172 (6.77)	182 (7.17)	182 (7.17)	177 (6.97)	184 (7.24)	184 (7.24)	182 (7.17)	187 (7.36)	187 (7.36)	187 (7.36)	191 (7.52)	191 (7.52)	191 (7.52)	191 (7.52)
Aug	75 (2.95)	67 (2.64)	76 (2.99)	76 (2.99)	70 (2.76)	77 (3.03)	77 (3.03)	73 (2.87)	78 (3.07)	78 (3.07)	76 (2.99)	80 (3.15)	80 (3.15)	79 (3.11)	81 (3.19)	81 (3.19)	81 (3.19)	81 (3.19)
Season	421 (16.57)	309 (12.16)	427 (16.81)	327 (12.88)	432 (17.01)	347 (13.66)	438 (17.24)	374 (14.73)	445 (17.52)	403 (15.86)	450 (17.72)	420 (16.54)						

REGION: 6 Unqua River
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
March	23 (0.91)	1 (0.04)	2 (0.08)	23 (0.91)	2 (0.08)	2 (0.08)	24 (0.94)	2 (0.08)	2 (0.08)	25 (0.98)	2 (0.08)	2 (0.08)	26 (1.02)	8 (0.31)	8 (0.31)	27 (1.06)	15 (0.59)	15 (0.59)
April	70 (2.76)	18 (0.71)	24 (0.94)	71 (2.80)	24 (0.94)	33 (1.30)	73 (2.87)	33 (1.30)	33 (1.30)	75 (2.95)	42 (1.65)	42 (1.65)	77 (3.03)	50 (1.97)	50 (1.97)	78 (3.07)	57 (2.24)	57 (2.24)
May	98 (3.86)	59 (2.32)	64 (2.52)	99 (3.90)	64 (2.52)	72 (2.83)	101 (3.98)	72 (2.83)	103 (3.98)	103 (4.06)	80 (3.15)	80 (3.15)	106 (4.17)	86 (3.39)	86 (3.39)	108 (4.25)	93 (3.66)	93 (3.66)
June	116 (4.57)	94 (3.70)	117 (4.61)	117 (4.61)	99 (3.90)	104 (4.09)	119 (4.69)	104 (4.09)	122 (4.80)	110 (4.33)	110 (4.33)	124 (4.88)	116 (4.57)	116 (4.57)	127 (5.00)	127 (5.00)	120 (4.72)	120 (4.72)
July	150 (5.91)	146 (5.75)	151 (5.94)	151 (5.94)	149 (5.87)	151 (5.94)	152 (5.98)	151 (5.94)	154 (6.06)	154 (6.06)	154 (6.06)	154 (6.06)	156 (6.14)	156 (6.14)	159 (6.26)	159 (6.26)	159 (6.26)	159 (6.26)
Aug	123 (4.84)	117 (4.61)	125 (4.92)	125 (4.92)	120 (4.72)	127 (5.00)	127 (5.00)	124 (4.88)	128 (5.04)	127 (5.00)	127 (5.00)	132 (5.20)	132 (5.20)	132 (5.20)	134 (5.28)	134 (5.28)	134 (5.28)	134 (5.28)
Sep	93 (3.66)	70 (2.76)	94 (3.70)	94 (3.70)	75 (2.95)	75 (2.95)	95 (3.74)	79 (3.11)	97 (3.82)	85 (3.35)	85 (3.35)	102 (4.02)	91 (3.58)	91 (3.58)	104 (4.09)	95 (3.74)	95 (3.74)	95 (3.74)
Season	673 (26.51)	505 (19.89)	680 (26.78)	533 (20.98)	691 (27.20)	565 (22.23)	704 (27.71)	600 (23.62)	723 (28.46)	639 (25.16)	737 (29.01)	673 (26.49)	737 (29.01)	673 (26.49)	737 (29.01)	673 (26.49)	737 (29.01)	673 (26.49)

REGION: 6 Unqua River
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
March	37 (1.46)	2 (0.08)	3 (0.12)	38 (1.50)	3 (0.12)	3 (0.12)	39 (1.54)	3 (0.12)	3 (0.12)	40 (1.57)	4 (0.16)	4 (0.16)	42 (1.65)	10 (0.39)	10 (0.39)	43 (1.69)	18 (0.71)	18 (0.71)
April	72 (2.83)	22 (0.87)	27 (1.06)	74 (2.91)	27 (1.06)	35 (1.38)	75 (2.95)	35 (1.38)	35 (1.38)	77 (3.03)	45 (1.77)	45 (1.77)	79 (3.11)	52 (2.05)	52 (2.05)	80 (3.15)	59 (2.32)	59 (2.32)
May	115 (4.53)	74 (2.91)	82 (3.23)	117 (4.61)	82 (3.23)	90 (3.54)	119 (4.69)	90 (3.54)	122 (4.80)	96 (3.78)	96 (3.78)	125 (4.92)	102 (4.02)	102 (4.02)	127 (5.00)	111 (4.37)	111 (4.37)	111 (4.37)
June	152 (5.98)	129 (5.08)	153 (6.02)	153 (6.02)	134 (5.28)	139 (5.47)	154 (6.06)	139 (5.47)	158 (6.22)	144 (5.67)	144 (5.67)	161 (6.34)	153 (6.02)	153 (6.02)	164 (6.46)	158 (6.22)	158 (6.22)	158 (6.22)
July	200 (7.87)	192 (7.56)	201 (7.91)	201 (7.91)	195 (7.68)	203 (7.83)	203 (7.99)	199 (7.83)	205 (8.07)	203 (7.99)	203 (7.99)	209 (8.23)	208 (8.19)	208 (8.19)	212 (8.35)	212 (8.35)	212 (8.35)	212 (8.35)
Aug	163 (6.42)	156 (6.14)	166 (6.54)	166 (6.54)	161 (6.34)	166 (6.54)	168 (6.61)	166 (6.54)	170 (6.69)	170 (6.69)	170 (6.69)	175 (6.89)	175 (6.89)	175 (6.89)	178 (7.01)	178 (7.01)	178 (7.01)	178 (7.01)
Sep	119 (4.69)	92 (3.62)	121 (4.76)	121 (4.76)	98 (3.86)	104 (4.05)	123 (4.84)	104 (4.05)	125 (4.92)	109 (4.29)	109 (4.29)	128 (5.04)	115 (4.53)	115 (4.53)	129 (5.08)	121 (4.76)	121 (4.76)	121 (4.76)
Oct	57 (2.24)	5 (0.20)	59 (2.32)	59 (2.32)	12 (0.47)	18 (0.71)	60 (2.36)	18 (0.71)	62 (2.44)	28 (1.10)	28 (1.10)	65 (2.56)	45 (1.77)	45 (1.77)	67 (2.64)	54 (2.13)	54 (2.13)	54 (2.13)
Nov	18 (0.71)	1 (0.04)	19 (0.75)	19 (0.75)	1 (0.04)	1 (0.04)	22 (0.87)	1 (0.04)	23 (0.91)	1 (0.04)	1 (0.04)	25 (0.98)	2 (0.08)	2 (0.08)	26 (1.02)	2 (0.08)	2 (0.08)	2 (0.08)
Season	933 (36.73)	673 (26.50)	948 (37.32)	713 (28.08)	963 (37.91)	755 (29.72)	982 (38.65)	800 (31.49)	1009 (39.72)	862 (33.94)	1026 (40.40)	913 (35.95)	1026 (40.40)	913 (35.95)	1026 (40.40)	913 (35.95)	1026 (40.40)	913 (35.95)

REGION: 6 Unqua River
CROP: Beans (Dry Field)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.		
May	57 (2.24)	23 (0.91)	57 (2.24)	29 (1.14)	58 (2.28)	33 (1.30)	60 (2.36)	38 (1.50)	61 (2.40)	44 (1.73)	62 (2.44)	52 (2.05)						
June	125 (4.92)	102 (4.02)	126 (4.96)	107 (4.21)	128 (5.04)	113 (4.45)	131 (5.16)	118 (4.65)	134 (5.28)	125 (4.92)	136 (5.35)	129 (5.08)						
July	124 (4.88)	121 (4.76)	125 (4.92)	123 (4.84)	126 (4.96)	125 (4.92)	128 (5.04)	127 (5.00)	130 (5.12)	129 (5.08)	132 (5.20)	132 (5.20)						
Season	306 (12.04)	246 (9.69)	308 (12.12)	259 (10.19)	312 (12.28)	271 (10.67)	319 (12.56)	283 (11.15)	325 (12.80)	298 (11.73)	330 (12.99)	313 (12.33)						

REGION: 6 Unqua River
CROP: Cherries

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years									
MONTH	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.									
March	37 (1.46)	2 (0.08)	38 (1.50)	3 (0.12)	39 (1.54)	3 (0.12)	40 (1.57)	4 (0.16)	42 (1.65)	10 (0.39)	43 (1.69)	18 (0.71)	72 (2.83)	22 (0.87)	74 (2.91)	27 (1.06)									
April	72 (2.83)	22 (0.87)	74 (2.91)	27 (1.06)	75 (2.95)	35 (3.54)	77 (3.03)	45 (1.77)	79 (3.11)	52 (2.05)	80 (3.15)	59 (2.32)	115 (4.53)	74 (2.91)	117 (4.61)	82 (3.23)									
May	115 (4.53)	74 (2.91)	117 (4.61)	82 (3.23)	119 (4.69)	90 (3.54)	122 (4.80)	96 (3.78)	125 (4.92)	102 (4.02)	127 (5.00)	111 (4.37)	152 (5.98)	129 (5.08)	153 (6.02)	134 (5.28)									
June	152 (5.98)	129 (5.08)	153 (6.02)	134 (5.28)	154 (6.06)	139 (5.47)	158 (6.22)	144 (5.67)	161 (6.34)	153 (6.02)	164 (6.46)	158 (6.22)	200 (7.87)	192 (7.56)	201 (7.91)	195 (7.68)									
July	200 (7.87)	192 (7.56)	201 (7.91)	195 (7.68)	203 (7.99)	199 (7.83)	205 (8.07)	203 (7.99)	209 (8.23)	208 (8.19)	212 (8.35)	212 (8.35)	163 (6.42)	156 (6.14)	166 (6.54)	161 (6.34)									
Aug	163 (6.42)	156 (6.14)	166 (6.54)	161 (6.34)	168 (6.61)	166 (6.54)	170 (6.69)	170 (6.69)	175 (6.89)	175 (6.89)	178 (7.01)	178 (7.01)	119 (4.69)	92 (3.62)	121 (4.76)	98 (3.86)									
Sep	119 (4.69)	92 (3.62)	121 (4.76)	98 (3.86)	123 (4.84)	104 (4.09)	125 (4.92)	109 (4.29)	128 (5.04)	115 (4.53)	129 (5.08)	121 (4.76)	57 (2.24)	5 (0.20)	59 (2.32)	12 (0.47)									
Oct	57 (2.24)	5 (0.20)	59 (2.32)	12 (0.47)	60 (2.36)	18 (0.71)	62 (2.44)	28 (1.10)	65 (2.56)	45 (1.77)	67 (2.64)	54 (2.13)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)									
Nov	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	22 (0.87)	1 (0.04)	23 (0.91)	1 (0.04)	25 (0.98)	2 (0.08)	26 (1.02)	2 (0.08)	Season	933 (36.73)	673 (26.50)	948 (37.32)	713 (28.08)	963 (37.91)	755 (29.72)	982 (38.65)	800 (31.49)	1009 (39.72)	862 (33.94)	1026 (40.40)	913 (35.95)

REGION: 6 Unqua River
CROP: Corn (Silage)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
May	30 (1.18)	3 (0.12)	30 (1.18)	30 (1.18)	6 (0.24)	10 (0.39)	31 (1.22)	15 (0.59)	31 (1.22)	21 (0.83)	32 (1.26)	25 (0.98)	32 (1.26)	25 (0.98)	32 (1.26)	25 (0.98)	32 (1.26)	25 (0.98)
June	100 (3.94)	81 (3.19)	101 (3.98)	103 (4.06)	89 (3.50)	105 (4.13)	94 (3.70)	107 (4.21)	100 (3.94)	109 (4.29)	104 (4.09)	104 (4.09)	109 (4.29)	104 (4.09)	109 (4.29)	104 (4.09)	109 (4.29)	104 (4.09)
July	184 (7.24)	181 (7.13)	185 (7.28)	186 (7.32)	184 (7.24)	186 (7.32)	190 (7.48)	190 (7.48)	190 (7.48)	193 (7.60)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)
Aug	149 (5.87)	142 (5.59)	151 (5.94)	153 (6.02)	150 (5.91)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	159 (6.26)	164 (6.46)	163 (6.42)	164 (6.46)	163 (6.42)	164 (6.46)	163 (6.42)	164 (6.46)	163 (6.42)
Sep	29 (1.14)	25 (0.98)	29 (1.14)	30 (1.18)	26 (1.02)	30 (1.18)	30 (1.18)	28 (1.10)	30 (1.18)	29 (1.14)	31 (1.22)	30 (1.18)	31 (1.22)	30 (1.18)	31 (1.22)	30 (1.18)	31 (1.22)	30 (1.18)
Season	492 (19.37)	432 (17.01)	496 (19.52)	502 (19.76)	447 (17.60)	502 (19.76)	511 (20.11)	482 (18.97)	521 (20.51)	502 (19.77)	533 (20.99)	519 (20.43)	533 (20.99)	519 (20.43)	533 (20.99)	519 (20.43)	533 (20.99)	519 (20.43)

REGION: 6 Unqua River
CROP: Corn (Sweet)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
May	59 (2.32)	24 (0.94)	60 (2.36)	61 (2.40)	31 (1.22)	35 (1.38)	61 (2.40)	39 (1.54)	63 (2.48)	47 (1.85)	63 (2.48)	54 (2.13)	63 (2.48)	54 (2.13)	63 (2.48)	54 (2.13)	63 (2.48)	54 (2.13)
June	113 (4.45)	94 (3.70)	115 (4.53)	117 (4.61)	98 (3.86)	102 (4.02)	119 (4.69)	107 (4.21)	122 (4.80)	113 (4.45)	124 (4.88)	118 (4.65)	124 (4.88)	118 (4.65)	124 (4.88)	118 (4.65)	124 (4.88)	118 (4.65)
July	185 (7.28)	179 (7.05)	187 (7.36)	189 (7.44)	181 (7.13)	184 (7.24)	190 (7.48)	189 (7.44)	194 (7.64)	193 (7.60)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)	197 (7.76)
Aug	150 (5.91)	143 (5.63)	153 (6.02)	155 (6.10)	147 (5.79)	151 (5.94)	157 (6.14)	156 (6.14)	164 (6.46)	162 (6.38)	165 (6.50)	164 (6.46)	165 (6.50)	164 (6.46)	165 (6.50)	164 (6.46)	165 (6.50)	164 (6.46)
Sep	54 (2.13)	43 (1.69)	54 (2.13)	56 (2.20)	46 (1.81)	49 (1.93)	57 (2.24)	51 (2.01)	57 (2.24)	54 (2.13)	60 (2.36)	56 (2.20)	60 (2.36)	56 (2.20)	60 (2.36)	56 (2.20)	60 (2.36)	56 (2.20)
Season	561 (22.09)	483 (19.01)	569 (22.40)	578 (22.75)	503 (19.81)	521 (20.51)	584 (22.99)	542 (21.34)	600 (23.62)	569 (22.41)	609 (23.98)	589 (23.20)	609 (23.98)	589 (23.20)	609 (23.98)	589 (23.20)	609 (23.98)	589 (23.20)

REGION: 6 Unqua River
CROP: Filberts

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	37 (1.46)	2 (0.08)	38 (1.50)	3 (0.12)	39 (1.54)	3 (0.12)	40 (1.57)	4 (0.16)	42 (1.65)	10 (0.39)	43 (1.69)	18 (0.71)						
April	72 (2.83)	22 (0.87)	74 (2.91)	27 (1.06)	75 (2.95)	35 (1.38)	77 (3.03)	45 (1.77)	79 (3.11)	52 (2.05)	80 (3.15)	59 (2.32)						
May	115 (4.53)	74 (2.91)	117 (4.61)	82 (3.23)	119 (4.69)	90 (3.54)	122 (4.80)	96 (3.78)	125 (4.92)	102 (4.02)	127 (5.00)	111 (4.37)						
June	152 (5.98)	129 (5.08)	153 (6.02)	134 (5.28)	154 (6.06)	139 (5.47)	158 (6.22)	144 (5.67)	161 (6.34)	153 (6.02)	164 (6.46)	158 (6.22)						
July	200 (7.87)	192 (7.56)	201 (7.91)	195 (7.68)	203 (7.99)	199 (7.83)	205 (8.07)	203 (7.99)	209 (8.23)	208 (8.19)	212 (8.35)	212 (8.35)						
Aug	163 (6.42)	156 (6.14)	166 (6.54)	161 (6.34)	168 (6.61)	166 (6.54)	170 (6.69)	170 (6.69)	175 (6.89)	175 (6.89)	178 (7.01)	178 (7.01)						
Sep	119 (4.69)	92 (3.62)	121 (4.76)	98 (3.86)	123 (4.84)	104 (4.09)	125 (4.92)	109 (4.29)	128 (5.04)	115 (4.53)	129 (5.08)	121 (4.76)						
Oct	57 (2.24)	5 (0.20)	59 (2.32)	12 (0.47)	60 (2.36)	18 (0.71)	62 (2.44)	28 (1.10)	65 (2.56)	45 (1.77)	67 (2.64)	54 (2.13)						
Nov	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	22 (0.87)	1 (0.04)	23 (0.91)	1 (0.04)	25 (0.98)	2 (0.08)	26 (1.02)	2 (0.08)						
Season	933 (36.73)	673 (26.50)	948 (37.32)	713 (28.08)	963 (37.91)	755 (29.72)	982 (38.65)	800 (31.49)	1009 (39.72)	862 (33.94)	1026 (40.40)	913 (35.95)						

REGION: 6 Unqua River
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	15 (0.59)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	2 (0.08)	18 (0.71)	7 (0.28)						
April	58 (2.28)	8 (0.31)	59 (2.32)	13 (0.51)	60 (2.36)	21 (0.83)	62 (2.44)	30 (1.18)	63 (2.48)	39 (1.54)	64 (2.52)	44 (1.73)						
May	116 (4.57)	76 (2.99)	118 (4.65)	83 (3.27)	120 (4.72)	91 (3.58)	123 (4.84)	98 (3.86)	129 (5.08)	105 (4.13)	131 (5.16)	113 (4.45)						
June	144 (5.67)	119 (4.69)	145 (5.71)	124 (4.88)	147 (5.79)	129 (5.08)	148 (5.83)	134 (5.28)	154 (6.06)	142 (5.59)	156 (6.14)	147 (5.79)						
July	143 (5.63)	139 (5.47)	144 (5.67)	141 (5.55)	146 (5.75)	144 (5.67)	147 (5.79)	146 (5.75)	150 (5.91)	150 (5.91)	152 (5.98)	152 (5.98)						
Aug	11 (0.43)	11 (0.43)	12 (0.47)	11 (0.43)	12 (0.47)	12 (0.47)	12 (0.47)	12 (0.47)	12 (0.47)	12 (0.47)	12 (0.47)	12 (0.47)						
Season	487 (19.17)	354 (13.93)	493 (19.41)	373 (14.68)	501 (19.72)	398 (15.67)	508 (20.00)	421 (16.58)	525 (20.67)	450 (17.72)	533 (20.98)	475 (18.70)						

REGION: 6 Unqua River
CROP: Grain (Winter)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR in.	ET crop in.	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.
March	24 (0.94)	1 (0.04)	25 (0.98)	2 (0.08)	26 (1.02)	2 (0.08)	27 (1.06)	2 (0.08)	28 (1.10)	3 (0.12)	29 (1.14)	3 (0.12)	30 (1.18)	3 (0.12)	31 (1.22)	3 (0.12)	32 (1.26)	3 (0.12)
April	57 (2.24)	7 (0.28)	58 (2.28)	12 (0.47)	59 (2.32)	21 (0.83)	60 (2.36)	28 (1.10)	61 (2.40)	36 (1.42)	62 (2.44)	43 (1.69)	63 (2.48)	50 (1.96)	64 (2.52)	57 (2.00)	65 (2.56)	64 (2.00)
May	112 (4.41)	71 (2.80)	113 (4.45)	79 (3.11)	115 (4.53)	87 (3.43)	117 (4.61)	93 (3.66)	120 (4.72)	99 (3.90)	122 (4.80)	107 (4.21)	125 (4.88)	115 (4.21)	127 (4.96)	115 (4.21)	129 (5.04)	115 (4.21)
June	144 (5.67)	119 (4.69)	145 (5.71)	124 (4.88)	147 (5.79)	129 (5.08)	148 (5.83)	135 (5.31)	154 (6.06)	143 (5.63)	156 (6.14)	147 (5.79)	160 (6.22)	155 (5.63)	162 (6.30)	155 (5.63)	164 (6.38)	155 (5.63)
July	133 (5.24)	130 (5.12)	135 (5.31)	132 (5.20)	137 (5.39)	134 (5.28)	138 (5.43)	136 (5.35)	140 (5.51)	139 (5.47)	142 (5.59)	142 (5.59)	144 (5.67)	142 (5.59)	146 (5.75)	142 (5.59)	148 (5.83)	142 (5.59)
Season	470 (18.50)	328 (12.93)	476 (18.73)	349 (13.74)	484 (19.05)	373 (14.70)	490 (19.29)	394 (15.50)	504 (19.83)	420 (16.54)	511 (20.11)	448 (17.63)	518 (20.65)	448 (17.63)	525 (20.93)	448 (17.63)	532 (21.21)	448 (17.63)

REGION: 6 Unqua River
CROP: Grass Seed (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR in.	ET crop in.	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.
Jan	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	19 (0.75)	0 (0.00)
Feb	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	18 (0.71)	0 (0.00)	19 (0.75)	0 (0.00)	20 (0.79)	0 (0.00)	21 (0.83)	0 (0.00)	22 (0.87)	0 (0.00)
March	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	2 (0.08)	21 (0.83)	2 (0.08)	22 (0.87)	2 (0.08)	23 (0.91)	2 (0.08)	24 (0.95)	2 (0.08)	25 (0.99)	2 (0.08)
April	44 (1.73)	3 (0.12)	44 (1.73)	4 (0.16)	45 (1.77)	8 (0.31)	46 (1.81)	16 (0.63)	47 (1.85)	23 (0.91)	48 (1.89)	27 (1.06)	49 (1.93)	30 (1.10)	50 (1.97)	30 (1.10)	51 (2.01)	30 (1.10)
May	66 (2.60)	28 (1.10)	67 (2.64)	36 (1.42)	68 (2.68)	41 (1.61)	69 (2.72)	46 (1.81)	70 (2.76)	52 (2.05)	72 (2.83)	61 (2.40)	73 (2.87)	64 (2.44)	74 (2.88)	64 (2.44)	75 (2.92)	64 (2.44)
June	101 (3.98)	82 (3.23)	103 (4.06)	86 (3.39)	104 (4.09)	90 (3.54)	106 (4.17)	95 (3.74)	108 (4.25)	101 (3.98)	110 (4.33)	105 (4.13)	111 (4.37)	108 (4.13)	113 (4.41)	108 (4.13)	115 (4.45)	108 (4.13)
July	163 (6.42)	158 (6.22)	164 (6.46)	161 (6.34)	166 (6.54)	164 (6.46)	168 (6.61)	167 (6.57)	171 (6.73)	171 (6.73)	173 (6.81)	173 (6.81)	175 (6.89)	173 (6.81)	177 (6.93)	173 (6.81)	179 (6.97)	173 (6.81)
Aug	148 (5.83)	141 (5.55)	151 (5.94)	145 (5.71)	153 (6.02)	149 (5.87)	155 (6.10)	154 (6.06)	159 (6.26)	159 (6.26)	163 (6.42)	162 (6.38)	166 (6.54)	163 (6.42)	168 (6.58)	163 (6.42)	170 (6.62)	163 (6.42)
Sep	114 (4.49)	87 (3.43)	115 (4.53)	93 (3.66)	116 (4.57)	99 (3.90)	117 (4.61)	105 (4.13)	123 (4.84)	111 (4.37)	126 (4.96)	116 (4.57)	129 (5.04)	126 (4.96)	131 (5.08)	126 (4.96)	133 (5.12)	126 (4.96)
Oct	71 (2.80)	15 (0.59)	73 (2.87)	23 (0.91)	75 (2.95)	32 (1.26)	77 (3.03)	43 (1.69)	80 (3.15)	58 (2.28)	83 (3.27)	67 (2.64)	86 (3.35)	83 (3.27)	88 (3.39)	83 (3.27)	90 (3.43)	83 (3.27)
Nov	27 (1.06)	1 (0.04)	28 (1.10)	2 (0.08)	29 (1.14)	2 (0.08)	30 (1.18)	2 (0.08)	33 (1.30)	2 (0.08)	35 (1.38)	3 (0.12)	38 (1.46)	3 (0.12)	40 (1.54)	3 (0.12)	42 (1.62)	3 (0.12)
Dec	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	12 (0.47)	0 (0.00)	13 (0.51)	0 (0.00)	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)
Season	783 (30.83)	516 (20.32)	798 (31.41)	551 (21.71)	810 (31.88)	586 (23.07)	829 (32.63)	630 (24.79)	858 (33.78)	679 (26.74)	882 (34.73)	716 (28.19)	911 (35.78)	882 (34.73)	940 (36.83)	882 (34.73)	969 (37.88)	882 (34.73)

REGION: 6 Unqua River
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm
March	44 (1.73)	3 (0.12)	4 (1.77)	45 (1.77)	4 (0.16)	4 (0.16)	46 (1.81)	4 (0.16)	4 (0.16)	48 (1.89)	5 (0.20)	5 (0.20)	50 (1.97)	16 (0.63)	16 (0.63)	52 (2.05)	27 (1.06)	27 (1.06)
April	75 (2.95)	24 (0.94)	76 (2.99)	76 (2.99)	29 (1.14)	29 (1.14)	78 (3.07)	38 (1.50)	38 (1.50)	80 (3.15)	46 (1.81)	46 (1.81)	82 (3.23)	54 (2.13)	54 (2.13)	83 (3.27)	64 (2.52)	64 (2.52)
May	105 (4.13)	65 (2.56)	106 (4.17)	106 (4.17)	70 (2.76)	70 (2.76)	108 (4.25)	82 (3.23)	82 (3.23)	111 (4.37)	88 (3.46)	88 (3.46)	114 (4.49)	93 (3.66)	93 (3.66)	115 (4.53)	101 (3.98)	101 (3.98)
June	125 (4.92)	103 (4.06)	126 (4.96)	126 (4.96)	107 (4.21)	107 (4.21)	128 (5.04)	113 (4.45)	113 (4.45)	131 (5.16)	119 (4.69)	119 (4.69)	134 (5.28)	126 (4.96)	126 (4.96)	136 (5.35)	129 (5.08)	129 (5.08)
July	162 (6.38)	157 (6.18)	163 (6.42)	163 (6.42)	160 (6.30)	160 (6.30)	165 (6.50)	163 (6.42)	163 (6.42)	166 (6.54)	166 (6.54)	166 (6.54)	169 (6.65)	169 (6.65)	169 (6.65)	172 (6.77)	172 (6.77)	172 (6.77)
Aug	132 (5.20)	125 (4.92)	134 (5.28)	134 (5.28)	129 (5.08)	129 (5.08)	137 (5.39)	133 (5.24)	133 (5.24)	138 (5.43)	138 (5.43)	138 (5.43)	142 (5.59)	142 (5.59)	142 (5.59)	145 (5.71)	145 (5.71)	145 (5.71)
Sep	102 (4.02)	76 (2.99)	104 (4.09)	104 (4.09)	81 (3.19)	81 (3.19)	105 (4.13)	86 (3.39)	86 (3.39)	108 (4.25)	92 (3.62)	92 (3.62)	110 (4.33)	98 (3.86)	98 (3.86)	113 (4.45)	103 (4.06)	103 (4.06)
Oct	63 (2.48)	8 (0.31)	65 (2.56)	65 (2.56)	15 (0.59)	15 (0.59)	66 (2.60)	26 (1.02)	26 (1.02)	68 (2.68)	36 (1.42)	36 (1.42)	71 (2.80)	50 (1.97)	50 (1.97)	73 (2.87)	59 (2.32)	59 (2.32)
Nov	12 (0.47)	1 (0.04)	12 (0.47)	12 (0.47)	1 (0.04)	1 (0.04)	13 (0.51)	1 (0.04)	1 (0.04)	13 (0.51)	1 (0.04)	1 (0.04)	16 (0.63)	1 (0.04)	1 (0.04)	16 (0.63)	1 (0.04)	1 (0.04)
Season	820 (32.28)	562 (22.12)	831 (32.71)	831 (32.71)	596 (23.47)	596 (23.47)	846 (33.30)	646 (25.45)	646 (25.45)	863 (33.98)	691 (27.21)	691 (27.21)	888 (34.97)	749 (29.49)	749 (29.49)	905 (35.63)	801 (31.54)	801 (31.54)

REGION: 6 Unqua River
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm
March	37 (1.46)	2 (0.08)	38 (1.50)	38 (1.50)	3 (0.12)	3 (0.12)	39 (1.54)	3 (0.12)	3 (0.12)	40 (1.57)	4 (0.16)	4 (0.16)	42 (1.65)	10 (0.39)	10 (0.39)	43 (1.69)	18 (0.71)	18 (0.71)
April	69 (2.72)	18 (0.71)	70 (2.76)	70 (2.76)	23 (0.91)	23 (0.91)	72 (2.83)	30 (1.18)	30 (1.18)	74 (2.91)	41 (1.61)	41 (1.61)	76 (2.99)	48 (1.89)	48 (1.89)	77 (3.03)	54 (2.13)	54 (2.13)
May	104 (4.09)	64 (2.52)	105 (4.13)	105 (4.13)	70 (2.76)	70 (2.76)	107 (4.21)	79 (3.11)	79 (3.11)	110 (4.33)	86 (3.39)	86 (3.39)	113 (4.45)	92 (3.62)	92 (3.62)	114 (4.49)	100 (3.94)	100 (3.94)
June	139 (5.47)	115 (4.53)	140 (5.51)	140 (5.51)	120 (4.72)	120 (4.72)	141 (5.55)	126 (4.96)	126 (4.96)	144 (5.67)	132 (5.20)	132 (5.20)	150 (5.91)	139 (5.47)	139 (5.47)	152 (5.98)	143 (5.63)	143 (5.63)
July	182 (7.17)	179 (7.05)	183 (7.20)	183 (7.20)	182 (7.17)	182 (7.17)	184 (7.24)	184 (7.24)	184 (7.24)	188 (7.40)	188 (7.40)	188 (7.40)	192 (7.56)	191 (7.52)	191 (7.52)	195 (7.68)	195 (7.68)	195 (7.68)
Aug	149 (5.87)	142 (5.59)	152 (5.98)	152 (5.98)	146 (5.75)	146 (5.75)	154 (6.06)	150 (5.91)	150 (5.91)	156 (6.14)	155 (6.10)	155 (6.10)	163 (6.42)	160 (6.30)	160 (6.30)	164 (6.46)	163 (6.42)	163 (6.42)
Sep	109 (4.29)	82 (3.23)	110 (4.33)	110 (4.33)	88 (3.46)	88 (3.46)	112 (4.41)	94 (3.70)	94 (3.70)	114 (4.49)	99 (3.90)	99 (3.90)	117 (4.61)	105 (4.13)	105 (4.13)	120 (4.72)	110 (4.33)	110 (4.33)
Oct	53 (2.09)	5 (0.20)	55 (2.17)	55 (2.17)	8 (0.31)	8 (0.31)	56 (2.20)	17 (0.67)	17 (0.67)	58 (2.28)	26 (1.02)	26 (1.02)	60 (2.36)	43 (1.69)	43 (1.69)	64 (2.52)	50 (1.97)	50 (1.97)
Nov	18 (0.71)	1 (0.04)	19 (0.75)	19 (0.75)	1 (0.04)	1 (0.04)	22 (0.87)	1 (0.04)	1 (0.04)	23 (0.91)	1 (0.04)	1 (0.04)	25 (0.98)	2 (0.08)	2 (0.08)	26 (1.02)	2 (0.08)	2 (0.08)
Season	860 (33.87)	608 (23.95)	872 (34.33)	872 (34.33)	641 (25.24)	641 (25.24)	887 (34.91)	684 (26.93)	684 (26.93)	907 (35.70)	732 (28.82)	732 (28.82)	938 (36.93)	790 (31.09)	790 (31.09)	955 (37.59)	835 (32.89)	835 (32.89)

REGION: 6 Unqua River
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	1 (0.04)	17 (0.67)	1 (0.04)	17 (0.67)	2 (0.08)	18 (0.71)	2 (0.08)	18 (0.71)	2 (0.08)	18 (0.71)	8 (0.31)	18 (0.71)	8 (0.31)
April	73 (2.87)	22 (0.87)	75 (2.95)	28 (1.10)	76 (2.99)	37 (1.46)	78 (3.07)	45 (1.77)	80 (3.15)	53 (2.09)	81 (3.19)	53 (2.09)	81 (3.19)	53 (2.09)	81 (3.19)	60 (2.36)	81 (3.19)	60 (2.36)
May	118 (4.65)	77 (3.03)	120 (4.72)	85 (3.35)	122 (4.80)	93 (3.66)	125 (4.92)	99 (3.90)	131 (5.16)	105 (4.13)	133 (5.24)	105 (4.13)	133 (5.24)	105 (4.13)	133 (5.24)	114 (4.49)	133 (5.24)	114 (4.49)
June	136 (5.35)	114 (4.49)	140 (5.51)	118 (4.65)	142 (5.59)	124 (4.88)	146 (5.75)	131 (5.16)	148 (5.83)	137 (5.39)	150 (5.91)	137 (5.39)	150 (5.91)	137 (5.39)	150 (5.91)	141 (5.55)	150 (5.91)	141 (5.55)
Season	343 (13.50)	214 (8.43)	351 (13.81)	232 (9.14)	357 (14.05)	255 (10.04)	366 (14.41)	277 (10.91)	377 (14.85)	297 (11.69)	382 (15.05)	297 (11.69)	382 (15.05)	297 (11.69)	382 (15.05)	323 (12.71)	382 (15.05)	323 (12.71)

REGION: 6 Unqua River
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	37 (1.46)	2 (0.08)	38 (1.50)	3 (0.12)	39 (1.54)	3 (0.12)	40 (1.57)	4 (0.16)	42 (1.65)	10 (0.39)	43 (1.69)	10 (0.39)	43 (1.69)	10 (0.39)	43 (1.69)	18 (0.71)	43 (1.69)	18 (0.71)
April	69 (2.72)	18 (0.71)	70 (2.76)	23 (0.91)	72 (2.83)	30 (1.18)	74 (2.91)	41 (1.61)	76 (2.99)	48 (1.89)	77 (3.03)	48 (1.89)	77 (3.03)	48 (1.89)	77 (3.03)	54 (2.13)	77 (3.03)	54 (2.13)
May	104 (4.09)	64 (2.52)	105 (4.13)	70 (2.76)	107 (4.21)	79 (3.11)	110 (4.33)	86 (3.39)	113 (4.45)	92 (3.62)	114 (4.49)	92 (3.62)	114 (4.49)	92 (3.62)	114 (4.49)	100 (3.94)	114 (4.49)	100 (3.94)
June	139 (5.47)	115 (4.53)	140 (5.51)	120 (4.72)	141 (5.55)	126 (4.96)	144 (5.67)	132 (5.20)	150 (5.91)	139 (5.47)	152 (5.98)	139 (5.47)	152 (5.98)	139 (5.47)	152 (5.98)	143 (5.63)	152 (5.98)	143 (5.63)
July	182 (7.17)	179 (7.05)	183 (7.20)	182 (7.17)	184 (7.24)	184 (7.24)	188 (7.40)	188 (7.40)	192 (7.56)	191 (7.52)	195 (7.68)	191 (7.52)	195 (7.68)	191 (7.52)	195 (7.68)	195 (7.68)	195 (7.68)	195 (7.68)
Aug	149 (5.87)	142 (5.59)	152 (5.98)	146 (5.75)	154 (6.06)	150 (5.91)	156 (6.14)	155 (6.10)	163 (6.42)	160 (6.30)	164 (6.46)	160 (6.30)	164 (6.46)	160 (6.30)	164 (6.46)	163 (6.42)	164 (6.46)	163 (6.42)
Sep	109 (4.29)	82 (3.23)	110 (4.33)	88 (3.46)	112 (4.41)	94 (3.70)	114 (4.49)	99 (3.90)	117 (4.61)	105 (4.13)	120 (4.72)	105 (4.13)	120 (4.72)	105 (4.13)	120 (4.72)	110 (4.33)	120 (4.72)	110 (4.33)
Oct	53 (2.09)	5 (0.20)	55 (2.17)	8 (0.31)	56 (2.20)	17 (0.67)	58 (2.28)	26 (1.02)	60 (2.36)	43 (1.69)	64 (2.52)	43 (1.69)	64 (2.52)	43 (1.69)	64 (2.52)	50 (1.97)	64 (2.52)	50 (1.97)
Nov	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	22 (0.87)	1 (0.04)	23 (0.91)	1 (0.04)	25 (0.98)	2 (0.08)	26 (1.02)	2 (0.08)	26 (1.02)	2 (0.08)	26 (1.02)	2 (0.08)	26 (1.02)	2 (0.08)
Season	860 (33.87)	608 (23.95)	872 (34.33)	641 (25.24)	887 (34.91)	684 (26.93)	907 (35.70)	732 (28.82)	938 (36.93)	790 (31.09)	955 (37.59)	790 (31.09)	955 (37.59)	790 (31.09)	955 (37.59)	835 (32.89)	955 (37.59)	835 (32.89)

REGION: 6 Unqua River
CROP: Tomatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
May	48 (1.89)	14 (0.55)	49 (1.93)	49 (1.93)	20 (0.79)	49 (1.93)	122 (4.80)	24 (0.94)	50 (1.97)	29 (1.14)	51 (2.01)	51 (2.01)	37 (1.46)	51 (2.01)	51 (2.01)	44 (1.73)		
June	119 (4.69)	100 (3.94)	120 (4.72)	122 (4.80)	104 (4.09)	122 (4.80)	191 (7.52)	108 (4.25)	126 (4.96)	113 (4.45)	129 (5.08)	129 (5.08)	120 (4.72)	130 (5.12)	130 (5.12)	125 (4.92)		
July	189 (7.44)	183 (7.20)	190 (7.48)	191 (7.52)	186 (7.32)	191 (7.52)	81 (3.19)	189 (7.44)	195 (7.68)	194 (7.64)	199 (7.83)	199 (7.83)	198 (7.80)	202 (7.95)	202 (7.95)	202 (7.95)		
Aug	79 (3.11)	75 (2.95)	80 (3.15)	81 (3.19)	77 (3.03)	81 (3.19)	83 (3.27)	80 (3.15)	83 (3.27)	83 (3.27)	84 (3.31)	84 (3.31)	84 (3.31)	86 (3.39)	86 (3.39)	86 (3.39)		
Season	435 (17.13)	372 (14.64)	439 (17.28)	443 (17.44)	387 (15.23)	443 (17.44)	454 (17.88)	401 (15.78)	454 (17.88)	419 (16.50)	463 (18.23)	463 (18.23)	439 (17.29)	469 (18.47)	469 (18.47)	457 (17.99)		

REGION: 7 Medford-Grants Pass
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	5 (0.20)	2 (0.08)	5 (0.20)	2 (0.08)	5 (0.20)	2 (0.08)	5 (0.20)	2 (0.08)	5 (0.20)	2 (0.08)	5 (0.20)	2 (0.08)	5 (0.20)	2 (0.08)	5 (0.20)	2 (0.08)	5 (0.20)	2 (0.08)
April	85 (3.35)	52 (2.05)	87 (3.43)	57 (2.24)	89 (3.50)	62 (2.44)	91 (3.58)	69 (2.72)	94 (3.70)	78 (3.07)	97 (3.82)	82 (3.23)	101 (3.94)	86 (3.29)	104 (4.06)	89 (3.39)	107 (4.18)	91 (3.51)
May	119 (4.69)	89 (3.50)	122 (4.80)	95 (3.74)	125 (4.92)	101 (3.98)	128 (5.04)	110 (4.33)	132 (5.20)	120 (4.72)	137 (5.39)	126 (4.96)	141 (5.51)	129 (5.03)	146 (5.65)	135 (5.16)	150 (5.30)	138 (4.99)
June	143 (5.63)	123 (4.84)	144 (5.67)	129 (5.08)	146 (5.75)	134 (5.28)	150 (5.91)	140 (5.51)	155 (6.10)	149 (5.87)	158 (6.22)	154 (6.06)	163 (6.36)	152 (6.12)	168 (6.40)	157 (6.28)	173 (6.54)	161 (6.31)
July	174 (6.85)	171 (6.73)	176 (6.93)	174 (6.85)	178 (7.01)	176 (6.93)	180 (7.09)	179 (7.05)	185 (7.28)	183 (7.20)	187 (7.36)	186 (7.32)	192 (7.50)	190 (7.42)	196 (7.56)	194 (7.48)	200 (7.60)	198 (7.52)
Aug	146 (5.75)	142 (5.59)	147 (5.79)	145 (5.71)	150 (5.91)	149 (5.87)	152 (5.98)	152 (5.98)	156 (6.14)	156 (6.14)	159 (6.26)	159 (6.26)	164 (6.40)	164 (6.40)	168 (6.54)	168 (6.54)	173 (6.68)	173 (6.68)
Sep	107 (4.21)	88 (3.46)	108 (4.25)	93 (3.66)	109 (4.29)	98 (3.86)	112 (4.41)	103 (4.06)	116 (4.57)	108 (4.25)	118 (4.65)	113 (4.45)	123 (4.79)	115 (4.51)	128 (4.83)	120 (4.55)	125 (4.69)	118 (4.41)
Season	779 (30.68)	667 (26.25)	789 (31.07)	695 (27.36)	802 (31.58)	723 (28.48)	818 (32.21)	757 (29.81)	844 (33.23)	799 (31.45)	862 (33.94)	825 (32.48)	898 (34.96)	848 (33.41)	916 (35.43)	878 (34.49)	932 (36.00)	892 (35.06)

REGION: 7 Medford-Grants Pass
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	44 (1.73)	4 (0.16)	44 (1.73)	5 (0.20)	45 (1.77)	7 (0.28)	49 (1.93)	15 (0.59)	52 (2.05)	28 (1.10)	57 (2.24)	36 (1.42)	60 (2.36)	39 (1.54)	63 (2.48)	42 (1.66)	66 (2.60)	45 (1.78)
April	88 (3.46)	55 (2.17)	90 (3.54)	60 (2.36)	93 (3.66)	65 (2.56)	95 (3.74)	72 (2.83)	98 (3.86)	82 (3.23)	101 (3.98)	86 (3.39)	104 (4.10)	89 (3.51)	107 (4.22)	91 (3.63)	104 (4.35)	93 (3.75)
May	141 (5.55)	108 (4.25)	145 (5.71)	115 (4.53)	148 (5.83)	121 (4.76)	151 (5.94)	130 (5.12)	156 (6.14)	141 (5.55)	162 (6.38)	150 (5.91)	167 (6.52)	156 (6.03)	173 (6.77)	161 (6.29)	178 (6.91)	165 (6.43)
June	186 (7.32)	162 (6.38)	189 (7.44)	168 (6.61)	191 (7.52)	176 (6.93)	196 (7.72)	186 (7.32)	202 (7.95)	193 (7.60)	207 (8.15)	201 (7.91)	213 (8.27)	202 (7.95)	218 (8.41)	207 (8.15)	223 (8.65)	211 (8.31)
July	231 (9.09)	226 (8.90)	235 (9.25)	232 (9.13)	238 (9.37)	235 (9.25)	240 (9.45)	238 (9.37)	247 (9.72)	242 (9.53)	250 (9.84)	247 (9.72)	257 (10.08)	250 (9.84)	263 (10.32)	251 (10.04)	268 (10.56)	254 (10.28)
Aug	191 (7.52)	188 (7.40)	195 (7.68)	192 (7.56)	199 (7.83)	197 (7.76)	202 (7.95)	201 (7.91)	207 (8.15)	207 (8.15)	211 (8.31)	211 (8.31)	218 (8.41)	218 (8.41)	223 (8.65)	218 (8.41)	228 (8.89)	223 (8.65)
Sep	135 (5.31)	115 (4.53)	136 (5.35)	119 (4.69)	138 (5.43)	123 (4.84)	141 (5.55)	129 (5.08)	146 (5.75)	136 (5.35)	149 (5.87)	141 (5.55)	157 (6.13)	146 (5.75)	164 (6.29)	149 (5.87)	171 (6.37)	157 (6.13)
Oct	64 (2.52)	25 (0.98)	66 (2.60)	32 (1.26)	67 (2.64)	39 (1.54)	68 (2.68)	48 (1.89)	72 (2.83)	57 (2.24)	73 (2.87)	67 (2.64)	78 (3.11)	72 (2.83)	78 (3.11)	73 (2.87)	83 (3.25)	77 (3.07)
Nov	18 (0.71)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)	22 (0.87)	2 (0.08)	22 (0.87)	13 (0.51)	25 (0.98)	2 (0.08)	25 (0.98)	13 (0.51)	28 (1.10)	2 (0.08)
Season	1098 (43.21)	884 (34.81)	1118 (44.01)	924 (36.38)	1138 (44.80)	964 (37.96)	1161 (45.71)	1020 (40.15)	1202 (47.32)	1088 (42.83)	1232 (48.51)	1152 (45.36)	1332 (50.76)	1202 (47.32)	1382 (53.96)	1232 (48.51)	1452 (57.16)	1332 (50.76)

REGION: 7 Medford-Grants Pass
CROP: Cherries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	44 (1.73)	4 (0.16)	44 (1.73)	45 (1.77)	7 (0.28)	49 (1.93)	15 (0.59)	52 (2.05)	28 (1.10)	57 (2.24)	36 (1.42)							
April	88 (3.46)	55 (2.17)	90 (3.54)	93 (3.66)	65 (2.56)	95 (3.74)	72 (2.83)	98 (3.86)	82 (3.23)	101 (3.98)	86 (3.39)							
May	141 (5.55)	108 (4.25)	145 (5.71)	148 (5.83)	121 (4.76)	151 (5.94)	130 (5.12)	156 (6.14)	141 (5.55)	162 (6.38)	150 (5.91)							
June	186 (7.32)	162 (6.38)	189 (7.44)	191 (7.52)	176 (6.93)	196 (7.72)	186 (7.32)	202 (7.95)	193 (7.60)	207 (8.15)	201 (7.91)							
July	231 (9.09)	226 (8.90)	235 (9.25)	238 (9.37)	235 (9.25)	240 (9.45)	238 (9.37)	247 (9.72)	242 (9.53)	250 (9.84)	247 (9.72)							
Aug	191 (7.52)	188 (7.40)	195 (7.68)	199 (7.83)	197 (7.76)	202 (7.95)	201 (7.91)	207 (8.15)	207 (8.15)	211 (8.31)	211 (8.31)							
Sep	135 (5.31)	115 (4.53)	136 (5.35)	138 (5.43)	123 (4.84)	141 (5.55)	129 (5.08)	146 (5.75)	136 (5.35)	149 (5.87)	141 (5.55)							
Oct	64 (2.52)	25 (0.98)	66 (2.60)	67 (2.64)	39 (1.54)	68 (2.68)	48 (1.89)	72 (2.83)	57 (2.24)	73 (2.87)	67 (2.64)							
Nov	18 (0.71)	1 (0.04)	18 (0.71)	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)	22 (0.87)	2 (0.08)	22 (0.87)	13 (0.51)							
Season1098	(43.21)	884 (34.81)	1118 (44.01)	924 (36.38)	1138 (44.80)	964 (37.96)	1161 (45.71)	1020 (40.15)	1202 (47.32)	1088 (42.83)	1232 (48.51)	1152 (45.36)						

REGION: 7 Medford-Grants Pass
CROP: Filberts

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	44 (1.73)	4 (0.16)	44 (1.73)	44 (1.73)	5 (0.20)	45 (1.77)	7 (0.28)	49 (1.93)	15 (0.59)	52 (2.05)	28 (1.10)	57 (2.24)	36 (1.42)					
April	88 (3.46)	55 (2.17)	90 (3.54)	90 (3.54)	60 (2.36)	93 (3.66)	65 (2.56)	95 (3.74)	72 (2.83)	98 (3.86)	82 (3.23)	101 (3.98)	86 (3.39)					
May	141 (5.55)	108 (4.25)	145 (5.71)	145 (5.71)	115 (4.53)	148 (5.83)	121 (4.76)	151 (5.94)	130 (5.12)	156 (6.14)	141 (5.55)	162 (6.38)	150 (5.91)					
June	186 (7.32)	162 (6.38)	189 (7.44)	189 (7.44)	168 (6.61)	191 (7.52)	176 (6.93)	196 (7.72)	186 (7.32)	202 (7.95)	193 (7.60)	207 (8.15)	201 (7.91)					
July	231 (9.09)	226 (8.90)	235 (9.25)	235 (9.25)	232 (9.13)	238 (9.37)	235 (9.25)	240 (9.45)	238 (9.37)	247 (9.72)	242 (9.53)	250 (9.84)	247 (9.72)					
Aug	191 (7.52)	188 (7.40)	195 (7.68)	195 (7.68)	192 (7.56)	199 (7.83)	197 (7.76)	202 (7.95)	201 (7.91)	207 (8.15)	207 (8.15)	211 (8.31)	211 (8.31)					
Sep	135 (5.31)	115 (4.53)	136 (5.35)	136 (5.35)	119 (4.69)	138 (5.43)	123 (4.84)	141 (5.55)	129 (5.08)	146 (5.75)	136 (5.35)	149 (5.87)	141 (5.55)					
Oct	64 (2.52)	25 (0.98)	66 (2.60)	66 (2.60)	32 (1.26)	67 (2.64)	39 (1.54)	68 (2.68)	48 (1.89)	72 (2.83)	57 (2.24)	73 (2.87)	67 (2.64)					
Nov	18 (0.71)	1 (0.04)	18 (0.71)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)	22 (0.87)	2 (0.08)	22 (0.87)	13 (0.51)					
Season1098	(43.21)	884 (34.81)	1118 (44.01)	924 (36.38)	1138 (44.80)	964 (37.96)	1161 (45.71)	1020 (40.15)	1202 (47.32)	1088 (42.83)	1232 (48.51)	1152 (45.36)						

REGION: 7 Medford-Grants Pass
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	17 (0.67)	1 (0.04)	18 (0.71)	2 (0.08)	19 (0.75)	2 (0.08)	19 (0.75)	2 (0.08)	19 (0.75)	3 (0.12)	20 (0.79)	10 (0.39)	21 (0.83)	14 (0.55)	21 (0.83)	14 (0.55)	21 (0.83)	14 (0.55)
April	68 (2.68)	36 (1.42)	70 (2.76)	42 (1.65)	72 (2.83)	47 (1.85)	74 (2.91)	53 (2.09)	76 (2.99)	60 (2.36)	79 (3.11)	65 (2.56)	79 (3.11)	65 (2.56)	79 (3.11)	65 (2.56)	79 (3.11)	65 (2.56)
May	142 (5.59)	109 (4.29)	146 (5.75)	116 (4.57)	149 (5.87)	122 (4.80)	153 (6.02)	131 (5.16)	157 (6.18)	142 (5.59)	164 (6.46)	151 (5.94)	164 (6.46)	151 (5.94)	164 (6.46)	151 (5.94)	164 (6.46)	151 (5.94)
June	173 (6.81)	151 (5.94)	175 (6.89)	156 (6.14)	178 (7.01)	164 (6.46)	182 (7.17)	172 (6.77)	188 (7.40)	179 (7.03)	192 (7.56)	187 (7.36)	192 (7.56)	187 (7.36)	192 (7.56)	187 (7.36)	192 (7.56)	187 (7.36)
July	165 (6.50)	162 (6.38)	168 (6.61)	165 (6.50)	170 (6.69)	167 (6.57)	171 (6.73)	170 (6.69)	177 (6.97)	174 (6.85)	178 (7.01)	177 (6.97)	178 (7.01)	177 (6.97)	178 (7.01)	177 (6.97)	178 (7.01)	177 (6.97)
Aug	13 (0.51)	13 (0.51)	13 (0.51)	13 (0.51)	13 (0.51)	13 (0.51)	14 (0.55)	13 (0.51)	14 (0.55)	14 (0.55)	14 (0.55)	14 (0.55)	14 (0.55)	14 (0.55)	14 (0.55)	14 (0.55)	14 (0.55)	14 (0.55)
Season	578 (22.76)	472 (18.58)	590 (23.23)	494 (19.45)	601 (23.66)	515 (20.27)	613 (24.13)	542 (21.34)	632 (24.88)	579 (22.79)	648 (25.52)	608 (23.93)	648 (25.52)	608 (23.93)	648 (25.52)	608 (23.93)	648 (25.52)	608 (23.93)

REGION: 7 Medford-Grants Pass
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	28 (1.10)	2 (0.08)	29 (1.14)	3 (0.12)	30 (1.18)	3 (0.12)	31 (1.22)	6 (0.24)	33 (1.30)	14 (0.55)	34 (1.34)	20 (0.79)	34 (1.34)	20 (0.79)	34 (1.34)	20 (0.79)	34 (1.34)	20 (0.79)
April	67 (2.54)	35 (1.38)	68 (2.68)	42 (1.65)	70 (2.76)	46 (1.81)	72 (2.83)	52 (2.05)	75 (2.95)	59 (2.32)	76 (2.99)	63 (2.48)	76 (2.99)	63 (2.48)	76 (2.99)	63 (2.48)	76 (2.99)	63 (2.48)
May	135 (5.31)	103 (4.06)	136 (5.35)	109 (4.29)	138 (5.43)	116 (4.57)	146 (5.75)	125 (4.92)	150 (5.91)	135 (5.31)	156 (6.14)	144 (5.67)	156 (6.14)	144 (5.67)	156 (6.14)	144 (5.67)	156 (6.14)	144 (5.67)
June	174 (6.85)	150 (5.91)	176 (6.93)	156 (6.14)	178 (7.01)	165 (6.50)	183 (7.20)	173 (6.81)	189 (7.44)	181 (7.13)	193 (7.60)	188 (7.40)	193 (7.60)	188 (7.40)	193 (7.60)	188 (7.40)	193 (7.60)	188 (7.40)
July	154 (6.06)	151 (5.94)	157 (6.18)	153 (6.02)	159 (6.26)	156 (6.14)	160 (6.30)	158 (6.22)	165 (6.50)	162 (6.38)	166 (6.54)	165 (6.50)	166 (6.54)	165 (6.50)	166 (6.54)	165 (6.50)	166 (6.54)	165 (6.50)
Season	558 (21.96)	441 (17.37)	566 (22.28)	463 (18.22)	575 (22.64)	486 (19.14)	592 (23.30)	514 (20.24)	612 (24.10)	551 (21.69)	625 (24.61)	580 (22.84)	625 (24.61)	580 (22.84)	625 (24.61)	580 (22.84)	625 (24.61)	580 (22.84)

REGION: 7 Medford-Grants Pass
CROP: Grass Seed (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)	11 (0.43)	0 (0.00)
Feb	15 (0.59)	1 (0.04)	17 (0.67)	1 (0.04)	17 (0.67)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	18 (0.71)	1 (0.04)	18 (0.71)	1 (0.04)	20 (0.79)	1 (0.04)	21 (0.83)	1 (0.04)
March	21 (0.83)	2 (0.08)	22 (0.87)	2 (0.08)	23 (0.91)	2 (0.08)	23 (0.91)	2 (0.08)	24 (0.94)	2 (0.08)	24 (0.94)	2 (0.08)	26 (1.02)	4 (0.16)	27 (1.06)	9 (0.35)	27 (1.06)	9 (0.35)
April	49 (1.93)	18 (0.71)	49 (1.93)	24 (0.94)	50 (1.97)	29 (1.14)	51 (2.01)	33 (1.30)	51 (2.01)	33 (1.30)	53 (2.09)	39 (1.54)	54 (2.13)	42 (1.65)	54 (2.13)	42 (1.65)	54 (2.13)	42 (1.65)
May	76 (2.99)	47 (1.85)	77 (3.03)	52 (2.05)	78 (3.07)	58 (2.28)	79 (3.11)	64 (2.52)	79 (3.11)	64 (2.52)	81 (3.19)	72 (2.83)	83 (3.27)	76 (2.99)	83 (3.27)	76 (2.99)	83 (3.27)	76 (2.99)
June	120 (4.72)	103 (4.06)	122 (4.80)	106 (4.17)	124 (4.88)	110 (4.33)	126 (4.96)	116 (4.57)	126 (4.96)	116 (4.57)	129 (5.08)	124 (4.88)	132 (5.20)	128 (5.04)	132 (5.20)	128 (5.04)	132 (5.20)	128 (5.04)
July	187 (7.36)	182 (7.17)	190 (7.48)	187 (7.36)	193 (7.60)	190 (7.48)	195 (7.68)	192 (7.56)	195 (7.68)	192 (7.56)	200 (7.87)	196 (7.72)	202 (7.95)	200 (7.87)	202 (7.95)	200 (7.87)	202 (7.95)	200 (7.87)
Aug	175 (6.89)	170 (6.69)	177 (6.97)	174 (6.85)	180 (7.09)	178 (7.01)	183 (7.20)	182 (7.17)	183 (7.20)	182 (7.17)	188 (7.40)	188 (7.40)	191 (7.52)	191 (7.52)	191 (7.52)	191 (7.52)	191 (7.52)	191 (7.52)
Sep	127 (5.00)	109 (4.29)	129 (5.08)	113 (4.45)	131 (5.16)	118 (4.65)	135 (5.31)	123 (4.84)	135 (5.31)	123 (4.84)	139 (5.47)	130 (5.12)	142 (5.59)	134 (5.28)	142 (5.59)	134 (5.28)	142 (5.59)	134 (5.28)
Oct	78 (3.07)	39 (1.54)	82 (3.23)	46 (1.81)	83 (3.27)	53 (2.09)	85 (3.35)	62 (2.44)	85 (3.35)	62 (2.44)	87 (3.43)	71 (2.80)	89 (3.50)	84 (3.31)	89 (3.50)	84 (3.31)	89 (3.50)	84 (3.31)
Nov	24 (0.94)	1 (0.04)	25 (0.98)	2 (0.08)	26 (1.02)	2 (0.08)	27 (1.06)	2 (0.08)	27 (1.06)	2 (0.08)	30 (1.18)	2 (0.08)	30 (1.18)	19 (0.75)	30 (1.18)	19 (0.75)	30 (1.18)	19 (0.75)
Dec	6 (0.24)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	7 (0.28)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)	9 (0.35)	0 (0.00)
Season	885 (34.84)	672 (26.47)	904 (35.60)	707 (27.83)	922 (36.31)	741 (29.18)	942 (37.07)	777 (30.60)	973 (38.30)	827 (32.57)	991 (39.01)	884 (34.80)						

REGION: 7 Medford-Grants Pass
CROP: Onions

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	17 (0.67)	2 (0.08)	18 (0.71)	2 (0.08)	18 (0.71)	2 (0.08)	20 (0.79)	6 (0.24)	21 (0.83)	11 (0.43)	21 (0.83)	11 (0.43)	21 (0.83)	14 (0.55)	21 (0.83)	14 (0.55)	21 (0.83)	14 (0.55)
April	72 (2.83)	45 (1.77)	73 (2.87)	49 (1.93)	75 (2.95)	52 (2.05)	77 (3.03)	59 (2.32)	80 (3.15)	65 (2.56)	82 (3.23)	69 (2.72)	82 (3.23)	69 (2.72)	82 (3.23)	69 (2.72)	82 (3.23)	69 (2.72)
May	132 (5.20)	103 (4.06)	135 (5.31)	109 (4.29)	138 (5.43)	116 (4.57)	141 (5.55)	122 (4.80)	145 (5.71)	129 (5.08)	152 (5.98)	137 (5.39)	152 (5.98)	137 (5.39)	152 (5.98)	137 (5.39)	152 (5.98)	137 (5.39)
June	158 (6.22)	139 (5.47)	160 (6.30)	143 (5.63)	162 (6.38)	151 (5.94)	166 (6.54)	158 (6.22)	171 (6.73)	164 (6.46)	175 (6.89)	170 (6.69)	175 (6.89)	170 (6.69)	175 (6.89)	170 (6.69)	175 (6.89)	170 (6.69)
July	188 (7.40)	184 (7.24)	190 (7.48)	189 (7.44)	191 (7.52)	191 (7.52)	194 (7.64)	194 (7.64)	201 (7.91)	197 (7.76)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)
Aug	136 (5.35)	132 (5.20)	138 (5.43)	135 (5.31)	140 (5.51)	138 (5.43)	143 (5.63)	141 (5.55)	146 (5.75)	146 (5.75)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)	149 (5.87)
Season	703 (27.67)	605 (23.82)	714 (28.10)	627 (24.68)	724 (28.50)	650 (25.59)	741 (29.18)	680 (26.77)	764 (30.08)	712 (28.04)	782 (30.79)	740 (29.13)						

REGION: 7 Medford-Grants Pass
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR mm	Net IRR in.	ET crop in.	Net IRR mm	Net IRR in.	ET mm	ET crop in.	Net IRR mm	Net IRR in.	ET mm	ET crop in.	Net IRR mm	Net IRR in.	ET mm	ET crop in.	Net IRR mm	Net IRR in.
March	50 (1.97)	6 (0.24)	8 (0.31)	52 (2.05)	8 (0.31)	8 (0.31)	54 (2.13)	15 (0.59)	61 (2.40)	24 (0.94)	65 (2.56)	39 (1.54)	68 (2.68)	47 (1.85)				
April	91 (3.58)	58 (2.28)	63 (2.48)	93 (3.66)	63 (2.48)	63 (2.48)	95 (3.74)	68 (2.68)	98 (3.86)	76 (2.99)	101 (3.98)	84 (3.31)	104 (4.09)	89 (3.50)				
May	128 (5.04)	96 (3.78)	102 (4.02)	131 (5.16)	102 (4.02)	102 (4.02)	134 (5.28)	109 (4.29)	137 (5.39)	117 (4.61)	141 (5.55)	126 (4.96)	147 (5.79)	135 (5.31)				
June	153 (6.02)	131 (5.16)	137 (5.39)	155 (6.10)	137 (5.39)	137 (5.39)	157 (6.18)	144 (5.67)	161 (6.34)	151 (5.94)	166 (6.54)	159 (6.26)	169 (6.65)	165 (6.50)				
July	186 (7.32)	183 (7.20)	189 (7.36)	189 (7.44)	187 (7.36)	187 (7.36)	191 (7.52)	190 (7.48)	193 (7.60)	192 (7.56)	199 (7.83)	197 (7.76)	201 (7.91)	200 (7.87)				
Aug	154 (6.06)	150 (5.91)	157 (6.18)	157 (6.18)	154 (6.06)	154 (6.06)	161 (6.34)	158 (6.22)	163 (6.42)	161 (6.34)	167 (6.57)	167 (6.57)	169 (6.65)	169 (6.65)				
Sep	113 (4.45)	95 (3.74)	99 (3.90)	115 (4.53)	99 (3.90)	99 (3.90)	117 (4.61)	103 (4.06)	120 (4.72)	108 (4.25)	124 (4.88)	115 (4.53)	127 (5.00)	119 (4.69)				
Oct	72 (2.83)	31 (1.22)	73 (2.87)	73 (2.87)	39 (1.54)	39 (1.54)	74 (2.91)	46 (1.81)	76 (2.99)	54 (2.13)	77 (3.03)	63 (2.48)	79 (3.11)	75 (2.95)				
Nov	10 (0.39)	1 (0.04)	11 (0.43)	11 (0.43)	1 (0.04)	1 (0.04)	12 (0.47)	1 (0.04)	12 (0.47)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	9 (0.35)				
Season	957 (37.66)	751 (29.57)	976 (38.42)	790 (31.10)	995 (39.18)	834 (32.84)	1021 (40.19)	884 (34.80)	1053 (41.45)	951 (37.45)	1077 (42.39)	1008 (39.67)						

REGION: 7 Medford-Grants Pass
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR mm	Net IRR in.	ET crop in.	Net IRR mm	Net IRR in.	ET mm	ET crop in.	Net IRR mm	Net IRR in.	ET mm	ET crop in.	Net IRR mm	Net IRR in.	ET mm	ET crop in.	Net IRR mm	Net IRR in.
March	44 (1.73)	4 (0.16)	5 (0.20)	44 (1.73)	5 (0.20)	5 (0.20)	45 (1.77)	7 (0.28)	49 (1.93)	15 (0.59)	52 (2.05)	28 (1.10)	57 (2.24)	36 (1.42)				
April	81 (3.19)	51 (2.01)	56 (2.20)	83 (3.27)	56 (2.20)	56 (2.20)	88 (3.46)	61 (2.40)	90 (3.54)	68 (2.68)	93 (3.66)	77 (3.03)	96 (3.78)	81 (3.19)				
May	128 (5.04)	96 (3.78)	102 (4.02)	131 (5.16)	102 (4.02)	102 (4.02)	134 (5.28)	109 (4.29)	137 (5.39)	117 (4.61)	141 (5.55)	126 (4.96)	147 (5.79)	135 (5.31)				
June	170 (6.69)	148 (5.83)	153 (6.02)	172 (6.77)	153 (6.02)	153 (6.02)	175 (6.89)	161 (6.34)	179 (7.05)	169 (6.65)	185 (7.28)	176 (6.93)	189 (7.44)	184 (7.24)				
July	212 (8.35)	207 (8.15)	216 (8.50)	216 (8.50)	212 (8.35)	212 (8.35)	218 (8.58)	215 (8.46)	220 (8.66)	218 (8.58)	227 (8.94)	222 (8.74)	229 (9.02)	226 (8.90)				
Aug	177 (6.97)	172 (6.77)	179 (7.05)	179 (7.05)	176 (6.93)	176 (6.93)	182 (7.17)	180 (7.09)	185 (7.28)	184 (7.24)	190 (7.48)	190 (7.48)	193 (7.60)	193 (7.60)				
Sep	123 (4.84)	104 (4.09)	125 (4.92)	125 (4.92)	108 (4.25)	108 (4.25)	126 (4.96)	112 (4.41)	129 (5.08)	117 (4.61)	133 (5.24)	123 (4.84)	136 (5.35)	128 (5.04)				
Oct	61 (2.40)	22 (0.87)	62 (2.44)	62 (2.44)	29 (1.14)	29 (1.14)	63 (2.48)	34 (1.34)	64 (2.52)	45 (1.77)	68 (2.68)	53 (2.09)	69 (2.72)	64 (2.52)				
Nov	18 (0.71)	1 (0.04)	18 (0.71)	18 (0.71)	1 (0.04)	1 (0.04)	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)	22 (0.87)	2 (0.08)	22 (0.87)	13 (0.51)				
Season	1014 (39.92)	805 (31.70)	1030 (40.55)	842 (33.15)	1050 (41.34)	880 (34.65)	1072 (42.20)	934 (36.77)	1111 (43.75)	997 (39.25)	1138 (44.81)	1060 (41.73)						

REGION: 7 Medford-Grants Pass
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	44 (1.73)	4 (0.16)	44 (1.73)	5 (0.20)	45 (1.77)	7 (0.28)	49 (1.93)	15 (0.59)	52 (2.05)	28 (1.10)	57 (2.24)	36 (1.42)	52 (2.05)	28 (1.10)	57 (2.24)	36 (1.42)	52 (2.05)	28 (1.10)
April	81 (3.19)	51 (2.01)	83 (3.27)	56 (2.20)	88 (3.46)	61 (2.40)	90 (3.54)	68 (2.68)	93 (3.66)	77 (3.03)	96 (3.78)	81 (3.19)	93 (3.66)	77 (3.03)	96 (3.78)	81 (3.19)	93 (3.66)	77 (3.03)
May	128 (5.04)	96 (3.78)	131 (5.16)	102 (4.02)	134 (5.28)	109 (4.29)	137 (5.39)	117 (4.61)	141 (5.55)	126 (4.96)	147 (5.79)	135 (5.31)	141 (5.55)	126 (4.96)	147 (5.79)	135 (5.31)	141 (5.55)	126 (4.96)
June	170 (6.69)	148 (5.83)	172 (6.77)	153 (6.02)	175 (6.89)	161 (6.34)	179 (7.05)	169 (6.65)	185 (7.28)	176 (6.93)	189 (7.44)	184 (7.24)	185 (7.28)	176 (6.93)	189 (7.44)	184 (7.24)	185 (7.28)	176 (6.93)
July	212 (8.35)	207 (8.15)	216 (8.50)	212 (8.35)	218 (8.58)	215 (8.46)	220 (8.66)	218 (8.58)	227 (8.94)	222 (8.74)	229 (9.02)	226 (8.90)	227 (8.94)	222 (8.74)	229 (9.02)	226 (8.90)	227 (8.94)	222 (8.74)
Aug	177 (6.97)	172 (6.77)	179 (7.05)	176 (6.93)	182 (7.17)	180 (7.09)	185 (7.28)	184 (7.24)	190 (7.48)	190 (7.48)	193 (7.60)	193 (7.60)	190 (7.48)	190 (7.48)	193 (7.60)	193 (7.60)	190 (7.48)	190 (7.48)
Sep	123 (4.84)	104 (4.09)	125 (4.92)	108 (4.25)	126 (4.96)	112 (4.41)	129 (5.08)	117 (4.61)	133 (5.24)	123 (4.84)	136 (5.35)	128 (5.04)	133 (5.24)	123 (4.84)	136 (5.35)	128 (5.04)	133 (5.24)	123 (4.84)
Oct	61 (2.40)	22 (0.87)	62 (2.44)	29 (1.14)	63 (2.48)	34 (1.34)	64 (2.52)	45 (1.77)	68 (2.68)	53 (2.09)	69 (2.72)	64 (2.52)	68 (2.68)	53 (2.09)	69 (2.72)	64 (2.52)	68 (2.68)	53 (2.09)
Nov	18 (0.71)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)	22 (0.87)	2 (0.08)	22 (0.87)	13 (0.51)	22 (0.87)	2 (0.08)	22 (0.87)	13 (0.51)	22 (0.87)	2 (0.08)
Season	1014 (39.92)	805 (31.70)	1030 (40.55)	842 (33.15)	1050 (41.34)	880 (34.65)	1072 (42.20)	934 (36.77)	1111 (43.75)	997 (39.25)	1138 (44.81)	1060 (41.73)	1111 (43.75)	997 (39.25)	1138 (44.81)	1060 (41.73)	1111 (43.75)	997 (39.25)

REGION: 7 Medford-Grants Pass
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	26 (1.02)	14 (0.55)	26 (1.02)	16 (0.63)	27 (1.06)	19 (0.75)	27 (1.06)	22 (0.87)	28 (1.10)	24 (0.94)	28 (1.10)	26 (1.02)	28 (1.10)	24 (0.94)	28 (1.10)	26 (1.02)	28 (1.10)	24 (0.94)
June	89 (3.50)	74 (2.91)	90 (3.54)	77 (3.03)	91 (3.58)	82 (3.23)	93 (3.66)	88 (3.46)	95 (3.74)	92 (3.62)	97 (3.82)	94 (3.70)	95 (3.74)	92 (3.62)	97 (3.82)	94 (3.70)	95 (3.74)	92 (3.62)
July	207 (8.15)	203 (7.99)	211 (8.31)	208 (8.19)	213 (8.39)	211 (8.31)	215 (8.46)	214 (8.43)	222 (8.74)	217 (8.54)	224 (8.82)	222 (8.74)	222 (8.74)	217 (8.54)	224 (8.82)	222 (8.74)	222 (8.74)	217 (8.54)
Aug	180 (7.09)	173 (6.81)	182 (7.17)	177 (6.97)	185 (7.28)	182 (7.17)	188 (7.40)	187 (7.36)	193 (7.60)	193 (7.60)	196 (7.72)	196 (7.72)	193 (7.60)	193 (7.60)	196 (7.72)	196 (7.72)	193 (7.60)	193 (7.60)
Sep	122 (4.80)	104 (4.09)	124 (4.88)	108 (4.25)	125 (4.92)	112 (4.41)	128 (5.04)	117 (4.61)	132 (5.20)	124 (4.88)	135 (5.31)	128 (5.04)	132 (5.20)	124 (4.88)	135 (5.31)	128 (5.04)	132 (5.20)	124 (4.88)
Oct	29 (1.14)	12 (0.47)	29 (1.14)	15 (0.59)	30 (1.18)	19 (0.75)	30 (1.18)	22 (0.87)	31 (1.22)	25 (0.98)	32 (1.26)	30 (1.18)	31 (1.22)	25 (0.98)	32 (1.26)	30 (1.18)	31 (1.22)	25 (0.98)
Season	653 (25.70)	580 (22.82)	662 (26.06)	601 (23.66)	671 (26.41)	625 (24.62)	681 (26.80)	650 (25.60)	701 (27.60)	675 (26.56)	712 (28.03)	696 (27.40)	701 (27.60)	675 (26.56)	712 (28.03)	696 (27.40)	712 (28.03)	675 (26.56)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	4 (0.16)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	2 (0.08)	6 (0.24)	4 (0.16)	6 (0.24)	5 (0.20)	6 (0.24)	5 (0.20)		
April	80 (3.15)	27 (1.06)	82 (3.23)	36 (1.42)	86 (3.39)	46 (1.81)	89 (3.50)	55 (2.17)	92 (3.62)	67 (2.64)	94 (3.70)	72 (2.83)	94 (3.70)	72 (2.83)	94 (3.70)	72 (2.83)		
May	116 (4.57)	70 (2.76)	118 (4.65)	79 (3.11)	119 (4.69)	86 (3.39)	122 (4.80)	94 (3.70)	126 (4.96)	108 (4.25)	130 (5.12)	117 (4.61)	130 (5.12)	117 (4.61)	130 (5.12)	117 (4.61)		
June	136 (5.35)	110 (4.33)	139 (5.47)	119 (4.69)	142 (5.59)	127 (5.00)	145 (5.71)	135 (5.31)	151 (5.94)	145 (5.71)	154 (6.06)	153 (6.02)	154 (6.06)	153 (6.02)	154 (6.06)	153 (6.02)		
July	169 (6.65)	165 (6.50)	171 (6.73)	167 (6.57)	173 (6.81)	170 (6.69)	175 (6.89)	172 (6.77)	178 (7.01)	177 (6.97)	182 (7.17)	181 (7.13)	182 (7.17)	181 (7.13)	182 (7.17)	181 (7.13)		
Aug	139 (5.47)	132 (5.20)	142 (5.59)	136 (5.35)	145 (5.71)	139 (5.47)	147 (5.79)	144 (5.67)	150 (5.91)	149 (5.87)	153 (6.02)	152 (5.98)	153 (6.02)	152 (5.98)	153 (6.02)	152 (5.98)		
Sep	102 (4.02)	78 (3.07)	104 (4.09)	83 (3.27)	107 (4.21)	88 (3.46)	109 (4.29)	95 (3.74)	113 (4.45)	104 (4.09)	115 (4.53)	108 (4.25)	115 (4.53)	108 (4.25)	115 (4.53)	108 (4.25)		
Season	746 (29.37)	582 (22.92)	761 (29.96)	620 (24.41)	777 (30.60)	656 (25.82)	792 (31.18)	697 (27.44)	816 (32.13)	754 (29.69)	834 (32.84)	788 (31.02)	834 (32.84)	788 (31.02)	834 (32.84)	788 (31.02)		

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	40 (1.57)	2 (0.08)	44 (1.73)	3 (0.12)	45 (1.77)	3 (0.12)	47 (1.85)	4 (0.16)	50 (1.97)	11 (0.43)	51 (2.01)	26 (1.02)						
April	83 (3.27)	30 (1.18)	85 (3.35)	1 (1.54)	89 (3.50)	49 (1.93)	93 (3.66)	58 (2.28)	96 (3.78)	70 (2.76)	98 (3.86)	76 (2.99)						
May	137 (5.39)	88 (3.46)	139 (5.47)	95 (3.74)	141 (5.55)	104 (4.09)	144 (5.67)	114 (4.49)	149 (5.87)	128 (5.04)	154 (6.06)	138 (5.43)						
June	178 (7.01)	148 (5.83)	181 (7.13)	158 (6.22)	185 (7.28)	167 (6.57)	190 (7.44)	177 (6.97)	197 (7.76)	190 (7.48)	201 (7.91)	199 (7.83)						
July	223 (8.78)	221 (8.70)	225 (8.86)	224 (8.82)	227 (8.94)	227 (8.94)	232 (9.13)	231 (9.09)	237 (9.33)	237 (9.33)	242 (9.53)	241 (9.49)						
Aug	184 (7.24)	178 (7.01)	188 (7.40)	182 (7.17)	192 (7.56)	187 (7.36)	194 (7.64)	192 (7.56)	198 (7.80)	198 (7.80)	203 (7.99)	201 (7.91)						
Sept	128 (5.04)	104 (4.09)	131 (5.16)	109 (4.29)	135 (5.31)	115 (4.53)	138 (5.43)	122 (4.80)	143 (5.63)	131 (5.16)	146 (5.75)	136 (5.35)						
Oct	61 (2.40)	7 (0.28)	63 (2.48)	11 (0.43)	64 (2.52)	19 (0.75)	66 (2.60)	33 (1.30)	70 (2.76)	46 (1.81)	75 (2.95)	64 (2.52)						
Nov	16 (0.63)	1 (0.04)	17 (0.67)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	1 (0.04)	20 (0.79)	2 (0.08)	21 (0.83)	3 (0.12)						
Season1050	41.33	779 (30.67)	1073 (42.25)	822 (32.37)	1097 (43.18)	872 (34.33)	1124 (44.25)	932 (36.69)	1160 (45.69)	1013 (39.89)	1191 (46.89)	1084 (42.66)						

REGION: 8 Lake Creek-Little Butte Creek
CROP: Cherries

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	40 (1.57)	2 (0.08)	44 (1.73)	3 (0.12)	45 (1.77)	3 (0.12)	47 (1.85)	4 (0.16)	50 (1.97)	11 (0.43)	51 (2.01)	26 (1.02)						
April	83 (3.27)	30 (1.18)	85 (3.35)	39 (1.54)	89 (3.50)	49 (1.93)	93 (3.66)	58 (2.28)	96 (3.78)	70 (2.76)	98 (3.86)	76 (2.99)						
May	137 (5.39)	88 (3.46)	139 (5.47)	95 (3.74)	141 (5.55)	104 (4.09)	144 (5.67)	114 (4.49)	149 (5.87)	128 (5.04)	154 (6.06)	138 (5.43)						
June	178 (7.01)	148 (5.83)	181 (7.13)	158 (6.22)	185 (7.28)	167 (6.57)	190 (7.48)	177 (6.97)	197 (7.76)	190 (7.48)	201 (7.91)	199 (7.83)						
July	223 (8.78)	221 (8.70)	225 (8.86)	224 (8.82)	227 (8.94)	227 (8.94)	232 (9.13)	231 (9.09)	237 (9.33)	237 (9.33)	242 (9.53)	241 (9.49)						
Aug	184 (7.24)	178 (7.01)	188 (7.40)	182 (7.17)	192 (7.56)	187 (7.36)	194 (7.64)	192 (7.56)	198 (7.80)	198 (7.80)	203 (7.99)	201 (7.91)						
Sep	128 (5.04)	104 (4.09)	131 (5.16)	109 (4.29)	135 (5.31)	115 (4.53)	138 (5.43)	122 (4.80)	143 (5.63)	131 (5.16)	146 (5.75)	136 (5.35)						
Oct	61 (2.40)	7 (0.28)	63 (2.48)	11 (0.43)	64 (2.52)	19 (0.75)	66 (2.60)	33 (1.30)	70 (2.76)	46 (1.81)	75 (2.95)	64 (2.52)						
Nov	16 (0.53)	1 (0.04)	17 (0.67)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	1 (0.04)	20 (0.79)	2 (0.08)	21 (0.83)	3 (0.12)						
Season1050	(41.33)	779 (30.67)	1073 (42.25)	822 (32.37)	1097 (43.18)	872 (34.33)	1124 (44.25)	932 (36.69)	1160 (45.69)	1013 (39.89)	1191 (46.89)	1084 (42.66)						

REGION: 8 Lake Creek-Little Butte Creek
CROP: Corn (Sweet)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
May	65 (2.56)	23 (0.91)	65 (2.56)	31 (1.22)	66 (2.60)	37 (1.46)	67 (2.64)	44 (1.73)	69 (2.72)	54 (2.13)	70 (2.76)	60 (2.36)						
June	131 (5.16)	102 (4.02)	133 (5.24)	110 (4.33)	135 (5.31)	119 (4.69)	138 (5.43)	128 (5.04)	143 (5.53)	138 (5.43)	146 (5.75)	144 (5.67)						
July	206 (8.11)	203 (7.99)	208 (8.19)	206 (8.11)	210 (8.27)	210 (8.27)	215 (8.46)	213 (8.39)	221 (8.70)	218 (8.58)	225 (8.86)	223 (8.78)						
Aug	169 (6.65)	163 (6.42)	173 (6.81)	167 (6.57)	176 (6.93)	172 (6.77)	179 (7.05)	177 (6.97)	182 (7.17)	182 (7.17)	186 (7.32)	184 (7.24)						
Sep	59 (2.32)	48 (1.89)	59 (2.32)	52 (2.05)	60 (2.36)	54 (2.13)	61 (2.40)	57 (2.24)	65 (2.56)	60 (2.36)	66 (2.60)	62 (2.44)						
Season	630 (24.80)	539 (21.23)	638 (25.12)	566 (22.28)	647 (25.47)	592 (23.32)	660 (25.98)	619 (24.37)	680 (26.78)	652 (25.67)	693 (27.29)	673 (26.49)						

REGION: 8 Lake Creek-Little Butte Creek
CROP: Filberts

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	40 (1.57)	2 (0.08)	44 (1.73)	3 (0.12)	45 (1.77)	3 (0.12)	47 (1.85)	4 (0.16)	50 (1.97)	11 (0.43)	51 (2.01)	26 (1.02)						
April	83 (3.27)	30 (1.18)	85 (3.35)	39 (1.54)	89 (3.50)	49 (1.93)	93 (3.66)	58 (2.28)	96 (3.78)	70 (2.76)	98 (3.86)	76 (2.99)						
May	137 (5.39)	88 (3.46)	139 (5.47)	95 (3.74)	141 (5.55)	104 (4.09)	144 (5.67)	114 (4.49)	149 (5.87)	128 (5.04)	154 (6.06)	138 (5.43)						
June	178 (7.01)	148 (5.83)	181 (7.13)	158 (6.22)	185 (7.28)	167 (6.57)	190 (7.48)	177 (6.97)	197 (7.76)	190 (7.48)	201 (7.91)	199 (7.83)						
July	223 (8.78)	221 (8.70)	225 (8.86)	224 (8.82)	227 (8.94)	227 (8.94)	232 (9.13)	231 (9.09)	237 (9.33)	237 (9.33)	242 (9.53)	241 (9.49)						
Aug	184 (7.24)	178 (7.01)	188 (7.40)	182 (7.17)	192 (7.56)	187 (7.36)	194 (7.64)	192 (7.56)	198 (7.80)	198 (7.80)	203 (7.99)	201 (7.91)						
Sep	128 (5.04)	104 (4.09)	131 (5.16)	109 (4.29)	135 (5.31)	115 (4.53)	138 (5.43)	122 (4.80)	143 (5.63)	131 (5.16)	146 (5.75)	136 (5.35)						
Oct	61 (2.40)	7 (0.28)	63 (2.48)	11 (0.43)	64 (2.52)	19 (0.75)	66 (2.60)	33 (1.30)	70 (2.76)	46 (1.81)	75 (2.95)	64 (2.52)						
Nov	16 (0.53)	1 (0.04)	17 (0.67)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	1 (0.04)	20 (0.79)	2 (0.08)	21 (0.83)	3 (0.12)						
Season1050	(41.33)	779 (30.67)	1073 (42.25)	822 (32.37)	1097 (43.18)	872 (34.33)	1124 (44.25)	932 (36.69)	1160 (45.69)	1013 (39.89)	1191 (46.89)	1084 (42.66)						

REGION: 8 Lake Creek-Little Butte Creek
CROP: Grain (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	16 (0.63)	1 (0.04)	18 (0.71)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	2 (0.08)	20 (0.79)	8 (0.31)						
April	64 (2.52)	14 (0.55)	66 (2.60)	22 (0.87)	69 (2.72)	32 (1.26)	72 (2.83)	39 (1.54)	75 (2.95)	51 (2.01)	76 (2.99)	55 (2.17)						
May	138 (5.43)	89 (3.50)	140 (5.51)	96 (3.78)	142 (5.59)	104 (4.09)	145 (5.71)	114 (4.49)	150 (5.91)	130 (5.12)	155 (6.10)	140 (5.51)						
June	168 (6.61)	138 (5.43)	172 (6.77)	146 (5.75)	174 (6.85)	155 (6.10)	176 (6.93)	163 (6.42)	183 (7.20)	176 (6.93)	187 (7.36)	184 (7.24)						
July	160 (6.30)	156 (6.14)	162 (6.38)	159 (6.26)	164 (6.46)	162 (6.38)	165 (6.50)	165 (6.50)	170 (6.69)	170 (6.69)	173 (6.81)	172 (6.77)						
Aug	12 (0.47)	12 (0.47)	13 (0.51)	12 (0.47)	13 (0.51)	13 (0.51)	13 (0.51)	13 (0.51)	13 (0.51)	13 (0.51)	14 (0.55)	14 (0.55)						
Season	558 (21.96)	410 (16.13)	571 (22.48)	436 (17.17)	580 (22.84)	467 (18.38)	590 (23.23)	495 (19.50)	611 (24.05)	542 (21.34)	625 (24.60)	573 (22.55)						

REGION: 8 Lake Creek-Little Butte Creek
CROP: Grain (Winter)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
March	27 (1.06)	1 (0.04)	2 (0.08)	28 (1.10)	2 (0.08)	2 (0.08)	30 (1.18)	2 (0.08)	2 (0.08)	30 (1.18)	2 (0.08)	2 (0.08)	32 (1.26)	2 (0.08)	2 (0.08)	32 (1.26)	13 (0.51)	13 (0.51)
April	63 (2.48)	13 (0.51)	20 (0.79)	65 (2.56)	20 (0.79)	20 (0.79)	68 (2.68)	31 (1.22)	31 (1.22)	70 (2.76)	37 (1.46)	37 (1.46)	74 (2.91)	49 (1.93)	49 (1.93)	75 (2.95)	55 (2.17)	55 (2.17)
May	131 (5.16)	84 (3.31)	133 (5.24)	133 (5.31)	92 (3.62)	92 (3.62)	135 (5.31)	99 (3.90)	99 (3.90)	139 (5.47)	108 (4.25)	108 (4.25)	143 (5.63)	124 (4.88)	124 (4.88)	149 (5.87)	134 (5.28)	134 (5.28)
June	168 (6.61)	138 (5.43)	173 (6.81)	173 (6.81)	146 (5.75)	146 (5.75)	175 (6.89)	155 (6.10)	155 (6.10)	177 (6.97)	164 (6.46)	164 (6.46)	184 (7.24)	177 (6.97)	177 (6.97)	187 (7.36)	185 (7.28)	185 (7.28)
July	149 (5.87)	145 (5.71)	151 (5.94)	151 (5.94)	147 (5.79)	147 (5.79)	153 (6.02)	150 (5.91)	150 (5.91)	154 (6.06)	153 (6.02)	153 (6.02)	157 (6.18)	157 (6.18)	157 (6.18)	161 (6.34)	161 (6.34)	161 (6.34)
Season	538 (21.18)	381 (15.00)	550 (21.65)	407 (16.03)	561 (22.08)	437 (17.21)	570 (22.44)	464 (18.27)	464 (18.27)	590 (23.22)	509 (20.04)	509 (20.04)	604 (23.78)	548 (21.58)	548 (21.58)			

REGION: 8 Lake Creek-Little Butte Creek
CROP: Grass Seed (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
Jan	6 (0.24)	0 (0.00)	0 (0.00)	6 (0.24)	0 (0.00)	0 (0.00)	7 (0.28)	0 (0.00)	0 (0.00)	7 (0.28)	0 (0.00)	0 (0.00)	10 (0.39)	0 (0.00)	0 (0.00)	10 (0.39)	0 (0.00)	0 (0.00)
Feb	14 (0.55)	1 (0.04)	1 (0.04)	15 (0.59)	1 (0.04)	1 (0.04)	15 (0.59)	1 (0.04)	1 (0.04)	17 (0.67)	1 (0.04)	1 (0.04)	18 (0.71)	1 (0.04)	1 (0.04)	20 (0.79)	1 (0.04)	1 (0.04)
March	19 (0.75)	1 (0.04)	1 (0.04)	21 (0.83)	1 (0.04)	1 (0.04)	22 (0.87)	1 (0.04)	1 (0.04)	23 (0.91)	1 (0.04)	1 (0.04)	23 (0.91)	2 (0.08)	2 (0.08)	24 (0.94)	2 (0.08)	2 (0.08)
April	46 (1.81)	4 (0.16)	6 (0.24)	48 (1.89)	6 (0.24)	6 (0.24)	49 (1.93)	14 (0.55)	14 (0.55)	51 (2.01)	21 (0.83)	21 (0.83)	53 (2.09)	30 (1.18)	30 (1.18)	54 (2.13)	36 (1.42)	36 (1.42)
May	74 (2.91)	30 (1.18)	37 (1.46)	75 (2.95)	37 (1.46)	37 (1.46)	77 (3.03)	47 (1.85)	47 (1.85)	78 (3.07)	54 (2.13)	54 (2.13)	80 (3.15)	62 (2.44)	62 (2.44)	83 (3.27)	69 (2.72)	69 (2.72)
June	117 (4.61)	92 (3.62)	118 (4.65)	118 (4.65)	99 (3.90)	99 (3.90)	120 (4.72)	105 (4.13)	105 (4.13)	123 (4.84)	112 (4.41)	112 (4.41)	126 (4.96)	122 (4.80)	122 (4.80)	129 (5.08)	129 (5.08)	129 (5.08)
July	181 (7.13)	177 (6.97)	183 (7.20)	183 (7.20)	180 (7.09)	180 (7.09)	186 (7.32)	184 (7.24)	184 (7.24)	189 (7.44)	187 (7.36)	187 (7.36)	192 (7.56)	192 (7.56)	192 (7.56)	196 (7.72)	195 (7.68)	195 (7.68)
Aug	167 (6.57)	160 (6.30)	170 (6.69)	170 (6.69)	164 (6.46)	164 (6.46)	174 (6.85)	168 (6.61)	168 (6.61)	177 (6.97)	173 (6.81)	173 (6.81)	180 (7.09)	179 (7.05)	179 (7.05)	184 (7.24)	181 (7.13)	181 (7.13)
Sep	122 (4.80)	97 (3.82)	125 (4.92)	125 (4.92)	103 (4.06)	103 (4.06)	128 (5.04)	110 (4.53)	110 (4.53)	132 (5.20)	116 (4.57)	116 (4.57)	136 (5.35)	124 (4.88)	124 (4.88)	139 (5.47)	130 (5.12)	130 (5.12)
Oct	76 (2.99)	11 (0.43)	78 (3.07)	78 (3.07)	23 (0.91)	23 (0.91)	80 (3.15)	33 (1.30)	33 (1.30)	82 (3.23)	42 (1.65)	42 (1.65)	87 (3.43)	62 (2.44)	62 (2.44)	90 (3.54)	80 (3.15)	80 (3.15)
Nov	22 (0.87)	1 (0.04)	23 (0.91)	23 (0.91)	1 (0.04)	1 (0.04)	26 (1.02)	2 (0.08)	2 (0.08)	27 (1.06)	2 (0.08)	2 (0.08)	28 (1.10)	2 (0.08)	2 (0.08)	29 (1.14)	9 (0.35)	9 (0.35)
Dec	3 (0.12)	0 (0.00)	6 (0.24)	6 (0.24)	0 (0.00)	0 (0.00)	6 (0.24)	0 (0.00)	0 (0.00)	7 (0.28)	0 (0.00)	0 (0.00)	8 (0.31)	0 (0.00)	0 (0.00)	9 (0.35)	0 (0.00)	0 (0.00)
Season	847 (33.35)	574 (22.60)	868 (34.18)	615 (24.24)	890 (35.04)	665 (26.17)	913 (35.96)	709 (27.92)	709 (27.92)	941 (37.05)	776 (30.55)	776 (30.55)	967 (38.06)	832 (32.77)	832 (32.77)			

REGION: 8 Lake Creek-Little Butte Creek
CROP: Onions

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	16 (0.63)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	18 (0.71)	2 (0.08)	19 (0.75)	4 (0.16)	20 (0.79)	11 (0.43)	20 (0.79)	11 (0.43)	20 (0.79)	11 (0.43)	20 (0.79)	11 (0.43)
April	68 (2.68)	23 (0.91)	70 (2.76)	30 (1.18)	72 (2.83)	39 (1.54)	75 (2.95)	47 (1.85)	78 (3.07)	57 (2.24)	80 (3.15)	61 (2.40)	80 (3.15)	61 (2.40)	80 (3.15)	61 (2.40)	80 (3.15)	61 (2.40)
May	128 (5.04)	84 (3.31)	130 (5.12)	91 (3.58)	132 (5.20)	98 (3.86)	135 (5.31)	108 (4.25)	139 (5.47)	121 (4.76)	144 (5.67)	130 (5.12)	139 (5.47)	121 (4.76)	144 (5.67)	130 (5.12)	139 (5.47)	121 (4.76)
June	151 (5.94)	127 (5.00)	154 (6.06)	135 (5.31)	157 (6.18)	142 (5.59)	161 (6.34)	150 (5.91)	167 (6.57)	161 (6.34)	170 (6.69)	169 (6.65)	167 (6.57)	161 (6.34)	170 (6.69)	169 (6.65)	167 (6.57)	161 (6.34)
July	182 (7.17)	179 (7.05)	184 (7.24)	182 (7.17)	186 (7.32)	184 (7.24)	188 (7.40)	187 (7.36)	193 (7.60)	192 (7.56)	197 (7.76)	195 (7.68)	193 (7.60)	192 (7.56)	197 (7.76)	195 (7.68)	193 (7.60)	192 (7.56)
Aug	131 (5.16)	125 (4.92)	133 (5.24)	128 (5.04)	135 (5.31)	131 (5.16)	137 (5.39)	135 (5.31)	140 (5.51)	140 (5.51)	143 (5.63)	142 (5.59)	140 (5.51)	140 (5.51)	143 (5.63)	142 (5.59)	143 (5.63)	142 (5.59)
Season	676 (26.62)	539 (21.23)	688 (27.09)	567 (22.32)	700 (27.55)	595 (23.43)	714 (28.10)	629 (24.76)	736 (28.97)	675 (26.57)	754 (29.69)	708 (27.87)	736 (28.97)	675 (26.57)	754 (29.69)	708 (27.87)	754 (29.69)	708 (27.87)

REGION: 8 Lake Creek-Little Butte Creek
CROP: Pasture

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	48 (1.89)	3 (0.12)	53 (2.09)	4 (0.16)	55 (2.17)	4 (0.16)	57 (2.24)	5 (0.20)	61 (2.40)	21 (0.83)	62 (2.44)	31 (1.22)	61 (2.40)	21 (0.83)	62 (2.44)	31 (1.22)	62 (2.44)	31 (1.22)
April	84 (3.31)	32 (1.26)	86 (3.39)	40 (1.57)	90 (3.54)	50 (1.97)	93 (3.66)	59 (2.32)	98 (3.86)	73 (2.87)	101 (3.98)	77 (3.03)	98 (3.86)	73 (2.87)	101 (3.98)	77 (3.03)	101 (3.98)	77 (3.03)
May	124 (4.88)	76 (2.99)	126 (4.96)	84 (3.31)	128 (5.04)	92 (3.62)	131 (5.16)	101 (3.98)	134 (5.28)	116 (4.57)	139 (5.47)	125 (4.92)	134 (5.28)	116 (4.57)	139 (5.47)	125 (4.92)	139 (5.47)	116 (4.57)
June	147 (5.79)	118 (4.65)	151 (5.94)	126 (4.96)	153 (6.02)	135 (5.31)	155 (6.10)	144 (5.67)	161 (6.34)	154 (6.06)	164 (6.46)	161 (6.34)	161 (6.34)	154 (6.06)	164 (6.46)	161 (6.34)	164 (6.46)	154 (6.06)
July	180 (7.09)	175 (6.89)	183 (7.20)	178 (7.01)	184 (7.24)	181 (7.13)	186 (7.32)	184 (7.24)	192 (7.56)	189 (7.44)	195 (7.68)	193 (7.60)	192 (7.56)	189 (7.44)	195 (7.68)	193 (7.60)	195 (7.68)	189 (7.44)
Aug	149 (5.87)	142 (5.59)	151 (5.94)	146 (5.75)	155 (6.10)	149 (5.87)	157 (6.18)	154 (6.06)	160 (6.30)	159 (6.26)	163 (6.42)	162 (6.38)	160 (6.30)	159 (6.26)	163 (6.42)	162 (6.38)	163 (6.42)	159 (6.26)
Sep	108 (4.25)	85 (3.35)	111 (4.37)	90 (3.54)	114 (4.49)	95 (3.74)	117 (4.61)	102 (4.02)	121 (4.76)	110 (4.33)	123 (4.84)	115 (4.53)	121 (4.76)	110 (4.33)	123 (4.84)	115 (4.53)	123 (4.84)	110 (4.33)
Oct	68 (2.68)	8 (0.31)	69 (2.72)	19 (0.75)	71 (2.80)	27 (1.06)	73 (2.87)	37 (1.46)	77 (3.03)	55 (2.17)	82 (3.23)	71 (2.80)	77 (3.03)	55 (2.17)	82 (3.23)	71 (2.80)	82 (3.23)	55 (2.17)
Nov	9 (0.35)	0 (0.00)	10 (0.39)	1 (0.04)	11 (0.43)	1 (0.04)	12 (0.47)	1 (0.04)	12 (0.47)	1 (0.04)	12 (0.47)	5 (0.20)	12 (0.47)	1 (0.04)	12 (0.47)	5 (0.20)	12 (0.47)	1 (0.04)
Season	917 (36.11)	639 (25.16)	940 (37.00)	688 (27.09)	961 (37.83)	734 (28.90)	981 (38.61)	787 (30.99)	1016 (40.00)	878 (34.57)	1041 (40.99)	940 (37.02)	1016 (40.00)	878 (34.57)	1041 (40.99)	940 (37.02)	1041 (40.99)	878 (34.57)

REGION: 8 Lake Creek-Little Butte Creek
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	40 (1.57)	2 (0.08)	44 (1.73)	3 (0.12)	45 (1.77)	3 (0.12)	47 (1.85)	4 (0.16)	50 (1.97)	11 (0.43)	51 (2.01)	26 (1.02)	51 (2.01)	26 (1.02)	51 (2.01)	26 (1.02)	51 (2.01)	26 (1.02)
April	78 (3.07)	25 (0.98)	81 (3.19)	33 (1.30)	85 (3.35)	44 (1.73)	88 (3.46)	53 (2.09)	91 (3.58)	66 (2.60)	93 (3.66)	71 (2.80)	93 (3.66)	71 (2.80)	93 (3.66)	71 (2.80)	93 (3.66)	71 (2.80)
May	125 (4.92)	77 (3.03)	127 (5.00)	85 (3.35)	129 (5.08)	92 (3.62)	132 (5.20)	101 (3.98)	136 (5.35)	117 (4.61)	140 (5.51)	126 (4.96)	140 (5.51)	126 (4.96)	140 (5.51)	126 (4.96)	140 (5.51)	126 (4.96)
June	167 (6.57)	136 (5.35)	170 (6.69)	144 (5.67)	172 (6.77)	153 (6.02)	174 (6.85)	162 (6.38)	181 (7.13)	174 (6.85)	184 (7.24)	183 (7.20)	184 (7.24)	183 (7.20)	184 (7.24)	183 (7.20)	184 (7.24)	183 (7.20)
July	204 (8.03)	202 (7.95)	206 (8.11)	205 (8.07)	208 (8.19)	208 (8.19)	213 (8.39)	211 (8.31)	219 (8.62)	217 (8.54)	223 (8.78)	221 (8.70)	223 (8.78)	221 (8.70)	223 (8.78)	221 (8.70)	223 (8.78)	221 (8.70)
Aug	169 (6.65)	163 (6.42)	173 (6.81)	167 (6.57)	176 (6.93)	172 (6.77)	179 (7.05)	177 (6.97)	182 (7.17)	182 (7.17)	186 (7.32)	184 (7.24)	186 (7.32)	184 (7.24)	186 (7.32)	184 (7.24)	186 (7.32)	184 (7.24)
Sep	117 (4.61)	94 (3.70)	120 (4.72)	99 (3.90)	123 (4.84)	105 (4.13)	126 (4.96)	112 (4.41)	130 (5.12)	120 (4.72)	133 (5.24)	125 (4.92)	133 (5.24)	125 (4.92)	133 (5.24)	125 (4.92)	133 (5.24)	125 (4.92)
Oct	58 (2.28)	6 (0.24)	59 (2.32)	10 (0.39)	61 (2.40)	17 (0.67)	63 (2.48)	25 (0.98)	66 (2.60)	42 (1.65)	71 (2.80)	61 (2.40)	71 (2.80)	61 (2.40)	71 (2.80)	61 (2.40)	71 (2.80)	61 (2.40)
Nov	16 (0.63)	1 (0.04)	17 (0.67)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	1 (0.04)	20 (0.79)	2 (0.08)	21 (0.83)	3 (0.12)	21 (0.83)	3 (0.12)	21 (0.83)	3 (0.12)	21 (0.83)	3 (0.12)
Season	974 (38.33)	706 (27.79)	997 (39.24)	747 (29.41)	1018 (40.08)	795 (31.29)	1042 (41.03)	846 (33.32)	1075 (42.33)	931 (36.65)	1102 (43.39)	1000 (39.36)	1102 (43.39)	1000 (39.36)	1102 (43.39)	1000 (39.36)	1102 (43.39)	1000 (39.36)

REGION: 8 Lake Creek-Little Butte Creek
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	17 (0.67)	1 (0.04)	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	2 (0.08)	20 (0.79)	2 (0.08)	21 (0.83)	9 (0.35)	21 (0.83)	9 (0.35)	21 (0.83)	9 (0.35)	21 (0.83)	9 (0.35)
April	83 (3.27)	29 (1.14)	85 (3.35)	38 (1.50)	88 (3.46)	49 (1.93)	91 (3.58)	58 (2.28)	97 (3.82)	71 (2.80)	99 (3.90)	76 (2.99)	99 (3.90)	76 (2.99)	99 (3.90)	76 (2.99)	99 (3.90)	76 (2.99)
May	140 (5.51)	90 (3.54)	142 (5.59)	98 (3.86)	144 (5.67)	106 (4.17)	148 (5.83)	117 (4.61)	152 (5.98)	132 (5.20)	157 (6.18)	142 (5.99)	157 (6.18)	142 (5.99)	157 (6.18)	142 (5.99)	157 (6.18)	142 (5.99)
June	162 (6.38)	133 (5.24)	165 (6.50)	140 (5.51)	168 (6.61)	148 (5.83)	170 (6.69)	157 (6.18)	176 (6.93)	170 (6.69)	180 (7.09)	178 (7.01)	180 (7.09)	178 (7.01)	180 (7.09)	178 (7.01)	180 (7.09)	178 (7.01)
Season	402 (15.83)	253 (9.96)	411 (16.19)	277 (10.91)	419 (16.49)	304 (11.97)	429 (16.89)	334 (13.15)	445 (17.52)	375 (14.77)	457 (18.00)	405 (15.94)	457 (18.00)	405 (15.94)	457 (18.00)	405 (15.94)	457 (18.00)	405 (15.94)

REGION: 8 Lake Creek-Little Butte Creek
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR in.	crop in.	ET mm	Net IRR in.	crop in.	ET mm	Net IRR in.	crop in.	ET mm	Net IRR in.	crop in.	ET mm	Net IRR in.	crop in.	ET mm	Net IRR in.	crop in.
March	40 (1.57)	2 (0.08)	44 (1.73)	33 (0.12)	45 (1.77)	3 (0.12)	47 (1.85)	4 (0.16)	50 (1.97)	11 (0.43)	51 (2.01)	26 (1.02)						
April	78 (3.07)	25 (0.98)	81 (3.19)	33 (1.30)	85 (3.35)	44 (1.73)	88 (3.46)	53 (2.09)	91 (3.58)	66 (2.60)	93 (3.66)	71 (2.80)						
May	125 (4.92)	77 (3.03)	127 (5.00)	85 (3.35)	129 (5.08)	92 (3.62)	132 (5.20)	101 (3.98)	136 (5.35)	117 (4.61)	140 (5.51)	126 (4.96)						
June	167 (6.57)	136 (5.35)	170 (6.69)	144 (5.67)	172 (6.77)	153 (6.02)	174 (6.85)	162 (6.38)	181 (7.13)	174 (6.85)	184 (7.24)	183 (7.20)						
July	204 (8.03)	202 (7.95)	206 (8.11)	205 (8.07)	208 (8.19)	208 (8.19)	213 (8.39)	211 (8.31)	219 (8.62)	217 (8.54)	223 (8.78)	221 (8.70)						
Aug	169 (6.65)	163 (6.42)	173 (6.81)	167 (6.57)	176 (6.93)	172 (6.77)	179 (7.05)	177 (6.97)	182 (7.17)	182 (7.17)	186 (7.32)	184 (7.24)						
Sep	117 (4.61)	94 (3.70)	120 (4.72)	99 (3.90)	123 (4.84)	105 (4.13)	126 (4.96)	112 (4.41)	130 (5.12)	120 (4.72)	133 (5.24)	125 (4.92)						
Oct	58 (2.28)	6 (0.24)	59 (2.32)	10 (0.39)	61 (2.40)	17 (0.67)	63 (2.48)	25 (0.98)	66 (2.60)	42 (1.65)	71 (2.80)	61 (2.40)						
Nov	16 (0.63)	1 (0.04)	17 (0.67)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	1 (0.04)	20 (0.79)	2 (0.08)	21 (0.83)	3 (0.12)						
Season	974 (38.33)	706 (27.79)	997 (39.24)	747 (29.41)	1018 (40.08)	795 (31.29)	1042 (41.03)	846 (33.32)	1075 (42.33)	931 (36.65)	1102 (43.39)	1000 (39.36)						

REGION: 9 Hood River Valley
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
April	60 (2.36)	27 (1.06)	61 (2.40)	32 (1.26)	63 (2.48)	40 (1.57)	65 (2.56)	45 (1.77)	66 (2.60)	50 (1.97)	67 (2.64)	57 (2.24)						
May	124 (4.88)	90 (3.54)	126 (4.96)	97 (3.82)	128 (5.04)	104 (4.09)	132 (5.20)	111 (4.37)	136 (5.35)	118 (4.65)	138 (5.43)	124 (4.88)						
June	141 (5.55)	121 (4.76)	142 (5.59)	127 (5.00)	143 (5.63)	132 (5.20)	148 (5.83)	137 (5.39)	152 (5.98)	144 (5.67)	153 (6.02)	149 (5.87)						
July	171 (6.73)	166 (6.54)	172 (6.77)	169 (6.65)	173 (6.81)	172 (6.77)	174 (6.85)	174 (6.85)	179 (7.05)	178 (7.01)	181 (7.13)	181 (7.13)						
Aug	142 (5.59)	134 (5.28)	144 (5.67)	137 (5.39)	145 (5.71)	140 (5.51)	147 (5.79)	143 (5.63)	152 (5.98)	150 (5.91)	154 (6.06)	154 (6.06)						
Sep	99 (3.90)	75 (2.95)	101 (3.98)	81 (3.19)	103 (4.06)	88 (3.46)	104 (4.09)	95 (3.74)	106 (4.17)	101 (3.98)	108 (4.25)	104 (4.09)						
Season	737 (29.01)	613 (24.13)	746 (29.37)	643 (25.31)	755 (29.73)	676 (26.60)	770 (30.32)	705 (27.75)	791 (31.13)	741 (29.19)	801 (31.53)	769 (30.27)						

REGION: 9 Hood River Valley
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.	
March	41 (1.61)	2 (0.08)		42 (1.65)	2 (0.08)		43 (1.69)	2 (0.08)		45 (1.77)	3 (0.12)		48 (1.89)	12 (0.47)		51 (2.01)	23 (0.91)	
April	87 (3.43)	40 (1.57)		91 (3.58)	48 (1.89)		95 (3.74)	58 (2.28)		97 (3.82)	66 (2.60)		98 (3.86)	73 (2.87)		101 (3.98)	83 (3.27)	
May	148 (5.83)	112 (4.41)		150 (5.91)	119 (4.69)		153 (6.02)	125 (4.92)		158 (6.22)	132 (5.20)		161 (6.34)	142 (5.59)		163 (6.42)	149 (5.87)	
June	183 (7.20)	158 (6.22)		186 (7.32)	164 (6.46)		188 (7.40)	171 (6.73)		190 (7.48)	178 (7.01)		198 (7.80)	187 (7.36)		200 (7.87)	194 (7.64)	
July	226 (8.90)	219 (8.62)		228 (8.98)	222 (8.74)		229 (9.02)	226 (8.90)		230 (9.06)	230 (9.06)		237 (9.33)	237 (9.33)		240 (9.45)	240 (9.45)	
Aug	188 (7.40)	177 (6.97)		190 (7.48)	183 (7.20)		192 (7.56)	187 (7.36)		195 (7.68)	191 (7.52)		201 (7.91)	200 (7.87)		204 (8.03)	204 (8.03)	
Sep	125 (4.92)	97 (3.82)		127 (5.00)	104 (4.09)		130 (5.12)	112 (4.41)		131 (5.16)	120 (4.72)		134 (5.28)	128 (5.04)		139 (5.47)	131 (5.16)	
Oct	56 (2.20)	5 (0.20)		57 (2.24)	6 (0.24)		58 (2.28)	11 (0.43)		60 (2.36)	32 (1.26)		62 (2.44)	39 (1.54)		63 (2.48)	57 (2.24)	
Nov	11 (0.43)	0 (0.00)		14 (0.55)	0 (0.00)		15 (0.59)	0 (0.00)		15 (0.59)	0 (0.00)		16 (0.63)	0 (0.00)		17 (0.67)	0 (0.00)	
Season	1065 (41.92)	810 (31.89)		1085 (42.71)	848 (33.39)		1103 (43.42)	892 (35.11)		1121 (44.14)	952 (37.49)		1155 (45.48)	1018 (40.07)		1178 (46.38)	1081 (42.57)	

REGION: 9 Hood River Valley
CROP: Berries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.	
May	21 (0.83)	14 (0.55)		22 (0.87)	15 (0.59)		22 (0.87)	17 (0.67)		22 (0.87)	19 (0.75)		23 (0.91)	21 (0.83)		23 (0.91)	22 (0.87)	
June	83 (3.27)	65 (2.56)		84 (3.31)	71 (2.80)		85 (3.35)	75 (2.95)		87 (3.43)	79 (3.11)		88 (3.46)	84 (3.31)		89 (3.50)	87 (3.43)	
July	123 (4.84)	120 (4.72)		124 (4.88)	122 (4.80)		126 (4.96)	124 (4.88)		128 (5.04)	126 (4.96)		130 (5.12)	130 (5.12)		132 (5.20)	132 (5.20)	
Aug	110 (4.33)	102 (4.02)		111 (4.37)	106 (4.17)		112 (4.41)	109 (4.29)		113 (4.45)	112 (4.41)		117 (4.61)	115 (4.53)		119 (4.69)	119 (4.69)	
Sep	77 (3.03)	51 (2.01)		78 (3.07)	59 (2.32)		79 (3.11)	64 (2.52)		80 (3.15)	71 (2.80)		82 (3.23)	78 (3.07)		83 (3.27)	80 (3.15)	
Oct	32 (1.26)	2 (0.08)		32 (1.26)	3 (0.12)		34 (1.34)	3 (0.12)		35 (1.38)	15 (0.59)		36 (1.42)	22 (0.87)		37 (1.46)	32 (1.26)	
Season	446 (17.56)	354 (13.94)		451 (17.76)	376 (14.80)		458 (18.04)	392 (15.43)		465 (18.32)	422 (16.62)		476 (18.75)	450 (17.73)		483 (19.03)	472 (18.60)	

REGION: 9 Hood River Valley
CROP: Cherries

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.
March	41 (1.61)	2 (0.08)	42 (1.65)	2 (0.08)	43 (1.69)	2 (0.08)	45 (1.77)	3 (0.12)	48 (1.89)	12 (0.47)	51 (2.01)	23 (0.91)	51 (2.01)	23 (0.91)	51 (2.01)	23 (0.91)	51 (2.01)	23 (0.91)
April	87 (3.43)	40 (1.57)	91 (3.58)	48 (1.89)	95 (3.74)	58 (2.28)	97 (3.82)	66 (2.60)	98 (3.86)	73 (2.87)	101 (3.98)	83 (3.27)	101 (3.98)	83 (3.27)	101 (3.98)	83 (3.27)	101 (3.98)	83 (3.27)
May	148 (5.83)	112 (4.41)	150 (5.91)	119 (4.69)	153 (6.02)	125 (4.92)	158 (6.22)	132 (5.20)	161 (6.34)	142 (5.59)	163 (6.42)	149 (5.87)	163 (6.42)	149 (5.87)	163 (6.42)	149 (5.87)	163 (6.42)	149 (5.87)
June	183 (7.20)	158 (6.22)	186 (7.32)	164 (6.46)	188 (7.40)	171 (6.73)	190 (7.48)	178 (7.01)	198 (7.80)	187 (7.36)	200 (7.87)	194 (7.64)	200 (7.87)	194 (7.64)	200 (7.87)	194 (7.64)	200 (7.87)	194 (7.64)
July	226 (8.90)	219 (8.62)	228 (8.98)	222 (8.74)	229 (9.02)	226 (8.90)	230 (9.06)	230 (9.06)	237 (9.33)	237 (9.33)	240 (9.45)	240 (9.45)	237 (9.33)	237 (9.33)	240 (9.45)	240 (9.45)	237 (9.33)	237 (9.33)
Aug	188 (7.40)	177 (6.97)	190 (7.48)	183 (7.20)	192 (7.56)	187 (7.36)	195 (7.88)	191 (7.52)	201 (7.91)	200 (7.87)	204 (8.03)	204 (8.03)	201 (7.91)	200 (7.87)	204 (8.03)	204 (8.03)	201 (7.91)	200 (7.87)
Sep	125 (4.92)	97 (3.82)	127 (5.00)	104 (4.09)	130 (5.12)	112 (4.41)	131 (5.16)	120 (4.72)	134 (5.28)	128 (5.04)	139 (5.47)	131 (5.16)	134 (5.28)	128 (5.04)	139 (5.47)	131 (5.16)	134 (5.28)	128 (5.04)
Oct	56 (2.20)	5 (0.20)	57 (2.24)	6 (0.24)	58 (2.28)	11 (0.43)	60 (2.36)	32 (1.26)	62 (2.44)	39 (1.54)	63 (2.48)	57 (2.24)	62 (2.44)	39 (1.54)	63 (2.48)	57 (2.24)	62 (2.44)	39 (1.54)
Nov	11 (0.43)	0 (0.00)	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)
Season	1065 (41.92)	810 (31.89)	1085 (42.71)	848 (33.39)	1103 (43.42)	892 (35.11)	1121 (44.14)	952 (37.49)	1155 (45.48)	1018 (40.07)	1178 (46.38)	1081 (42.57)	1155 (45.48)	1018 (40.07)	1178 (46.38)	1081 (42.57)	1178 (46.38)	1081 (42.57)

REGION: 9 Hood River Valley
CROP: Corn (Field)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.	ET crop mm	Net IRR in.
May	60 (2.36)	36 (1.42)	61 (2.40)	40 (1.57)	61 (2.40)	45 (1.77)	62 (2.44)	51 (2.01)	63 (2.48)	57 (2.24)	64 (2.52)	59 (2.32)	63 (2.48)	57 (2.24)	64 (2.52)	59 (2.32)	64 (2.52)	59 (2.32)
June	125 (4.92)	106 (4.17)	127 (5.00)	112 (4.41)	129 (5.08)	116 (4.57)	133 (5.24)	121 (4.76)	135 (5.31)	127 (5.00)	136 (5.35)	132 (5.20)	135 (5.31)	127 (5.00)	136 (5.35)	132 (5.20)	136 (5.35)	132 (5.20)
July	204 (8.03)	198 (7.80)	206 (8.11)	202 (7.95)	207 (8.15)	207 (8.15)	209 (8.23)	209 (8.23)	215 (8.46)	214 (8.43)	218 (8.58)	217 (8.54)	215 (8.46)	214 (8.43)	218 (8.58)	217 (8.54)	218 (8.58)	217 (8.54)
Aug	175 (6.89)	164 (6.46)	176 (6.93)	169 (6.65)	178 (7.01)	173 (6.81)	180 (7.09)	177 (6.97)	187 (7.36)	184 (7.24)	190 (7.48)	187 (7.36)	187 (7.36)	184 (7.24)	190 (7.48)	187 (7.36)	190 (7.48)	187 (7.36)
Sep	90 (3.54)	65 (2.56)	91 (3.58)	73 (2.87)	93 (3.66)	78 (3.07)	94 (3.70)	85 (3.35)	96 (3.78)	91 (3.58)	100 (3.94)	94 (3.70)	96 (3.78)	91 (3.58)	100 (3.94)	94 (3.70)	100 (3.94)	94 (3.70)
Season	654 (25.74)	569 (22.41)	661 (26.02)	596 (23.45)	668 (26.30)	619 (24.37)	678 (26.70)	643 (25.32)	696 (27.39)	673 (26.49)	708 (27.87)	689 (27.12)	696 (27.39)	673 (26.49)	708 (27.87)	689 (27.12)	708 (27.87)	689 (27.12)

REGION: 9 Hood River Valley
CROP: Corn (Sweet)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	35 (1.38)	21 (0.83)	35 (1.38)	24 (0.94)	36 (1.42)	26 (1.02)	36 (1.42)	30 (1.18)	37 (1.46)	32 (1.26)	37 (1.46)	32 (1.26)	37 (1.46)	34 (1.34)	37 (1.46)	34 (1.34)	37 (1.46)	34 (1.34)
June	103 (4.06)	85 (3.35)	106 (4.17)	91 (3.58)	108 (4.25)	96 (3.78)	110 (4.33)	100 (3.94)	112 (4.41)	106 (4.17)	113 (4.45)	110 (4.33)	113 (4.45)	110 (4.33)	113 (4.45)	110 (4.33)	113 (4.45)	110 (4.33)
July	192 (7.56)	187 (7.36)	194 (7.64)	191 (7.52)	195 (7.68)	194 (7.64)	197 (7.76)	197 (7.76)	202 (7.95)	201 (7.91)	205 (8.07)	205 (8.07)	205 (8.07)	205 (8.07)	205 (8.07)	205 (8.07)	205 (8.07)	205 (8.07)
Aug	175 (6.89)	164 (6.46)	176 (6.93)	169 (6.65)	178 (7.01)	173 (6.81)	180 (7.09)	177 (6.97)	187 (7.36)	184 (7.24)	190 (7.48)	187 (7.36)	190 (7.48)	187 (7.36)	190 (7.48)	187 (7.36)	190 (7.48)	187 (7.36)
Sep	19 (0.75)	16 (0.63)	19 (0.75)	18 (0.71)	20 (0.79)	18 (0.71)	20 (0.79)	19 (0.75)	20 (0.79)	20 (0.79)	21 (0.83)	20 (0.79)	21 (0.83)	20 (0.79)	21 (0.83)	20 (0.79)	21 (0.83)	20 (0.79)
Season	524 (20.64)	473 (18.63)	530 (20.87)	493 (19.40)	537 (21.15)	507 (19.96)	543 (21.39)	523 (20.60)	558 (21.97)	543 (21.37)	566 (22.29)	556 (21.89)	566 (22.29)	556 (21.89)	566 (22.29)	556 (21.89)	566 (22.29)	556 (21.89)

REGION: 9 Hood River Valley
CROP: Filberts

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	2 (0.08)	42 (1.65)	2 (0.08)	43 (1.69)	2 (0.08)	45 (1.77)	3 (0.12)	48 (1.89)	12 (0.47)	51 (2.01)	23 (0.91)	51 (2.01)	23 (0.91)	51 (2.01)	23 (0.91)	51 (2.01)	23 (0.91)
April	87 (3.43)	40 (1.57)	91 (3.58)	48 (1.89)	95 (3.74)	58 (2.28)	97 (3.82)	66 (2.60)	98 (3.86)	73 (2.87)	101 (3.98)	83 (3.27)	101 (3.98)	83 (3.27)	101 (3.98)	83 (3.27)	101 (3.98)	83 (3.27)
May	148 (5.83)	112 (4.41)	150 (5.91)	119 (4.69)	153 (6.02)	125 (4.92)	158 (6.22)	132 (5.20)	161 (6.34)	142 (5.59)	163 (6.42)	149 (5.87)	163 (6.42)	149 (5.87)	163 (6.42)	149 (5.87)	163 (6.42)	149 (5.87)
June	183 (7.20)	158 (6.22)	186 (7.32)	164 (6.46)	188 (7.40)	171 (6.73)	190 (7.48)	178 (7.01)	198 (7.80)	187 (7.36)	200 (7.87)	194 (7.64)	200 (7.87)	194 (7.64)	200 (7.87)	194 (7.64)	200 (7.87)	194 (7.64)
July	226 (8.90)	219 (8.62)	228 (8.98)	222 (8.74)	229 (9.02)	226 (8.90)	230 (9.06)	230 (9.06)	237 (9.33)	237 (9.33)	240 (9.45)	240 (9.45)	240 (9.45)	240 (9.45)	240 (9.45)	240 (9.45)	240 (9.45)	240 (9.45)
Aug	188 (7.40)	177 (6.97)	190 (7.48)	183 (7.20)	192 (7.56)	187 (7.36)	195 (7.68)	191 (7.52)	201 (7.91)	200 (7.87)	204 (8.03)	204 (8.03)	204 (8.03)	204 (8.03)	204 (8.03)	204 (8.03)	204 (8.03)	204 (8.03)
Sep	125 (4.92)	97 (3.82)	127 (5.00)	104 (4.09)	130 (5.12)	112 (4.41)	131 (5.16)	120 (4.72)	134 (5.28)	128 (5.04)	139 (5.47)	131 (5.16)	139 (5.47)	131 (5.16)	139 (5.47)	131 (5.16)	139 (5.47)	131 (5.16)
Oct	56 (2.20)	5 (0.20)	57 (2.24)	6 (0.24)	58 (2.28)	11 (0.43)	60 (2.36)	32 (1.26)	62 (2.44)	39 (1.54)	63 (2.48)	57 (2.24)	63 (2.48)	57 (2.24)	63 (2.48)	57 (2.24)	63 (2.48)	57 (2.24)
Nov	11 (0.43)	0 (0.00)	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)	17 (0.67)	0 (0.00)
Season	1065 (41.92)	810 (31.89)	1085 (42.71)	848 (33.39)	1103 (43.42)	892 (35.11)	1121 (44.14)	952 (37.49)	1155 (45.48)	1018 (40.07)	1178 (46.38)	1081 (42.57)	1178 (46.38)	1081 (42.57)	1178 (46.38)	1081 (42.57)	1178 (46.38)	1081 (42.57)

REGION: 9 Hood River Valley
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	59 (2.32)	15 (0.59)	60 (2.36)	23 (0.91)	61 (2.40)	30 (1.18)	62 (2.44)	37 (1.46)	63 (2.48)	45 (1.77)	64 (2.52)	54 (2.13)	142 (5.59)	106 (4.17)	144 (5.67)	111 (4.37)	146 (5.75)	119 (4.69)
May	142 (5.59)	106 (4.17)	144 (5.67)	111 (4.37)	146 (5.75)	119 (4.69)	149 (5.87)	127 (5.00)	152 (5.98)	136 (5.35)	156 (6.14)	142 (5.59)	185 (7.28)	148 (5.83)	173 (6.81)	155 (6.10)	174 (6.85)	161 (6.34)
June	171 (6.73)	148 (5.83)	173 (6.81)	155 (6.10)	174 (6.85)	161 (6.34)	180 (7.09)	167 (6.57)	183 (7.20)	175 (6.89)	185 (7.28)	181 (7.13)	199 (7.83)	187 (7.36)	188 (7.40)	185 (7.28)	190 (7.48)	190 (7.48)
July	187 (7.36)	182 (7.17)	188 (7.40)	185 (7.28)	189 (7.44)	188 (7.40)	190 (7.48)	190 (7.48)	196 (7.72)	194 (7.64)	199 (7.83)	198 (7.80)	34 (1.34)	32 (1.26)	34 (1.34)	33 (1.38)	35 (1.42)	35 (1.38)
Aug	34 (1.34)	32 (1.26)	34 (1.34)	33 (1.38)	35 (1.42)	34 (1.34)	36 (1.42)	35 (1.38)	37 (1.46)	36 (1.42)	37 (1.46)	37 (1.46)	593 (23.34)	483 (19.02)	599 (23.58)	507 (19.96)	605 (23.82)	532 (20.95)
Season	593 (23.34)	483 (19.02)	599 (23.58)	507 (19.96)	605 (23.82)	532 (20.95)	617 (24.30)	556 (21.89)	631 (24.84)	586 (23.07)	641 (25.23)	612 (24.11)						

REGION: 9 Hood River Valley
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	27 (1.06)	1 (0.04)	28 (1.10)	1 (0.04)	29 (1.14)	1 (0.04)	30 (1.18)	1 (0.04)	32 (1.26)	2 (0.08)	33 (1.30)	10 (0.39)	77 (3.03)	30 (1.18)	79 (3.11)	37 (1.46)	81 (3.19)	46 (1.81)
April	77 (3.03)	30 (1.18)	79 (3.11)	37 (1.46)	81 (3.19)	46 (1.81)	83 (3.27)	54 (2.13)	85 (3.35)	61 (2.40)	87 (3.43)	72 (2.83)	148 (5.83)	112 (4.41)	150 (5.91)	118 (4.65)	153 (6.02)	125 (4.92)
May	148 (5.83)	112 (4.41)	150 (5.91)	118 (4.65)	153 (6.02)	125 (4.92)	158 (6.22)	133 (5.24)	161 (6.34)	141 (5.55)	163 (6.42)	148 (5.83)	167 (6.57)	147 (5.79)	170 (6.69)	155 (6.10)	175 (6.89)	160 (6.30)
June	167 (6.57)	147 (5.79)	170 (6.69)	155 (6.10)	175 (6.89)	160 (6.30)	177 (6.97)	166 (6.54)	185 (7.28)	174 (6.85)	186 (7.32)	180 (7.09)	76 (2.99)	74 (2.91)	77 (3.03)	76 (2.99)	79 (3.11)	77 (3.03)
July	76 (2.99)	74 (2.91)	77 (3.03)	75 (2.95)	78 (3.07)	76 (2.99)	79 (3.11)	77 (3.03)	81 (3.19)	79 (3.11)	82 (3.23)	81 (3.19)	495 (19.48)	364 (14.33)	504 (19.84)	386 (15.20)	516 (20.31)	408 (16.06)
Season	495 (19.48)	364 (14.33)	504 (19.84)	386 (15.20)	516 (20.31)	408 (16.06)	527 (20.75)	431 (16.98)	544 (21.42)	457 (17.99)	551 (21.70)	491 (19.33)						

REGION: 9 Hood River Valley
CROP: Grapes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
April	43 (1.69)	4 (0.16)	8 (0.31)	45 (1.77)	8 (0.31)	15 (0.59)	46 (1.81)	15 (0.59)	21 (0.83)	47 (1.85)	21 (0.83)	28 (1.10)	48 (1.89)	28 (1.10)	49 (1.93)	36 (1.42)		
May	78 (3.07)	48 (1.89)	53 (2.09)	79 (3.11)	53 (2.09)	59 (2.32)	80 (3.15)	59 (2.32)	64 (2.52)	84 (3.31)	64 (2.52)	73 (2.87)	86 (3.39)	73 (2.87)	87 (3.43)	77 (3.03)		
June	102 (4.02)	83 (3.27)	89 (3.50)	104 (4.09)	89 (3.50)	93 (3.66)	106 (4.17)	93 (3.66)	98 (3.86)	107 (4.21)	98 (3.86)	104 (4.09)	111 (4.37)	104 (4.09)	111 (4.37)	108 (4.25)		
July	125 (4.92)	122 (4.80)	124 (4.88)	126 (4.96)	124 (4.88)	126 (4.96)	127 (5.00)	126 (4.96)	128 (5.04)	128 (5.04)	128 (5.04)	131 (5.16)	132 (5.20)	131 (5.16)	134 (5.28)	134 (5.28)		
Aug	105 (4.13)	96 (3.78)	100 (3.94)	106 (4.17)	100 (3.94)	103 (4.06)	107 (4.21)	103 (4.06)	106 (4.17)	108 (4.25)	106 (4.17)	109 (4.29)	112 (4.41)	109 (4.29)	113 (4.45)	113 (4.45)		
Sep	72 (2.83)	47 (1.85)	56 (2.20)	73 (2.87)	56 (2.20)	60 (2.36)	75 (2.95)	60 (2.36)	66 (2.60)	76 (2.99)	66 (2.60)	72 (2.83)	77 (3.03)	72 (2.83)	78 (3.07)	75 (2.95)		
Oct	33 (1.30)	2 (0.08)	3 (0.12)	34 (1.34)	3 (0.12)	3 (0.12)	34 (1.34)	3 (0.12)	11 (0.43)	37 (1.46)	11 (0.43)	22 (0.87)	38 (1.50)	22 (0.87)	39 (1.54)	32 (1.26)		
Nov	6 (0.24)	0 (0.00)	0 (0.00)	7 (0.28)	0 (0.00)	0 (0.00)	7 (0.28)	0 (0.00)	0 (0.00)	7 (0.28)	0 (0.00)	0 (0.00)	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)		
Season	564 (22.20)	402 (15.83)	433 (17.04)	574 (22.59)	433 (17.04)	459 (18.07)	582 (22.91)	459 (18.07)	494 (19.45)	594 (23.39)	494 (19.45)	539 (21.21)	611 (24.07)	539 (21.21)	619 (24.38)	575 (22.64)		

REGION: 9 Hood River Valley
CROP: Onions

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
April	17 (0.67)	5 (0.20)	7 (0.28)	17 (0.67)	7 (0.28)	10 (0.39)	18 (0.71)	10 (0.39)	12 (0.47)	18 (0.71)	12 (0.47)	14 (0.55)	18 (0.71)	14 (0.55)	18 (0.71)	16 (0.63)		
May	86 (3.39)	59 (2.32)	64 (2.52)	86 (3.39)	64 (2.52)	69 (2.72)	87 (3.43)	69 (2.72)	75 (2.95)	89 (3.50)	75 (2.95)	81 (3.19)	90 (3.54)	81 (3.19)	92 (3.62)	84 (3.31)		
June	128 (5.04)	112 (4.41)	118 (4.65)	130 (5.12)	118 (4.65)	122 (4.80)	132 (5.20)	122 (4.80)	126 (4.96)	136 (5.35)	126 (4.96)	132 (5.20)	139 (5.47)	132 (5.20)	140 (5.51)	137 (5.39)		
July	188 (7.40)	182 (7.17)	185 (7.28)	189 (7.44)	185 (7.28)	188 (7.40)	190 (7.48)	188 (7.40)	191 (7.52)	191 (7.52)	191 (7.52)	197 (7.76)	197 (7.76)	197 (7.76)	200 (7.87)	199 (7.83)		
Aug	158 (6.22)	149 (5.87)	153 (6.02)	160 (6.30)	153 (6.02)	156 (6.14)	161 (6.34)	156 (6.14)	163 (6.42)	163 (6.42)	159 (6.26)	162 (6.38)	169 (6.65)	162 (6.38)	171 (6.73)	169 (6.65)		
Sep	47 (1.85)	36 (1.42)	41 (1.61)	48 (1.89)	41 (1.61)	43 (1.69)	48 (1.89)	43 (1.69)	46 (1.81)	49 (1.93)	46 (1.81)	48 (1.89)	50 (1.97)	48 (1.89)	52 (2.05)	49 (1.93)		
Season	624 (24.57)	543 (21.39)	568 (22.36)	630 (24.81)	568 (22.36)	588 (23.14)	636 (25.05)	588 (23.14)	609 (23.97)	646 (25.43)	609 (23.97)	634 (24.97)	663 (26.10)	634 (24.97)	673 (26.49)	654 (25.74)		

REGION: 9 Hood River Valley
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	19 (0.75)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	1 (0.04)	21 (0.83)	1 (0.04)	21 (0.83)	1 (0.04)	22 (0.87)	9 (0.35)	24 (0.94)	13 (0.51)	24 (0.94)	13 (0.51)	24 (0.94)	13 (0.51)
April	89 (3.50)	41 (1.61)	93 (3.66)	50 (1.97)	95 (3.74)	61 (2.40)	96 (3.78)	68 (2.68)	96 (3.78)	68 (2.68)	99 (3.90)	75 (2.95)	103 (4.06)	86 (3.39)	103 (4.06)	86 (3.39)	103 (4.06)	86 (3.39)
May	133 (5.24)	98 (3.86)	135 (5.31)	103 (4.06)	137 (5.39)	110 (4.33)	142 (5.59)	118 (4.65)	142 (5.59)	118 (4.65)	145 (5.71)	126 (4.96)	146 (5.75)	132 (5.20)	146 (5.75)	132 (5.20)	146 (5.75)	132 (5.20)
June	150 (5.91)	131 (5.16)	153 (6.02)	137 (5.39)	155 (6.10)	142 (5.59)	158 (6.22)	147 (5.79)	158 (6.22)	147 (5.79)	163 (6.42)	154 (6.06)	164 (6.46)	159 (6.26)	164 (6.46)	159 (6.26)	164 (6.46)	159 (6.26)
July	182 (7.17)	177 (6.97)	183 (7.20)	181 (7.13)	184 (7.24)	184 (7.24)	185 (7.28)	185 (7.28)	185 (7.28)	185 (7.28)	191 (7.52)	191 (7.52)	194 (7.64)	194 (7.64)	194 (7.64)	194 (7.64)	194 (7.64)	194 (7.64)
Aug	152 (5.98)	144 (5.67)	154 (6.06)	147 (5.79)	155 (6.10)	150 (5.91)	157 (6.18)	154 (6.06)	157 (6.18)	154 (6.06)	162 (6.38)	161 (6.34)	165 (6.50)	165 (6.50)	165 (6.50)	165 (6.50)	165 (6.50)	165 (6.50)
Sep	106 (4.17)	81 (3.19)	108 (4.25)	88 (3.46)	110 (4.33)	95 (3.74)	112 (4.41)	102 (4.02)	112 (4.41)	102 (4.02)	114 (4.49)	108 (4.25)	116 (4.57)	112 (4.41)	116 (4.57)	112 (4.41)	116 (4.57)	112 (4.41)
Oct	58 (2.28)	5 (0.20)	59 (2.32)	6 (0.24)	62 (2.44)	18 (0.71)	65 (2.56)	36 (1.42)	65 (2.56)	36 (1.42)	66 (2.60)	45 (1.77)	68 (2.68)	54 (2.13)	68 (2.68)	54 (2.13)	68 (2.68)	54 (2.13)
Season	889 (35.00)	678 (26.70)	904 (35.57)	713 (28.08)	918 (36.13)	761 (29.96)	936 (36.85)	811 (31.94)	936 (36.85)	811 (31.94)	962 (37.89)	869 (34.20)	980 (38.60)	915 (36.04)	962 (37.89)	869 (34.20)	980 (38.60)	915 (36.04)

REGION: 9 Hood River Valley
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	2 (0.08)	42 (1.65)	2 (0.08)	43 (1.69)	2 (0.08)	45 (1.77)	3 (0.12)	45 (1.77)	3 (0.12)	48 (1.89)	12 (0.47)	51 (2.01)	23 (0.91)	48 (1.89)	12 (0.47)	51 (2.01)	23 (0.91)
April	84 (3.31)	36 (1.42)	86 (3.39)	43 (1.69)	89 (3.50)	54 (2.13)	91 (3.58)	63 (2.48)	91 (3.58)	63 (2.48)	93 (3.66)	69 (2.72)	95 (3.74)	79 (3.11)	93 (3.66)	69 (2.72)	95 (3.74)	79 (3.11)
May	133 (5.24)	99 (3.90)	134 (5.28)	105 (4.13)	137 (5.39)	112 (4.41)	143 (5.63)	119 (4.69)	143 (5.63)	119 (4.69)	147 (5.79)	128 (5.04)	148 (5.83)	134 (5.28)	147 (5.79)	128 (5.04)	148 (5.83)	134 (5.28)
June	168 (6.61)	145 (5.71)	170 (6.69)	153 (6.02)	172 (6.77)	158 (6.22)	174 (6.85)	164 (6.46)	174 (6.85)	164 (6.46)	182 (7.17)	171 (6.73)	183 (7.20)	177 (6.97)	182 (7.17)	171 (6.73)	183 (7.20)	177 (6.97)
July	208 (8.19)	200 (7.87)	209 (8.23)	204 (8.03)	210 (8.27)	207 (8.15)	211 (8.31)	211 (8.31)	211 (8.31)	211 (8.31)	218 (8.58)	217 (8.54)	221 (8.70)	220 (8.66)	218 (8.58)	217 (8.54)	221 (8.70)	220 (8.66)
Aug	173 (6.81)	162 (6.38)	174 (6.85)	167 (6.57)	176 (6.93)	171 (6.73)	178 (7.01)	175 (6.89)	178 (7.01)	175 (6.89)	185 (7.28)	182 (7.17)	188 (7.40)	185 (7.28)	185 (7.28)	182 (7.17)	188 (7.40)	185 (7.28)
Sep	114 (4.49)	87 (3.43)	116 (4.57)	96 (3.78)	119 (4.69)	103 (4.06)	120 (4.72)	109 (4.29)	120 (4.72)	109 (4.29)	122 (4.80)	116 (4.57)	124 (4.88)	119 (4.69)	122 (4.80)	116 (4.57)	124 (4.88)	119 (4.69)
Oct	52 (2.05)	4 (0.16)	53 (2.09)	5 (0.20)	54 (2.13)	10 (0.39)	58 (2.28)	28 (1.10)	58 (2.28)	28 (1.10)	59 (2.32)	36 (1.42)	61 (2.40)	48 (1.89)	59 (2.32)	36 (1.42)	61 (2.40)	48 (1.89)
Nov	11 (0.43)	0 (0.00)	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)
Season	984 (38.74)	735 (28.95)	998 (39.30)	775 (30.50)	1015 (39.96)	817 (32.17)	1035 (40.74)	872 (34.34)	1035 (40.74)	872 (34.34)	1070 (42.12)	931 (36.66)	1088 (42.83)	985 (38.79)	1070 (42.12)	931 (36.66)	1088 (42.83)	985 (38.79)

REGION: 9 Hood River Valley
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
April	38 (1.50)	9 (0.35)	39 (1.54)	14 (0.55)	39 (1.54)	20 (0.79)	40 (1.57)	23 (0.91)	41 (1.61)	28 (1.10)	42 (1.65)	36 (1.42)						
May	135 (5.31)	99 (3.90)	137 (5.39)	104 (4.09)	139 (5.47)	113 (4.45)	142 (5.59)	121 (4.76)	146 (5.75)	128 (5.04)	148 (5.83)	134 (5.28)						
June	171 (6.73)	148 (5.83)	173 (6.81)	155 (6.10)	175 (6.89)	161 (6.34)	177 (6.97)	166 (6.54)	185 (7.28)	174 (6.85)	186 (7.32)	180 (7.09)						
July	161 (6.34)	156 (6.14)	162 (6.38)	158 (6.22)	163 (6.42)	161 (6.34)	163 (6.42)	163 (6.42)	168 (6.61)	168 (6.61)	171 (6.73)	171 (6.73)						
Season	505 (19.88)	412 (16.22)	511 (20.12)	431 (16.96)	516 (20.32)	455 (17.92)	522 (20.55)	473 (18.63)	540 (21.25)	498 (19.60)	547 (21.53)	521 (20.52)						

REGION: 9 Hood River Valley
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR	ET crop	Net IRR
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.
March	41 (1.61)	2 (0.08)	42 (1.65)	2 (0.08)	43 (1.69)	2 (0.08)	45 (1.77)	3 (0.12)	48 (1.89)	12 (0.47)	51 (2.01)	23 (0.91)						
April	84 (3.31)	36 (1.42)	86 (3.39)	43 (1.69)	89 (3.50)	54 (2.13)	91 (3.58)	63 (2.48)	93 (3.66)	69 (2.72)	95 (3.74)	79 (3.11)						
May	133 (5.24)	99 (3.90)	134 (5.28)	105 (4.13)	137 (5.39)	112 (4.41)	143 (5.63)	119 (4.69)	147 (5.79)	128 (5.04)	148 (5.83)	134 (5.28)						
June	168 (6.61)	145 (5.71)	170 (6.69)	153 (6.02)	172 (6.77)	158 (6.22)	174 (6.85)	164 (6.46)	182 (7.17)	171 (6.73)	183 (7.20)	177 (6.97)						
July	208 (8.19)	200 (7.87)	209 (8.23)	204 (8.03)	210 (8.27)	207 (8.15)	211 (8.31)	211 (8.31)	218 (8.58)	217 (8.54)	221 (8.70)	220 (8.66)						
Aug	173 (6.81)	162 (6.38)	174 (6.85)	167 (6.57)	176 (6.93)	171 (6.73)	178 (7.01)	175 (6.89)	185 (7.28)	182 (7.17)	188 (7.40)	185 (7.28)						
Sep	114 (4.49)	87 (3.43)	116 (4.57)	96 (3.78)	119 (4.69)	103 (4.06)	120 (4.72)	109 (4.29)	122 (4.80)	116 (4.57)	124 (4.88)	119 (4.69)						
Oct	52 (2.05)	4 (0.16)	53 (2.09)	5 (0.20)	54 (2.13)	10 (0.39)	58 (2.28)	28 (1.10)	59 (2.32)	36 (1.42)	61 (2.40)	48 (1.89)						
Nov	11 (0.43)	0 (0.00)	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)	15 (0.59)	0 (0.00)	16 (0.63)	0 (0.00)	17 (0.67)	0 (0.00)						
Season	984 (38.74)	735 (28.95)	998 (39.30)	775 (30.50)	1015 (39.96)	817 (32.17)	1035 (40.74)	872 (34.34)	1070 (42.12)	931 (36.66)	1088 (42.83)	985 (38.79)						

REGION: 10 Columbia River above Hood River
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	72 (2.83)	64 (2.52)	73 (2.87)	67 (2.64)	74 (2.91)	70 (2.76)	75 (2.95)	73 (2.87)	79 (3.11)	75 (2.95)	80 (3.15)	77 (3.03)						
May	150 (5.91)	142 (5.59)	154 (6.06)	145 (5.71)	156 (6.14)	149 (5.87)	159 (6.26)	151 (5.94)	163 (6.42)	155 (6.10)	165 (6.50)	159 (6.26)						
June	170 (6.69)	157 (6.18)	172 (6.77)	162 (6.38)	175 (6.89)	167 (6.57)	180 (7.09)	173 (6.81)	185 (7.28)	181 (7.13)	189 (7.44)	184 (7.24)						
July	200 (7.87)	198 (7.80)	202 (7.95)	200 (7.87)	204 (8.03)	202 (7.95)	208 (8.19)	206 (8.11)	212 (8.35)	209 (8.23)	215 (8.46)	214 (8.43)						
Aug	169 (6.65)	166 (6.54)	172 (6.77)	170 (6.69)	174 (6.85)	174 (6.85)	180 (7.09)	179 (7.05)	187 (7.36)	185 (7.28)	190 (7.48)	188 (7.40)						
Sep	116 (4.57)	108 (4.25)	118 (4.65)	111 (4.37)	120 (4.72)	114 (4.49)	121 (4.76)	118 (4.65)	125 (4.92)	122 (4.80)	129 (5.08)	127 (5.00)						
Season	877 (34.52)	835 (32.88)	891 (35.07)	855 (33.66)	903 (35.54)	876 (34.49)	923 (36.34)	900 (35.43)	951 (37.44)	927 (36.49)	968 (38.11)	949 (37.36)						

REGION: 10 Columbia River above Hood River
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	50 (1.97)	32 (1.26)	51 (2.01)	35 (1.38)	54 (2.13)	37 (1.46)	56 (2.20)	41 (1.61)	57 (2.24)	48 (1.89)	58 (2.28)	52 (2.05)						
April	107 (4.21)	95 (3.74)	109 (4.29)	99 (3.90)	110 (4.33)	104 (4.09)	112 (4.41)	108 (4.25)	118 (4.65)	112 (4.41)	120 (4.72)	115 (4.53)						
May	178 (7.01)	171 (6.73)	183 (7.20)	175 (6.89)	186 (7.32)	179 (7.05)	189 (7.44)	181 (7.13)	194 (7.64)	185 (7.28)	197 (7.76)	189 (7.44)						
June	221 (8.70)	208 (8.19)	225 (8.86)	214 (8.43)	228 (8.98)	219 (8.62)	235 (9.25)	226 (8.90)	242 (9.53)	236 (9.29)	247 (9.72)	241 (9.49)						
July	264 (10.39)	262 (10.31)	267 (10.51)	265 (10.43)	270 (10.63)	269 (10.59)	275 (10.83)	273 (10.75)	278 (10.94)	278 (10.94)	284 (11.18)	284 (11.18)						
Aug	224 (8.82)	219 (8.62)	227 (8.94)	222 (8.74)	230 (9.06)	228 (8.98)	238 (9.37)	236 (9.29)	247 (9.72)	244 (9.61)	252 (9.92)	250 (9.84)						
Sep	146 (5.75)	138 (5.43)	148 (5.83)	142 (5.59)	150 (5.91)	145 (5.71)	151 (5.94)	149 (5.87)	156 (6.14)	155 (6.10)	161 (6.34)	160 (6.30)						
Oct	68 (2.68)	51 (2.01)	70 (2.76)	56 (2.20)	71 (2.80)	61 (2.40)	72 (2.83)	65 (2.56)	74 (2.91)	69 (2.72)	76 (2.99)	74 (2.91)						
Nov	15 (0.59)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	7 (0.28)	20 (0.79)	9 (0.35)						
Season	1273 (50.12)	1177 (46.33)	1297 (51.07)	1209 (47.60)	1317 (51.87)	1243 (48.94)	1347 (53.02)	1280 (50.40)	1386 (54.56)	1334 (52.52)	1415 (55.70)	1374 (54.09)						

REGION: 10 Columbia River above Hood River
CROP: Berries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	41 (1.61)	38 (1.50)	42 (1.65)	39 (1.54)	42 (1.65)	40 (1.57)	43 (1.69)	41 (1.61)	43 (1.69)	43 (1.69)	43 (1.69)	43 (1.69)	43 (1.69)	43 (1.69)	43 (1.69)	43 (1.69)	43 (1.69)	43 (1.69)
June	101 (3.98)	91 (3.58)	102 (4.02)	95 (3.74)	103 (4.06)	98 (3.86)	105 (4.13)	102 (4.02)	110 (4.33)	105 (4.13)	110 (4.33)	105 (4.13)	110 (4.33)	105 (4.13)	111 (4.37)	108 (4.25)	111 (4.37)	108 (4.25)
July	147 (5.79)	146 (5.75)	148 (5.83)	148 (5.83)	150 (5.91)	149 (5.87)	152 (5.98)	151 (5.94)	154 (6.06)	154 (6.06)	154 (6.06)	154 (6.06)	154 (6.06)	154 (6.06)	158 (6.22)	157 (6.18)	158 (6.22)	157 (6.18)
Aug	131 (5.16)	129 (5.08)	133 (5.24)	131 (5.16)	134 (5.28)	134 (5.28)	139 (5.47)	137 (5.39)	144 (5.67)	143 (5.63)	144 (5.67)	143 (5.63)	147 (5.79)	147 (5.79)	147 (5.79)	147 (5.79)	147 (5.79)	147 (5.79)
Sep	90 (3.54)	83 (3.27)	92 (3.62)	85 (3.35)	93 (3.66)	87 (3.43)	94 (3.70)	90 (3.54)	97 (3.82)	95 (3.74)	97 (3.82)	95 (3.74)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)	99 (3.90)	98 (3.86)
Oct	52 (2.05)	37 (1.46)	53 (2.09)	40 (1.57)	55 (2.17)	44 (1.73)	56 (2.20)	48 (1.89)	57 (2.24)	52 (2.05)	57 (2.24)	52 (2.05)	58 (2.28)	56 (2.20)	58 (2.28)	56 (2.20)	58 (2.28)	56 (2.20)
Nov	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	4 (0.16)	1 (0.04)	4 (0.16)	3 (0.12)	4 (0.16)	3 (0.12)	4 (0.16)	3 (0.12)	4 (0.16)	3 (0.12)	4 (0.16)	3 (0.12)
Season	565 (22.25)	524 (20.64)	573 (22.57)	538 (21.19)	580 (22.85)	552 (21.74)	593 (23.33)	570 (22.43)	609 (23.97)	595 (23.42)	620 (24.41)	612 (24.09)						

REGION: 10 Columbia River above Hood River
CROP: Cherries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	50 (1.97)	32 (1.26)	51 (2.01)	35 (1.38)	54 (2.13)	37 (1.46)	56 (2.20)	41 (1.61)	57 (2.24)	48 (1.89)	58 (2.28)	52 (2.05)						
April	107 (4.21)	95 (3.74)	109 (4.29)	99 (3.90)	110 (4.33)	104 (4.09)	112 (4.41)	108 (4.25)	118 (4.65)	112 (4.41)	120 (4.72)	115 (4.53)						
May	178 (7.01)	171 (6.73)	183 (7.20)	175 (6.89)	186 (7.32)	179 (7.05)	189 (7.44)	181 (7.13)	194 (7.64)	185 (7.28)	197 (7.76)	189 (7.44)						
June	221 (8.70)	208 (8.19)	225 (8.86)	214 (8.43)	228 (8.98)	219 (8.62)	235 (9.25)	226 (8.90)	242 (9.53)	236 (9.29)	247 (9.72)	241 (9.49)						
July	264 (10.39)	262 (10.31)	267 (10.51)	265 (10.43)	270 (10.63)	269 (10.59)	275 (10.83)	273 (10.75)	278 (10.94)	278 (10.94)	284 (11.18)	284 (11.18)						
Aug	224 (8.82)	219 (8.62)	227 (8.94)	222 (8.74)	230 (9.06)	228 (8.98)	238 (9.37)	236 (9.29)	247 (9.72)	244 (9.61)	252 (9.92)	250 (9.84)						
Sep	146 (5.75)	138 (5.43)	148 (5.83)	142 (5.59)	150 (5.91)	145 (5.71)	151 (5.94)	149 (5.87)	156 (6.14)	155 (6.10)	161 (6.34)	160 (6.30)						
Oct	68 (2.68)	51 (2.01)	70 (2.76)	56 (2.20)	71 (2.80)	61 (2.40)	72 (2.83)	65 (2.56)	74 (2.91)	69 (2.72)	76 (2.99)	74 (2.91)						
Nov	15 (0.59)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	7 (0.28)	20 (0.79)	9 (0.35)						
Season	1273 (50.12)	1177 (46.33)	1297 (51.07)	1209 (47.60)	1317 (51.87)	1243 (48.94)	1347 (53.02)	1280 (50.40)	1386 (54.56)	1334 (52.52)	1415 (55.70)	1374 (54.09)						

REGION: 10 Columbia River above Hood River
CROP: Filberts

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	50 (1.97)	32 (1.26)	51 (2.01)	35 (1.38)	54 (2.13)	37 (1.46)	56 (2.20)	41 (1.61)	57 (2.24)	48 (1.89)	58 (2.28)	52 (2.05)						
April	107 (4.21)	95 (3.74)	109 (4.29)	99 (3.90)	110 (4.33)	104 (4.09)	112 (4.41)	108 (4.25)	118 (4.65)	112 (4.41)	120 (4.72)	115 (4.53)						
May	178 (7.01)	171 (6.73)	183 (7.20)	175 (6.89)	186 (7.32)	179 (7.05)	189 (7.44)	181 (7.13)	194 (7.54)	185 (7.28)	197 (7.76)	189 (7.44)						
June	221 (8.70)	208 (8.19)	225 (8.86)	214 (8.43)	228 (8.98)	219 (8.62)	235 (9.25)	226 (8.90)	242 (9.53)	236 (9.29)	247 (9.72)	241 (9.49)						
July	264 (10.39)	262 (10.31)	267 (10.51)	265 (10.43)	270 (10.63)	269 (10.59)	275 (10.83)	273 (10.75)	278 (10.94)	278 (10.94)	284 (11.18)	284 (11.18)						
Aug	224 (8.82)	219 (8.62)	227 (8.94)	222 (8.74)	230 (9.06)	228 (8.98)	238 (9.37)	236 (9.29)	247 (9.72)	244 (9.61)	252 (9.92)	250 (9.84)						
Sep	146 (5.75)	138 (5.43)	148 (5.83)	142 (5.59)	150 (5.91)	145 (5.71)	151 (5.94)	149 (5.87)	156 (6.14)	155 (6.10)	161 (6.34)	160 (6.30)						
Oct	68 (2.68)	51 (2.01)	70 (2.76)	56 (2.20)	71 (2.80)	61 (2.40)	72 (2.83)	65 (2.56)	74 (2.91)	69 (2.72)	76 (2.99)	74 (2.91)						
Nov	15 (0.59)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	7 (0.28)	20 (0.79)	9 (0.35)						
Season	1273 (50.12)	1177 (46.33)	1297 (51.07)	1209 (47.60)	1317 (51.87)	1243 (48.94)	1347 (53.02)	1280 (50.40)	1386 (54.56)	1334 (52.52)	1415 (55.70)	1374 (54.09)						

REGION: 10 Columbia River above Hood River
CROP: Grain (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
April	67 (2.64)	58 (2.28)	69 (2.72)	61 (2.40)	70 (2.76)	64 (2.52)	70 (2.76)	67 (2.64)	72 (2.83)	69 (2.72)	73 (2.87)	72 (2.83)						
May	170 (6.69)	162 (6.38)	174 (6.85)	166 (6.54)	177 (6.97)	169 (6.65)	180 (7.09)	173 (6.81)	185 (7.28)	177 (6.97)	188 (7.40)	180 (7.09)						
June	206 (8.11)	193 (7.60)	210 (8.27)	199 (7.83)	212 (8.35)	204 (8.03)	219 (8.62)	210 (8.27)	225 (8.86)	219 (8.62)	230 (9.06)	224 (8.82)						
July	219 (8.62)	215 (8.46)	221 (8.70)	218 (8.58)	224 (8.82)	221 (8.70)	227 (8.94)	225 (8.86)	232 (9.13)	230 (9.06)	235 (9.25)	235 (9.25)						
Aug	41 (1.61)	41 (1.61)	42 (1.65)	41 (1.61)	42 (1.65)	42 (1.65)	43 (1.69)	43 (1.69)	45 (1.77)	45 (1.77)	46 (1.81)	46 (1.81)						
Season	703 (27.67)	669 (26.33)	716 (28.19)	685 (26.96)	725 (28.55)	700 (27.55)	739 (29.10)	718 (28.27)	759 (29.87)	740 (29.14)	772 (30.39)	757 (29.80)						

REGION: 10 Columbia River above Hood River
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	33 (1.30)	17 (0.67)	33 (1.30)	20 (0.79)	34 (1.34)	22 (0.87)	36 (1.42)	26 (1.02)	37 (1.46)	31 (1.22)	37 (1.46)	31 (1.22)	37 (1.46)	33 (1.30)	37 (1.46)	33 (1.30)	37 (1.46)	33 (1.30)
April	91 (3.58)	80 (3.15)	92 (3.62)	83 (3.27)	93 (3.66)	87 (3.43)	95 (3.74)	91 (3.58)	99 (3.90)	95 (3.74)	99 (3.90)	95 (3.74)	101 (3.98)	97 (3.82)	101 (3.98)	97 (3.82)	101 (3.98)	97 (3.82)
May	178 (7.01)	170 (6.69)	183 (7.20)	174 (6.85)	186 (7.32)	177 (6.97)	189 (7.44)	181 (7.13)	194 (7.64)	185 (7.28)	194 (7.64)	185 (7.28)	197 (7.76)	189 (7.44)	197 (7.76)	189 (7.44)	197 (7.76)	189 (7.44)
June	206 (8.11)	193 (7.60)	210 (8.27)	198 (7.80)	212 (8.35)	203 (7.99)	219 (8.62)	211 (8.31)	225 (8.86)	218 (8.58)	225 (8.86)	218 (8.58)	230 (9.06)	223 (8.78)	230 (9.06)	223 (8.78)	230 (9.06)	223 (8.78)
July	90 (3.54)	90 (3.54)	91 (3.58)	91 (3.58)	92 (3.62)	92 (3.62)	93 (3.66)	93 (3.66)	93 (3.66)	93 (3.66)	93 (3.66)	93 (3.66)	95 (3.74)	95 (3.74)	95 (3.74)	95 (3.74)	97 (3.82)	97 (3.82)
Season	598 (23.54)	550 (21.65)	609 (23.97)	566 (22.29)	617 (24.29)	581 (22.88)	632 (24.88)	602 (23.70)	650 (25.60)	624 (24.56)	662 (26.08)	639 (25.16)						

REGION: 10 Columbia River above Hood River
CROP: Grapes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	52 (2.05)	43 (1.69)	53 (2.09)	46 (1.81)	54 (2.13)	48 (1.89)	55 (2.17)	51 (2.01)	58 (2.28)	54 (2.13)	59 (2.32)	57 (2.24)	59 (2.32)	57 (2.24)	59 (2.32)	57 (2.24)	59 (2.32)	57 (2.24)
May	95 (3.74)	87 (3.43)	97 (3.82)	90 (3.54)	98 (3.86)	92 (3.62)	100 (3.94)	94 (3.70)	103 (4.06)	98 (3.86)	104 (4.09)	100 (3.94)	104 (4.09)	100 (3.94)	104 (4.09)	100 (3.94)	104 (4.09)	100 (3.94)
June	123 (4.84)	113 (4.45)	125 (4.92)	118 (4.65)	127 (5.00)	121 (4.76)	130 (5.12)	125 (4.92)	134 (5.28)	130 (5.12)	137 (5.39)	133 (5.24)	137 (5.39)	133 (5.24)	137 (5.39)	133 (5.24)	137 (5.39)	133 (5.24)
July	147 (5.79)	147 (5.79)	149 (5.87)	149 (5.87)	151 (5.94)	150 (5.91)	152 (5.98)	152 (5.98)	154 (6.06)	154 (6.06)	159 (6.26)	159 (6.26)	159 (6.26)	159 (6.26)	159 (6.26)	159 (6.26)	159 (6.26)	159 (6.26)
Aug	124 (4.88)	122 (4.80)	126 (4.96)	124 (4.88)	128 (5.04)	127 (5.00)	132 (5.20)	131 (5.16)	137 (5.39)	136 (5.35)	140 (5.51)	140 (5.51)	140 (5.51)	140 (5.51)	140 (5.51)	140 (5.51)	140 (5.51)	140 (5.51)
Sep	84 (3.31)	79 (3.11)	86 (3.39)	81 (3.19)	88 (3.46)	83 (3.27)	89 (3.50)	85 (3.35)	91 (3.58)	88 (3.46)	93 (3.66)	91 (3.58)	93 (3.66)	91 (3.58)	93 (3.66)	91 (3.58)	93 (3.66)	91 (3.58)
Oct	41 (1.61)	28 (1.10)	42 (1.65)	30 (1.18)	43 (1.69)	34 (1.34)	44 (1.73)	38 (1.50)	45 (1.77)	42 (1.65)	46 (1.81)	45 (1.77)	46 (1.81)	45 (1.77)	46 (1.81)	45 (1.77)	46 (1.81)	45 (1.77)
Nov	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	8 (0.31)	1 (0.04)	9 (0.35)	1 (0.04)	9 (0.35)	4 (0.16)	9 (0.35)	4 (0.16)	9 (0.35)	4 (0.16)	9 (0.35)	4 (0.16)
Season	673 (26.50)	619 (24.37)	686 (27.01)	638 (25.12)	697 (27.43)	655 (25.79)	710 (27.95)	677 (26.66)	731 (28.77)	703 (27.67)	747 (29.39)	729 (28.70)						

REGION: 10 Columbia River above Hood River
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	5 (0.20)	0 (0.00)	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	12 (0.47)	0 (0.00)	12 (0.47)	0 (0.00)	12 (0.47)	0 (0.00)
Feb	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	15 (0.59)	2 (0.08)	16 (0.63)	4 (0.16)	16 (0.63)	7 (0.28)	16 (0.63)	7 (0.28)	17 (0.67)	13 (0.51)	17 (0.67)	13 (0.51)	17 (0.67)	13 (0.51)
March	23 (0.91)	5 (0.20)	24 (0.94)	8 (0.31)	25 (0.98)	10 (0.39)	27 (1.06)	16 (0.63)	27 (1.06)	21 (0.83)	27 (1.06)	21 (0.83)	28 (1.10)	23 (0.91)	28 (1.10)	23 (0.91)	28 (1.10)	23 (0.91)
April	55 (2.17)	45 (1.77)	55 (2.17)	48 (1.89)	56 (2.20)	51 (2.01)	56 (2.20)	53 (2.09)	58 (2.28)	56 (2.20)	58 (2.28)	56 (2.20)	58 (2.28)	58 (2.28)	58 (2.28)	58 (2.28)	58 (2.28)	58 (2.28)
May	88 (3.46)	78 (3.07)	89 (3.50)	83 (3.27)	90 (3.54)	85 (3.35)	91 (3.58)	87 (3.43)	93 (3.66)	90 (3.54)	93 (3.66)	90 (3.54)	94 (3.70)	92 (3.62)	94 (3.70)	92 (3.62)	94 (3.70)	92 (3.62)
June	138 (5.43)	126 (4.96)	140 (5.51)	131 (5.16)	142 (5.59)	135 (5.31)	145 (5.71)	140 (5.51)	150 (5.91)	145 (5.71)	150 (5.91)	145 (5.71)	153 (6.02)	149 (5.87)	153 (6.02)	149 (5.87)	153 (6.02)	149 (5.87)
July	213 (8.39)	211 (8.31)	215 (8.46)	215 (8.46)	217 (8.54)	217 (8.54)	221 (8.70)	220 (8.66)	224 (8.82)	223 (8.78)	224 (8.82)	223 (8.78)	228 (8.98)	228 (8.98)	228 (8.98)	228 (8.98)	228 (8.98)	228 (8.98)
Aug	203 (7.99)	201 (7.91)	206 (8.11)	205 (8.07)	209 (8.23)	209 (8.23)	214 (8.43)	214 (8.43)	224 (8.82)	223 (8.78)	224 (8.82)	223 (8.78)	229 (9.02)	227 (8.94)	229 (9.02)	227 (8.94)	229 (9.02)	227 (8.94)
Sep	140 (5.51)	131 (5.16)	142 (5.59)	135 (5.31)	145 (5.71)	138 (5.43)	147 (5.79)	141 (5.55)	150 (5.91)	148 (5.83)	150 (5.91)	148 (5.83)	154 (6.06)	153 (6.02)	154 (6.06)	153 (6.02)	154 (6.06)	153 (6.02)
Oct	82 (3.23)	66 (2.60)	83 (3.27)	71 (2.80)	84 (3.31)	76 (2.99)	86 (3.39)	80 (3.15)	90 (3.54)	84 (3.31)	90 (3.54)	84 (3.31)	93 (3.66)	89 (3.50)	93 (3.66)	89 (3.50)	93 (3.66)	89 (3.50)
Nov	20 (0.79)	1 (0.04)	21 (0.83)	1 (0.04)	22 (0.87)	2 (0.08)	25 (0.98)	5 (0.20)	27 (1.06)	13 (0.51)	27 (1.06)	13 (0.51)	27 (1.06)	15 (0.59)	27 (1.06)	15 (0.59)	27 (1.06)	15 (0.59)
Dec	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)
Season	984 (38.75)	865 (34.06)	1000 (39.37)	898 (35.35)	1019 (40.11)	925 (36.41)	1043 (41.06)	960 (37.81)	1075 (42.32)	1010 (39.77)	1075 (42.32)	1010 (39.77)	1099 (43.26)	1047 (41.22)	1099 (43.26)	1047 (41.22)	1099 (43.26)	1047 (41.22)

REGION: 10 Columbia River above Hood River
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	24 (0.94)	17 (0.67)	24 (0.94)	19 (0.75)	25 (0.98)	20 (0.79)	26 (1.02)	22 (0.87)	26 (1.02)	24 (0.94)	26 (1.02)	24 (0.94)	27 (1.06)	25 (0.98)	27 (1.06)	25 (0.98)	27 (1.06)	25 (0.98)
April	109 (4.29)	98 (3.86)	111 (4.37)	102 (4.02)	113 (4.45)	106 (4.17)	115 (4.53)	111 (4.37)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)	123 (4.84)	118 (4.65)	123 (4.84)	118 (4.65)	123 (4.84)	118 (4.65)
May	160 (6.30)	152 (5.98)	165 (6.50)	156 (6.14)	167 (6.57)	160 (6.30)	170 (6.89)	162 (6.38)	174 (6.85)	166 (6.54)	174 (6.85)	166 (6.54)	177 (6.97)	170 (6.69)	177 (6.97)	170 (6.69)	177 (6.97)	170 (6.69)
June	181 (7.13)	169 (6.65)	184 (7.24)	173 (6.81)	188 (7.40)	178 (7.01)	194 (7.64)	185 (7.28)	198 (7.80)	192 (7.56)	198 (7.80)	192 (7.56)	202 (7.95)	196 (7.72)	202 (7.95)	196 (7.72)	202 (7.95)	196 (7.72)
July	214 (8.43)	210 (8.27)	216 (8.50)	213 (8.39)	219 (8.62)	216 (8.50)	222 (8.74)	220 (8.66)	225 (8.86)	224 (8.82)	225 (8.86)	224 (8.82)	230 (9.06)	228 (8.98)	230 (9.06)	228 (8.98)	230 (9.06)	228 (8.98)
Aug	181 (7.13)	178 (7.01)	187 (7.36)	182 (7.17)	189 (7.44)	187 (7.36)	192 (7.56)	192 (7.56)	199 (7.83)	198 (7.80)	199 (7.83)	198 (7.80)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)	203 (7.99)	201 (7.91)
Sep	124 (4.88)	116 (4.57)	126 (4.96)	119 (4.69)	129 (5.08)	121 (4.76)	131 (5.16)	124 (4.88)	133 (5.24)	130 (5.12)	133 (5.24)	130 (5.12)	137 (5.39)	135 (5.31)	137 (5.39)	135 (5.31)	137 (5.39)	135 (5.31)
Oct	71 (2.80)	56 (2.20)	75 (2.87)	61 (2.40)	75 (2.95)	65 (2.56)	77 (3.03)	69 (2.72)	79 (3.11)	72 (2.83)	79 (3.11)	72 (2.83)	80 (3.15)	78 (3.07)	80 (3.15)	78 (3.07)	80 (3.15)	78 (3.07)
Season	1064 (41.90)	996 (39.21)	1086 (42.74)	1025 (40.37)	1105 (43.49)	1053 (41.45)	1127 (44.37)	1085 (42.72)	1155 (45.47)	1121 (44.14)	1155 (45.47)	1121 (44.14)	1179 (46.41)	1151 (45.31)	1179 (46.41)	1151 (45.31)	1179 (46.41)	1151 (45.31)

REGION: 10 Columbia River above Hood River
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	50 (1.97)	32 (1.26)	51 (2.01)	35 (1.38)	54 (2.13)	37 (1.46)	56 (2.20)	41 (1.61)	57 (2.24)	48 (1.89)	58 (2.28)	52 (2.05)						
April	101 (3.98)	90 (3.54)	103 (4.06)	94 (3.70)	104 (4.09)	97 (3.82)	106 (4.17)	101 (3.98)	111 (4.37)	106 (4.17)	113 (4.45)	108 (4.25)						
May	162 (6.38)	154 (6.06)	167 (6.57)	158 (6.22)	169 (6.65)	162 (6.38)	172 (6.77)	164 (6.46)	176 (6.93)	168 (6.61)	179 (7.05)	172 (6.77)						
June	203 (7.99)	190 (7.48)	206 (8.11)	195 (7.68)	209 (8.23)	200 (7.87)	215 (8.46)	208 (8.19)	221 (8.70)	215 (8.46)	226 (8.90)	220 (8.66)						
July	243 (9.57)	240 (9.45)	245 (9.65)	243 (9.57)	248 (9.76)	246 (9.69)	252 (9.92)	250 (9.84)	255 (10.04)	255 (10.04)	261 (10.28)	261 (10.28)						
Aug	206 (8.11)	203 (7.99)	209 (8.23)	207 (8.15)	212 (8.35)	211 (8.31)	219 (8.62)	216 (8.50)	227 (8.94)	224 (8.82)	231 (9.09)	229 (9.02)						
Sep	134 (5.28)	125 (4.92)	135 (5.31)	128 (5.04)	137 (5.39)	131 (5.16)	138 (5.43)	134 (5.28)	143 (5.63)	141 (5.55)	146 (5.75)	146 (5.75)						
Oct	64 (2.52)	48 (1.89)	66 (2.60)	53 (2.09)	67 (2.64)	57 (2.24)	68 (2.68)	61 (2.40)	69 (2.72)	65 (2.56)	72 (2.83)	70 (2.76)						
Nov	15 (0.59)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	7 (0.28)	20 (0.79)	9 (0.35)						
Season	1178 (46.39)	1083 (42.63)	1199 (47.21)	1114 (43.87)	1218 (47.95)	1142 (44.97)	1245 (49.00)	1176 (46.30)	1279 (50.36)	1229 (48.38)	1306 (51.42)	1267 (49.89)						

REGION: 10 Columbia River above Hood River
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	50 (1.97)	32 (1.26)	51 (2.01)	35 (1.38)	54 (2.13)	37 (1.46)	56 (2.20)	41 (1.61)	57 (2.24)	48 (1.89)	58 (2.28)	52 (2.05)						
April	101 (3.98)	90 (3.54)	103 (4.06)	94 (3.70)	104 (4.09)	97 (3.82)	106 (4.17)	101 (3.98)	111 (4.37)	106 (4.17)	113 (4.45)	108 (4.25)						
May	162 (6.38)	154 (6.06)	167 (6.57)	158 (6.22)	169 (6.65)	162 (6.38)	172 (6.77)	164 (6.46)	176 (6.93)	168 (6.61)	179 (7.05)	172 (6.77)						
June	203 (7.99)	190 (7.48)	206 (8.11)	195 (7.68)	209 (8.23)	200 (7.87)	215 (8.46)	208 (8.19)	221 (8.70)	215 (8.46)	226 (8.90)	220 (8.66)						
July	243 (9.57)	240 (9.45)	245 (9.65)	243 (9.57)	248 (9.76)	246 (9.69)	252 (9.92)	250 (9.84)	255 (10.04)	255 (10.04)	261 (10.28)	261 (10.28)						
Aug	206 (8.11)	203 (7.99)	209 (8.23)	207 (8.15)	212 (8.35)	211 (8.31)	219 (8.62)	216 (8.50)	227 (8.94)	224 (8.82)	231 (9.09)	229 (9.02)						
Sep	134 (5.28)	125 (4.92)	135 (5.31)	128 (5.04)	137 (5.39)	131 (5.16)	138 (5.43)	134 (5.28)	143 (5.63)	141 (5.55)	146 (5.75)	146 (5.75)						
Oct	64 (2.52)	48 (1.89)	66 (2.60)	53 (2.09)	67 (2.64)	57 (2.24)	68 (2.68)	61 (2.40)	69 (2.72)	65 (2.56)	72 (2.83)	70 (2.76)						
Nov	15 (0.59)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	19 (0.75)	1 (0.04)	20 (0.79)	7 (0.28)	20 (0.79)	9 (0.35)						
Season	1178 (46.39)	1083 (42.63)	1199 (47.21)	1114 (43.87)	1218 (47.95)	1142 (44.97)	1245 (49.00)	1176 (46.30)	1279 (50.36)	1229 (48.38)	1306 (51.42)	1267 (49.89)						

REGION: 10 Columbia River above Hood River
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	44 (1.73)	36 (1.42)	44 (1.73)	38 (1.50)	45 (1.77)	41 (1.61)	45 (1.77)	41 (1.61)	45 (1.77)	44 (1.73)	46 (1.81)	46 (1.81)	47 (1.85)	47 (1.85)	47 (1.85)	47 (1.85)	47 (1.85)	47 (1.85)
May	89 (3.50)	80 (3.15)	89 (3.50)	83 (3.27)	91 (3.58)	85 (3.35)	91 (3.58)	85 (3.35)	93 (3.66)	87 (3.43)	95 (3.74)	89 (3.50)	96 (3.78)	91 (3.58)	96 (3.78)	91 (3.58)	96 (3.78)	91 (3.58)
June	175 (6.89)	164 (6.46)	178 (7.01)	168 (6.61)	181 (7.13)	173 (6.81)	185 (7.28)	180 (7.09)	185 (7.28)	180 (7.09)	191 (7.52)	187 (7.36)	195 (7.68)	190 (7.48)	195 (7.68)	190 (7.48)	195 (7.68)	190 (7.48)
July	245 (9.65)	243 (9.57)	247 (9.72)	246 (9.69)	250 (9.84)	249 (9.80)	254 (10.00)	253 (9.96)	254 (10.00)	253 (9.96)	257 (10.12)	257 (10.12)	263 (10.35)	263 (10.35)	263 (10.35)	263 (10.35)	263 (10.35)	263 (10.35)
Aug	208 (8.19)	204 (8.03)	211 (8.31)	207 (8.15)	214 (8.43)	213 (8.39)	221 (8.70)	220 (8.66)	221 (8.70)	220 (8.66)	229 (9.02)	227 (8.94)	233 (9.17)	232 (9.13)	233 (9.17)	232 (9.13)	233 (9.17)	232 (9.13)
Sep	123 (4.84)	116 (4.57)	125 (4.92)	119 (4.69)	128 (5.04)	121 (4.76)	130 (5.12)	124 (4.88)	130 (5.12)	124 (4.88)	132 (5.20)	129 (5.08)	135 (5.31)	134 (5.28)	135 (5.31)	134 (5.28)	135 (5.31)	134 (5.28)
Oct	19 (0.75)	16 (0.63)	19 (0.75)	17 (0.67)	19 (0.75)	18 (0.71)	19 (0.75)	18 (0.71)	19 (0.75)	18 (0.71)	20 (0.79)	19 (0.75)	21 (0.83)	21 (0.83)	21 (0.83)	21 (0.83)	21 (0.83)	21 (0.83)
Season	903 (35.55)	859 (33.83)	913 (35.94)	878 (34.58)	928 (36.54)	900 (35.43)	947 (37.28)	926 (36.46)	947 (37.28)	926 (36.46)	970 (38.20)	954 (37.56)	990 (38.97)	978 (38.50)	990 (38.97)	978 (38.50)	990 (38.97)	978 (38.50)

REGION: 11 East Slope of Mt. Hood
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	57 (2.24)	48 (1.89)	59 (2.32)	51 (2.01)	62 (2.44)	54 (2.13)	63 (2.48)	57 (2.24)	65 (2.56)	62 (2.44)	67 (2.64)	64 (2.52)	67 (2.64)	62 (2.44)	67 (2.64)	64 (2.52)	67 (2.64)	62 (2.44)
May	122 (4.80)	106 (4.17)	125 (4.92)	111 (4.37)	129 (5.08)	116 (4.57)	133 (5.24)	121 (4.76)	137 (5.39)	128 (5.04)	139 (5.47)	132 (5.20)	139 (5.47)	128 (5.04)	139 (5.47)	132 (5.20)	139 (5.47)	128 (5.04)
June	140 (5.51)	124 (4.88)	143 (5.63)	132 (5.20)	146 (5.75)	136 (5.35)	150 (5.91)	139 (5.47)	154 (6.06)	148 (5.83)	156 (6.14)	151 (5.94)	156 (6.14)	148 (5.83)	156 (6.14)	151 (5.94)	156 (6.14)	148 (5.83)
July	176 (6.93)	173 (6.81)	177 (6.97)	175 (6.89)	178 (7.01)	177 (6.97)	180 (7.09)	179 (7.05)	185 (7.28)	184 (7.24)	190 (7.48)	187 (7.36)	185 (7.28)	184 (7.24)	190 (7.48)	187 (7.36)	185 (7.28)	184 (7.24)
Aug	143 (5.63)	138 (5.43)	145 (5.71)	141 (5.55)	147 (5.79)	144 (5.67)	149 (5.87)	148 (5.83)	155 (6.10)	153 (6.02)	158 (6.22)	156 (6.14)	155 (6.10)	153 (6.02)	158 (6.22)	156 (6.14)	155 (6.10)	153 (6.02)
Sep	104 (4.09)	91 (3.58)	105 (4.13)	94 (3.70)	106 (4.17)	98 (3.86)	106 (4.17)	101 (3.98)	107 (4.21)	104 (4.09)	110 (4.33)	106 (4.17)	107 (4.21)	104 (4.09)	110 (4.33)	106 (4.17)	110 (4.33)	104 (4.09)
Season	742 (29.20)	680 (26.76)	754 (29.68)	704 (27.72)	768 (30.24)	725 (28.55)	781 (30.76)	745 (29.33)	803 (31.60)	779 (30.66)	820 (32.28)	796 (31.33)	803 (31.60)	779 (30.66)	820 (32.28)	796 (31.33)	820 (32.28)	796 (31.33)

REGION: 11 East Slope of Mt. Hood
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	38 (1.50)	15 (0.59)	40 (1.57)	21 (0.83)	42 (1.65)	25 (0.98)	43 (1.69)	29 (1.14)	48 (1.89)	34 (1.34)	50 (1.97)	37 (1.46)	48 (1.89)	34 (1.34)	50 (1.97)	37 (1.46)	50 (1.97)	34 (1.34)
April	86 (3.39)	71 (2.80)	88 (3.46)	76 (2.99)	93 (3.66)	80 (3.15)	95 (3.74)	84 (3.31)	98 (3.86)	92 (3.62)	100 (3.94)	95 (3.74)	98 (3.86)	92 (3.62)	100 (3.94)	95 (3.74)	100 (3.94)	92 (3.62)
May	148 (5.83)	129 (5.08)	150 (5.91)	135 (5.31)	153 (6.02)	140 (5.51)	158 (6.22)	146 (5.75)	164 (6.46)	153 (6.02)	168 (6.61)	158 (6.22)	164 (6.46)	153 (6.02)	168 (6.61)	158 (6.22)	168 (6.61)	153 (6.02)
June	182 (7.17)	166 (6.54)	187 (7.36)	173 (6.81)	191 (7.52)	179 (7.05)	195 (7.68)	183 (7.20)	201 (7.91)	187 (7.36)	203 (7.99)	195 (7.68)	201 (7.91)	187 (7.36)	203 (7.99)	195 (7.68)	203 (7.99)	187 (7.36)
July	234 (9.21)	230 (9.06)	235 (9.25)	233 (9.17)	237 (9.33)	235 (9.25)	238 (9.37)	238 (9.37)	245 (9.65)	243 (9.57)	252 (9.92)	247 (9.72)	245 (9.65)	243 (9.57)	252 (9.92)	247 (9.72)	252 (9.92)	243 (9.57)
Aug	190 (7.48)	185 (7.28)	192 (7.56)	189 (7.44)	194 (7.64)	192 (7.56)	197 (7.76)	195 (7.68)	202 (7.95)	200 (7.87)	209 (8.23)	206 (8.11)	202 (7.95)	200 (7.87)	209 (8.23)	206 (8.11)	209 (8.23)	200 (7.87)
Sep	129 (5.08)	116 (4.57)	130 (5.12)	120 (4.72)	131 (5.16)	124 (4.88)	136 (5.35)	130 (5.12)	138 (5.43)	133 (5.24)	139 (5.47)	134 (5.28)	138 (5.43)	133 (5.24)	139 (5.47)	134 (5.28)	139 (5.47)	133 (5.24)
Oct	36 (1.42)	35 (1.38)	44 (1.73)	41 (1.61)	51 (2.01)	46 (1.81)	58 (2.28)	52 (2.05)	67 (2.64)	60 (2.36)	72 (2.83)	69 (2.72)	67 (2.64)	60 (2.36)	72 (2.83)	69 (2.72)	72 (2.83)	60 (2.36)
Nov	10 (0.39)	1 (0.04)	11 (0.43)	1 (0.04)	12 (0.47)	1 (0.04)	13 (0.51)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	6 (0.24)	15 (0.59)	1 (0.04)	16 (0.63)	6 (0.24)	16 (0.63)	1 (0.04)
Season	1053 (41.47)	948 (37.34)	1077 (42.39)	989 (38.92)	1104 (43.46)	1022 (40.23)	1133 (44.60)	1058 (41.66)	1178 (46.38)	1103 (43.42)	1209 (47.59)	1147 (45.17)	1178 (46.38)	1103 (43.42)	1209 (47.59)	1147 (45.17)	1209 (47.59)	1103 (43.42)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
May	22 (0.87)	19 (0.75)	22 (0.87)	20 (0.79)	22 (0.87)	21 (0.83)	23 (0.91)	21 (0.83)	23 (0.91)	22 (0.87)	23 (0.91)	22 (0.87)	23 (0.91)	22 (0.87)	23 (0.91)	22 (0.87)		
June	84 (3.31)	69 (2.72)	85 (3.35)	74 (2.91)	86 (3.39)	79 (3.11)	88 (3.46)	82 (3.23)	89 (3.50)	86 (3.39)	89 (3.50)	86 (3.39)	91 (3.58)	88 (3.46)	91 (3.58)	88 (3.46)		
July	128 (5.04)	125 (4.92)	130 (5.12)	127 (5.00)	131 (5.16)	130 (5.12)	132 (5.20)	132 (5.20)	135 (5.31)	135 (5.31)	135 (5.31)	135 (5.31)	138 (5.43)	137 (5.39)	138 (5.43)	137 (5.39)		
Aug	111 (4.37)	106 (4.17)	112 (4.41)	108 (4.25)	114 (4.49)	110 (4.33)	116 (4.57)	113 (4.45)	118 (4.65)	118 (4.65)	118 (4.65)	118 (4.65)	123 (4.84)	120 (4.72)	123 (4.84)	120 (4.72)		
Sep	80 (3.15)	69 (2.72)	81 (3.19)	72 (2.83)	82 (3.23)	75 (2.95)	83 (3.27)	78 (3.07)	85 (3.35)	81 (3.19)	85 (3.35)	81 (3.19)	86 (3.39)	82 (3.23)	86 (3.39)	82 (3.23)		
Oct	22 (0.87)	19 (0.75)	26 (1.02)	22 (0.87)	30 (1.18)	26 (1.02)	34 (1.34)	30 (1.18)	40 (1.57)	35 (1.38)	40 (1.57)	35 (1.38)	43 (1.69)	40 (1.57)	43 (1.69)	40 (1.57)		
Season	447 (17.61)	407 (16.03)	456 (17.96)	423 (16.65)	465 (18.32)	441 (17.36)	476 (18.75)	456 (17.96)	490 (19.29)	477 (18.79)	490 (19.29)	477 (18.79)	504 (19.84)	489 (19.24)	504 (19.84)	489 (19.24)		

CROP.	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	Net IRR in.	ET crop in.	Net IRR mm	ET crop in.	Net IRR in.	ET crop mm	Net IRR mm	ET crop in.	Net IRR in.	ET crop mm	Net IRR mm	ET crop in.	Net IRR mm	ET crop in.	Net IRR mm		
March	38 (1.50)	15 (0.59)	40 (1.57)	21 (0.83)	42 (1.65)	25 (0.98)	43 (1.69)	29 (1.14)	48 (1.89)	34 (1.34)	50 (1.97)	37 (1.46)						
April	86 (3.39)	71 (2.80)	88 (3.46)	76 (2.99)	93 (3.66)	80 (3.15)	95 (3.74)	84 (3.31)	98 (3.86)	92 (3.62)	100 (3.94)	95 (3.74)						
May	148 (5.83)	129 (5.08)	150 (5.91)	135 (5.31)	153 (6.02)	140 (5.51)	158 (6.22)	146 (5.75)	164 (6.46)	153 (6.02)	168 (6.61)	158 (6.22)						
June	182 (7.17)	166 (6.54)	187 (7.36)	173 (6.81)	191 (7.52)	179 (7.05)	195 (7.68)	183 (7.20)	201 (7.91)	187 (7.36)	203 (7.99)	195 (7.68)						
July	234 (9.21)	230 (9.06)	235 (9.25)	233 (9.17)	237 (9.33)	235 (9.25)	238 (9.37)	238 (9.37)	245 (9.65)	243 (9.57)	252 (9.92)	247 (9.72)						
Aug	190 (7.48)	185 (7.28)	192 (7.56)	189 (7.44)	194 (7.64)	192 (7.56)	197 (7.76)	195 (7.68)	202 (7.95)	200 (7.87)	209 (8.23)	206 (8.11)						
Sep	129 (5.08)	116 (4.57)	130 (5.12)	120 (4.72)	131 (5.16)	124 (4.88)	136 (5.35)	130 (5.12)	138 (5.43)	133 (5.24)	139 (5.47)	134 (5.28)						
Oct	36 (1.42)	35 (1.38)	44 (1.73)	41 (1.61)	51 (2.01)	46 (1.81)	58 (2.28)	52 (2.05)	67 (2.64)	60 (2.36)	72 (2.83)	69 (2.72)						
Nov	10 (0.39)	1 (0.04)	11 (0.43)	1 (0.04)	12 (0.47)	1 (0.04)	13 (0.51)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	6 (0.24)						
Season	1053 (41.47)	948 (37.34)	1077 (42.39)	989 (38.92)	1104 (43.46)	1022 (40.23)	1133 (44.60)	1058 (41.66)	1178 (46.38)	1103 (43.42)	1209 (47.59)	1147 (45.17)						

REGION: 11 East Slope of Mt. Hood
CROP: Grain (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	56 (2.20)	42 (1.65)	57 (2.24)	45 (1.77)	61 (2.40)	51 (2.01)	62 (2.44)	54 (2.13)	63 (2.48)	59 (2.32)	64 (2.52)	61 (2.40)						
May	141 (5.55)	123 (4.84)	143 (5.63)	129 (5.08)	147 (5.79)	134 (5.28)	151 (5.94)	139 (5.47)	157 (6.18)	145 (5.71)	160 (6.30)	149 (5.87)						
June	173 (6.81)	155 (6.10)	175 (6.89)	163 (6.42)	178 (7.01)	167 (6.57)	182 (7.17)	171 (6.73)	188 (7.40)	181 (7.13)	189 (7.44)	185 (7.28)						
July	193 (7.60)	189 (7.44)	194 (7.64)	192 (7.56)	196 (7.72)	194 (7.64)	197 (7.76)	197 (7.76)	203 (7.99)	201 (7.91)	208 (8.19)	205 (8.07)						
Aug	35 (1.38)	33 (1.30)	35 (1.38)	34 (1.34)	36 (1.42)	35 (1.38)	36 (1.42)	36 (1.42)	37 (1.46)	37 (1.46)	38 (1.50)	38 (1.50)						
Season	598 (23.54)	542 (21.33)	604 (23.78)	563 (22.17)	618 (24.34)	581 (22.88)	628 (24.73)	597 (23.51)	648 (25.51)	623 (24.53)	659 (25.95)	638 (25.12)						

REGION: 11 East Slope of Mt. Hood
CROP: Grain (Winter)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	27 (1.06)	7 (0.28)	27 (1.06)	13 (0.51)	29 (1.14)	15 (0.59)	30 (1.18)	17 (0.67)	31 (1.22)	23 (0.91)	32 (1.26)	24 (0.94)						
April	76 (2.99)	59 (2.32)	77 (3.03)	63 (2.48)	80 (3.15)	67 (2.64)	82 (3.23)	72 (2.83)	85 (3.35)	79 (3.11)	86 (3.39)	81 (3.19)						
May	146 (5.75)	129 (5.08)	149 (5.87)	135 (5.31)	153 (6.02)	140 (5.51)	157 (6.18)	146 (5.75)	164 (6.46)	152 (5.98)	168 (6.61)	156 (6.14)						
June	173 (6.81)	154 (6.06)	175 (6.89)	161 (6.34)	178 (7.01)	166 (6.54)	181 (7.13)	170 (6.69)	187 (7.36)	174 (6.85)	188 (7.40)	181 (7.13)						
July	79 (3.11)	78 (3.07)	79 (3.11)	79 (3.11)	81 (3.19)	80 (3.15)	82 (3.23)	82 (3.23)	83 (3.27)	83 (3.27)	85 (3.35)	84 (3.31)						
Season	501 (19.72)	427 (16.81)	507 (19.96)	451 (17.75)	521 (20.51)	468 (18.43)	532 (20.95)	487 (19.17)	550 (21.66)	511 (20.12)	559 (22.01)	526 (20.71)						

REGION: 11 East Slope of Mt. Hood
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	1 (0.04)	0 (0.00)	2 (0.08)	0 (0.00)	5 (0.20)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)
Feb	8 (0.31)	1 (0.04)	9 (0.35)	1 (0.04)	10 (0.39)	1 (0.04)	10 (0.39)	1 (0.04)	10 (0.39)	1 (0.04)	10 (0.39)	1 (0.04)	10 (0.39)	1 (0.04)	13 (0.51)	8 (0.31)	13 (0.51)	8 (0.31)
March	19 (0.75)	1 (0.04)	19 (0.75)	2 (0.08)	20 (0.79)	4 (0.16)	21 (0.83)	6 (0.24)	21 (0.83)	6 (0.24)	21 (0.83)	6 (0.24)	21 (0.83)	6 (0.24)	23 (0.91)	14 (0.55)	24 (0.94)	16 (0.63)
April	47 (1.85)	33 (1.30)	49 (1.93)	36 (1.42)	50 (1.97)	41 (1.61)	51 (2.01)	44 (1.73)	52 (2.05)	49 (1.93)	52 (2.05)	49 (1.93)	53 (2.09)	50 (1.97)	53 (2.09)	50 (1.97)	53 (2.09)	50 (1.97)
May	78 (3.07)	64 (2.52)	79 (3.11)	68 (2.68)	80 (3.15)	71 (2.80)	81 (3.19)	74 (2.91)	83 (3.27)	78 (3.07)	85 (3.35)	81 (3.19)	83 (3.27)	78 (3.07)	85 (3.35)	81 (3.19)	83 (3.27)	78 (3.07)
June	117 (4.61)	101 (3.98)	119 (4.69)	109 (4.29)	122 (4.80)	113 (4.45)	125 (4.92)	117 (4.61)	129 (5.08)	123 (4.84)	130 (5.12)	127 (5.00)	130 (5.12)	127 (5.00)	130 (5.12)	127 (5.00)	130 (5.12)	127 (5.00)
July	189 (7.44)	185 (7.28)	191 (7.52)	188 (7.40)	192 (7.56)	191 (7.52)	195 (7.68)	193 (7.60)	198 (7.80)	197 (7.76)	203 (7.99)	201 (7.91)	198 (7.80)	197 (7.76)	203 (7.99)	201 (7.91)	198 (7.80)	197 (7.76)
Aug	172 (6.77)	168 (6.61)	174 (6.85)	171 (6.73)	176 (6.93)	173 (6.81)	179 (7.05)	176 (6.93)	183 (7.20)	181 (7.13)	190 (7.48)	186 (7.32)	183 (7.20)	181 (7.13)	190 (7.48)	186 (7.32)	183 (7.20)	181 (7.13)
Sep	123 (4.84)	110 (4.33)	124 (4.88)	113 (4.45)	124 (4.88)	117 (4.61)	129 (5.08)	123 (4.84)	131 (5.16)	126 (4.96)	133 (5.24)	127 (5.00)	133 (5.24)	127 (5.00)	133 (5.24)	127 (5.00)	133 (5.24)	127 (5.00)
Oct	45 (1.77)	45 (1.77)	54 (2.13)	54 (2.13)	63 (2.48)	59 (2.32)	72 (2.83)	64 (2.52)	83 (3.27)	74 (2.91)	89 (3.50)	84 (3.31)	83 (3.27)	74 (2.91)	89 (3.50)	84 (3.31)	89 (3.50)	84 (3.31)
Nov	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	2 (0.08)	18 (0.71)	2 (0.08)	20 (0.79)	5 (0.20)	22 (0.87)	10 (0.39)	20 (0.79)	5 (0.20)	22 (0.87)	10 (0.39)	22 (0.87)	10 (0.39)
Dec	1 (0.04)	0 (0.00)	1 (0.04)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)
Season 814	(32.04)	709 (27.91)	836 (32.92)	743 (29.26)	861 (33.90)	772 (30.40)	890 (35.05)	800 (31.50)	924 (36.40)	850 (33.47)	958 (37.72)	890 (35.03)	924 (36.40)	850 (33.47)	958 (37.72)	890 (35.03)	958 (37.72)	890 (35.03)

REGION: 11 East Slope of Mt. Hood
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	19 (0.75)	11 (0.43)	19 (0.75)	13 (0.51)	19 (0.75)	15 (0.59)	20 (0.79)	16 (0.63)	22 (0.87)	19 (0.75)	23 (0.91)	19 (0.75)	22 (0.87)	19 (0.75)	23 (0.91)	19 (0.75)	23 (0.91)	19 (0.75)
April	87 (3.43)	72 (2.83)	90 (3.54)	78 (3.07)	93 (3.66)	81 (3.19)	97 (3.82)	86 (3.39)	100 (3.94)	94 (3.70)	103 (4.06)	97 (3.82)	100 (3.94)	94 (3.70)	103 (4.06)	97 (3.82)	103 (4.06)	97 (3.82)
May	133 (5.24)	115 (4.53)	135 (5.31)	120 (4.72)	138 (5.43)	125 (4.92)	142 (5.59)	129 (5.08)	147 (5.79)	136 (5.35)	151 (5.94)	141 (5.55)	147 (5.79)	136 (5.35)	151 (5.94)	141 (5.55)	151 (5.94)	141 (5.55)
June	152 (5.98)	134 (5.28)	153 (6.02)	142 (5.59)	156 (6.14)	146 (5.75)	160 (6.30)	150 (5.91)	165 (6.50)	159 (6.26)	166 (6.54)	162 (6.38)	165 (6.50)	159 (6.26)	166 (6.54)	162 (6.38)	166 (6.54)	162 (6.38)
July	189 (7.44)	185 (7.28)	190 (7.48)	188 (7.40)	191 (7.52)	190 (7.48)	193 (7.60)	192 (7.56)	198 (7.80)	197 (7.76)	203 (7.99)	200 (7.87)	198 (7.80)	197 (7.76)	203 (7.99)	200 (7.87)	203 (7.99)	200 (7.87)
Aug	153 (6.02)	148 (5.83)	155 (6.10)	151 (5.94)	157 (6.18)	155 (6.10)	159 (6.26)	158 (6.22)	163 (6.42)	163 (6.42)	169 (6.65)	167 (6.57)	163 (6.42)	163 (6.42)	169 (6.65)	167 (6.57)	169 (6.65)	167 (6.57)
Sep	111 (4.37)	97 (3.82)	113 (4.45)	100 (3.94)	114 (4.49)	104 (4.09)	116 (4.57)	109 (4.29)	118 (4.65)	112 (4.41)	119 (4.69)	114 (4.49)	118 (4.65)	112 (4.41)	119 (4.69)	114 (4.49)	119 (4.69)	114 (4.49)
Oct	39 (1.54)	39 (1.54)	46 (1.81)	46 (1.81)	54 (2.13)	51 (2.01)	62 (2.44)	56 (2.20)	72 (2.83)	64 (2.52)	77 (3.03)	73 (2.87)	72 (2.83)	64 (2.52)	77 (3.03)	73 (2.87)	77 (3.03)	73 (2.87)
Season 883	(34.77)	801 (31.54)	901 (35.46)	838 (32.98)	922 (36.30)	867 (34.13)	949 (37.37)	896 (35.28)	985 (38.80)	944 (37.17)	1011 (39.81)	973 (38.30)	985 (38.80)	944 (37.17)	1011 (39.81)	973 (38.30)	1011 (39.81)	973 (38.30)

REGION: 11 East Slope of Mt. Hood
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	38 (1.50)	15 (0.59)	40 (1.57)	21 (0.83)	42 (1.65)	25 (0.98)	43 (1.69)	29 (1.14)	48 (1.89)	34 (1.34)	50 (1.97)	37 (1.46)						
April	81 (3.19)	66 (2.60)	83 (3.27)	72 (2.83)	88 (3.46)	76 (2.99)	90 (3.54)	80 (3.15)	92 (3.62)	87 (3.43)	95 (3.74)	90 (3.54)						
May	132 (5.20)	116 (4.57)	136 (5.35)	121 (4.76)	139 (5.47)	127 (5.00)	142 (5.59)	132 (5.20)	149 (5.87)	139 (5.47)	152 (5.98)	143 (5.63)						
June	169 (6.65)	152 (5.98)	171 (6.73)	159 (6.26)	174 (6.85)	164 (6.46)	178 (7.01)	167 (6.57)	184 (7.24)	178 (7.01)	185 (7.28)	182 (7.17)						
July	213 (8.39)	211 (8.31)	214 (8.43)	214 (8.43)	216 (8.50)	216 (8.50)	219 (8.62)	219 (8.62)	225 (8.86)	224 (8.82)	231 (9.09)	227 (8.94)						
Aug	174 (6.85)	170 (6.69)	176 (6.93)	173 (6.81)	178 (7.01)	175 (6.89)	181 (7.13)	178 (7.01)	185 (7.28)	183 (7.20)	192 (7.56)	188 (7.40)						
Sep	116 (4.57)	105 (4.13)	118 (4.65)	109 (4.29)	119 (4.69)	112 (4.41)	121 (4.76)	118 (4.65)	123 (4.84)	121 (4.76)	127 (5.00)	123 (4.84)						
Oct	34 (1.34)	34 (1.34)	41 (1.61)	39 (1.54)	48 (1.89)	44 (1.73)	55 (2.17)	49 (1.93)	63 (2.48)	56 (2.20)	68 (2.68)	64 (2.52)						
Nov	10 (0.39)	1 (0.04)	11 (0.43)	1 (0.04)	12 (0.47)	1 (0.04)	13 (0.51)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	6 (0.24)						
Season	967 (38.08)	870 (34.25)	990 (38.97)	909 (35.79)	1016 (39.99)	940 (37.00)	1042 (41.02)	973 (38.31)	1084 (42.67)	1023 (40.27)	1116 (43.93)	1060 (41.74)						

REGION: 11 East Slope of Mt. Hood
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	38 (1.50)	15 (0.59)	40 (1.57)	21 (0.83)	42 (1.65)	25 (0.98)	43 (1.69)	29 (1.14)	48 (1.89)	34 (1.34)	50 (1.97)	37 (1.46)						
April	81 (3.19)	66 (2.60)	83 (3.27)	72 (2.83)	88 (3.46)	76 (2.99)	90 (3.54)	80 (3.15)	92 (3.62)	87 (3.43)	95 (3.74)	90 (3.54)						
May	132 (5.20)	116 (4.57)	136 (5.35)	121 (4.76)	139 (5.47)	127 (5.00)	142 (5.59)	132 (5.20)	149 (5.87)	139 (5.47)	152 (5.98)	143 (5.63)						
June	169 (6.65)	152 (5.98)	171 (6.73)	159 (6.26)	174 (6.85)	164 (6.46)	178 (7.01)	167 (6.57)	184 (7.24)	178 (7.01)	185 (7.28)	182 (7.17)						
July	213 (8.39)	211 (8.31)	214 (8.43)	214 (8.43)	216 (8.50)	216 (8.50)	219 (8.62)	219 (8.62)	225 (8.86)	224 (8.82)	231 (9.09)	227 (8.94)						
Aug	174 (6.85)	170 (6.69)	176 (6.93)	173 (6.81)	178 (7.01)	175 (6.89)	181 (7.13)	178 (7.01)	185 (7.28)	183 (7.20)	192 (7.56)	188 (7.40)						
Sep	116 (4.57)	105 (4.13)	118 (4.65)	109 (4.29)	119 (4.69)	112 (4.41)	121 (4.76)	118 (4.65)	123 (4.84)	121 (4.76)	127 (5.00)	123 (4.84)						
Oct	34 (1.34)	34 (1.34)	41 (1.61)	39 (1.54)	48 (1.89)	44 (1.73)	55 (2.17)	49 (1.93)	63 (2.48)	56 (2.20)	68 (2.68)	64 (2.52)						
Nov	10 (0.39)	1 (0.04)	11 (0.43)	1 (0.04)	12 (0.47)	1 (0.04)	13 (0.51)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	6 (0.24)						
Season	967 (38.08)	870 (34.25)	990 (38.97)	909 (35.79)	1016 (39.99)	940 (37.00)	1042 (41.02)	973 (38.31)	1084 (42.67)	1023 (40.27)	1116 (43.93)	1060 (41.74)						

REGION: 12 Columbia Basin wheat land
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	58 (2.28)	46 (1.81)	60 (2.36)	49 (1.93)	62 (2.44)	52 (2.05)	63 (2.48)	57 (2.24)	66 (2.60)	61 (2.40)	68 (2.68)	64 (2.52)						
May	126 (4.96)	102 (4.02)	128 (5.04)	107 (4.21)	130 (5.12)	111 (4.37)	134 (5.28)	117 (4.61)	137 (5.39)	123 (4.84)	138 (5.43)	129 (5.08)						
June	144 (5.67)	120 (4.72)	149 (5.87)	129 (5.08)	150 (5.91)	136 (5.35)	152 (5.98)	144 (5.67)	157 (6.18)	150 (5.91)	161 (6.34)	155 (6.10)						
July	177 (6.97)	169 (6.65)	178 (7.01)	173 (6.81)	180 (7.09)	176 (6.93)	183 (7.20)	179 (7.05)	186 (7.32)	182 (7.17)	191 (7.52)	186 (7.32)						
Aug	147 (5.79)	140 (5.51)	149 (5.87)	143 (5.63)	152 (5.98)	146 (5.75)	154 (6.06)	150 (5.91)	163 (6.42)	157 (6.18)	166 (6.54)	160 (6.30)						
Sep	101 (3.98)	89 (3.50)	103 (4.06)	94 (3.70)	105 (4.13)	98 (3.86)	109 (4.29)	101 (3.98)	111 (4.37)	105 (4.13)	112 (4.41)	108 (4.25)						
Season	753 (29.65)	666 (26.21)	767 (30.21)	695 (27.36)	779 (30.67)	719 (28.31)	795 (31.29)	748 (29.46)	820 (32.28)	778 (30.63)	836 (32.92)	802 (31.57)						

REGION: 12 Columbia Basin wheat land
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	17 (0.67)	42 (1.65)	22 (0.87)	44 (1.73)	26 (1.02)	46 (1.81)	28 (1.10)	48 (1.89)	32 (1.26)	49 (1.93)	35 (1.38)						
April	87 (3.43)	67 (2.64)	90 (3.54)	72 (2.83)	92 (3.62)	77 (3.03)	94 (3.70)	83 (3.27)	98 (3.86)	90 (3.54)	101 (3.98)	95 (3.74)						
May	149 (5.87)	125 (4.92)	152 (5.98)	130 (5.12)	154 (6.06)	136 (5.35)	159 (6.26)	141 (5.55)	162 (6.38)	149 (5.87)	163 (6.42)	155 (6.10)						
June	189 (7.44)	162 (6.38)	194 (7.64)	170 (6.69)	196 (7.72)	177 (6.97)	199 (7.83)	184 (7.24)	205 (8.07)	195 (7.68)	210 (8.27)	204 (8.03)						
July	233 (9.17)	227 (8.94)	234 (9.21)	231 (9.09)	237 (9.33)	235 (9.25)	242 (9.53)	239 (9.41)	246 (9.69)	242 (9.53)	253 (9.96)	248 (9.76)						
Aug	195 (7.68)	186 (7.32)	198 (7.80)	191 (7.52)	201 (7.91)	196 (7.72)	203 (7.99)	202 (7.95)	212 (8.35)	209 (8.23)	219 (8.62)	213 (8.39)						
Sep	129 (5.08)	112 (4.41)	130 (5.12)	119 (4.69)	132 (5.20)	125 (4.92)	136 (5.35)	129 (5.08)	139 (5.47)	134 (5.28)	140 (5.51)	138 (5.43)						
Oct	61 (2.40)	40 (1.57)	63 (2.48)	45 (1.77)	64 (2.52)	50 (1.97)	65 (2.56)	55 (2.17)	67 (2.64)	61 (2.40)	70 (2.76)	66 (2.60)						
Nov	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	4 (0.16)	17 (0.67)	8 (0.31)						
Season	1097 (43.19)	937 (36.89)	1117 (43.97)	981 (38.62)	1135 (44.68)	1023 (40.27)	1160 (45.66)	1062 (41.81)	1193 (46.98)	1116 (43.95)	1222 (48.12)	1162 (45.74)						

REGION: 12 Columbia Basin wheat Land
CROP: Berries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	37 (1.46)	28 (1.10)	38 (1.50)	30 (1.18)	38 (1.50)	32 (1.26)	39 (1.54)	34 (1.34)	39 (1.54)	35 (1.38)	39 (1.54)	35 (1.38)	39 (1.54)	35 (1.38)	39 (1.54)	36 (1.42)	39 (1.54)	36 (1.42)
June	90 (3.54)	69 (2.72)	91 (3.58)	76 (2.99)	93 (3.66)	81 (3.19)	95 (3.74)	85 (3.35)	97 (3.82)	91 (3.58)	101 (3.98)	95 (3.74)	101 (3.98)	95 (3.74)	101 (3.98)	95 (3.74)	101 (3.98)	95 (3.74)
July	131 (5.16)	127 (5.00)	132 (5.20)	129 (5.08)	133 (5.24)	131 (5.16)	135 (5.31)	133 (5.24)	138 (5.43)	136 (5.35)	139 (5.47)	138 (5.43)	139 (5.47)	138 (5.43)	139 (5.47)	138 (5.43)	139 (5.47)	138 (5.43)
Aug	113 (4.45)	108 (4.25)	115 (4.53)	111 (4.37)	117 (4.61)	114 (4.49)	119 (4.69)	117 (4.61)	124 (4.88)	120 (4.72)	128 (5.04)	122 (4.80)	124 (4.88)	120 (4.72)	128 (5.04)	122 (4.80)	128 (5.04)	122 (4.80)
Sep	80 (3.15)	67 (2.64)	80 (3.15)	70 (2.76)	81 (3.19)	74 (2.91)	84 (3.31)	79 (3.11)	86 (3.39)	82 (3.23)	86 (3.39)	82 (3.23)	86 (3.39)	82 (3.23)	86 (3.39)	82 (3.23)	86 (3.39)	82 (3.23)
Oct	47 (1.85)	26 (1.02)	48 (1.89)	31 (1.22)	49 (1.93)	35 (1.38)	50 (1.97)	39 (1.54)	52 (2.05)	47 (1.85)	55 (2.17)	51 (2.01)	52 (2.05)	47 (1.85)	55 (2.17)	51 (2.01)	55 (2.17)	51 (2.01)
Nov	2 (0.08)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)
Season 500	(19.69)	425 (16.73)	507 (19.97)	447 (17.60)	514 (20.25)	467 (18.39)	525 (20.68)	487 (19.19)	539 (21.23)	513 (20.19)	551 (21.71)	527 (20.75)	539 (21.23)	513 (20.19)	551 (21.71)	527 (20.75)	551 (21.71)	527 (20.75)

REGION: 12 Columbia Basin wheat Land
CROP: Cherries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	17 (0.67)	42 (1.65)	22 (0.87)	44 (1.73)	26 (1.02)	46 (1.81)	28 (1.10)	48 (1.89)	32 (1.26)	49 (1.93)	35 (1.38)	48 (1.89)	32 (1.26)	49 (1.93)	35 (1.38)	49 (1.93)	35 (1.38)
April	87 (3.43)	67 (2.64)	90 (3.54)	72 (2.83)	92 (3.62)	77 (3.03)	94 (3.70)	83 (3.27)	98 (3.86)	90 (3.54)	101 (3.98)	95 (3.74)	98 (3.86)	90 (3.54)	101 (3.98)	95 (3.74)	101 (3.98)	95 (3.74)
May	149 (5.87)	125 (4.92)	152 (5.98)	130 (5.12)	154 (6.06)	136 (5.35)	159 (6.26)	141 (5.55)	162 (6.38)	149 (5.87)	163 (6.42)	155 (6.10)	162 (6.38)	149 (5.87)	163 (6.42)	155 (6.10)	163 (6.42)	155 (6.10)
June	189 (7.44)	162 (6.38)	194 (7.64)	170 (6.69)	196 (7.72)	177 (6.97)	199 (7.83)	184 (7.24)	205 (8.07)	195 (7.68)	210 (8.27)	204 (8.03)	205 (8.07)	195 (7.68)	210 (8.27)	204 (8.03)	210 (8.27)	204 (8.03)
July	233 (9.17)	227 (8.94)	234 (9.21)	231 (9.09)	237 (9.33)	235 (9.25)	242 (9.53)	239 (9.41)	246 (9.69)	242 (9.53)	253 (9.96)	248 (9.76)	246 (9.69)	242 (9.53)	253 (9.96)	248 (9.76)	253 (9.96)	248 (9.76)
Aug	195 (7.68)	186 (7.32)	198 (7.80)	191 (7.52)	201 (7.91)	196 (7.72)	203 (7.99)	202 (7.95)	212 (8.35)	209 (8.23)	219 (8.62)	213 (8.39)	212 (8.35)	209 (8.23)	219 (8.62)	213 (8.39)	219 (8.62)	213 (8.39)
Sep	129 (5.08)	112 (4.41)	130 (5.12)	119 (4.69)	132 (5.20)	125 (4.92)	136 (5.35)	129 (5.08)	139 (5.47)	134 (5.28)	140 (5.51)	138 (5.43)	139 (5.47)	134 (5.28)	140 (5.51)	138 (5.43)	140 (5.51)	138 (5.43)
Oct	61 (2.40)	40 (1.57)	63 (2.48)	45 (1.77)	64 (2.52)	50 (1.97)	65 (2.56)	55 (2.17)	67 (2.64)	61 (2.40)	70 (2.76)	66 (2.60)	67 (2.64)	61 (2.40)	70 (2.76)	66 (2.60)	70 (2.76)	66 (2.60)
Nov	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	4 (0.16)	17 (0.67)	8 (0.31)	16 (0.63)	4 (0.16)	17 (0.67)	8 (0.31)	17 (0.67)	8 (0.31)
Season1097	(43.19)	937 (36.89)	1117 (43.97)	981 (38.62)	1135 (44.68)	1023 (40.27)	1160 (45.66)	1062 (41.81)	1193 (46.98)	1116 (43.95)	1222 (48.12)	1162 (45.74)	1193 (46.98)	1116 (43.95)	1222 (48.12)	1162 (45.74)	1222 (48.12)	1162 (45.74)

REGION: 12 Columbia Basin wheat Land
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	57 (2.24)	38 (1.50)	58 (2.28)	42 (1.65)	60 (2.36)	47 (1.85)	62 (2.44)	53 (2.09)	63 (2.48)	58 (2.28)	64 (2.52)	61 (2.40)						
May	143 (5.63)	119 (4.69)	145 (5.71)	124 (4.88)	147 (5.79)	129 (5.08)	152 (5.98)	134 (5.28)	155 (6.10)	141 (5.55)	156 (6.14)	147 (5.79)						
June	176 (6.93)	151 (5.94)	181 (7.13)	160 (6.30)	183 (7.20)	166 (6.54)	185 (7.28)	173 (6.81)	191 (7.52)	182 (7.17)	195 (7.68)	189 (7.44)						
July	192 (7.56)	186 (7.32)	193 (7.60)	190 (7.48)	196 (7.72)	193 (7.60)	200 (7.87)	196 (7.72)	203 (7.99)	199 (7.83)	208 (8.19)	204 (8.03)						
Aug	36 (1.42)	34 (1.34)	36 (1.42)	35 (1.38)	37 (1.46)	36 (1.42)	37 (1.46)	37 (1.46)	38 (1.50)	38 (1.50)	40 (1.57)	40 (1.57)						
Season 604	(23.78)	528 (20.79)	613 (24.14)	551 (21.69)	623 (24.53)	571 (22.49)	636 (25.03)	593 (23.36)	650 (25.59)	618 (24.33)	663 (26.10)	641 (25.23)						

REGION: 12 Columbia Basin wheat Land
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	26 (1.02)	9 (0.35)	27 (1.06)	12 (0.47)	29 (1.14)	15 (0.59)	30 (1.18)	18 (0.71)	32 (1.26)	20 (0.79)	32 (1.26)	22 (0.87)						
April	75 (2.95)	56 (2.20)	77 (3.03)	60 (2.36)	79 (3.11)	67 (2.64)	82 (3.23)	72 (2.83)	85 (3.35)	78 (3.07)	88 (3.46)	83 (3.27)						
May	149 (5.87)	123 (4.84)	151 (5.94)	129 (5.08)	154 (6.06)	135 (5.31)	159 (6.26)	141 (5.55)	162 (6.38)	147 (5.79)	163 (6.42)	154 (6.06)						
June	175 (6.89)	149 (5.87)	180 (7.09)	158 (6.22)	182 (7.17)	166 (6.54)	185 (7.28)	172 (6.77)	190 (7.48)	181 (7.13)	195 (7.68)	189 (7.44)						
July	79 (3.11)	78 (3.07)	81 (3.19)	79 (3.11)	82 (3.23)	80 (3.15)	82 (3.23)	82 (3.23)	83 (3.27)	83 (3.27)	85 (3.35)	84 (3.31)						
Season 504	(19.84)	415 (16.33)	516 (20.31)	438 (17.24)	526 (20.71)	463 (18.23)	538 (21.18)	485 (19.09)	552 (21.74)	509 (20.05)	563 (22.17)	532 (20.95)						

REGION: 12 Columbia Basin wheat land
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	2 (0.08)	0 (0.00)	3 (0.12)	0 (0.00)	5 (0.20)	0 (0.00)	6 (0.24)	0 (0.00)	7 (0.28)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)	10 (0.39)	0 (0.00)
Feb	10 (0.39)	1 (0.04)	11 (0.43)	1 (0.04)	12 (0.47)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)
March	19 (0.75)	2 (0.08)	19 (0.75)	2 (0.08)	21 (0.83)	5 (0.20)	22 (0.87)	7 (0.28)	23 (0.91)	10 (0.39)	24 (0.94)	12 (0.47)	24 (0.94)	12 (0.47)	24 (0.94)	12 (0.47)	24 (0.94)	12 (0.47)
April	48 (1.89)	30 (1.18)	49 (1.93)	33 (1.30)	50 (1.97)	37 (1.46)	51 (2.01)	43 (1.69)	53 (2.09)	49 (1.93)	54 (2.13)	52 (2.05)	54 (2.13)	52 (2.05)	54 (2.13)	52 (2.05)	54 (2.13)	52 (2.05)
May	78 (3.07)	58 (2.28)	79 (3.11)	63 (2.48)	81 (3.19)	67 (2.64)	82 (3.23)	70 (2.76)	83 (3.27)	73 (2.87)	84 (3.31)	75 (2.95)	84 (3.31)	75 (2.95)	84 (3.31)	75 (2.95)	84 (3.31)	75 (2.95)
June	121 (4.76)	98 (3.86)	124 (4.88)	106 (4.17)	126 (4.96)	111 (4.37)	128 (5.04)	116 (4.57)	133 (5.24)	124 (4.88)	135 (5.31)	130 (5.12)	135 (5.31)	130 (5.12)	135 (5.31)	130 (5.12)	135 (5.31)	130 (5.12)
July	189 (7.44)	183 (7.20)	191 (7.52)	187 (7.36)	193 (7.60)	190 (7.48)	197 (7.76)	193 (7.50)	200 (7.87)	196 (7.72)	202 (7.95)	201 (7.91)	202 (7.95)	201 (7.91)	202 (7.95)	201 (7.91)	202 (7.95)	201 (7.91)
Aug	177 (6.97)	168 (6.61)	180 (7.09)	173 (6.81)	183 (7.20)	177 (6.97)	185 (7.28)	183 (7.20)	193 (7.60)	189 (7.44)	200 (7.87)	192 (7.56)	200 (7.87)	192 (7.56)	200 (7.87)	192 (7.56)	200 (7.87)	192 (7.56)
Sep	124 (4.88)	109 (4.29)	125 (4.92)	115 (4.53)	127 (5.00)	119 (4.69)	131 (5.16)	123 (4.84)	133 (5.24)	127 (5.00)	135 (5.31)	131 (5.16)	135 (5.31)	131 (5.16)	135 (5.31)	131 (5.16)	135 (5.31)	131 (5.16)
Oct	74 (2.91)	51 (2.01)	76 (2.99)	57 (2.24)	78 (3.07)	63 (2.48)	79 (3.11)	69 (2.72)	82 (3.23)	76 (2.99)	87 (3.43)	80 (3.15)	87 (3.43)	80 (3.15)	87 (3.43)	80 (3.15)	87 (3.43)	80 (3.15)
Nov	19 (0.75)	1 (0.04)	20 (0.79)	2 (0.08)	21 (0.83)	2 (0.08)	22 (0.87)	2 (0.08)	23 (0.91)	9 (0.35)	24 (0.94)	13 (0.51)	24 (0.94)	13 (0.51)	24 (0.94)	13 (0.51)	24 (0.94)	13 (0.51)
Dec	1 (0.04)	0 (0.00)	1 (0.04)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	5 (0.20)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)
Season	862 (33.93)	701 (27.59)	878 (34.57)	739 (29.09)	900 (35.44)	772 (30.41)	920 (36.24)	807 (31.78)	950 (37.43)	856 (33.69)	977 (38.45)	898 (35.35)	977 (38.45)	898 (35.35)	977 (38.45)	898 (35.35)	977 (38.45)	898 (35.35)

REGION: 12 Columbia Basin wheat land
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	19 (0.75)	11 (0.43)	19 (0.75)	13 (0.51)	20 (0.79)	14 (0.55)	21 (0.83)	15 (0.59)	22 (0.87)	17 (0.67)	23 (0.91)	19 (0.75)	23 (0.91)	19 (0.75)	23 (0.91)	19 (0.75)	23 (0.91)	19 (0.75)
April	89 (3.50)	69 (2.72)	92 (3.62)	74 (2.91)	94 (3.70)	79 (3.11)	96 (3.78)	85 (3.35)	100 (3.94)	92 (3.62)	103 (4.06)	97 (3.82)	103 (4.06)	97 (3.82)	103 (4.06)	97 (3.82)	103 (4.06)	97 (3.82)
May	134 (5.28)	110 (4.33)	136 (5.35)	115 (4.53)	138 (5.43)	120 (4.72)	143 (5.63)	125 (4.92)	145 (5.71)	132 (5.20)	146 (5.75)	140 (5.51)	146 (5.75)	140 (5.51)	146 (5.75)	140 (5.51)	146 (5.75)	140 (5.51)
June	154 (6.06)	130 (5.12)	159 (6.26)	138 (5.43)	161 (6.34)	146 (5.75)	162 (6.38)	151 (5.94)	167 (6.57)	160 (6.30)	172 (6.77)	165 (6.50)	172 (6.77)	165 (6.50)	172 (6.77)	165 (6.50)	172 (6.77)	165 (6.50)
July	189 (7.44)	181 (7.13)	190 (7.48)	186 (7.32)	192 (7.56)	189 (7.44)	195 (7.68)	191 (7.52)	198 (7.80)	194 (7.64)	203 (7.99)	199 (7.83)	203 (7.99)	199 (7.83)	203 (7.99)	199 (7.83)	203 (7.99)	199 (7.83)
Aug	157 (6.18)	150 (5.91)	160 (6.30)	153 (6.02)	162 (6.38)	157 (6.18)	164 (6.46)	161 (6.34)	171 (6.73)	167 (6.57)	177 (6.97)	170 (6.69)	177 (6.97)	170 (6.69)	177 (6.97)	170 (6.69)	177 (6.97)	170 (6.69)
Sep	110 (4.33)	96 (3.78)	111 (4.37)	101 (3.98)	112 (4.41)	106 (4.17)	116 (4.57)	110 (4.33)	118 (4.65)	114 (4.49)	119 (4.69)	117 (4.61)	119 (4.69)	117 (4.61)	119 (4.69)	117 (4.61)	119 (4.69)	117 (4.61)
Oct	64 (2.52)	43 (1.69)	66 (2.60)	47 (1.85)	67 (2.64)	53 (2.09)	68 (2.68)	59 (2.32)	71 (2.80)	66 (2.60)	73 (2.87)	70 (2.76)	73 (2.87)	70 (2.76)	73 (2.87)	70 (2.76)	73 (2.87)	70 (2.76)
Season	916 (36.06)	790 (31.11)	933 (36.73)	827 (32.55)	946 (37.25)	864 (34.01)	965 (38.01)	897 (35.31)	992 (39.07)	942 (37.09)	1016 (40.01)	977 (38.47)	992 (39.07)	942 (37.09)	1016 (40.01)	977 (38.47)	992 (39.07)	942 (37.09)

REGION: 12 Columbia Basin wheat land
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	17 (0.67)	42 (1.65)	22 (0.87)	44 (1.73)	26 (1.02)	46 (1.81)	28 (1.10)	48 (1.89)	32 (1.26)	49 (1.93)	35 (1.38)						
April	82 (3.23)	63 (2.48)	85 (3.35)	67 (2.64)	88 (3.46)	72 (2.83)	89 (3.50)	78 (3.07)	92 (3.62)	86 (3.39)	96 (3.78)	90 (3.54)						
May	136 (5.35)	112 (4.41)	138 (5.43)	117 (4.61)	140 (5.51)	122 (4.80)	145 (5.71)	128 (5.04)	148 (5.83)	135 (5.31)	149 (5.87)	141 (5.55)						
June	173 (6.81)	147 (5.79)	178 (7.01)	156 (6.14)	180 (7.09)	164 (6.46)	182 (7.17)	170 (6.69)	188 (7.40)	179 (7.05)	192 (7.56)	186 (7.32)						
July	215 (8.46)	208 (8.19)	217 (8.54)	212 (8.35)	218 (8.58)	216 (8.50)	222 (8.74)	218 (8.58)	226 (8.90)	222 (8.74)	232 (9.13)	227 (8.94)						
Aug	179 (7.05)	170 (6.69)	182 (7.17)	174 (6.85)	184 (7.24)	179 (7.05)	187 (7.36)	185 (7.28)	195 (7.68)	191 (7.52)	202 (7.95)	194 (7.64)						
Sep	118 (4.65)	101 (3.98)	119 (4.69)	110 (4.33)	120 (4.72)	114 (4.49)	124 (4.88)	118 (4.65)	127 (5.00)	121 (4.76)	128 (5.04)	125 (4.92)						
Oct	58 (2.28)	37 (1.46)	59 (2.32)	42 (1.65)	60 (2.36)	47 (1.85)	61 (2.40)	51 (2.01)	64 (2.52)	57 (2.24)	66 (2.60)	62 (2.44)						
Nov	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	4 (0.16)	17 (0.67)	8 (0.31)						
Season1015	(39.95)	856 (33.71)	1034 (40.71)	901 (35.48)	1049 (41.28)	941 (37.04)	1072 (42.20)	977 (38.46)	1104 (43.47)	1027 (40.43)	1131 (44.53)	1068 (42.04)						

REGION: 12 Columbia Basin wheat land
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	17 (0.67)	42 (1.65)	22 (0.87)	44 (1.73)	26 (1.02)	46 (1.81)	28 (1.10)	48 (1.89)	32 (1.26)	49 (1.93)	35 (1.38)						
April	82 (3.23)	63 (2.48)	85 (3.35)	67 (2.64)	88 (3.46)	72 (2.83)	89 (3.50)	78 (3.07)	92 (3.62)	86 (3.39)	96 (3.78)	90 (3.54)						
May	136 (5.35)	112 (4.41)	138 (5.43)	117 (4.61)	140 (5.51)	122 (4.80)	145 (5.71)	128 (5.04)	148 (5.83)	135 (5.31)	149 (5.87)	141 (5.55)						
June	173 (6.81)	147 (5.79)	178 (7.01)	156 (6.14)	180 (7.09)	164 (6.46)	182 (7.17)	170 (6.69)	188 (7.40)	179 (7.05)	192 (7.56)	186 (7.32)						
July	215 (8.46)	208 (8.19)	217 (8.54)	212 (8.35)	218 (8.58)	216 (8.50)	222 (8.74)	218 (8.58)	226 (8.90)	222 (8.74)	232 (9.13)	227 (8.94)						
Aug	179 (7.05)	170 (6.69)	182 (7.17)	174 (6.85)	184 (7.24)	179 (7.05)	187 (7.36)	185 (7.28)	195 (7.68)	191 (7.52)	202 (7.95)	194 (7.64)						
Sep	118 (4.65)	101 (3.98)	119 (4.69)	110 (4.33)	120 (4.72)	114 (4.49)	124 (4.88)	118 (4.65)	127 (5.00)	121 (4.76)	128 (5.04)	125 (4.92)						
Oct	58 (2.28)	37 (1.46)	59 (2.32)	42 (1.65)	60 (2.36)	47 (1.85)	61 (2.40)	51 (2.01)	64 (2.52)	57 (2.24)	66 (2.60)	62 (2.44)						
Nov	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	4 (0.16)	17 (0.67)	8 (0.31)						
Season1015	(39.95)	856 (33.71)	1034 (40.71)	901 (35.48)	1049 (41.28)	941 (37.04)	1072 (42.20)	977 (38.46)	1104 (43.47)	1027 (40.43)	1131 (44.53)	1068 (42.04)						

REGION: 13 Pendleton-Heppner
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
April	58 (2.28)	39 (1.54)	59 (2.32)	42 (1.65)	60 (2.36)	46 (1.81)	61 (2.40)	49 (1.93)	65 (2.56)	53 (2.09)	67 (2.64)	56 (2.20)	120 (4.72)	89 (3.50)	123 (4.84)	125 (4.92)	100 (3.94)	127 (5.00)
May	144 (5.67)	111 (4.37)	145 (5.71)	115 (4.53)	146 (5.75)	122 (4.80)	148 (5.83)	132 (5.20)	153 (6.02)	139 (5.47)	154 (6.06)	144 (5.67)	165 (6.50)	160 (6.30)	166 (6.54)	163 (6.42)	169 (6.65)	172 (6.77)
June	138 (5.43)	130 (5.12)	140 (5.51)	133 (5.24)	141 (5.55)	137 (5.39)	143 (5.63)	141 (5.55)	148 (5.83)	146 (5.75)	154 (6.06)	151 (5.94)	94 (3.70)	76 (2.99)	97 (3.82)	80 (3.15)	98 (3.86)	85 (3.35)
Season	719 (28.30)	605 (23.82)	730 (28.74)	628 (24.73)	739 (29.09)	655 (25.79)	750 (29.53)	687 (27.04)	775 (30.52)	721 (28.39)	792 (31.18)	747 (29.40)						

REGION: 13 Pendleton-Heppner
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
March	41 (1.61)	13 (0.51)	42 (1.65)	17 (0.67)	43 (1.69)	21 (0.83)	47 (1.85)	26 (1.02)	48 (1.89)	31 (1.22)	53 (2.09)	38 (1.50)	84 (3.31)	58 (2.28)	86 (3.39)	62 (2.44)	88 (3.46)	67 (2.64)
April	143 (5.63)	109 (4.29)	146 (5.75)	116 (4.57)	148 (5.83)	123 (4.84)	150 (5.91)	129 (5.08)	157 (6.18)	138 (5.43)	160 (6.30)	145 (5.71)	187 (7.36)	149 (5.87)	189 (7.44)	157 (6.18)	191 (7.52)	165 (6.50)
May	218 (8.58)	213 (8.39)	221 (8.70)	216 (8.50)	224 (8.82)	219 (8.62)	228 (8.98)	222 (8.74)	232 (9.13)	227 (8.94)	235 (9.25)	231 (9.09)	184 (7.24)	172 (6.77)	186 (7.32)	177 (6.97)	188 (7.40)	182 (7.17)
June	117 (4.61)	98 (3.86)	121 (4.76)	103 (4.06)	123 (4.84)	108 (4.25)	125 (4.92)	116 (4.57)	128 (5.04)	123 (4.84)	132 (5.20)	126 (4.96)	59 (2.32)	33 (1.30)	60 (2.36)	38 (1.50)	62 (2.44)	41 (1.61)
July	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	5 (0.20)						
Season	1046 (41.17)	846 (33.31)	1065 (41.92)	887 (34.93)	1081 (42.55)	927 (36.50)	1102 (43.39)	975 (38.38)	1139 (44.84)	1032 (40.62)	1173 (46.19)	1073 (42.25)						

REGION: 13 Pendleton-Heppler
CROP: Berries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
May	37 (1.46)	22 (0.87)	25 (1.46)	37 (1.46)	28 (1.10)	30 (1.50)	38 (1.50)	30 (1.18)	33 (1.30)	39 (1.54)	33 (1.30)	39 (1.54)	35 (1.38)	35 (1.38)	35 (1.38)	39 (1.54)	35 (1.38)	35 (1.38)
June	88 (3.46)	61 (2.40)	89 (3.50)	89 (3.50)	73 (2.87)	79 (3.11)	93 (3.66)	79 (3.11)	85 (3.35)	96 (3.78)	85 (3.35)	96 (3.78)	90 (3.54)	90 (3.54)	90 (3.54)	98 (3.86)	90 (3.54)	90 (3.54)
July	122 (4.80)	117 (4.61)	123 (4.84)	123 (4.84)	119 (4.69)	124 (4.76)	124 (4.76)	123 (4.84)	126 (4.96)	129 (5.08)	126 (4.96)	129 (5.08)	129 (5.08)	129 (5.08)	129 (5.08)	130 (5.12)	129 (5.08)	129 (5.08)
Aug	107 (4.21)	99 (3.90)	108 (4.25)	108 (4.25)	102 (4.02)	109 (4.29)	109 (4.29)	105 (4.13)	109 (4.29)	114 (4.49)	112 (4.41)	114 (4.49)	115 (4.53)	115 (4.53)	115 (4.53)	119 (4.69)	115 (4.53)	115 (4.53)
Sep	72 (2.83)	56 (2.20)	75 (2.95)	75 (2.95)	58 (2.28)	77 (3.03)	77 (3.03)	62 (2.44)	78 (3.07)	79 (3.11)	74 (2.91)	79 (3.11)	77 (3.03)	77 (3.03)	77 (3.03)	81 (3.19)	77 (3.03)	77 (3.03)
Oct	45 (1.77)	20 (0.79)	46 (1.81)	46 (1.81)	27 (1.06)	47 (1.85)	47 (1.85)	34 (1.34)	49 (1.93)	49 (1.93)	41 (1.61)	49 (1.93)	45 (1.77)	45 (1.77)	45 (1.77)	51 (2.01)	45 (1.77)	45 (1.77)
Nov	2 (0.08)	0 (0.00)	3 (0.12)	3 (0.12)	0 (0.00)	3 (0.12)	3 (0.12)	0 (0.00)	3 (0.12)	3 (0.12)	1 (0.04)	3 (0.12)	2 (0.08)	2 (0.08)	2 (0.08)	3 (0.12)	2 (0.08)	2 (0.08)
Season	473 (18.61)	375 (14.77)	481 (18.93)	393 (15.47)	487 (19.17)	416 (16.36)	496 (19.53)	443 (17.44)	509 (20.05)	472 (18.58)	521 (20.53)	493 (19.41)	493 (19.41)	493 (19.41)	493 (19.41)	521 (20.53)	493 (19.41)	493 (19.41)

REGION: 13 Pendleton-Heppler
CROP: Cherries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
March	41 (1.61)	13 (0.51)	42 (1.65)	17 (0.67)	21 (0.83)	26 (1.02)	47 (1.85)	26 (1.02)	31 (1.22)	48 (1.89)	31 (1.22)	48 (1.89)	38 (1.50)	38 (1.50)	38 (1.50)	53 (2.09)	38 (1.50)	38 (1.50)
April	84 (3.31)	58 (2.28)	86 (3.39)	62 (2.44)	67 (2.64)	72 (2.83)	91 (3.58)	72 (2.83)	78 (3.07)	96 (3.78)	78 (3.07)	96 (3.78)	82 (3.23)	82 (3.23)	82 (3.23)	100 (3.94)	82 (3.23)	82 (3.23)
May	143 (5.63)	109 (4.29)	146 (5.75)	116 (4.57)	123 (4.84)	129 (5.08)	150 (5.91)	129 (5.08)	138 (5.43)	157 (6.18)	138 (5.43)	157 (6.18)	145 (5.71)	145 (5.71)	145 (5.71)	160 (6.30)	145 (5.71)	145 (5.71)
June	187 (7.36)	149 (5.87)	189 (7.44)	157 (6.18)	165 (6.50)	175 (6.89)	192 (7.56)	175 (6.89)	184 (7.24)	199 (7.83)	184 (7.24)	199 (7.83)	188 (7.40)	188 (7.40)	188 (7.40)	202 (7.95)	188 (7.40)	188 (7.40)
July	218 (8.58)	213 (8.39)	221 (8.70)	216 (8.50)	224 (8.82)	219 (8.62)	228 (8.98)	222 (8.74)	227 (8.94)	232 (9.13)	227 (8.94)	232 (9.13)	231 (9.09)	231 (9.09)	231 (9.09)	235 (9.25)	231 (9.09)	231 (9.09)
Aug	184 (7.24)	172 (6.77)	186 (7.32)	177 (6.97)	182 (7.17)	187 (7.36)	190 (7.48)	187 (7.36)	194 (7.64)	196 (7.72)	194 (7.64)	196 (7.72)	198 (7.80)	198 (7.80)	198 (7.80)	205 (8.07)	198 (7.80)	198 (7.80)
Sep	117 (4.61)	98 (3.86)	121 (4.76)	103 (4.06)	108 (4.25)	116 (4.57)	125 (4.92)	116 (4.57)	123 (4.84)	128 (5.04)	123 (4.84)	128 (5.04)	126 (4.96)	126 (4.96)	126 (4.96)	132 (5.20)	126 (4.96)	126 (4.96)
Oct	59 (2.32)	33 (1.30)	60 (2.36)	38 (1.50)	41 (1.61)	47 (1.85)	64 (2.52)	47 (1.85)	56 (2.20)	67 (2.64)	56 (2.20)	67 (2.64)	60 (2.36)	60 (2.36)	60 (2.36)	69 (2.72)	60 (2.36)	60 (2.36)
Nov	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	1 (0.04)	1 (0.04)	15 (0.59)	1 (0.04)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	5 (0.20)	5 (0.20)	5 (0.20)	17 (0.67)	5 (0.20)	5 (0.20)
Season	1046 (41.17)	846 (33.31)	1065 (41.92)	887 (34.93)	1081 (42.55)	927 (36.50)	1102 (43.39)	975 (38.38)	1139 (44.84)	1032 (40.62)	1173 (46.19)	1073 (42.25)	1073 (42.25)	1073 (42.25)	1073 (42.25)	1173 (46.19)	1073 (42.25)	1073 (42.25)

REGION: 13 Pendleton-Heppner
CROP: Corn (Field)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	59 (2.32)	36 (1.42)	59 (2.32)	40 (1.57)	60 (2.36)	45 (1.77)	61 (2.40)	49 (1.93)	62 (2.44)	54 (2.13)	63 (2.48)	57 (2.24)	63 (2.48)	57 (2.24)	63 (2.48)	57 (2.24)	63 (2.48)	57 (2.24)
June	128 (5.04)	98 (3.56)	129 (5.08)	103 (4.06)	131 (5.16)	110 (4.33)	133 (5.24)	118 (4.65)	137 (5.39)	124 (4.88)	139 (5.47)	128 (5.04)	139 (5.47)	128 (5.04)	139 (5.47)	128 (5.04)	139 (5.47)	128 (5.04)
July	198 (7.80)	192 (7.56)	200 (7.87)	196 (7.72)	203 (7.99)	198 (7.80)	207 (8.15)	201 (7.91)	210 (8.27)	206 (8.11)	213 (8.39)	210 (8.27)	213 (8.39)	210 (8.27)	216 (8.50)	213 (8.39)	216 (8.50)	213 (8.39)
Aug	170 (6.69)	158 (6.22)	172 (6.77)	163 (6.42)	174 (6.85)	168 (6.61)	176 (6.93)	173 (6.81)	181 (7.13)	179 (7.05)	190 (7.48)	182 (7.17)	190 (7.48)	182 (7.17)	190 (7.48)	182 (7.17)	190 (7.48)	182 (7.17)
Sep	85 (3.35)	66 (2.60)	87 (3.43)	71 (2.80)	89 (3.50)	76 (2.99)	90 (3.54)	82 (3.23)	92 (3.62)	88 (3.46)	95 (3.74)	91 (3.58)	95 (3.74)	91 (3.58)	95 (3.74)	91 (3.58)	95 (3.74)	91 (3.58)
Season	640 (25.20)	550 (21.66)	647 (25.47)	573 (22.57)	657 (25.86)	597 (23.50)	667 (26.26)	623 (24.53)	682 (26.85)	651 (25.63)	700 (27.56)	668 (26.30)	682 (26.85)	651 (25.63)	700 (27.56)	668 (26.30)	700 (27.56)	668 (26.30)

REGION: 13 Pendleton-Heppner
CROP: Corn (Sweet)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	35 (1.38)	22 (0.87)	35 (1.38)	24 (0.94)	35 (1.38)	26 (1.02)	36 (1.42)	28 (1.10)	36 (1.42)	32 (1.26)	37 (1.46)	34 (1.34)	36 (1.42)	32 (1.26)	37 (1.46)	34 (1.34)	37 (1.46)	34 (1.34)
June	125 (4.92)	95 (3.74)	127 (5.00)	100 (3.94)	129 (5.08)	107 (4.21)	131 (5.16)	115 (4.53)	135 (5.31)	122 (4.80)	137 (5.39)	126 (4.96)	135 (5.31)	122 (4.80)	137 (5.39)	126 (4.96)	137 (5.39)	126 (4.96)
July	202 (7.95)	196 (7.72)	204 (8.03)	199 (7.83)	207 (8.15)	202 (7.95)	211 (8.31)	205 (8.07)	214 (8.43)	210 (8.27)	216 (8.50)	213 (8.39)	214 (8.43)	210 (8.27)	216 (8.50)	213 (8.39)	216 (8.50)	213 (8.39)
Aug	107 (4.21)	102 (4.02)	109 (4.29)	104 (4.09)	110 (4.33)	107 (4.21)	111 (4.37)	109 (4.29)	115 (4.53)	114 (4.49)	120 (4.72)	116 (4.57)	115 (4.53)	114 (4.49)	120 (4.72)	116 (4.57)	120 (4.72)	116 (4.57)
Season	469 (18.46)	415 (16.35)	475 (18.70)	427 (16.80)	481 (18.94)	442 (17.39)	489 (19.26)	457 (17.99)	500 (19.69)	478 (18.82)	510 (20.07)	489 (19.26)	500 (19.69)	478 (18.82)	510 (20.07)	489 (19.26)	510 (20.07)	489 (19.26)

REGION: 13 Pendleton-Heppner
CROP: Grain (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	57 (2.24)	31 (1.22)	58 (2.28)	34 (1.34)	59 (2.32)	39 (1.54)	60 (2.36)	43 (1.69)	62 (2.44)	48 (1.89)	64 (2.52)	51 (2.01)	64 (2.52)	51 (2.01)	64 (2.52)	51 (2.01)	64 (2.52)	51 (2.01)
May	136 (5.35)	104 (4.09)	139 (5.47)	110 (4.33)	142 (5.59)	116 (4.57)	144 (5.67)	122 (4.80)	150 (5.91)	130 (5.12)	153 (6.02)	139 (5.47)	153 (6.02)	139 (5.47)	153 (6.02)	139 (5.47)	153 (6.02)	139 (5.47)
June	174 (6.85)	137 (5.39)	176 (6.93)	144 (5.67)	177 (6.97)	153 (6.02)	179 (7.05)	162 (6.38)	185 (7.28)	170 (6.69)	187 (7.36)	175 (6.89)	187 (7.36)	175 (6.89)	187 (7.36)	175 (6.89)	187 (7.36)	175 (6.89)
July	180 (7.09)	174 (6.85)	182 (7.17)	177 (6.97)	184 (7.24)	179 (7.05)	188 (7.40)	182 (7.17)	191 (7.52)	187 (7.36)	193 (7.60)	190 (7.48)	193 (7.60)	190 (7.48)	193 (7.60)	190 (7.48)	193 (7.60)	190 (7.48)
Aug	33 (1.30)	31 (1.22)	34 (1.34)	32 (1.26)	34 (1.34)	33 (1.30)	35 (1.38)	34 (1.34)	36 (1.42)	35 (1.38)	37 (1.46)	37 (1.46)	37 (1.46)	37 (1.46)	37 (1.46)	37 (1.46)	37 (1.46)	37 (1.46)
Season	580 (22.83)	477 (18.77)	589 (23.19)	497 (19.57)	596 (23.46)	520 (20.48)	606 (23.86)	543 (21.38)	624 (24.57)	570 (22.44)	634 (24.96)	592 (23.31)	634 (24.96)	592 (23.31)	634 (24.96)	592 (23.31)	634 (24.96)	592 (23.31)

REGION: 13 Pendleton-Heppner
CROP: Grain (Winter)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	29 (1.14)	6 (0.24)	29 (1.14)	10 (0.39)	31 (1.22)	13 (0.51)	33 (1.30)	17 (0.67)	34 (1.34)	21 (0.83)	36 (1.42)	26 (1.02)	36 (1.42)	26 (1.02)	36 (1.42)	26 (1.02)	36 (1.42)	26 (1.02)
April	93 (3.66)	65 (2.56)	94 (3.70)	70 (2.76)	96 (3.78)	76 (2.99)	99 (3.90)	81 (3.19)	105 (4.13)	86 (3.39)	108 (4.25)	90 (3.54)	108 (4.25)	90 (3.54)	108 (4.25)	90 (3.54)	108 (4.25)	90 (3.54)
May	145 (5.71)	111 (4.37)	148 (5.83)	118 (4.65)	151 (5.94)	125 (4.92)	153 (6.02)	131 (5.16)	160 (6.30)	139 (5.47)	162 (6.38)	148 (5.83)	162 (6.38)	148 (5.83)	162 (6.38)	148 (5.83)	162 (6.38)	148 (5.83)
June	168 (6.61)	131 (5.16)	170 (6.69)	138 (5.43)	171 (6.73)	147 (5.79)	173 (6.81)	158 (6.22)	179 (7.05)	165 (6.50)	181 (7.13)	170 (6.69)	181 (7.13)	170 (6.69)	181 (7.13)	170 (6.69)	181 (7.13)	170 (6.69)
July	98 (3.86)	94 (3.70)	99 (3.90)	96 (3.78)	100 (3.94)	98 (3.86)	102 (4.02)	100 (3.94)	104 (4.09)	102 (4.02)	105 (4.13)	104 (4.09)	105 (4.13)	104 (4.09)	105 (4.13)	104 (4.09)	105 (4.13)	104 (4.09)
Season	533 (20.98)	407 (16.03)	540 (21.26)	432 (17.01)	549 (21.61)	459 (18.07)	560 (22.05)	487 (19.18)	582 (22.91)	513 (20.21)	592 (23.31)	538 (21.17)	592 (23.31)	538 (21.17)	592 (23.31)	538 (21.17)	592 (23.31)	538 (21.17)

REGION: 13 Pendleton-Heppler
CROP: Onions

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	5 (0.20)	3 (0.12)	6 (0.24)	3 (0.12)	6 (0.24)	3 (0.12)	6 (0.24)	3 (0.12)	6 (0.24)	3 (0.12)	6 (0.24)	3 (0.12)	6 (0.24)	3 (0.12)	6 (0.24)	3 (0.12)	6 (0.24)	3 (0.12)
April	52 (2.05)	30 (1.18)	53 (2.09)	32 (1.26)	53 (2.09)	36 (1.42)	54 (2.13)	40 (1.57)	56 (2.20)	45 (1.77)	58 (2.28)	48 (1.89)	59 (2.35)	51 (1.95)	60 (2.42)	54 (2.01)	61 (2.10)	53 (1.92)
May	86 (3.39)	61 (2.40)	87 (3.43)	65 (2.56)	89 (3.50)	69 (2.72)	90 (3.54)	75 (2.95)	92 (3.62)	81 (3.19)	94 (3.70)	85 (3.35)	96 (3.78)	87 (3.33)	98 (3.86)	89 (3.41)	100 (3.94)	91 (3.49)
June	131 (5.16)	102 (4.02)	133 (5.24)	109 (4.29)	135 (5.31)	117 (4.61)	137 (5.39)	124 (4.88)	142 (5.59)	129 (5.08)	145 (5.71)	132 (5.20)	147 (5.79)	139 (5.15)	150 (5.86)	141 (5.25)	152 (5.94)	143 (5.33)
July	181 (7.13)	176 (6.93)	183 (7.20)	179 (7.05)	185 (7.28)	182 (7.17)	189 (7.44)	184 (7.24)	192 (7.56)	188 (7.40)	194 (7.64)	191 (7.52)	196 (7.76)	193 (7.60)	199 (7.88)	195 (7.72)	200 (7.95)	197 (7.83)
Aug	155 (6.10)	146 (5.75)	157 (6.18)	150 (5.91)	159 (6.26)	154 (6.06)	160 (6.30)	158 (6.22)	166 (6.54)	164 (6.46)	173 (6.81)	167 (6.57)	175 (6.89)	171 (6.73)	178 (7.05)	173 (6.81)	179 (7.13)	175 (6.97)
Sep	67 (2.64)	57 (2.24)	70 (2.76)	61 (2.40)	71 (2.80)	63 (2.48)	72 (2.83)	66 (2.60)	74 (2.91)	71 (2.80)	76 (2.99)	72 (2.83)	78 (3.07)	74 (2.91)	80 (3.15)	76 (2.99)	82 (3.23)	78 (3.07)
Season	677 (26.67)	575 (22.64)	689 (27.14)	599 (23.59)	698 (27.48)	625 (24.62)	708 (27.87)	652 (25.66)	729 (28.70)	683 (26.90)	747 (29.41)	701 (27.60)	769 (30.30)	729 (28.70)	791 (31.21)	751 (30.01)	813 (32.11)	771 (30.91)

REGION: 13 Pendleton-Heppler
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	19 (0.75)	9 (0.35)	19 (0.75)	11 (0.43)	20 (0.79)	13 (0.51)	21 (0.83)	14 (0.55)	22 (0.87)	18 (0.71)	25 (0.98)	20 (0.79)	26 (1.05)	22 (0.89)	28 (1.11)	24 (0.95)	30 (1.17)	26 (1.01)
April	89 (3.50)	59 (2.32)	91 (3.58)	64 (2.52)	93 (3.66)	70 (2.76)	94 (3.70)	75 (2.95)	98 (3.86)	80 (3.15)	102 (4.02)	84 (3.31)	104 (4.08)	96 (3.45)	108 (4.14)	98 (3.49)	110 (4.20)	102 (3.53)
May	128 (5.04)	96 (3.78)	129 (5.08)	102 (4.02)	131 (5.16)	108 (4.25)	135 (5.31)	114 (4.49)	138 (5.43)	123 (4.84)	140 (5.51)	130 (5.12)	142 (5.57)	134 (5.19)	146 (5.63)	136 (5.25)	148 (5.71)	140 (5.31)
June	153 (6.02)	119 (4.69)	155 (6.10)	125 (4.92)	156 (6.14)	132 (5.20)	157 (6.18)	142 (5.59)	163 (6.42)	149 (5.87)	165 (6.50)	154 (6.06)	167 (6.56)	159 (6.18)	171 (6.64)	161 (6.24)	173 (6.70)	163 (6.30)
July	176 (6.93)	171 (6.73)	177 (6.97)	174 (6.85)	180 (7.09)	177 (6.97)	183 (7.20)	180 (7.09)	186 (7.32)	184 (7.24)	189 (7.44)	187 (7.36)	191 (7.50)	189 (7.44)	193 (7.58)	191 (7.52)	195 (7.64)	193 (7.56)
Aug	148 (5.83)	139 (5.47)	150 (5.91)	142 (5.59)	151 (5.94)	146 (5.75)	153 (6.02)	150 (5.91)	158 (6.22)	156 (6.14)	165 (6.50)	161 (6.34)	167 (6.60)	165 (6.50)	169 (6.64)	167 (6.58)	171 (6.72)	169 (6.66)
Sep	100 (3.94)	82 (3.23)	103 (4.06)	87 (3.43)	104 (4.09)	92 (3.62)	106 (4.17)	97 (3.82)	109 (4.29)	104 (4.09)	112 (4.41)	106 (4.17)	114 (4.53)	110 (4.37)	116 (4.65)	112 (4.41)	118 (4.69)	114 (4.53)
Oct	62 (2.44)	36 (1.42)	63 (2.48)	40 (1.57)	65 (2.56)	44 (1.73)	67 (2.64)	50 (1.97)	70 (2.76)	59 (2.32)	73 (2.87)	64 (2.52)	75 (2.91)	67 (2.58)	79 (3.07)	71 (2.83)	81 (3.11)	73 (2.87)
Season	875 (34.45)	711 (27.99)	887 (34.93)	745 (29.33)	900 (35.43)	782 (30.79)	916 (36.05)	822 (32.37)	944 (37.17)	873 (34.36)	971 (38.23)	906 (35.67)	999 (40.17)	944 (37.17)	1016 (41.69)	971 (38.23)	1043 (43.19)	999 (40.17)

REGION: 13 Pendleton-Heppner
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	13 (0.51)	42 (1.65)	17 (0.67)	43 (1.69)	21 (0.83)	47 (1.85)	26 (1.02)	48 (1.89)	31 (1.22)	53 (2.09)	38 (1.50)	53 (2.09)	38 (1.50)	53 (2.09)	38 (1.50)	53 (2.09)	38 (1.50)
April	82 (3.23)	53 (2.09)	84 (3.31)	58 (2.28)	85 (3.35)	63 (2.48)	87 (3.43)	68 (2.68)	91 (3.58)	73 (2.87)	94 (3.70)	77 (3.03)	94 (3.70)	77 (3.03)	94 (3.70)	77 (3.03)	94 (3.70)	77 (3.03)
May	130 (5.12)	97 (3.82)	132 (5.20)	103 (4.06)	134 (5.28)	109 (4.29)	136 (5.35)	115 (4.53)	142 (5.59)	123 (4.84)	145 (5.71)	131 (5.16)	145 (5.71)	131 (5.16)	145 (5.71)	131 (5.16)	145 (5.71)	131 (5.16)
June	172 (6.77)	135 (5.31)	173 (6.81)	142 (5.59)	175 (6.89)	151 (5.94)	176 (6.93)	161 (6.34)	183 (7.20)	168 (6.61)	185 (7.28)	172 (6.77)	185 (7.28)	172 (6.77)	185 (7.28)	172 (6.77)	185 (7.28)	172 (6.77)
July	201 (7.91)	195 (7.68)	203 (7.99)	198 (7.80)	206 (8.11)	201 (7.91)	210 (8.27)	204 (8.03)	213 (8.39)	209 (8.23)	215 (8.46)	212 (8.35)	215 (8.46)	212 (8.35)	215 (8.46)	212 (8.35)	215 (8.46)	212 (8.35)
Aug	169 (6.65)	157 (6.18)	171 (6.73)	162 (6.38)	173 (6.81)	167 (6.57)	175 (6.89)	172 (6.77)	180 (7.09)	178 (7.01)	189 (7.44)	181 (7.13)	189 (7.44)	181 (7.13)	189 (7.44)	181 (7.13)	189 (7.44)	181 (7.13)
Sep	107 (4.21)	88 (3.46)	111 (4.37)	93 (3.56)	112 (4.41)	98 (3.86)	114 (4.49)	106 (4.17)	117 (4.61)	113 (4.45)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)
Oct	56 (2.20)	29 (1.14)	57 (2.24)	33 (1.30)	57 (2.24)	37 (1.46)	58 (2.28)	44 (1.73)	61 (2.40)	52 (2.05)	65 (2.56)	57 (2.24)	61 (2.40)	52 (2.05)	65 (2.56)	57 (2.24)	61 (2.40)	52 (2.05)
Nov	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	5 (0.20)	17 (0.67)	5 (0.20)	17 (0.67)	5 (0.20)	17 (0.67)	5 (0.20)
Season	971 (38.21)	768 (30.23)	987 (38.85)	807 (31.78)	999 (39.33)	848 (33.38)	1018 (40.08)	897 (35.31)	1051 (41.38)	948 (37.32)	1084 (42.67)	988 (38.91)	1084 (42.67)	988 (38.91)	1084 (42.67)	988 (38.91)	1084 (42.67)	988 (38.91)

REGION: 13 Pendleton-Heppner
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	16 (0.63)	3 (0.12)	16 (0.63)	5 (0.20)	17 (0.67)	6 (0.24)	18 (0.71)	9 (0.35)	19 (0.75)	12 (0.47)	19 (0.75)	14 (0.55)	19 (0.75)	12 (0.47)	19 (0.75)	14 (0.55)	19 (0.75)	14 (0.55)
April	67 (2.64)	40 (1.57)	68 (2.68)	44 (1.73)	69 (2.72)	48 (1.89)	71 (2.80)	52 (2.05)	73 (2.87)	58 (2.28)	75 (2.95)	63 (2.48)	75 (2.95)	58 (2.28)	75 (2.95)	63 (2.48)	75 (2.95)	63 (2.48)
May	142 (5.59)	109 (4.29)	143 (5.63)	116 (4.57)	145 (5.71)	122 (4.80)	149 (5.87)	128 (5.04)	156 (6.14)	137 (5.39)	159 (6.26)	144 (5.67)	159 (6.26)	137 (5.39)	159 (6.26)	144 (5.67)	159 (6.26)	144 (5.67)
June	174 (6.85)	136 (5.35)	175 (6.89)	143 (5.63)	177 (6.97)	152 (5.98)	178 (7.01)	162 (6.38)	185 (7.28)	170 (6.69)	187 (7.36)	174 (6.85)	187 (7.36)	170 (6.69)	187 (7.36)	174 (6.85)	187 (7.36)	174 (6.85)
July	123 (4.84)	120 (4.72)	124 (4.88)	122 (4.80)	126 (4.96)	123 (4.84)	128 (5.04)	125 (4.92)	130 (5.12)	128 (5.04)	132 (5.20)	130 (5.12)	132 (5.20)	128 (5.04)	132 (5.20)	130 (5.12)	132 (5.20)	130 (5.12)
Season	522 (20.55)	408 (16.05)	526 (20.71)	430 (16.93)	534 (21.03)	451 (17.75)	544 (21.43)	476 (18.74)	563 (22.16)	505 (19.87)	572 (22.52)	525 (20.67)	572 (22.52)	505 (19.87)	572 (22.52)	525 (20.67)	572 (22.52)	525 (20.67)

REGION: 13 Pendleton-Heppner
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	41 (1.61)	13 (0.51)	42 (1.65)	17 (0.67)	43 (1.69)	21 (0.83)	47 (1.85)	26 (1.02)	48 (1.89)	31 (1.22)	53 (2.09)	38 (1.50)	53 (2.09)	38 (1.50)	53 (2.09)	38 (1.50)	53 (2.09)	38 (1.50)
April	82 (3.23)	53 (2.09)	84 (3.31)	58 (2.28)	85 (3.35)	63 (2.48)	87 (3.43)	68 (2.68)	91 (3.58)	73 (2.87)	94 (3.70)	77 (3.03)	94 (3.70)	77 (3.03)	94 (3.70)	77 (3.03)	94 (3.70)	77 (3.03)
May	130 (5.12)	97 (3.82)	132 (5.20)	103 (4.06)	134 (5.28)	109 (4.29)	136 (5.35)	115 (4.53)	142 (5.59)	123 (4.84)	145 (5.71)	131 (5.16)	145 (5.71)	131 (5.16)	145 (5.71)	131 (5.16)	145 (5.71)	131 (5.16)
June	172 (6.77)	135 (5.31)	173 (6.81)	142 (5.59)	175 (6.89)	151 (5.94)	176 (6.93)	161 (6.34)	183 (7.20)	168 (6.61)	185 (7.28)	172 (6.77)	185 (7.28)	172 (6.77)	185 (7.28)	172 (6.77)	185 (7.28)	172 (6.77)
July	201 (7.91)	195 (7.68)	203 (7.99)	198 (7.80)	206 (8.11)	201 (7.91)	210 (8.27)	204 (8.03)	213 (8.39)	209 (8.23)	215 (8.46)	212 (8.35)	215 (8.46)	212 (8.35)	215 (8.46)	212 (8.35)	215 (8.46)	212 (8.35)
Aug	169 (6.65)	157 (6.18)	171 (6.73)	162 (6.38)	173 (6.81)	167 (6.57)	175 (6.89)	172 (6.77)	180 (7.09)	178 (7.01)	189 (7.44)	181 (7.13)	189 (7.44)	181 (7.13)	189 (7.44)	181 (7.13)	189 (7.44)	181 (7.13)
Sep	107 (4.21)	88 (3.46)	111 (4.37)	93 (3.66)	112 (4.41)	98 (3.86)	114 (4.49)	106 (4.17)	117 (4.61)	113 (4.45)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)
Oct	56 (2.20)	29 (1.14)	57 (2.24)	33 (1.30)	57 (2.24)	37 (1.46)	58 (2.28)	44 (1.73)	61 (2.40)	52 (2.05)	65 (2.56)	57 (2.24)	61 (2.40)	52 (2.05)	65 (2.56)	57 (2.24)	65 (2.56)	57 (2.24)
Nov	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	5 (0.20)	17 (0.67)	5 (0.20)	17 (0.67)	5 (0.20)	17 (0.67)	5 (0.20)
Season	971 (38.21)	768 (30.23)	987 (38.85)	807 (31.78)	999 (39.33)	848 (33.38)	1018 (40.08)	897 (35.31)	1051 (41.38)	948 (37.32)	1084 (42.67)	988 (38.91)	1084 (42.67)	988 (38.91)	1084 (42.67)	988 (38.91)	1084 (42.67)	988 (38.91)

REGION: 14 Hermiston
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	66 (2.60)	56 (2.20)	67 (2.64)	59 (2.32)	68 (2.68)	62 (2.44)	70 (2.76)	68 (2.68)	74 (2.91)	70 (2.76)	75 (2.95)	71 (2.80)	74 (2.91)	70 (2.76)	75 (2.95)	71 (2.80)	75 (2.95)	71 (2.80)
May	136 (5.35)	122 (4.80)	139 (5.47)	126 (4.96)	144 (5.67)	130 (5.12)	147 (5.79)	137 (5.39)	150 (5.91)	143 (5.63)	151 (5.94)	146 (5.75)	150 (5.91)	143 (5.63)	151 (5.94)	146 (5.75)	151 (5.94)	146 (5.75)
June	157 (6.18)	142 (5.59)	159 (6.26)	146 (5.75)	161 (6.34)	150 (5.91)	163 (6.42)	156 (6.14)	167 (6.57)	165 (6.50)	171 (6.73)	170 (6.69)	167 (6.57)	165 (6.50)	171 (6.73)	170 (6.69)	171 (6.73)	170 (6.69)
July	178 (7.01)	176 (6.93)	180 (7.09)	179 (7.05)	181 (7.13)	181 (7.13)	184 (7.24)	183 (7.20)	190 (7.48)	187 (7.36)	192 (7.56)	190 (7.48)	190 (7.48)	187 (7.36)	192 (7.56)	190 (7.48)	192 (7.56)	190 (7.48)
Aug	151 (5.94)	148 (5.83)	152 (5.98)	150 (5.91)	158 (6.22)	153 (6.02)	162 (6.38)	159 (6.26)	166 (6.54)	165 (6.50)	171 (6.73)	168 (6.61)	166 (6.54)	165 (6.50)	171 (6.73)	168 (6.61)	171 (6.73)	168 (6.61)
Sep	102 (4.02)	95 (3.74)	105 (4.13)	98 (3.86)	106 (4.17)	100 (3.94)	108 (4.25)	103 (4.06)	112 (4.41)	108 (4.25)	113 (4.45)	111 (4.37)	112 (4.41)	108 (4.25)	113 (4.45)	111 (4.37)	113 (4.45)	111 (4.37)
Season	790 (31.10)	739 (29.09)	802 (31.57)	758 (29.85)	818 (32.21)	776 (30.56)	834 (32.84)	806 (31.73)	859 (33.82)	838 (33.00)	873 (34.36)	856 (33.70)	859 (33.82)	838 (33.00)	873 (34.36)	856 (33.70)	873 (34.36)	856 (33.70)

REGION: 14 Hermiston
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	46 (1.81)	32 (1.26)	47 (1.85)	34 (1.34)	49 (1.93)	36 (1.42)	51 (2.01)	38 (1.50)	53 (2.09)	42 (1.65)	56 (2.20)	45 (1.77)						
April	98 (3.86)	81 (3.19)	100 (3.94)	87 (3.43)	101 (3.98)	91 (3.58)	103 (4.06)	98 (3.86)	109 (4.29)	103 (4.06)	110 (4.33)	105 (4.13)						
May	161 (6.34)	148 (5.83)	165 (6.50)	152 (5.98)	171 (6.73)	157 (6.18)	174 (6.85)	164 (6.46)	177 (6.97)	171 (6.73)	179 (7.05)	174 (6.85)						
June	204 (8.03)	190 (7.48)	206 (8.11)	193 (7.60)	210 (8.27)	198 (7.80)	214 (8.43)	202 (7.95)	219 (8.62)	210 (8.27)	225 (8.86)	223 (8.78)						
July	236 (9.29)	233 (9.17)	238 (9.37)	237 (9.33)	241 (9.49)	241 (9.49)	245 (9.65)	244 (9.61)	253 (9.96)	249 (9.80)	255 (10.04)	253 (9.96)						
Aug	200 (7.87)	195 (7.68)	202 (7.95)	198 (7.80)	209 (8.23)	205 (8.07)	215 (8.46)	211 (8.31)	219 (8.62)	219 (8.62)	226 (8.90)	222 (8.74)						
Sep	131 (5.16)	121 (4.76)	132 (5.20)	125 (4.92)	134 (5.28)	128 (5.04)	136 (5.35)	131 (5.16)	141 (5.55)	137 (5.39)	142 (5.59)	140 (5.51)						
Oct	61 (2.40)	47 (1.85)	62 (2.44)	49 (1.93)	63 (2.48)	52 (2.05)	63 (2.48)	55 (2.17)	65 (2.56)	60 (2.36)	68 (2.68)	62 (2.44)						
Nov	15 (0.59)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	3 (0.12)	18 (0.71)	10 (0.39)						
Season	1152 (45.35)	1048 (41.26)	1167 (45.95)	1076 (42.37)	1194 (47.02)	1109 (43.67)	1217 (47.92)	1144 (45.06)	1253 (49.33)	1194 (47.00)	1279 (50.36)	1234 (48.57)						

REGION: 14 Hermiston
CROP: Berries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	39 (1.54)	33 (1.30)	40 (1.57)	35 (1.38)	40 (1.57)	37 (1.46)	41 (1.61)	38 (1.50)	41 (1.61)	40 (1.57)	41 (1.61)	40 (1.57)						
June	94 (3.70)	81 (3.19)	96 (3.78)	86 (3.39)	97 (3.82)	90 (3.54)	98 (3.86)	93 (3.66)	101 (3.98)	97 (3.82)	104 (4.09)	101 (3.98)						
July	131 (5.16)	128 (5.04)	132 (5.20)	130 (5.12)	133 (5.24)	132 (5.20)	135 (5.31)	134 (5.28)	138 (5.43)	138 (5.43)	141 (5.55)	139 (5.47)						
Aug	115 (4.53)	113 (4.45)	117 (4.61)	115 (4.53)	121 (4.76)	118 (4.65)	125 (4.92)	122 (4.80)	127 (5.00)	126 (4.96)	131 (5.16)	128 (5.04)						
Sep	80 (3.15)	71 (2.80)	80 (3.15)	74 (2.91)	81 (3.19)	77 (3.03)	83 (3.27)	80 (3.15)	86 (3.39)	84 (3.31)	86 (3.39)	85 (3.35)						
Oct	47 (1.85)	31 (1.22)	47 (1.85)	33 (1.30)	48 (1.89)	37 (1.46)	49 (1.93)	40 (1.57)	50 (1.97)	45 (1.77)	51 (2.01)	48 (1.89)						
Nov	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	1 (0.04)	3 (0.12)	2 (0.08)	3 (0.12)	3 (0.12)						
Season	509 (20.05)	457 (18.00)	515 (20.28)	473 (18.63)	523 (20.59)	491 (19.34)	534 (21.02)	508 (20.00)	546 (21.50)	532 (20.94)	557 (21.93)	544 (21.42)						

REGION: 14 Hermiston
CROP: Cherries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	46 (1.81)	32 (1.26)	47 (1.85)	34 (1.34)	49 (1.93)	36 (1.42)	51 (2.01)	38 (1.50)	53 (2.09)	42 (1.65)	56 (2.20)	45 (1.77)						
April	98 (3.86)	81 (3.19)	100 (3.94)	87 (3.43)	101 (3.98)	91 (3.58)	103 (4.06)	98 (3.86)	109 (4.29)	103 (4.06)	110 (4.33)	105 (4.13)						
May	161 (6.34)	148 (5.83)	165 (6.50)	152 (5.98)	171 (6.73)	157 (6.18)	174 (6.85)	164 (6.46)	177 (6.97)	171 (6.73)	179 (7.05)	174 (6.85)						
June	204 (8.03)	190 (7.48)	206 (8.11)	193 (7.60)	210 (8.27)	198 (7.80)	214 (8.43)	202 (7.95)	219 (8.62)	210 (8.27)	225 (8.86)	223 (8.78)						
July	236 (9.29)	233 (9.17)	238 (9.37)	237 (9.33)	241 (9.49)	241 (9.49)	245 (9.65)	244 (9.61)	253 (9.96)	249 (9.80)	255 (10.04)	253 (9.96)						
Aug	200 (7.87)	195 (7.68)	202 (7.95)	198 (7.80)	209 (8.23)	205 (8.07)	215 (8.46)	211 (8.31)	219 (8.62)	219 (8.62)	226 (8.90)	222 (8.74)						
Sep	131 (5.16)	121 (4.76)	132 (5.20)	125 (4.92)	134 (5.28)	128 (5.04)	136 (5.35)	131 (5.16)	141 (5.55)	137 (5.39)	142 (5.59)	140 (5.51)						
Oct	61 (2.40)	47 (1.85)	62 (2.44)	49 (1.93)	63 (2.48)	52 (2.05)	63 (2.48)	55 (2.17)	65 (2.56)	60 (2.36)	68 (2.68)	62 (2.44)						
Nov	15 (0.59)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	3 (0.12)	18 (0.71)	10 (0.39)						
Season	1152 (45.35)	1048 (41.26)	1167 (45.95)	1076 (42.37)	1194 (47.02)	1109 (43.67)	1217 (47.92)	1144 (45.06)	1253 (49.33)	1194 (47.00)	1279 (50.36)	1234 (48.57)						

REGION: 14 Hermiston
CROP: Corn (Field)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	63 (2.48)	54 (2.13)	64 (2.52)	56 (2.20)	65 (2.56)	59 (2.32)	66 (2.60)	62 (2.44)	67 (2.64)	65 (2.56)	67 (2.64)	66 (2.60)						
June	138 (5.43)	124 (4.88)	140 (5.51)	129 (5.08)	142 (5.59)	132 (5.20)	143 (5.63)	137 (5.39)	146 (5.75)	144 (5.67)	152 (5.98)	148 (5.83)						
July	215 (8.46)	211 (8.31)	217 (8.54)	214 (8.43)	218 (8.58)	217 (8.54)	222 (8.74)	221 (8.70)	226 (8.90)	225 (8.86)	228 (8.98)	228 (8.98)						
Aug	185 (7.28)	180 (7.09)	186 (7.32)	183 (7.20)	193 (7.60)	187 (7.36)	199 (7.83)	194 (7.64)	203 (7.99)	203 (7.99)	210 (8.27)	206 (8.11)						
Sep	94 (3.70)	85 (3.35)	95 (3.74)	88 (3.46)	96 (3.78)	91 (3.58)	98 (3.86)	95 (3.74)	101 (3.98)	99 (3.90)	102 (4.02)	101 (3.98)						
Season	695 (27.35)	654 (25.76)	702 (27.63)	670 (26.37)	714 (28.11)	686 (27.00)	728 (28.66)	709 (27.91)	743 (29.26)	736 (28.98)	759 (29.89)	749 (29.50)						

REGION: 14 Hermiston CROP: Corn (Sweet)		5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	
May	37 (1.46)	32 (1.26)	38 (1.50)	34 (1.34)	38 (1.50)	35 (1.38)	38 (1.50)	37 (1.46)	39 (1.54)	38 (1.50)	39 (1.54)	38 (1.50)	39 (1.54)	38 (1.50)	39 (1.54)	38 (1.50)	39 (1.54)	38 (1.50)	
June	136 (5.35)	122 (4.80)	137 (5.39)	126 (4.96)	139 (5.47)	130 (5.12)	140 (5.51)	135 (5.31)	143 (5.63)	141 (5.55)	149 (5.87)	145 (5.71)	157 (6.05)	154 (5.99)	164 (6.46)	160 (6.30)	171 (6.77)	167 (6.61)	
July	218 (8.58)	215 (8.46)	220 (8.66)	219 (8.62)	222 (8.74)	222 (8.74)	226 (8.90)	225 (8.86)	230 (9.06)	230 (9.06)	232 (9.13)	232 (9.13)	232 (9.13)	232 (9.13)	232 (9.13)	232 (9.13)	232 (9.13)	232 (9.13)	
Aug	116 (4.57)	115 (4.53)	118 (4.65)	117 (4.61)	122 (4.80)	119 (4.69)	127 (5.00)	122 (4.80)	128 (5.04)	128 (5.04)	132 (5.20)	131 (5.16)	132 (5.20)	132 (5.20)	132 (5.20)	131 (5.16)	132 (5.20)	131 (5.16)	
Season	507 (19.96)	484 (19.05)	513 (20.20)	496 (19.53)	521 (20.51)	506 (19.93)	531 (20.91)	519 (20.43)	540 (21.27)	537 (21.15)	552 (21.74)	546 (21.50)	552 (21.74)	537 (21.15)	552 (21.74)	546 (21.50)	552 (21.74)	546 (21.50)	

REGION: 14 Hermiston CROP: Grain (Spring)		5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	
March	18 (0.71)	12 (0.47)	18 (0.71)	13 (0.51)	19 (0.75)	14 (0.55)	20 (0.79)	15 (0.59)	21 (0.83)	16 (0.63)	21 (0.83)	17 (0.67)	21 (0.83)	17 (0.67)	21 (0.83)	17 (0.67)	21 (0.83)	17 (0.67)	
April	74 (2.91)	58 (2.28)	76 (2.99)	65 (2.56)	77 (3.03)	69 (2.72)	78 (3.07)	73 (2.87)	81 (3.19)	77 (3.03)	84 (3.31)	79 (3.11)	84 (3.31)	79 (3.11)	84 (3.31)	79 (3.11)	84 (3.31)	79 (3.11)	
May	148 (5.83)	134 (5.28)	152 (5.98)	139 (5.47)	157 (6.18)	144 (5.67)	160 (6.30)	150 (5.91)	163 (6.42)	157 (6.18)	164 (6.46)	160 (6.30)	163 (6.42)	157 (6.18)	164 (6.46)	160 (6.30)	164 (6.46)	160 (6.30)	
June	190 (7.48)	176 (6.93)	192 (7.56)	180 (7.09)	195 (7.68)	184 (7.24)	199 (7.83)	188 (7.40)	204 (8.03)	203 (7.99)	209 (8.23)	208 (8.19)	204 (8.03)	203 (7.99)	209 (8.23)	208 (8.19)	209 (8.23)	208 (8.19)	
July	195 (7.68)	194 (7.64)	196 (7.72)	196 (7.72)	198 (7.80)	198 (7.80)	202 (7.95)	200 (7.87)	208 (8.19)	204 (8.03)	210 (8.27)	208 (8.19)	208 (8.19)	204 (8.03)	210 (8.27)	208 (8.19)	210 (8.27)	208 (8.19)	
Aug	36 (1.42)	35 (1.38)	37 (1.46)	36 (1.42)	38 (1.50)	36 (1.42)	39 (1.54)	38 (1.50)	40 (1.57)	39 (1.54)	41 (1.61)	40 (1.57)	40 (1.57)	39 (1.54)	41 (1.61)	40 (1.57)	41 (1.61)	40 (1.57)	
Season	661 (26.03)	609 (23.98)	671 (26.42)	629 (24.77)	684 (26.94)	645 (25.40)	698 (27.48)	664 (26.14)	717 (28.23)	696 (27.40)	729 (28.71)	712 (28.03)	717 (28.23)	696 (27.40)	729 (28.71)	712 (28.03)	729 (28.71)	712 (28.03)	

REGION: 14 Hermiston
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	33 (1.30)	21 (0.83)	34 (1.34)	22 (0.87)	34 (1.34)	24 (0.94)	36 (1.42)	26 (1.02)	37 (1.46)	30 (1.18)	39 (1.54)	31 (1.22)	39 (1.54)	31 (1.22)	39 (1.54)	31 (1.22)	39 (1.54)	31 (1.22)
April	107 (4.21)	90 (3.54)	109 (4.29)	96 (3.78)	111 (4.37)	101 (3.98)	113 (4.45)	106 (4.17)	117 (4.61)	112 (4.41)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)	121 (4.76)	115 (4.53)
May	163 (6.42)	150 (5.91)	168 (6.61)	155 (6.10)	173 (6.81)	159 (6.26)	177 (6.97)	167 (6.57)	180 (7.09)	173 (6.81)	182 (7.17)	177 (6.97)	182 (7.17)	177 (6.97)	182 (7.17)	177 (6.97)	182 (7.17)	177 (6.97)
June	184 (7.24)	169 (6.65)	187 (7.36)	173 (6.81)	189 (7.44)	177 (6.97)	192 (7.56)	181 (7.13)	196 (7.72)	195 (7.68)	201 (7.91)	200 (7.87)	201 (7.91)	200 (7.87)	201 (7.91)	200 (7.87)	201 (7.91)	200 (7.87)
July	107 (4.21)	103 (4.06)	107 (4.21)	105 (4.13)	108 (4.25)	106 (4.17)	110 (4.33)	108 (4.25)	111 (4.37)	111 (4.37)	113 (4.45)	113 (4.45)	113 (4.45)	113 (4.45)	113 (4.45)	113 (4.45)	113 (4.45)	113 (4.45)
Season	594 (23.38)	533 (20.99)	605 (23.81)	551 (21.69)	615 (24.21)	567 (22.32)	628 (24.73)	588 (23.14)	641 (25.25)	621 (24.45)	656 (25.83)	636 (25.04)	656 (25.83)	636 (25.04)	656 (25.83)	636 (25.04)	656 (25.83)	636 (25.04)

REGION: 14 Hermiston
CROP: Mint

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)
April	50 (1.97)	35 (1.38)	50 (1.97)	40 (1.57)	51 (2.01)	44 (1.73)	52 (2.05)	47 (1.85)	54 (2.13)	50 (1.97)	54 (2.13)	52 (2.05)	54 (2.13)	50 (1.97)	54 (2.13)	52 (2.05)	54 (2.13)	52 (2.05)
May	142 (5.59)	128 (5.04)	146 (5.75)	133 (5.24)	149 (5.87)	137 (5.39)	153 (6.02)	144 (5.67)	156 (6.14)	150 (5.91)	157 (6.18)	153 (6.02)	156 (6.14)	150 (5.91)	157 (6.18)	153 (6.02)	157 (6.18)	153 (6.02)
June	197 (7.76)	181 (7.13)	200 (7.87)	186 (7.32)	202 (7.95)	190 (7.48)	205 (8.07)	194 (7.64)	210 (8.27)	208 (8.19)	215 (8.46)	213 (8.39)	210 (8.27)	208 (8.19)	215 (8.46)	213 (8.39)	215 (8.46)	213 (8.39)
July	194 (7.64)	193 (7.60)	196 (7.72)	195 (7.68)	198 (7.80)	197 (7.76)	201 (7.91)	199 (7.83)	207 (8.15)	203 (7.99)	209 (8.23)	207 (8.15)	207 (8.15)	203 (7.99)	209 (8.23)	207 (8.15)	209 (8.23)	207 (8.15)
Aug	26 (1.02)	25 (0.98)	26 (1.02)	26 (1.02)	27 (1.06)	26 (1.02)	28 (1.10)	27 (1.06)	28 (1.10)	28 (1.10)	29 (1.14)	28 (1.10)	28 (1.10)	28 (1.10)	29 (1.14)	28 (1.10)	29 (1.14)	28 (1.10)
Season	610 (24.02)	563 (22.17)	619 (24.37)	581 (22.87)	628 (24.73)	595 (23.42)	640 (25.19)	612 (24.09)	656 (25.83)	640 (25.20)	665 (26.18)	654 (25.75)	656 (25.83)	640 (25.20)	665 (26.18)	654 (25.75)	665 (26.18)	654 (25.75)

REGION: 14 Hermiston
CROP: Onions

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	6 (0.24)	5 (0.20)	6 (0.24)	6 (0.24)	6 (0.24)	6 (0.24)	6 (0.24)	6 (0.24)	7 (0.28)	6 (0.24)	7 (0.28)	6 (0.24)	7 (0.28)	6 (0.24)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)
April	57 (2.24)	44 (1.73)	57 (2.24)	49 (1.93)	58 (2.28)	52 (2.05)	59 (2.32)	55 (2.17)	59 (2.32)	55 (2.17)	60 (2.36)	58 (2.28)	62 (2.44)	59 (2.32)	62 (2.44)	59 (2.32)	62 (2.44)	59 (2.32)
May	95 (3.74)	84 (3.31)	97 (3.82)	87 (3.43)	99 (3.90)	91 (3.58)	101 (3.98)	94 (3.70)	101 (3.98)	94 (3.70)	103 (4.06)	99 (3.90)	103 (4.06)	101 (3.90)	103 (4.06)	101 (3.90)	103 (4.06)	101 (3.90)
June	143 (5.63)	131 (5.16)	145 (5.71)	135 (5.31)	147 (5.79)	138 (5.43)	149 (5.87)	143 (5.63)	149 (5.87)	143 (5.63)	152 (5.98)	151 (5.94)	156 (6.14)	155 (6.10)	156 (6.14)	155 (6.10)	156 (6.14)	155 (6.10)
July	196 (7.72)	193 (7.60)	197 (7.76)	197 (7.76)	199 (7.83)	199 (7.83)	203 (7.99)	202 (7.95)	203 (7.99)	202 (7.95)	206 (8.11)	204 (8.03)	208 (8.19)	208 (8.19)	208 (8.19)	208 (8.19)	208 (8.19)	208 (8.19)
Aug	167 (6.57)	165 (6.50)	170 (6.69)	168 (6.61)	176 (6.93)	172 (6.77)	181 (7.13)	176 (6.93)	181 (7.13)	176 (6.93)	185 (7.28)	185 (7.28)	191 (7.52)	188 (7.40)	191 (7.52)	188 (7.40)	191 (7.52)	188 (7.40)
Sep	75 (2.95)	70 (2.76)	76 (2.99)	72 (2.83)	77 (3.03)	73 (2.87)	78 (3.07)	76 (2.99)	78 (3.07)	76 (2.99)	81 (3.19)	79 (3.11)	81 (3.19)	80 (3.15)	81 (3.19)	80 (3.15)	81 (3.19)	80 (3.15)
Season	739 (29.09)	692 (27.26)	748 (29.45)	714 (28.11)	762 (30.00)	731 (28.77)	778 (30.64)	752 (29.61)	794 (31.26)	782 (30.78)	808 (31.82)	798 (31.42)						

REGION: 14 Hermiston
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	21 (0.83)	17 (0.67)	22 (0.87)	18 (0.71)	23 (0.91)	19 (0.75)	24 (0.94)	20 (0.79)	25 (0.98)	22 (0.87)	26 (1.02)	24 (0.94)						
April	100 (3.94)	84 (3.31)	102 (4.02)	89 (3.50)	104 (4.09)	94 (3.70)	106 (4.17)	100 (3.94)	112 (4.41)	105 (4.13)	113 (4.45)	108 (4.25)						
May	144 (5.67)	131 (5.16)	148 (5.83)	135 (5.31)	153 (6.02)	140 (5.51)	157 (6.18)	146 (5.75)	160 (6.30)	153 (6.02)	161 (6.34)	156 (6.14)						
June	166 (6.54)	153 (6.02)	168 (6.61)	157 (6.18)	171 (6.73)	161 (6.34)	174 (6.85)	165 (6.50)	178 (7.01)	177 (6.97)	183 (7.20)	181 (7.13)						
July	190 (7.48)	186 (7.32)	192 (7.56)	189 (7.44)	194 (7.64)	192 (7.56)	197 (7.76)	195 (7.68)	200 (7.87)	199 (7.83)	202 (7.95)	202 (7.95)						
Aug	161 (6.34)	158 (6.22)	163 (6.42)	161 (6.34)	168 (6.61)	163 (6.42)	173 (6.81)	169 (6.65)	176 (6.93)	176 (6.93)	182 (7.17)	179 (7.05)						
Sep	111 (4.37)	102 (4.02)	112 (4.41)	105 (4.13)	113 (4.45)	109 (4.29)	115 (4.53)	113 (4.45)	119 (4.69)	117 (4.61)	120 (4.72)	119 (4.69)						
Oct	64 (2.52)	49 (1.93)	65 (2.56)	52 (2.05)	66 (2.60)	55 (2.17)	67 (2.64)	58 (2.28)	68 (2.68)	63 (2.48)	69 (2.72)	66 (2.60)						
Season	957 (37.69)	880 (34.65)	972 (38.28)	906 (35.66)	992 (39.05)	933 (36.74)	1013 (39.88)	966 (38.04)	1038 (40.87)	1012 (39.84)	1056 (41.57)	1035 (40.75)						

REGION: 14 Hermiston
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	46 (1.81)	32 (1.26)	47 (1.85)	34 (1.34)	49 (1.93)	36 (1.42)	51 (2.01)	38 (1.50)	53 (2.09)	42 (1.65)	56 (2.20)	45 (1.77)	56 (2.20)	45 (1.77)	56 (2.20)	45 (1.77)	56 (2.20)	45 (1.77)
April	93 (3.66)	77 (3.03)	95 (3.74)	82 (3.23)	97 (3.82)	87 (3.43)	99 (3.90)	92 (3.62)	104 (4.09)	98 (3.86)	106 (4.17)	100 (3.94)	106 (4.17)	100 (3.94)	106 (4.17)	100 (3.94)	106 (4.17)	100 (3.94)
May	146 (5.75)	133 (5.24)	150 (5.91)	137 (5.39)	155 (6.10)	142 (5.59)	159 (6.26)	148 (5.83)	162 (6.38)	155 (6.10)	163 (6.42)	158 (6.22)	163 (6.42)	158 (6.22)	163 (6.42)	158 (6.22)	163 (6.42)	158 (6.22)
June	188 (7.40)	173 (6.81)	191 (7.52)	177 (6.97)	193 (7.60)	181 (7.13)	196 (7.72)	185 (7.28)	200 (7.87)	199 (7.83)	205 (8.07)	204 (8.03)	205 (8.07)	204 (8.03)	205 (8.07)	204 (8.03)	205 (8.07)	204 (8.03)
July	217 (8.54)	214 (8.43)	219 (8.62)	218 (8.58)	221 (8.70)	221 (8.70)	225 (8.86)	224 (8.82)	229 (9.02)	229 (9.02)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)
Aug	185 (7.28)	179 (7.05)	188 (7.40)	181 (7.13)	191 (7.52)	187 (7.36)	199 (7.83)	193 (7.60)	202 (7.95)	201 (7.91)	208 (8.19)	205 (8.07)	208 (8.19)	205 (8.07)	208 (8.19)	205 (8.07)	208 (8.19)	205 (8.07)
Sep	119 (4.69)	110 (4.33)	120 (4.72)	113 (4.45)	122 (4.80)	117 (4.61)	123 (4.84)	121 (4.76)	128 (5.04)	126 (4.96)	129 (5.08)	128 (5.04)	129 (5.08)	128 (5.04)	129 (5.08)	128 (5.04)	129 (5.08)	128 (5.04)
Oct	58 (2.28)	43 (1.69)	59 (2.32)	46 (1.81)	60 (2.36)	49 (1.93)	60 (2.36)	52 (2.05)	62 (2.44)	57 (2.24)	63 (2.48)	59 (2.32)	62 (2.44)	57 (2.24)	63 (2.48)	59 (2.32)	63 (2.48)	59 (2.32)
Nov	15 (0.59)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	3 (0.12)	18 (0.71)	10 (0.39)	17 (0.67)	3 (0.12)	18 (0.71)	10 (0.39)	18 (0.71)	10 (0.39)
Season	1067 (42.00)	962 (37.88)	1084 (42.67)	989 (38.94)	1104 (43.46)	1021 (40.21)	1128 (44.41)	1054 (41.50)	1157 (45.55)	1110 (43.69)	1179 (46.41)	1140 (44.87)	1157 (45.55)	1110 (43.69)	1179 (46.41)	1140 (44.87)	1179 (46.41)	1140 (44.87)

REGION: 14 Hermiston
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	18 (0.71)	12 (0.47)	19 (0.75)	12 (0.47)	19 (0.75)	13 (0.51)	19 (0.75)	14 (0.55)	20 (0.79)	16 (0.63)	21 (0.83)	17 (0.67)	20 (0.79)	16 (0.63)	21 (0.83)	17 (0.67)	21 (0.83)	17 (0.67)
April	74 (2.91)	58 (2.28)	75 (2.95)	65 (2.56)	77 (3.03)	69 (2.72)	78 (3.07)	73 (2.87)	82 (3.23)	77 (3.03)	83 (3.27)	79 (3.11)	82 (3.23)	77 (3.03)	83 (3.27)	79 (3.11)	83 (3.27)	79 (3.11)
May	160 (6.30)	147 (5.79)	164 (6.46)	151 (5.94)	170 (6.69)	156 (6.14)	173 (6.81)	163 (6.42)	176 (6.93)	170 (6.69)	178 (7.01)	173 (6.81)	176 (6.93)	170 (6.69)	178 (7.01)	173 (6.81)	178 (7.01)	173 (6.81)
June	190 (7.48)	175 (6.89)	193 (7.60)	179 (7.05)	195 (7.68)	183 (7.20)	198 (7.80)	187 (7.36)	202 (7.95)	201 (7.91)	207 (8.15)	206 (8.11)	202 (7.95)	201 (7.91)	207 (8.15)	206 (8.11)	207 (8.15)	206 (8.11)
July	132 (5.20)	132 (5.20)	134 (5.28)	134 (5.28)	135 (5.31)	135 (5.31)	137 (5.39)	137 (5.39)	142 (5.59)	141 (5.55)	143 (5.63)	143 (5.63)	142 (5.59)	141 (5.55)	143 (5.63)	143 (5.63)	143 (5.63)	143 (5.63)
Season	574 (22.60)	524 (20.63)	585 (23.04)	541 (21.30)	596 (23.46)	556 (21.88)	605 (23.82)	574 (22.59)	622 (24.49)	605 (23.81)	632 (24.89)	618 (24.33)	622 (24.49)	605 (23.81)	632 (24.89)	618 (24.33)	632 (24.89)	618 (24.33)

REGION: 14 Hermiston
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	46 (1.81)	32 (1.26)	47 (1.85)	34 (1.34)	49 (1.93)	36 (1.42)	51 (2.01)	38 (1.50)	53 (2.09)	42 (1.65)	56 (2.20)	45 (1.77)	56 (2.20)	45 (1.77)	56 (2.20)	45 (1.77)	56 (2.20)	45 (1.77)
April	93 (3.66)	77 (3.03)	95 (3.74)	82 (3.23)	97 (3.82)	87 (3.43)	99 (3.90)	92 (3.62)	104 (4.09)	98 (3.86)	106 (4.17)	100 (3.94)	106 (4.17)	100 (3.94)	106 (4.17)	100 (3.94)	106 (4.17)	100 (3.94)
May	146 (5.75)	133 (5.24)	150 (5.91)	137 (5.39)	155 (6.10)	142 (5.59)	159 (6.26)	148 (5.83)	162 (6.38)	155 (6.10)	163 (6.42)	158 (6.22)	163 (6.42)	158 (6.22)	163 (6.42)	158 (6.22)	163 (6.42)	158 (6.22)
June	188 (7.40)	173 (6.81)	191 (7.52)	177 (6.97)	193 (7.60)	181 (7.13)	196 (7.72)	185 (7.28)	200 (7.87)	199 (7.83)	205 (8.07)	204 (8.03)	205 (8.07)	204 (8.03)	205 (8.07)	204 (8.03)	205 (8.07)	204 (8.03)
July	217 (8.54)	214 (8.43)	219 (8.62)	218 (8.58)	221 (8.70)	221 (8.70)	225 (8.86)	224 (8.82)	229 (9.02)	229 (9.02)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)	231 (9.09)
Aug	185 (7.28)	179 (7.05)	188 (7.40)	181 (7.13)	191 (7.52)	187 (7.36)	199 (7.83)	193 (7.60)	202 (7.95)	201 (7.91)	208 (8.19)	205 (8.07)	208 (8.19)	205 (8.07)	208 (8.19)	205 (8.07)	208 (8.19)	205 (8.07)
Sep	119 (4.69)	110 (4.33)	120 (4.72)	113 (4.45)	122 (4.80)	117 (4.61)	123 (4.84)	121 (4.76)	128 (5.04)	126 (4.96)	129 (5.08)	128 (5.04)	129 (5.08)	128 (5.04)	129 (5.08)	128 (5.04)	129 (5.08)	128 (5.04)
Oct	58 (2.28)	43 (1.69)	59 (2.32)	46 (1.81)	60 (2.36)	49 (1.93)	60 (2.36)	52 (2.05)	62 (2.44)	57 (2.24)	63 (2.48)	59 (2.32)	62 (2.44)	57 (2.24)	63 (2.48)	59 (2.32)	63 (2.48)	59 (2.32)
Nov	15 (0.59)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	3 (0.12)	18 (0.71)	10 (0.39)	17 (0.67)	3 (0.12)	18 (0.71)	10 (0.39)	18 (0.71)	10 (0.39)
Season	1067 (42.00)	962 (37.88)	1084 (42.67)	989 (38.94)	1104 (43.46)	1021 (40.21)	1128 (44.41)	1054 (41.50)	1157 (45.55)	1110 (43.69)	1179 (46.41)	1140 (44.87)	1179 (46.41)	1110 (43.69)	1179 (46.41)	1140 (44.87)	1179 (46.41)	1140 (44.87)

REGION: 14 Hermiston
CROP: Potatoes (Early)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	19 (0.75)	10 (0.39)	20 (0.79)	11 (0.43)	20 (0.79)	13 (0.51)	20 (0.79)	14 (0.55)	21 (0.83)	16 (0.63)	22 (0.87)	17 (0.67)	21 (0.83)	16 (0.63)	22 (0.87)	17 (0.67)	22 (0.87)	17 (0.67)
April	57 (2.24)	42 (1.65)	58 (2.28)	48 (1.89)	58 (2.28)	52 (2.05)	59 (2.32)	55 (2.17)	62 (2.44)	58 (2.28)	63 (2.48)	60 (2.36)	62 (2.44)	58 (2.28)	63 (2.48)	60 (2.36)	63 (2.48)	60 (2.36)
May	141 (5.55)	129 (5.08)	144 (5.67)	133 (5.24)	149 (5.87)	136 (5.35)	152 (5.98)	142 (5.59)	154 (6.06)	148 (5.83)	156 (6.14)	151 (5.94)	154 (6.06)	148 (5.83)	156 (6.14)	151 (5.94)	156 (6.14)	151 (5.94)
June	191 (7.52)	176 (6.93)	194 (7.64)	181 (7.13)	196 (7.72)	185 (7.28)	199 (7.83)	189 (7.44)	204 (8.03)	196 (7.72)	209 (8.23)	208 (8.19)	204 (8.03)	196 (7.72)	209 (8.23)	208 (8.19)	209 (8.23)	208 (8.19)
July	192 (7.56)	190 (7.48)	194 (7.64)	192 (7.56)	196 (7.72)	195 (7.68)	199 (7.83)	198 (7.80)	202 (7.95)	202 (7.95)	204 (8.03)	204 (8.03)	202 (7.95)	202 (7.95)	204 (8.03)	204 (8.03)	204 (8.03)	204 (8.03)
Season	600 (23.62)	547 (21.53)	610 (24.02)	565 (22.25)	619 (24.38)	581 (22.87)	629 (24.75)	598 (23.55)	643 (25.31)	620 (24.41)	654 (25.75)	640 (25.19)	643 (25.31)	620 (24.41)	654 (25.75)	640 (25.19)	654 (25.75)	640 (25.19)

REGION: 14 Hermiston
CROP: Potatoes (Mid)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
April	28 (1.10)	20 (0.79)	29 (1.14)	29 (1.14)	23 (0.91)	29 (1.14)	29 (1.14)	25 (0.98)	29 (1.14)	26 (1.02)	30 (1.18)	28 (1.10)	30 (1.18)	28 (1.10)	30 (1.18)	29 (1.14)	29 (1.14)	29 (1.14)
May	72 (2.83)	60 (2.36)	72 (2.83)	74 (2.91)	67 (2.64)	74 (2.91)	74 (2.91)	67 (2.64)	74 (2.91)	70 (2.76)	76 (2.99)	73 (2.87)	77 (3.03)	73 (2.87)	77 (3.03)	75 (2.95)	75 (2.95)	75 (2.95)
June	154 (6.06)	141 (5.55)	156 (6.14)	156 (6.14)	145 (5.71)	158 (6.22)	158 (6.22)	148 (5.83)	160 (6.30)	151 (5.94)	163 (6.42)	163 (6.42)	168 (6.61)	163 (6.42)	168 (6.61)	167 (6.57)	167 (6.57)	167 (6.57)
July	219 (8.62)	217 (8.54)	221 (8.70)	223 (8.78)	223 (8.78)	223 (8.78)	223 (8.78)	223 (8.78)	226 (8.90)	226 (8.90)	230 (9.06)	228 (8.98)	233 (9.17)	230 (9.06)	233 (9.17)	233 (9.17)	233 (9.17)	233 (9.17)
Aug	185 (7.28)	182 (7.17)	186 (7.32)	186 (7.32)	184 (7.24)	193 (7.60)	193 (7.60)	188 (7.40)	199 (7.83)	193 (7.60)	203 (7.99)	203 (7.99)	210 (8.27)	203 (7.99)	210 (8.27)	206 (8.11)	206 (8.11)	206 (8.11)
Sep	102 (4.02)	95 (3.74)	104 (4.09)	104 (4.09)	97 (3.82)	105 (4.13)	105 (4.13)	99 (3.90)	106 (4.17)	102 (4.02)	110 (4.33)	109 (4.29)	111 (4.37)	110 (4.33)	111 (4.37)	110 (4.33)	110 (4.33)	110 (4.33)
Season	760 (29.91)	715 (28.15)	768 (30.22)	732 (28.82)	782 (30.78)	750 (29.53)	795 (31.29)	768 (30.24)	812 (31.97)	804 (31.65)	829 (32.63)	820 (32.27)						

REGION: 14 Hermiston
CROP: Potatoes (Late)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
April	7 (0.28)	6 (0.24)	7 (0.28)	7 (0.28)	6 (0.24)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)	7 (0.28)
May	58 (2.28)	46 (1.81)	58 (2.28)	59 (2.32)	52 (2.05)	59 (2.32)	59 (2.32)	52 (2.05)	59 (2.32)	55 (2.17)	60 (2.36)	57 (2.24)	60 (2.36)	57 (2.24)	60 (2.36)	59 (2.32)	59 (2.32)	59 (2.32)
June	114 (4.49)	101 (3.98)	115 (4.53)	116 (4.57)	109 (4.29)	116 (4.57)	116 (4.57)	109 (4.29)	118 (4.65)	113 (4.45)	120 (4.72)	118 (4.65)	124 (4.88)	118 (4.65)	124 (4.88)	121 (4.76)	121 (4.76)	121 (4.76)
July	210 (8.27)	207 (8.15)	211 (8.31)	213 (8.39)	213 (8.39)	213 (8.39)	213 (8.39)	213 (8.39)	217 (8.54)	215 (8.46)	220 (8.66)	218 (8.58)	223 (8.78)	218 (8.58)	223 (8.78)	223 (8.78)	223 (8.78)	223 (8.78)
Aug	185 (7.28)	182 (7.17)	186 (7.32)	186 (7.32)	184 (7.24)	193 (7.60)	193 (7.60)	188 (7.40)	199 (7.83)	193 (7.60)	203 (7.99)	203 (7.99)	210 (8.27)	203 (7.99)	210 (8.27)	206 (8.11)	206 (8.11)	206 (8.11)
Sep	117 (4.61)	110 (4.33)	120 (4.72)	122 (4.80)	116 (4.57)	123 (4.84)	123 (4.84)	119 (4.69)	128 (5.04)	124 (4.88)	129 (5.08)	127 (5.00)	129 (5.08)	127 (5.00)	129 (5.08)	127 (5.00)	127 (5.00)	127 (5.00)
Oct	27 (1.06)	21 (0.83)	27 (1.06)	28 (1.10)	24 (0.94)	28 (1.10)	28 (1.10)	26 (1.02)	29 (1.14)	27 (1.06)	29 (1.14)	27 (1.06)	29 (1.14)	27 (1.06)	29 (1.14)	28 (1.10)	28 (1.10)	28 (1.10)
Season	718 (28.27)	673 (26.51)	724 (28.50)	690 (27.17)	738 (29.06)	709 (27.92)	751 (29.56)	728 (28.67)	767 (30.19)	754 (29.68)	782 (30.79)	771 (30.35)						

REGION: 15 Milton-Freewater
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	34 (1.34)	2 (0.08)	35 (1.38)	2 (0.08)	37 (1.46)	3 (0.12)	39 (1.54)	5 (0.20)	42 (1.65)	16 (0.63)	43 (1.69)	20 (0.79)	43 (1.69)	20 (0.79)	43 (1.69)	20 (0.79)	43 (1.69)	20 (0.79)
April	69 (2.72)	29 (1.14)	72 (2.83)	35 (1.38)	73 (2.87)	42 (1.65)	75 (2.95)	52 (2.05)	82 (3.23)	62 (2.44)	84 (3.31)	68 (2.68)	84 (3.31)	68 (2.68)	84 (3.31)	68 (2.68)	84 (3.31)	68 (2.68)
May	105 (4.13)	62 (2.44)	106 (4.17)	69 (2.72)	109 (4.29)	77 (3.03)	111 (4.37)	85 (3.35)	120 (4.72)	104 (4.09)	122 (4.80)	114 (4.49)	122 (4.80)	114 (4.49)	122 (4.80)	114 (4.49)	122 (4.80)	114 (4.49)
June	121 (4.76)	87 (3.43)	123 (4.84)	93 (3.66)	124 (4.88)	100 (3.94)	129 (5.08)	106 (4.17)	132 (5.20)	112 (4.41)	137 (5.39)	126 (4.96)	137 (5.39)	126 (4.96)	137 (5.39)	126 (4.96)	137 (5.39)	126 (4.96)
July	172 (6.77)	162 (6.38)	173 (6.81)	166 (6.54)	175 (6.89)	170 (6.69)	177 (6.97)	174 (6.85)	181 (7.13)	177 (6.97)	184 (7.24)	182 (7.17)	184 (7.24)	182 (7.17)	184 (7.24)	182 (7.17)	184 (7.24)	182 (7.17)
Aug	140 (5.51)	131 (5.16)	142 (5.59)	136 (5.35)	144 (5.67)	140 (5.51)	146 (5.75)	143 (5.63)	150 (5.91)	147 (5.79)	155 (6.10)	151 (5.94)	155 (6.10)	151 (5.94)	155 (6.10)	151 (5.94)	155 (6.10)	151 (5.94)
Sep	84 (3.31)	59 (2.32)	86 (3.39)	66 (2.60)	89 (3.50)	73 (2.87)	91 (3.58)	84 (3.31)	93 (3.66)	89 (3.50)	95 (3.74)	92 (3.62)	95 (3.74)	92 (3.62)	95 (3.74)	92 (3.62)	95 (3.74)	92 (3.62)
Season	725 (28.54)	532 (20.95)	737 (29.01)	567 (22.33)	751 (29.56)	605 (23.81)	768 (30.24)	649 (25.56)	800 (31.50)	707 (27.83)	820 (32.27)	753 (29.65)	820 (32.27)	753 (29.65)	820 (32.27)	753 (29.65)	820 (32.27)	753 (29.65)

REGION: 15 Milton-Freewater
CROP: Apples

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	30 (1.18)	1 (0.04)	32 (1.26)	2 (0.08)	33 (1.30)	2 (0.08)	35 (1.38)	2 (0.08)	38 (1.50)	2 (0.08)	39 (1.54)	17 (0.67)	39 (1.54)	17 (0.67)	39 (1.54)	17 (0.67)	39 (1.54)	17 (0.67)
April	72 (2.83)	30 (1.18)	75 (2.95)	38 (1.50)	77 (3.03)	46 (1.81)	79 (3.11)	54 (2.13)	85 (3.35)	63 (2.48)	88 (3.46)	69 (2.72)	88 (3.46)	69 (2.72)	88 (3.46)	69 (2.72)	88 (3.46)	69 (2.72)
May	121 (4.76)	79 (3.11)	124 (4.88)	86 (3.39)	128 (5.04)	93 (3.66)	132 (5.20)	100 (3.94)	139 (5.47)	122 (4.80)	142 (5.59)	134 (5.28)	139 (5.47)	122 (4.80)	142 (5.59)	134 (5.28)	142 (5.59)	134 (5.28)
June	156 (6.14)	119 (4.69)	159 (6.26)	127 (5.00)	161 (6.34)	134 (5.28)	167 (6.57)	142 (5.59)	171 (6.73)	150 (5.91)	177 (6.97)	165 (6.50)	177 (6.97)	150 (5.91)	177 (6.97)	165 (6.50)	177 (6.97)	165 (6.50)
July	233 (9.17)	222 (8.74)	235 (9.25)	227 (8.94)	237 (9.33)	232 (9.13)	239 (9.41)	237 (9.33)	245 (9.65)	242 (9.53)	250 (9.84)	248 (9.76)	250 (9.84)	248 (9.76)	250 (9.84)	248 (9.76)	250 (9.84)	248 (9.76)
Aug	190 (7.48)	179 (7.05)	193 (7.60)	185 (7.28)	195 (7.68)	190 (7.48)	198 (7.80)	195 (7.68)	203 (7.99)	200 (7.87)	210 (8.27)	205 (8.07)	210 (8.27)	205 (8.07)	210 (8.27)	205 (8.07)	210 (8.27)	205 (8.07)
Sep	119 (4.69)	90 (3.54)	122 (4.80)	98 (3.86)	125 (4.92)	106 (4.17)	128 (5.04)	119 (4.69)	132 (5.20)	127 (5.00)	135 (5.31)	131 (5.16)	135 (5.31)	131 (5.16)	135 (5.31)	131 (5.16)	135 (5.31)	131 (5.16)
Oct	47 (1.85)	13 (0.51)	49 (1.93)	19 (0.75)	52 (2.05)	24 (0.94)	53 (2.09)	32 (1.26)	54 (2.13)	42 (1.65)	58 (2.28)	51 (2.01)	54 (2.13)	42 (1.65)	58 (2.28)	51 (2.01)	58 (2.28)	51 (2.01)
Nov	8 (0.31)	1 (0.04)	10 (0.39)	1 (0.04)	11 (0.43)	1 (0.04)	11 (0.43)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)
Season	976 (38.41)	734 (28.90)	999 (39.32)	783 (30.84)	1019 (40.12)	828 (32.59)	1042 (41.03)	882 (34.74)	1080 (42.53)	959 (37.75)	1112 (43.77)	1021 (40.21)	1080 (42.53)	959 (37.75)	1112 (43.77)	1021 (40.21)	1112 (43.77)	1021 (40.21)

REGION: 15 Milton-Freewater
CROP: Berries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
May	34 (1.34)	14 (0.55)	34 (1.34)	34 (1.34)	17 (0.67)	35 (1.38)	35 (1.38)	21 (0.83)	36 (1.42)	36 (1.42)	25 (0.98)	36 (1.42)	36 (1.42)	32 (1.26)	37 (1.46)	35 (1.38)		
June	79 (3.11)	50 (1.97)	81 (3.19)	83 (3.27)	55 (2.17)	83 (3.27)	83 (3.27)	59 (2.32)	84 (3.31)	84 (3.31)	64 (2.52)	87 (3.43)	87 (3.43)	71 (2.80)	90 (3.54)	80 (3.15)		
July	131 (5.16)	122 (4.80)	132 (5.20)	134 (5.28)	125 (4.92)	134 (5.28)	134 (5.28)	128 (5.04)	135 (5.31)	135 (5.31)	132 (5.20)	137 (5.39)	137 (5.39)	136 (5.35)	141 (5.55)	140 (5.51)		
Aug	111 (4.37)	102 (4.02)	113 (4.45)	115 (4.53)	107 (4.21)	115 (4.53)	115 (4.53)	110 (4.33)	117 (4.61)	117 (4.61)	113 (4.45)	119 (4.69)	119 (4.69)	118 (4.65)	122 (4.80)	122 (4.80)		
Sep	74 (2.91)	47 (1.85)	76 (2.99)	78 (3.07)	54 (2.13)	78 (3.07)	78 (3.07)	61 (2.40)	80 (3.15)	80 (3.15)	72 (2.83)	82 (3.23)	82 (3.23)	78 (3.07)	84 (3.31)	81 (3.19)		
Oct	39 (1.54)	4 (0.16)	40 (1.57)	42 (1.65)	9 (0.35)	42 (1.65)	42 (1.65)	13 (0.51)	43 (1.69)	43 (1.69)	21 (0.83)	45 (1.77)	45 (1.77)	32 (1.26)	46 (1.81)	40 (1.57)		
Nov	1 (0.04)	0 (0.00)	2 (0.08)	2 (0.08)	0 (0.00)	2 (0.08)	2 (0.08)	0 (0.00)	2 (0.08)	2 (0.08)	0 (0.00)	3 (0.12)	3 (0.12)	0 (0.00)	3 (0.12)	1 (0.04)		
Season	469 (18.47)	339 (13.35)	478 (18.82)	489 (19.26)	367 (14.45)	489 (19.26)	489 (19.26)	392 (15.43)	497 (19.57)	497 (19.57)	427 (16.81)	509 (20.05)	509 (20.05)	467 (18.39)	523 (20.59)	499 (19.64)		

REGION: 15 Milton-Freewater
CROP: Cherries

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
March	30 (1.18)	1 (0.04)	32 (1.26)	33 (1.30)	2 (0.08)	33 (1.30)	33 (1.30)	2 (0.08)	35 (1.38)	35 (1.38)	2 (0.08)	38 (1.50)	38 (1.50)	12 (0.47)	39 (1.54)	17 (0.67)		
April	72 (2.83)	30 (1.18)	75 (2.95)	77 (3.03)	38 (1.50)	77 (3.03)	77 (3.03)	46 (1.81)	79 (3.11)	79 (3.11)	54 (2.13)	85 (3.35)	85 (3.35)	63 (2.48)	88 (3.46)	69 (2.72)		
May	121 (4.76)	79 (3.11)	124 (4.88)	128 (5.04)	86 (3.39)	128 (5.04)	128 (5.04)	93 (3.66)	132 (5.20)	132 (5.20)	100 (3.94)	139 (5.47)	139 (5.47)	122 (4.80)	142 (5.59)	134 (5.28)		
June	156 (6.14)	119 (4.69)	159 (6.26)	161 (6.34)	127 (5.00)	161 (6.34)	161 (6.34)	134 (5.28)	167 (6.57)	167 (6.57)	142 (5.59)	171 (6.73)	171 (6.73)	150 (5.91)	177 (6.97)	165 (6.50)		
July	233 (9.17)	222 (8.74)	235 (9.25)	237 (9.33)	227 (8.94)	237 (9.33)	237 (9.33)	232 (9.13)	239 (9.41)	239 (9.41)	237 (9.33)	245 (9.65)	245 (9.65)	242 (9.53)	250 (9.84)	248 (9.76)		
Aug	190 (7.48)	179 (7.05)	193 (7.60)	195 (7.68)	185 (7.28)	195 (7.68)	195 (7.68)	190 (7.48)	198 (7.80)	198 (7.80)	195 (7.68)	203 (7.99)	203 (7.99)	200 (7.87)	210 (8.27)	205 (8.07)		
Sep	119 (4.69)	90 (3.54)	122 (4.80)	125 (4.92)	98 (3.86)	125 (4.92)	125 (4.92)	106 (4.17)	128 (5.04)	128 (5.04)	119 (4.69)	132 (5.20)	132 (5.20)	127 (5.00)	135 (5.31)	131 (5.16)		
Oct	47 (1.85)	13 (0.51)	49 (1.93)	52 (2.05)	19 (0.75)	52 (2.05)	52 (2.05)	24 (0.94)	53 (2.09)	53 (2.09)	32 (1.26)	54 (2.13)	54 (2.13)	42 (1.65)	58 (2.28)	51 (2.01)		
Nov	8 (0.31)	1 (0.04)	10 (0.39)	11 (0.43)	1 (0.04)	11 (0.43)	11 (0.43)	1 (0.04)	11 (0.43)	11 (0.43)	1 (0.04)	13 (0.51)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)		
Season	976 (38.41)	754 (28.90)	999 (39.32)	783 (30.84)	1019 (40.12)	828 (32.59)	1042 (41.03)	882 (34.74)	1080 (42.53)	1080 (42.53)	959 (37.75)	1112 (43.77)	1112 (43.77)	1021 (40.21)				

REGION: 15 Milton-Freewater
CROP: Corn (Sweet)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	33 (1.30)	14 (0.55)	33 (1.30)	17 (0.67)	33 (1.30)	20 (0.79)	34 (1.34)	24 (0.94)	35 (1.38)	31 (1.22)	35 (1.38)	31 (1.22)	35 (1.38)	31 (1.22)	35 (1.38)	33 (1.30)	33 (1.30)	33 (1.30)
June	110 (4.33)	78 (3.07)	112 (4.41)	84 (3.31)	115 (4.53)	89 (3.50)	118 (4.65)	94 (3.70)	122 (4.80)	100 (3.94)	124 (4.88)	113 (4.45)	124 (4.88)	113 (4.45)	124 (4.88)	113 (4.45)	124 (4.88)	113 (4.45)
July	215 (8.46)	205 (8.07)	217 (8.54)	210 (8.27)	219 (8.62)	214 (8.43)	221 (8.70)	218 (8.58)	227 (8.94)	223 (8.78)	231 (9.09)	228 (8.98)	231 (9.09)	228 (8.98)	231 (9.09)	228 (8.98)	231 (9.09)	228 (8.98)
Aug	112 (4.41)	106 (4.17)	113 (4.45)	108 (4.25)	115 (4.53)	111 (4.37)	116 (4.57)	114 (4.49)	120 (4.72)	117 (4.61)	123 (4.84)	120 (4.72)	123 (4.84)	120 (4.72)	123 (4.84)	120 (4.72)	123 (4.84)	120 (4.72)
Season	470 (18.50)	403 (15.86)	475 (18.70)	419 (16.50)	482 (18.98)	434 (17.09)	489 (19.26)	450 (17.71)	504 (19.84)	471 (18.55)	513 (20.19)	494 (19.45)	513 (20.19)	494 (19.45)	513 (20.19)	494 (19.45)	513 (20.19)	494 (19.45)

REGION: 15 Milton-Freewater
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	4 (0.16)	16 (0.63)	6 (0.24)	16 (0.63)	6 (0.24)
April	54 (2.13)	13 (0.51)	55 (2.17)	19 (0.75)	57 (2.24)	26 (1.02)	59 (2.32)	35 (1.38)	61 (2.40)	43 (1.69)	64 (2.52)	48 (1.89)	61 (2.40)	43 (1.69)	64 (2.52)	48 (1.89)	64 (2.52)	48 (1.89)
May	107 (4.21)	62 (2.44)	109 (4.29)	72 (2.83)	111 (4.37)	80 (3.15)	114 (4.49)	87 (3.43)	119 (4.69)	107 (4.21)	123 (4.84)	116 (4.57)	119 (4.69)	107 (4.21)	123 (4.84)	116 (4.57)	123 (4.84)	116 (4.57)
June	149 (5.87)	112 (4.41)	151 (5.94)	119 (4.69)	153 (6.02)	127 (5.00)	158 (6.22)	134 (5.28)	163 (6.42)	142 (5.59)	168 (6.61)	157 (6.18)	163 (6.42)	142 (5.59)	168 (6.61)	157 (6.18)	168 (6.61)	157 (6.18)
July	209 (8.23)	202 (7.95)	211 (8.31)	207 (8.15)	214 (8.43)	211 (8.31)	218 (8.58)	216 (8.50)	223 (8.78)	220 (8.66)	228 (8.98)	225 (8.86)	223 (8.78)	220 (8.66)	228 (8.98)	225 (8.86)	228 (8.98)	225 (8.86)
Aug	86 (3.39)	79 (3.11)	87 (3.43)	82 (3.23)	88 (3.46)	85 (3.35)	90 (3.54)	88 (3.46)	91 (3.58)	91 (3.58)	94 (3.70)	94 (3.70)	91 (3.58)	91 (3.58)	94 (3.70)	94 (3.70)	94 (3.70)	94 (3.70)
Season	618 (24.34)	469 (18.46)	626 (24.65)	500 (19.69)	637 (25.07)	530 (20.87)	653 (25.70)	561 (22.09)	672 (26.46)	607 (23.89)	693 (27.28)	646 (25.44)	672 (26.46)	607 (23.89)	693 (27.28)	646 (25.44)	693 (27.28)	646 (25.44)

REGION: 15 Milton-Freewater
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	23 (0.91)	1 (0.04)	23 (0.91)	1 (0.04)	24 (0.94)	1 (0.04)	26 (1.02)	2 (0.08)	28 (1.10)	8 (0.31)	29 (1.14)	12 (0.47)	29 (1.14)	8 (0.31)	29 (1.14)	12 (0.47)	29 (1.14)	8 (0.31)
April	80 (3.15)	36 (1.42)	82 (3.23)	44 (1.73)	84 (3.31)	52 (2.05)	87 (3.43)	61 (2.40)	94 (3.70)	72 (2.83)	96 (3.78)	79 (3.11)	96 (3.78)	72 (2.83)	96 (3.78)	79 (3.11)	96 (3.78)	72 (2.83)
May	125 (4.92)	83 (3.27)	129 (5.08)	90 (3.54)	131 (5.16)	97 (3.82)	134 (5.28)	106 (4.17)	145 (5.71)	126 (4.96)	148 (5.83)	139 (5.47)	145 (5.71)	126 (4.96)	148 (5.83)	139 (5.47)	148 (5.83)	126 (4.96)
June	142 (5.59)	105 (4.13)	144 (5.67)	113 (4.45)	146 (5.75)	121 (4.76)	152 (5.98)	127 (5.00)	155 (6.10)	134 (5.28)	160 (6.30)	149 (5.87)	155 (6.10)	134 (5.28)	160 (6.30)	149 (5.87)	160 (6.30)	134 (5.28)
July	104 (4.09)	96 (3.78)	105 (4.13)	99 (3.90)	106 (4.17)	102 (4.02)	107 (4.21)	105 (4.13)	109 (4.29)	109 (4.29)	112 (4.41)	112 (4.41)	109 (4.29)	109 (4.29)	112 (4.41)	112 (4.41)	112 (4.41)	109 (4.29)
Season	474 (18.66)	321 (12.64)	483 (19.02)	347 (13.66)	491 (19.33)	373 (14.69)	506 (19.92)	401 (15.78)	531 (20.90)	449 (17.67)	545 (21.46)	491 (19.33)	531 (20.90)	449 (17.67)	545 (21.46)	491 (19.33)	545 (21.46)	491 (19.33)

REGION: 15 Milton-Freewater
CROP: Onions

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	4 (0.16)	0 (0.00)	4 (0.16)	0 (0.00)	5 (0.20)	0 (0.00)	5 (0.20)	1 (0.04)	5 (0.20)	3 (0.12)	5 (0.20)	4 (0.16)	5 (0.20)	3 (0.12)	5 (0.20)	4 (0.16)	5 (0.20)	3 (0.12)
April	47 (1.85)	13 (0.51)	48 (1.89)	18 (0.71)	49 (1.93)	23 (0.91)	51 (2.01)	31 (1.22)	53 (2.09)	38 (1.50)	54 (2.13)	42 (1.65)	53 (2.09)	38 (1.50)	54 (2.13)	42 (1.65)	54 (2.13)	38 (1.50)
May	79 (3.11)	45 (1.77)	81 (3.19)	50 (1.97)	82 (3.23)	56 (2.20)	84 (3.31)	64 (2.52)	87 (3.43)	76 (2.99)	90 (3.54)	82 (3.23)	87 (3.43)	76 (2.99)	90 (3.54)	82 (3.23)	90 (3.54)	76 (2.99)
June	115 (4.53)	87 (3.43)	117 (4.61)	92 (3.62)	119 (4.69)	98 (3.86)	122 (4.80)	103 (4.06)	127 (5.00)	108 (4.25)	129 (5.08)	120 (4.72)	127 (5.00)	108 (4.25)	129 (5.08)	120 (4.72)	129 (5.08)	108 (4.25)
July	193 (7.60)	184 (7.24)	195 (7.68)	188 (7.40)	196 (7.72)	191 (7.52)	198 (7.80)	196 (7.72)	203 (7.99)	200 (7.87)	207 (8.15)	204 (8.03)	203 (7.99)	200 (7.87)	207 (8.15)	204 (8.03)	207 (8.15)	200 (7.87)
Aug	161 (6.34)	152 (5.98)	163 (6.42)	156 (6.14)	165 (6.50)	161 (6.34)	167 (6.57)	165 (6.50)	172 (6.77)	169 (6.65)	177 (6.97)	172 (6.77)	172 (6.77)	169 (6.65)	177 (6.97)	172 (6.77)	177 (6.97)	169 (6.65)
Sep	69 (2.72)	53 (2.09)	70 (2.76)	57 (2.24)	72 (2.83)	62 (2.44)	74 (2.91)	70 (2.76)	76 (2.99)	74 (2.91)	78 (3.07)	76 (2.99)	76 (2.99)	74 (2.91)	78 (3.07)	76 (2.99)	78 (3.07)	74 (2.91)
Season	668 (26.31)	534 (21.02)	678 (26.71)	561 (22.08)	688 (27.10)	591 (23.27)	701 (27.60)	630 (24.82)	723 (28.47)	668 (26.29)	740 (29.14)	700 (27.55)	723 (28.47)	668 (26.29)	740 (29.14)	700 (27.55)	740 (29.14)	668 (26.29)

REGION: 15 Milton-Freewater
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	4 (0.16)	18 (0.71)	8 (0.31)	19 (0.75)	11 (0.43)	19 (0.75)	11 (0.43)	19 (0.75)	11 (0.43)	19 (0.75)	11 (0.43)
April	76 (2.99)	32 (1.26)	78 (3.07)	40 (1.57)	80 (3.15)	49 (1.93)	82 (3.23)	58 (2.28)	89 (3.50)	68 (2.68)	92 (3.62)	75 (2.95)	92 (3.62)	75 (2.95)	92 (3.62)	75 (2.95)	92 (3.62)	75 (2.95)
May	114 (4.49)	71 (2.80)	116 (4.57)	77 (3.03)	120 (4.72)	85 (3.35)	123 (4.84)	92 (3.62)	130 (5.12)	114 (4.49)	132 (5.20)	125 (4.92)	132 (5.20)	125 (4.92)	132 (5.20)	125 (4.92)	132 (5.20)	125 (4.92)
June	130 (5.12)	97 (3.82)	132 (5.20)	104 (4.09)	135 (5.31)	110 (4.33)	140 (5.51)	117 (4.61)	144 (5.67)	123 (4.84)	148 (5.83)	137 (5.39)	144 (5.67)	123 (4.84)	148 (5.83)	137 (5.39)	144 (5.67)	123 (4.84)
July	187 (7.36)	177 (6.97)	189 (7.44)	181 (7.13)	190 (7.48)	185 (7.28)	192 (7.56)	189 (7.44)	197 (7.76)	193 (7.60)	201 (7.91)	198 (7.80)	197 (7.76)	193 (7.60)	201 (7.91)	198 (7.80)	197 (7.76)	193 (7.60)
Aug	153 (6.02)	142 (5.59)	155 (6.10)	149 (5.87)	157 (6.18)	153 (6.02)	159 (6.26)	157 (6.18)	163 (6.42)	160 (6.30)	168 (6.61)	165 (6.50)	163 (6.42)	160 (6.30)	168 (6.61)	165 (6.50)	163 (6.42)	160 (6.30)
Sep	102 (4.02)	71 (2.80)	104 (4.09)	80 (3.15)	106 (4.17)	88 (3.46)	109 (4.29)	100 (3.94)	112 (4.41)	108 (4.25)	115 (4.53)	111 (4.37)	112 (4.41)	108 (4.25)	115 (4.53)	111 (4.37)	112 (4.41)	108 (4.25)
Oct	53 (2.09)	17 (0.67)	54 (2.13)	23 (0.91)	55 (2.17)	30 (1.18)	56 (2.20)	37 (1.46)	58 (2.28)	45 (1.77)	61 (2.40)	55 (2.17)	58 (2.28)	45 (1.77)	61 (2.40)	55 (2.17)	58 (2.28)	45 (1.77)
Season	829 (32.64)	608 (23.95)	842 (33.15)	655 (25.79)	858 (33.77)	701 (27.59)	877 (34.52)	754 (29.69)	911 (35.87)	819 (32.24)	936 (36.85)	877 (34.53)	911 (35.87)	819 (32.24)	936 (36.85)	877 (34.53)	911 (35.87)	819 (32.24)

REGION: 15 Milton-Freewater
CROP: Pears

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	30 (1.18)	1 (0.04)	32 (1.26)	2 (0.08)	33 (1.30)	2 (0.08)	35 (1.38)	2 (0.08)	38 (1.50)	12 (0.47)	39 (1.54)	17 (0.67)	38 (1.50)	12 (0.47)	39 (1.54)	17 (0.67)	38 (1.50)	12 (0.47)
April	69 (2.72)	27 (1.06)	70 (2.76)	33 (1.30)	72 (2.83)	41 (1.61)	74 (2.91)	51 (2.01)	80 (3.15)	59 (2.32)	83 (3.27)	65 (2.56)	80 (3.15)	59 (2.32)	83 (3.27)	65 (2.56)	80 (3.15)	59 (2.32)
May	111 (4.37)	69 (2.72)	112 (4.41)	75 (2.95)	116 (4.57)	82 (3.23)	119 (4.69)	90 (3.54)	123 (4.84)	110 (4.33)	128 (5.04)	121 (4.76)	123 (4.84)	110 (4.33)	128 (5.04)	121 (4.76)	123 (4.84)	110 (4.33)
June	142 (5.59)	107 (4.21)	144 (5.67)	114 (4.49)	147 (5.79)	121 (4.76)	153 (6.02)	128 (5.04)	157 (6.18)	136 (5.35)	162 (6.38)	151 (5.94)	157 (6.18)	136 (5.35)	162 (6.38)	151 (5.94)	157 (6.18)	136 (5.35)
July	214 (8.43)	204 (8.03)	216 (8.50)	209 (8.23)	218 (8.58)	213 (8.39)	220 (8.66)	217 (8.54)	225 (8.86)	222 (8.74)	230 (9.06)	227 (8.94)	225 (8.86)	222 (8.74)	230 (9.06)	227 (8.94)	225 (8.86)	222 (8.74)
Aug	174 (6.85)	163 (6.42)	176 (6.93)	169 (6.65)	179 (7.05)	174 (6.85)	181 (7.13)	178 (7.01)	186 (7.32)	183 (7.20)	192 (7.56)	187 (7.36)	186 (7.32)	183 (7.20)	192 (7.56)	187 (7.36)	186 (7.32)	183 (7.20)
Sep	109 (4.29)	80 (3.15)	112 (4.41)	87 (3.43)	114 (4.49)	95 (3.74)	117 (4.61)	110 (4.33)	121 (4.76)	116 (4.57)	124 (4.88)	119 (4.69)	121 (4.76)	116 (4.57)	124 (4.88)	119 (4.69)	121 (4.76)	116 (4.57)
Oct	47 (1.85)	10 (0.39)	48 (1.89)	17 (0.67)	50 (1.97)	21 (0.83)	52 (2.05)	30 (1.18)	53 (2.09)	39 (1.54)	54 (2.13)	48 (1.89)	53 (2.09)	39 (1.54)	54 (2.13)	48 (1.89)	53 (2.09)	39 (1.54)
Nov	8 (0.31)	1 (0.04)	10 (0.39)	1 (0.04)	11 (0.43)	1 (0.04)	11 (0.43)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)
Season	904 (35.59)	662 (26.06)	920 (36.22)	707 (27.84)	940 (37.01)	750 (29.53)	962 (37.88)	807 (31.77)	996 (39.21)	878 (34.56)	1025 (40.37)	936 (36.85)	996 (39.21)	878 (34.56)	1025 (40.37)	936 (36.85)	996 (39.21)	878 (34.56)

REGION: 15 Milton-Freewater
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	12 (0.47)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	4 (0.16)	15 (0.59)	4 (0.16)	15 (0.59)	6 (0.24)	15 (0.59)	6 (0.24)
April	59 (2.32)	18 (0.71)	61 (2.40)	24 (0.94)	62 (2.44)	31 (1.22)	64 (2.52)	40 (1.57)	64 (2.52)	40 (1.57)	67 (2.64)	48 (1.89)	67 (2.64)	48 (1.89)	69 (2.72)	54 (2.13)	69 (2.72)	54 (2.13)
May	124 (4.88)	80 (3.15)	126 (4.96)	88 (3.46)	130 (5.12)	95 (3.74)	134 (5.28)	102 (4.02)	134 (5.28)	102 (4.02)	138 (5.43)	124 (4.88)	138 (5.43)	124 (4.88)	143 (5.63)	136 (5.35)	143 (5.63)	136 (5.35)
June	146 (5.75)	109 (4.29)	148 (5.83)	117 (4.61)	151 (5.94)	124 (4.88)	157 (6.18)	131 (5.16)	157 (6.18)	131 (5.16)	162 (6.38)	139 (5.47)	162 (6.38)	139 (5.47)	165 (6.50)	154 (6.06)	165 (6.50)	154 (6.06)
July	130 (5.12)	125 (4.92)	131 (5.16)	128 (5.04)	132 (5.20)	130 (5.12)	133 (5.24)	132 (5.20)	133 (5.24)	132 (5.20)	137 (5.39)	135 (5.31)	137 (5.39)	135 (5.31)	139 (5.47)	138 (5.43)	139 (5.47)	138 (5.43)
Season	471 (18.54)	333 (13.11)	479 (18.86)	358 (14.09)	488 (19.21)	381 (15.00)	502 (19.77)	406 (15.99)	502 (19.77)	406 (15.99)	519 (20.43)	450 (17.71)	519 (20.43)	450 (17.71)	531 (20.91)	488 (19.21)	531 (20.91)	488 (19.21)

REGION: 15 Milton-Freewater
CROP: Plums

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	30 (1.18)	1 (0.04)	32 (1.26)	2 (0.08)	33 (1.30)	2 (0.08)	35 (1.38)	2 (0.08)	35 (1.38)	2 (0.08)	38 (1.50)	12 (0.47)	38 (1.50)	12 (0.47)	39 (1.54)	17 (0.67)	39 (1.54)	17 (0.67)
April	69 (2.72)	27 (1.06)	70 (2.76)	33 (1.30)	72 (2.83)	41 (1.61)	74 (2.91)	51 (2.01)	74 (2.91)	51 (2.01)	80 (3.15)	59 (2.32)	80 (3.15)	59 (2.32)	83 (3.27)	65 (2.56)	83 (3.27)	65 (2.56)
May	111 (4.37)	69 (2.72)	112 (4.41)	75 (2.95)	116 (4.57)	82 (3.23)	119 (4.69)	90 (3.54)	119 (4.69)	90 (3.54)	123 (4.84)	110 (4.33)	123 (4.84)	110 (4.33)	128 (5.04)	121 (4.76)	128 (5.04)	121 (4.76)
June	142 (5.59)	107 (4.21)	144 (5.67)	114 (4.49)	147 (5.79)	121 (4.76)	153 (6.02)	128 (5.04)	153 (6.02)	128 (5.04)	157 (6.18)	136 (5.35)	157 (6.18)	136 (5.35)	162 (6.38)	151 (5.94)	162 (6.38)	151 (5.94)
July	214 (8.43)	204 (8.03)	216 (8.50)	209 (8.23)	218 (8.58)	213 (8.39)	220 (8.66)	217 (8.54)	220 (8.66)	217 (8.54)	225 (8.86)	222 (8.74)	225 (8.86)	222 (8.74)	230 (9.06)	227 (8.94)	230 (9.06)	227 (8.94)
Aug	174 (6.85)	163 (6.42)	176 (6.93)	169 (6.65)	179 (7.05)	174 (6.85)	181 (7.13)	178 (7.01)	181 (7.13)	178 (7.01)	186 (7.32)	183 (7.20)	186 (7.32)	183 (7.20)	192 (7.56)	187 (7.36)	192 (7.56)	187 (7.36)
Sep	109 (4.29)	80 (3.15)	112 (4.41)	87 (3.43)	114 (4.49)	95 (3.74)	117 (4.61)	110 (4.33)	117 (4.61)	110 (4.33)	121 (4.76)	116 (4.57)	121 (4.76)	116 (4.57)	124 (4.88)	119 (4.69)	124 (4.88)	119 (4.69)
Oct	47 (1.85)	10 (0.39)	48 (1.89)	17 (0.67)	50 (1.97)	21 (0.83)	52 (2.05)	30 (1.18)	52 (2.05)	30 (1.18)	53 (2.09)	39 (1.54)	53 (2.09)	39 (1.54)	54 (2.13)	48 (1.89)	54 (2.13)	48 (1.89)
Nov	8 (0.31)	1 (0.04)	10 (0.39)	1 (0.04)	11 (0.43)	1 (0.04)	11 (0.43)	1 (0.04)	11 (0.43)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)
Season	904 (35.59)	662 (26.06)	920 (36.22)	707 (27.84)	940 (37.01)	750 (29.53)	962 (37.88)	807 (31.77)	962 (37.88)	807 (31.77)	996 (39.21)	878 (34.56)	996 (39.21)	878 (34.56)	1025 (40.37)	936 (36.85)	1025 (40.37)	936 (36.85)

REGION: 15 Milton-Freewater
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	24 (0.94)	2 (0.08)	24 (0.94)	3 (0.12)	25 (0.98)	8 (0.31)	26 (1.02)	13 (0.51)	27 (1.06)	18 (0.71)	28 (1.10)	21 (0.83)						
May	61 (2.40)	26 (1.02)	62 (2.44)	31 (1.22)	63 (2.48)	37 (1.46)	64 (2.52)	43 (1.69)	66 (2.60)	57 (2.24)	68 (2.68)	62 (2.44)						
June	123 (4.84)	92 (3.62)	125 (4.92)	98 (3.86)	128 (5.04)	104 (4.09)	131 (5.16)	109 (4.29)	135 (5.31)	116 (4.57)	138 (5.43)	128 (5.04)						
July	216 (8.50)	206 (8.11)	218 (8.58)	210 (8.27)	220 (8.66)	215 (8.46)	222 (8.74)	219 (8.62)	227 (8.94)	224 (8.82)	232 (9.13)	228 (8.98)						
Aug	176 (6.93)	166 (6.54)	178 (7.01)	171 (6.73)	181 (7.13)	176 (6.93)	183 (7.20)	181 (7.13)	188 (7.40)	185 (7.28)	194 (7.64)	190 (7.48)						
Sep	94 (3.70)	67 (2.64)	96 (3.78)	74 (2.91)	99 (3.90)	82 (3.23)	101 (3.98)	93 (3.66)	104 (4.09)	100 (3.94)	107 (4.21)	103 (4.06)						
Season	694 (27.31)	559 (22.01)	703 (27.67)	587 (23.11)	716 (28.19)	622 (24.48)	727 (28.62)	658 (25.90)	747 (29.40)	700 (27.56)	767 (30.19)	732 (28.83)						

REGION: 15 Milton-Freewater
CROP: Tomatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	50 (1.97)	14 (0.55)	51 (2.01)	19 (0.75)	51 (2.01)	25 (0.98)	52 (2.05)	32 (1.26)	54 (2.13)	45 (1.77)	55 (2.17)	49 (1.93)						
June	124 (4.88)	90 (3.54)	126 (4.96)	97 (3.82)	129 (5.08)	103 (4.06)	133 (5.24)	109 (4.29)	137 (5.39)	116 (4.57)	140 (5.51)	130 (5.12)						
July	217 (8.54)	211 (8.31)	220 (8.66)	216 (8.50)	223 (8.78)	221 (8.70)	227 (8.94)	225 (8.86)	233 (9.17)	229 (9.02)	238 (9.37)	235 (9.25)						
Aug	92 (3.62)	86 (3.39)	93 (3.66)	89 (3.50)	94 (3.70)	92 (3.62)	95 (3.74)	94 (3.70)	98 (3.86)	96 (3.78)	101 (3.98)	99 (3.90)						
Season	483 (19.01)	401 (15.79)	490 (19.29)	421 (16.57)	497 (19.57)	441 (17.36)	507 (19.97)	460 (18.11)	522 (20.55)	486 (19.14)	534 (21.03)	513 (20.20)						

REGION: 16 Madras-Redmond
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	56 (2.20)	47 (1.85)	57 (2.24)	49 (1.93)	58 (2.28)	50 (1.97)	60 (2.36)	56 (2.20)	63 (2.48)	60 (2.36)	65 (2.56)	62 (2.44)						
May	114 (4.49)	91 (3.58)	116 (4.57)	96 (3.78)	117 (4.61)	100 (3.94)	120 (4.72)	104 (4.09)	125 (4.92)	109 (4.29)	130 (5.12)	114 (4.49)						
June	136 (5.35)	111 (4.37)	137 (5.39)	117 (4.61)	138 (5.43)	123 (4.84)	140 (5.51)	129 (5.08)	146 (5.75)	137 (5.39)	148 (5.83)	143 (5.63)						
July	167 (6.57)	159 (6.26)	168 (6.61)	162 (6.38)	169 (6.65)	165 (6.50)	171 (6.73)	168 (6.61)	173 (6.81)	173 (6.81)	175 (6.89)	175 (6.89)						
Aug	131 (5.16)	127 (5.00)	134 (5.28)	129 (5.08)	137 (5.39)	131 (5.16)	140 (5.51)	135 (5.31)	145 (5.71)	142 (5.59)	149 (5.87)	146 (5.75)						
Sep	97 (3.82)	84 (3.31)	99 (3.90)	87 (3.43)	101 (3.98)	92 (3.62)	103 (4.06)	97 (3.82)	106 (4.17)	102 (4.02)	108 (4.25)	104 (4.09)						
Season	701 (27.59)	619 (24.37)	711 (27.99)	640 (25.21)	720 (28.34)	661 (26.03)	734 (28.89)	689 (27.11)	758 (29.84)	723 (28.46)	775 (30.52)	744 (29.29)						

REGION: 16 Madras-Redmond
CROP: Corn (Silage)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	57 (2.24)	41 (1.61)	57 (2.24)	45 (1.77)	58 (2.28)	47 (1.85)	59 (2.32)	50 (1.97)	60 (2.36)	52 (2.05)	62 (2.44)	55 (2.17)						
June	122 (4.80)	98 (3.86)	124 (4.88)	105 (4.13)	125 (4.92)	112 (4.41)	127 (5.00)	118 (4.65)	132 (5.20)	125 (4.92)	135 (5.31)	131 (5.16)						
July	201 (7.91)	192 (7.56)	202 (7.95)	196 (7.72)	204 (8.03)	200 (7.87)	205 (8.07)	204 (8.03)	208 (8.19)	208 (8.19)	211 (8.31)	211 (8.31)						
Aug	161 (6.34)	155 (6.10)	164 (6.46)	159 (6.26)	168 (6.61)	162 (6.38)	171 (6.73)	166 (6.54)	178 (7.01)	174 (6.85)	184 (7.24)	179 (7.05)						
Sep	113 (4.45)	98 (3.86)	115 (4.53)	103 (4.06)	117 (4.61)	108 (4.25)	120 (4.72)	112 (4.41)	124 (4.88)	119 (4.69)	126 (4.96)	122 (4.80)						
Season	654 (25.74)	584 (22.99)	662 (26.06)	608 (23.94)	672 (26.45)	629 (24.76)	682 (26.84)	650 (25.60)	702 (27.64)	678 (26.70)	718 (28.26)	698 (27.49)						

REGION: 16 Madras-Redmond
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	55 (2.17)	42 (1.65)	56 (2.20)	45 (1.77)	58 (2.28)	48 (1.89)	59 (2.32)	54 (2.13)	62 (2.44)	57 (2.24)	64 (2.52)	59 (2.32)	130 (5.12)	107 (4.21)	132 (5.20)	110 (4.33)	147 (5.79)	131 (5.16)
May	130 (5.12)	107 (4.21)	132 (5.20)	110 (4.33)	134 (5.28)	114 (4.49)	137 (5.39)	120 (4.72)	142 (5.59)	127 (5.00)	147 (5.79)	131 (5.16)	165 (6.50)	137 (5.39)	169 (6.65)	145 (5.71)	180 (7.09)	174 (6.85)
June	165 (6.50)	137 (5.39)	169 (6.65)	145 (5.71)	170 (6.69)	152 (5.98)	172 (6.77)	158 (6.22)	178 (7.01)	167 (6.57)	180 (7.09)	174 (6.85)	182 (7.17)	173 (6.81)	183 (7.20)	177 (6.97)	191 (7.52)	191 (7.52)
July	182 (7.17)	173 (6.81)	183 (7.20)	177 (6.97)	184 (7.24)	180 (7.09)	186 (7.32)	183 (7.20)	188 (7.40)	188 (7.40)	191 (7.52)	191 (7.52)	32 (1.26)	30 (1.18)	32 (1.26)	31 (1.22)	35 (1.38)	35 (1.38)
Aug	32 (1.26)	30 (1.18)	32 (1.26)	31 (1.22)	32 (1.26)	32 (1.26)	33 (1.30)	32 (1.26)	34 (1.34)	34 (1.34)	35 (1.38)	35 (1.38)						
Season	564 (22.22)	489 (19.24)	572 (22.51)	508 (20.00)	578 (22.75)	526 (20.71)	587 (23.10)	547 (21.53)	604 (23.78)	573 (22.55)	617 (24.30)	590 (23.23)						

REGION: 16 Madras-Redmond
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	17 (0.67)	9 (0.35)	17 (0.67)	10 (0.39)	18 (0.71)	12 (0.47)	18 (0.71)	13 (0.51)	19 (0.75)	15 (0.59)	20 (0.79)	16 (0.63)	71 (2.80)	58 (2.28)	72 (2.83)	61 (2.40)	83 (3.27)	77 (3.03)
April	71 (2.80)	58 (2.28)	72 (2.83)	61 (2.40)	75 (2.95)	65 (2.56)	78 (3.07)	69 (2.72)	81 (3.19)	75 (2.95)	83 (3.27)	77 (3.03)	138 (5.43)	115 (4.53)	140 (5.51)	118 (4.65)	157 (6.18)	138 (5.43)
May	138 (5.43)	115 (4.53)	140 (5.51)	118 (4.65)	142 (5.59)	122 (4.80)	145 (5.71)	127 (5.00)	151 (5.94)	133 (5.24)	157 (6.18)	138 (5.43)	165 (6.50)	137 (5.39)	169 (6.65)	145 (5.71)	180 (7.09)	174 (6.85)
June	165 (6.50)	137 (5.39)	169 (6.65)	145 (5.71)	170 (6.69)	152 (5.98)	172 (6.77)	158 (6.22)	178 (7.01)	167 (6.57)	180 (7.09)	174 (6.85)	182 (7.17)	173 (6.81)	183 (7.20)	177 (6.97)	191 (7.52)	191 (7.52)
July	182 (7.17)	173 (6.81)	183 (7.20)	177 (6.97)	184 (7.24)	180 (7.09)	186 (7.32)	183 (7.20)	188 (7.40)	188 (7.40)	191 (7.52)	191 (7.52)	18 (0.71)	18 (0.71)	19 (0.75)	18 (0.71)	20 (0.79)	20 (0.79)
Aug	18 (0.71)	18 (0.71)	19 (0.75)	18 (0.71)	19 (0.75)	19 (0.75)	19 (0.75)	19 (0.75)	19 (0.75)	19 (0.75)	20 (0.79)	20 (0.79)						
Season	593 (23.35)	512 (20.15)	602 (23.69)	530 (20.87)	610 (24.01)	552 (21.73)	619 (24.37)	571 (22.48)	639 (25.16)	600 (23.62)	653 (25.72)	618 (24.33)						

REGION: 16 Madras-Redmond
CROP: Grass Seed (Fall)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	4 (0.16)	0 (0.00)	6 (0.24)	0 (0.00)	7 (0.28)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	11 (0.43)	0 (0.00)	12 (0.47)	0 (0.00)	13 (0.51)	0 (0.00)	14 (0.55)	0 (0.00)
Feb	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	17 (0.67)	2 (0.08)	18 (0.71)	5 (0.20)	20 (0.79)	10 (0.39)	22 (0.87)	15 (0.59)	24 (0.95)	17 (0.67)	26 (1.03)	20 (0.87)	28 (1.11)	22 (0.95)
March	40 (1.57)	23 (0.91)	42 (1.65)	25 (0.98)	44 (1.73)	28 (1.10)	46 (1.81)	32 (1.26)	49 (1.93)	35 (1.38)	51 (2.01)	39 (1.54)	53 (2.09)	41 (1.42)	55 (2.17)	43 (1.58)	57 (2.25)	45 (1.66)
April	87 (3.43)	74 (2.91)	90 (3.54)	76 (2.99)	93 (3.66)	79 (3.11)	96 (3.78)	87 (3.43)	100 (3.94)	92 (3.62)	104 (4.09)	96 (3.78)	107 (4.13)	99 (3.86)	111 (4.21)	103 (3.94)	115 (4.33)	107 (4.05)
May	139 (5.47)	115 (4.53)	141 (5.55)	119 (4.69)	143 (5.63)	124 (4.88)	146 (5.75)	130 (5.12)	152 (5.98)	136 (5.35)	158 (6.22)	140 (5.51)	160 (6.28)	142 (5.59)	164 (6.36)	144 (5.63)	168 (6.44)	150 (5.81)
June	165 (6.50)	139 (5.47)	167 (6.57)	147 (5.79)	169 (6.65)	153 (6.02)	171 (6.73)	158 (6.22)	179 (7.05)	167 (6.57)	181 (7.13)	174 (6.85)	184 (7.21)	176 (6.93)	188 (7.29)	180 (7.01)	192 (7.37)	182 (7.09)
July	204 (8.03)	194 (7.64)	205 (8.07)	198 (7.80)	206 (8.11)	202 (7.95)	208 (8.19)	206 (8.11)	211 (8.31)	211 (8.31)	214 (8.43)	214 (8.43)	217 (8.51)	217 (8.51)	220 (8.59)	218 (8.51)	222 (8.63)	220 (8.55)
Aug	143 (5.63)	138 (5.43)	146 (5.75)	141 (5.55)	149 (5.87)	144 (5.67)	152 (5.98)	148 (5.83)	158 (6.22)	155 (6.10)	163 (6.42)	160 (6.30)	166 (6.54)	163 (6.42)	169 (6.66)	165 (6.54)	171 (6.78)	167 (6.66)
Sep	53 (2.09)	42 (1.65)	54 (2.13)	44 (1.73)	55 (2.17)	48 (1.89)	57 (2.24)	52 (2.05)	58 (2.28)	55 (2.17)	59 (2.32)	57 (2.24)	60 (2.36)	58 (2.28)	61 (2.40)	59 (2.32)	62 (2.44)	60 (2.36)
Oct	47 (1.85)	31 (1.22)	48 (1.89)	34 (1.34)	49 (1.93)	38 (1.50)	50 (1.97)	41 (1.61)	52 (2.05)	45 (1.77)	54 (2.13)	50 (1.97)	56 (2.21)	51 (1.89)	58 (2.25)	53 (2.01)	60 (2.36)	55 (2.09)
Nov	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	4 (0.16)	20 (0.79)	9 (0.35)	20 (0.79)	12 (0.47)	22 (0.87)	17 (0.67)	24 (0.95)	19 (0.71)	26 (1.03)	21 (0.87)
Dec	2 (0.08)	0 (0.00)	2 (0.08)	0 (0.00)	4 (0.16)	0 (0.00)	4 (0.16)	0 (0.00)	7 (0.28)	0 (0.00)	9 (0.35)	0 (0.00)	11 (0.43)	0 (0.00)	13 (0.51)	0 (0.00)	15 (0.59)	0 (0.00)
Season	913 (35.95)	758 (29.84)	932 (36.69)	786 (30.95)	953 (37.53)	819 (32.24)	975 (38.38)	863 (33.99)	1016 (40.01)	915 (36.01)	1046 (41.19)	957 (37.68)	1087 (42.37)	1016 (40.01)	1117 (43.55)	1046 (41.19)	1177 (44.73)	1087 (42.37)

REGION: 16 Madras-Redmond
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	5 (0.20)	0 (0.00)	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	9 (0.35)	0 (0.00)	10 (0.39)	0 (0.00)	12 (0.47)	0 (0.00)	13 (0.51)	0 (0.00)	14 (0.55)	0 (0.00)	15 (0.59)	0 (0.00)
Feb	12 (0.47)	1 (0.04)	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	3 (0.12)	16 (0.63)	8 (0.31)	17 (0.67)	11 (0.43)	18 (0.71)	10 (0.39)	19 (0.75)	13 (0.55)	20 (0.79)	15 (0.59)
March	19 (0.75)	3 (0.12)	20 (0.79)	5 (0.20)	21 (0.83)	7 (0.28)	22 (0.87)	11 (0.43)	23 (0.91)	14 (0.55)	24 (0.95)	16 (0.63)	25 (0.99)	17 (0.67)	26 (1.03)	19 (0.75)	27 (1.07)	21 (0.87)
April	47 (1.85)	34 (1.34)	48 (1.89)	37 (1.46)	49 (1.93)	40 (1.57)	50 (1.97)	45 (1.77)	52 (2.05)	49 (1.93)	54 (2.13)	50 (1.97)	56 (2.21)	51 (2.01)	58 (2.25)	53 (2.09)	60 (2.36)	55 (2.17)
May	72 (2.83)	52 (2.05)	73 (2.87)	56 (2.20)	74 (2.91)	60 (2.36)	76 (2.99)	64 (2.52)	77 (3.03)	67 (2.64)	79 (3.11)	71 (2.80)	81 (3.23)	73 (2.87)	83 (3.27)	75 (3.01)	85 (3.39)	77 (3.05)
June	114 (4.49)	91 (3.58)	116 (4.57)	98 (3.86)	118 (4.65)	103 (4.06)	120 (4.72)	108 (4.25)	124 (4.88)	115 (4.53)	126 (4.96)	120 (4.72)	128 (5.04)	122 (4.80)	130 (5.12)	126 (4.96)	134 (5.26)	128 (5.04)
July	179 (7.05)	171 (6.73)	180 (7.09)	175 (6.89)	182 (7.17)	178 (7.01)	184 (7.24)	181 (7.13)	186 (7.32)	186 (7.32)	189 (7.44)	189 (7.44)	192 (7.52)	190 (7.46)	194 (7.58)	190 (7.46)	198 (7.66)	194 (7.58)
Aug	158 (6.22)	151 (5.94)	161 (6.34)	155 (6.10)	164 (6.46)	159 (6.26)	167 (6.57)	164 (6.46)	175 (6.89)	171 (6.73)	180 (7.09)	177 (6.97)	188 (7.37)	180 (7.09)	190 (7.31)	186 (7.23)	198 (7.66)	190 (7.31)
Sep	117 (4.61)	103 (4.06)	119 (4.69)	107 (4.21)	122 (4.80)	111 (4.37)	124 (4.88)	115 (4.53)	128 (5.04)	122 (4.80)	130 (5.12)	126 (4.96)	134 (5.26)	128 (5.04)	138 (5.42)	130 (5.12)	142 (5.62)	134 (5.26)
Oct	76 (2.99)	58 (2.28)	77 (3.03)	61 (2.40)	79 (3.11)	64 (2.52)	80 (3.15)	67 (2.64)	84 (3.31)	79 (3.11)	86 (3.39)	83 (3.27)	90 (3.51)	84 (3.31)	94 (3.65)	86 (3.39)	100 (3.99)	94 (3.65)
Nov	22 (0.87)	2 (0.08)	23 (0.91)	2 (0.08)	27 (1.06)	2 (0.08)	29 (1.14)	10 (0.39)	31 (1.22)	17 (0.67)	32 (1.26)	22 (0.87)	34 (1.34)	27 (1.06)	36 (1.42)	32 (1.26)	38 (1.46)	34 (1.34)
Dec	2 (0.08)	0 (0.00)	3 (0.12)	0 (0.00)	5 (0.20)	0 (0.00)	6 (0.24)	0 (0.00)	9 (0.35)	0 (0.00)	11 (0.43)	0 (0.00)	13 (0.51)	0 (0.00)	15 (0.59)	0 (0.00)	17 (0.67)	0 (0.00)
Season	823 (32.41)	666 (26.22)	840 (33.09)	697 (27.44)	863 (33.98)	725 (28.55)	882 (34.71)	768 (30.24)	915 (36.02)	828 (32.59)	940 (37.01)	865 (34.06)	981 (38.21)	915 (36.02)	1016 (40.01)	940 (37.01)	1087 (42.37)	981 (38.21)

REGION: 16 Madras-Redmond
CROP: Mint

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
April	42 (1.65)	30 (1.18)	43 (1.69)	33 (1.30)	43 (1.69)	36 (1.42)	44 (1.73)	39 (1.54)	45 (1.77)	42 (1.65)	47 (1.85)	44 (1.73)						
May	116 (4.57)	94 (3.70)	118 (4.65)	99 (3.90)	119 (4.69)	103 (4.06)	122 (4.80)	108 (4.25)	126 (4.96)	113 (4.45)	129 (5.08)	116 (4.57)						
June	170 (6.69)	142 (5.59)	172 (6.77)	152 (5.98)	173 (6.81)	158 (6.22)	176 (6.93)	164 (6.46)	184 (7.24)	173 (6.81)	186 (7.32)	180 (7.09)						
July	187 (7.36)	177 (6.97)	188 (7.40)	180 (7.09)	189 (7.44)	184 (7.24)	190 (7.48)	187 (7.36)	193 (7.60)	192 (7.56)	196 (7.72)	196 (7.72)						
Aug	30 (1.18)	29 (1.14)	30 (1.18)	29 (1.14)	31 (1.22)	30 (1.18)	31 (1.22)	31 (1.22)	32 (1.26)	32 (1.26)	33 (1.30)	33 (1.30)						
Season	545 (21.45)	472 (18.58)	551 (21.69)	493 (19.41)	555 (21.85)	511 (20.12)	563 (22.16)	529 (20.83)	580 (22.83)	552 (21.73)	591 (23.27)	569 (22.41)						

REGION: 16 Madras-Redmond
CROP: Onions

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
April	16 (0.63)	14 (0.55)	16 (0.63)	15 (0.59)	17 (0.67)	16 (0.63)	17 (0.67)	16 (0.63)	17 (0.67)	16 (0.63)	18 (0.71)	17 (0.67)	18 (0.71)	17 (0.67)	18 (0.71)	18 (0.71)		
May	78 (3.07)	62 (2.44)	80 (3.15)	66 (2.60)	82 (3.23)	68 (2.68)	83 (3.27)	72 (2.83)	84 (3.31)	76 (2.99)	86 (3.39)	79 (3.11)	87 (3.43)	80 (3.15)	88 (3.47)	81 (3.19)		
June	125 (4.92)	104 (4.09)	127 (5.00)	111 (4.37)	128 (5.04)	116 (4.57)	130 (5.12)	121 (4.76)	135 (5.31)	128 (5.04)	137 (5.39)	133 (5.24)	138 (5.43)	130 (5.12)	139 (5.47)	132 (5.26)		
July	185 (7.28)	177 (6.97)	186 (7.32)	180 (7.09)	187 (7.36)	183 (7.20)	188 (7.40)	187 (7.36)	191 (7.52)	191 (7.52)	194 (7.64)	194 (7.64)	197 (7.76)	191 (7.52)	194 (7.64)	194 (7.64)		
Aug	145 (5.71)	141 (5.55)	148 (5.83)	144 (5.67)	151 (5.94)	147 (5.79)	154 (6.06)	150 (5.91)	161 (6.34)	157 (6.18)	166 (6.54)	162 (6.38)	167 (6.58)	161 (6.34)	166 (6.54)	162 (6.38)		
Sep	46 (1.81)	41 (1.61)	46 (1.81)	43 (1.69)	47 (1.85)	45 (1.77)	48 (1.89)	46 (1.81)	50 (1.97)	49 (1.93)	51 (2.01)	50 (1.97)	52 (2.05)	50 (1.97)	51 (2.01)	50 (1.97)		
Season	595 (23.42)	539 (21.21)	603 (23.74)	559 (22.01)	612 (24.09)	575 (22.64)	620 (24.41)	592 (23.30)	639 (25.16)	618 (24.33)	652 (25.68)	636 (25.05)	653 (25.72)	639 (25.16)	652 (25.68)	636 (25.05)		

REGION: 16 Madras-Redmond
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
April	54 (2.13)	46 (1.81)	55 (2.17)	48 (1.89)	57 (2.24)	50 (1.97)	58 (2.28)	53 (2.09)	62 (2.44)	59 (2.32)	64 (2.52)	61 (2.40)	120 (4.72)	98 (3.86)	122 (4.80)	103 (4.06)	124 (4.88)	108 (4.25)
May	144 (5.67)	120 (4.72)	146 (5.75)	128 (5.04)	147 (5.79)	133 (5.24)	149 (5.87)	139 (5.47)	156 (6.14)	146 (5.75)	158 (6.22)	152 (5.98)	178 (7.01)	169 (6.65)	179 (7.05)	173 (6.81)	180 (7.09)	176 (6.93)
June	141 (5.55)	134 (5.28)	142 (5.59)	137 (5.39)	145 (5.71)	140 (5.51)	149 (5.87)	144 (5.67)	155 (6.10)	151 (5.94)	159 (6.26)	156 (6.14)	103 (4.06)	91 (3.58)	105 (4.13)	94 (3.70)	107 (4.21)	98 (3.86)
July	52 (2.05)	39 (1.54)	53 (2.09)	41 (1.61)	54 (2.13)	44 (1.73)	55 (2.17)	46 (1.81)	58 (2.28)	54 (2.13)	59 (2.32)	57 (2.24)	792 (31.19)	697 (27.44)	802 (31.58)	724 (28.50)	814 (32.05)	749 (29.49)
Aug																		
Sep																		
Oct																		
Season	792 (31.19)	697 (27.44)	802 (31.58)	724 (28.50)	814 (32.05)	749 (29.49)	831 (32.73)	775 (30.52)	861 (33.89)	819 (32.24)	880 (34.64)	846 (33.29)						

REGION: 16 Madras-Redmond
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
April	36 (1.42)	29 (1.14)	36 (1.42)	31 (1.22)	37 (1.46)	32 (1.26)	38 (1.50)	35 (1.38)	40 (1.57)	37 (1.46)	41 (1.61)	39 (1.54)	123 (4.84)	101 (3.98)	126 (4.96)	105 (4.13)	128 (5.04)	109 (4.29)
May	164 (6.46)	134 (5.28)	166 (6.54)	142 (5.59)	168 (6.61)	152 (5.98)	170 (6.69)	157 (6.18)	178 (7.01)	167 (6.57)	180 (7.09)	173 (6.81)	157 (6.22)	155 (6.10)	159 (6.26)	157 (6.18)	161 (6.34)	160 (6.30)
June																		
July																		
Season	480 (18.90)	416 (16.38)	486 (19.14)	433 (17.04)	492 (19.37)	450 (17.71)	499 (19.65)	466 (18.35)	516 (20.31)	486 (19.14)	524 (20.63)	501 (19.73)						

REGION: 16 Madras-Redmond
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
May	25 (0.98)	16 (0.63)	26 (1.02)	26 (1.02)	20 (0.79)	26 (1.02)	26 (1.02)	21 (0.83)	26 (1.02)	26 (1.02)	23 (0.91)	27 (1.06)	27 (1.06)	24 (0.94)	28 (1.10)	24 (0.94)	24 (0.94)	24 (0.94)
June	85 (3.35)	65 (2.56)	86 (3.39)	86 (3.39)	69 (2.72)	87 (3.43)	87 (3.43)	76 (2.99)	88 (3.46)	88 (3.46)	81 (3.19)	91 (3.58)	91 (3.58)	86 (3.39)	93 (3.66)	89 (3.50)	89 (3.50)	89 (3.50)
July	198 (7.80)	190 (7.48)	199 (7.83)	199 (7.83)	194 (7.64)	201 (7.91)	201 (7.91)	198 (7.80)	202 (7.95)	202 (7.95)	201 (7.91)	205 (8.07)	205 (8.07)	205 (8.07)	208 (8.19)	208 (8.19)	208 (8.19)	208 (8.19)
Aug	161 (6.34)	156 (6.14)	164 (6.46)	164 (6.46)	159 (6.26)	168 (6.61)	168 (6.61)	162 (6.38)	171 (6.73)	171 (6.73)	166 (6.54)	178 (7.01)	178 (7.01)	174 (6.85)	184 (7.24)	180 (7.09)	180 (7.09)	180 (7.09)
Sep	111 (4.37)	97 (3.82)	113 (4.45)	113 (4.45)	101 (3.98)	115 (4.53)	115 (4.53)	106 (4.17)	118 (4.65)	118 (4.65)	110 (4.33)	121 (4.76)	121 (4.76)	117 (4.61)	123 (4.84)	120 (4.72)	120 (4.72)	120 (4.72)
Oct	27 (1.06)	20 (0.79)	27 (1.06)	27 (1.06)	22 (0.87)	28 (1.10)	28 (1.10)	24 (0.94)	29 (1.14)	29 (1.14)	26 (1.02)	31 (1.22)	31 (1.22)	28 (1.10)	32 (1.26)	30 (1.18)	30 (1.18)	30 (1.18)
Season	607 (23.90)	544 (21.42)	615 (24.21)	615 (24.21)	565 (22.26)	625 (24.60)	625 (24.60)	587 (23.11)	634 (24.95)	634 (24.95)	607 (23.90)	653 (25.70)	653 (25.70)	634 (24.96)	668 (26.29)	651 (25.62)	651 (25.62)	651 (25.62)

REGION: 17 Bend
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
April	47 (1.85)	26 (1.02)	48 (1.89)	48 (1.89)	30 (1.18)	49 (1.93)	49 (1.93)	32 (1.26)	51 (2.01)	51 (2.01)	37 (1.46)	54 (2.13)	54 (2.13)	44 (1.73)	56 (2.20)	49 (1.93)	49 (1.93)	49 (1.93)
May	100 (3.94)	72 (2.83)	101 (3.98)	101 (3.98)	75 (2.95)	103 (4.06)	103 (4.06)	79 (3.11)	108 (4.25)	108 (4.25)	84 (3.31)	112 (4.41)	112 (4.41)	92 (3.62)	113 (4.45)	96 (3.78)	96 (3.78)	96 (3.78)
June	121 (4.76)	95 (3.74)	123 (4.84)	123 (4.84)	101 (3.98)	126 (4.96)	126 (4.96)	109 (4.29)	130 (5.12)	130 (5.12)	115 (4.53)	135 (5.31)	135 (5.31)	121 (4.76)	140 (5.51)	125 (4.92)	125 (4.92)	125 (4.92)
July	149 (5.87)	140 (5.51)	152 (5.98)	152 (5.98)	144 (5.67)	155 (6.10)	155 (6.10)	147 (5.79)	157 (6.18)	157 (6.18)	150 (5.91)	160 (6.30)	160 (6.30)	154 (6.06)	162 (6.38)	159 (6.26)	159 (6.26)	159 (6.26)
Aug	118 (4.65)	108 (4.25)	119 (4.69)	119 (4.69)	114 (4.49)	121 (4.76)	121 (4.76)	117 (4.61)	124 (4.88)	124 (4.88)	120 (4.72)	130 (5.12)	130 (5.12)	123 (4.84)	133 (5.24)	127 (5.00)	127 (5.00)	127 (5.00)
Sep	83 (3.27)	68 (2.68)	87 (3.43)	87 (3.43)	71 (2.80)	91 (3.58)	91 (3.58)	75 (2.95)	93 (3.66)	93 (3.66)	80 (3.15)	96 (3.78)	96 (3.78)	91 (3.58)	98 (3.86)	94 (3.70)	94 (3.70)	94 (3.70)
Season	618 (24.34)	509 (20.03)	630 (24.81)	630 (24.81)	535 (21.07)	645 (25.39)	645 (25.39)	559 (22.01)	663 (26.10)	663 (26.10)	586 (23.08)	687 (27.05)	687 (27.05)	625 (24.59)	702 (27.64)	650 (25.59)	650 (25.59)	650 (25.59)

REGION: 17 Bend
CROP: Corn (Sweet)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	30 (1.18)	18 (0.71)	31 (1.22)	20 (0.79)	31 (1.22)	22 (0.87)	32 (1.26)	24 (0.94)	32 (1.26)	27 (1.06)	33 (1.30)	29 (1.14)	33 (1.30)	29 (1.14)	33 (1.30)	29 (1.14)	33 (1.30)	29 (1.14)
June	95 (3.74)	69 (2.72)	97 (3.82)	76 (2.99)	99 (3.90)	83 (3.27)	101 (3.98)	88 (3.46)	104 (4.09)	94 (3.70)	108 (4.25)	97 (3.82)	108 (4.25)	97 (3.82)	108 (4.25)	97 (3.82)	108 (4.25)	97 (3.82)
July	171 (6.73)	161 (6.34)	173 (6.81)	164 (6.46)	176 (6.93)	168 (6.61)	178 (7.01)	172 (6.77)	182 (7.17)	177 (6.97)	185 (7.28)	182 (7.17)	185 (7.28)	182 (7.17)	185 (7.28)	182 (7.17)	185 (7.28)	182 (7.17)
Aug	145 (5.71)	134 (5.28)	146 (5.75)	139 (5.47)	148 (5.83)	143 (5.63)	152 (5.98)	148 (5.83)	159 (6.26)	152 (5.98)	163 (6.42)	157 (6.18)	163 (6.42)	157 (6.18)	163 (6.42)	157 (6.18)	163 (6.42)	157 (6.18)
Sep	16 (0.63)	15 (0.59)	16 (0.63)	16 (0.63)	17 (0.67)	16 (0.63)	17 (0.67)	17 (0.67)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)
Season	457 (17.99)	397 (15.64)	463 (18.23)	415 (16.34)	471 (18.55)	432 (17.01)	480 (18.90)	449 (17.67)	495 (19.49)	468 (18.42)	507 (19.96)	483 (19.02)	507 (19.96)	483 (19.02)	507 (19.96)	483 (19.02)	507 (19.96)	483 (19.02)

REGION: 17 Bend
CROP: Grain (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	48 (1.89)	19 (0.75)	49 (1.93)	25 (0.98)	50 (1.97)	28 (1.10)	52 (2.05)	31 (1.22)	54 (2.13)	41 (1.61)	55 (2.17)	46 (1.81)	55 (2.17)	46 (1.81)	55 (2.17)	46 (1.81)	55 (2.17)	46 (1.81)
May	114 (4.49)	86 (3.39)	115 (4.53)	90 (3.54)	118 (4.65)	93 (3.66)	123 (4.84)	98 (3.86)	127 (5.00)	106 (4.17)	129 (5.08)	111 (4.37)	129 (5.08)	111 (4.37)	129 (5.08)	111 (4.37)	129 (5.08)	111 (4.37)
June	146 (5.75)	119 (4.69)	153 (6.02)	125 (4.92)	155 (6.10)	136 (5.35)	158 (6.22)	144 (5.67)	165 (6.50)	150 (5.91)	169 (6.65)	155 (6.10)	169 (6.65)	155 (6.10)	169 (6.65)	155 (6.10)	169 (6.65)	155 (6.10)
July	163 (6.42)	153 (6.02)	166 (6.54)	157 (6.18)	169 (6.65)	161 (6.34)	171 (6.73)	164 (6.46)	173 (6.81)	170 (6.69)	177 (6.97)	174 (6.85)	177 (6.97)	174 (6.85)	177 (6.97)	174 (6.85)	177 (6.97)	174 (6.85)
Aug	28 (1.10)	26 (1.02)	29 (1.14)	27 (1.06)	29 (1.14)	28 (1.10)	29 (1.14)	29 (1.14)	31 (1.22)	31 (1.22)	31 (1.22)	31 (1.22)	31 (1.22)	31 (1.22)	31 (1.22)	31 (1.22)	31 (1.22)	31 (1.22)
Season	499 (19.65)	403 (15.87)	512 (20.16)	424 (16.68)	521 (20.51)	446 (17.55)	533 (20.98)	466 (18.35)	550 (21.66)	498 (19.60)	561 (22.09)	517 (20.35)	561 (22.09)	517 (20.35)	561 (22.09)	517 (20.35)	561 (22.09)	517 (20.35)

REGION: 17 Bend
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	1 (0.04)	16 (0.63)	1 (0.04)	17 (0.67)	5 (0.20)	18 (0.71)	9 (0.35)	18 (0.71)	9 (0.35)	18 (0.71)	9 (0.35)
April	60 (2.36)	30 (1.18)	62 (2.44)	35 (1.38)	63 (2.48)	39 (1.54)	66 (2.60)	44 (1.73)	66 (2.60)	44 (1.73)	69 (2.72)	53 (2.09)	72 (2.83)	62 (2.44)	72 (2.83)	62 (2.44)	72 (2.83)	62 (2.44)
May	121 (4.76)	92 (3.62)	122 (4.80)	96 (3.78)	125 (4.92)	100 (3.94)	130 (5.12)	104 (4.09)	130 (5.12)	104 (4.09)	135 (5.31)	114 (4.49)	137 (5.39)	119 (4.69)	137 (5.39)	119 (4.69)	137 (5.39)	119 (4.69)
June	146 (5.75)	119 (4.69)	153 (6.02)	125 (4.92)	155 (6.10)	136 (5.35)	158 (6.22)	144 (5.67)	158 (6.22)	144 (5.67)	165 (6.50)	150 (5.91)	169 (6.65)	155 (6.10)	169 (6.65)	155 (6.10)	169 (6.65)	155 (6.10)
July	164 (6.46)	155 (6.10)	167 (6.57)	159 (6.26)	170 (6.69)	162 (6.38)	173 (6.81)	165 (6.50)	173 (6.81)	165 (6.50)	176 (6.93)	170 (6.69)	178 (7.01)	175 (6.89)	178 (7.01)	175 (6.89)	178 (7.01)	175 (6.89)
Aug	16 (0.63)	15 (0.59)	17 (0.67)	15 (0.59)	17 (0.67)	16 (0.63)	17 (0.67)	16 (0.63)	17 (0.67)	16 (0.63)	18 (0.71)	17 (0.67)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)
Season	520 (20.47)	412 (16.22)	535 (21.05)	431 (16.97)	545 (21.45)	454 (17.88)	560 (22.05)	474 (18.66)	560 (22.05)	474 (18.66)	580 (22.84)	509 (20.05)	592 (23.30)	538 (21.18)	592 (23.30)	538 (21.18)	592 (23.30)	538 (21.18)

REGION: 17 Bend
CROP: Mint

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)
April	39 (1.54)	10 (0.39)	40 (1.57)	14 (0.55)	41 (1.61)	19 (0.75)	42 (1.65)	24 (0.94)	42 (1.65)	24 (0.94)	44 (1.73)	30 (1.18)	46 (1.81)	36 (1.42)	46 (1.81)	36 (1.42)	46 (1.81)	36 (1.42)
May	106 (4.17)	78 (3.07)	108 (4.25)	81 (3.19)	110 (4.33)	85 (3.35)	114 (4.49)	88 (3.46)	114 (4.49)	88 (3.46)	118 (4.65)	96 (3.78)	120 (4.72)	101 (3.98)	120 (4.72)	101 (3.98)	120 (4.72)	101 (3.98)
June	151 (5.94)	124 (4.88)	154 (6.06)	130 (5.12)	157 (6.18)	141 (5.55)	163 (6.42)	148 (5.83)	163 (6.42)	148 (5.83)	170 (6.69)	155 (6.10)	174 (6.85)	160 (6.30)	174 (6.85)	160 (6.30)	174 (6.85)	160 (6.30)
July	162 (6.38)	153 (6.02)	165 (6.50)	157 (6.18)	168 (6.61)	160 (6.30)	171 (6.73)	163 (6.42)	171 (6.73)	163 (6.42)	174 (6.85)	168 (6.61)	176 (6.93)	173 (6.81)	176 (6.93)	173 (6.81)	176 (6.93)	173 (6.81)
Aug	20 (0.79)	19 (0.75)	20 (0.79)	19 (0.75)	20 (0.79)	20 (0.79)	21 (0.83)	20 (0.79)	21 (0.83)	20 (0.79)	22 (0.87)	21 (0.83)	22 (0.87)	22 (0.87)	22 (0.87)	22 (0.87)	22 (0.87)	22 (0.87)
Season	479 (18.86)	385 (15.15)	488 (19.21)	402 (15.83)	497 (19.56)	426 (16.78)	512 (20.16)	444 (17.48)	512 (20.16)	444 (17.48)	529 (20.83)	471 (18.54)	539 (21.22)	493 (19.42)	539 (21.22)	493 (19.42)	539 (21.22)	493 (19.42)

REGION: 17 Bend
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	45 (1.77)	26 (1.02)	46 (1.81)	30 (1.18)	47 (1.85)	34 (1.34)	49 (1.93)	37 (1.46)	53 (2.09)	43 (1.69)	54 (2.13)	48 (1.89)						
May	106 (4.17)	78 (3.07)	108 (4.25)	82 (3.23)	110 (4.33)	85 (3.35)	114 (4.49)	89 (3.50)	118 (4.65)	99 (3.90)	120 (4.72)	103 (4.06)						
June	129 (5.08)	102 (4.02)	131 (5.16)	109 (4.29)	134 (5.28)	118 (4.65)	139 (5.47)	124 (4.88)	143 (5.63)	130 (5.12)	148 (5.83)	134 (5.28)						
July	159 (6.26)	150 (5.91)	162 (6.38)	153 (6.02)	165 (6.50)	156 (6.14)	167 (6.57)	160 (6.30)	169 (6.65)	164 (6.46)	172 (6.77)	169 (6.65)						
Aug	124 (4.88)	115 (4.53)	126 (4.96)	119 (4.69)	129 (5.08)	124 (4.88)	133 (5.24)	128 (5.04)	139 (5.47)	132 (5.20)	142 (5.59)	136 (5.35)						
Sep	89 (3.50)	74 (2.91)	93 (3.66)	77 (3.03)	98 (3.86)	81 (3.19)	100 (3.94)	86 (3.39)	103 (4.06)	98 (3.86)	105 (4.13)	101 (3.98)						
Oct	45 (1.77)	18 (0.71)	47 (1.85)	22 (0.87)	48 (1.89)	30 (1.18)	50 (1.97)	35 (1.38)	52 (2.05)	41 (1.61)	53 (2.09)	50 (1.97)						
Season	697 (27.43)	563 (22.17)	713 (28.07)	592 (23.31)	731 (28.79)	628 (24.73)	752 (29.61)	659 (25.95)	777 (30.60)	707 (27.84)	794 (31.26)	741 (29.18)						

REGION: 17 Bend
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	31 (1.22)	12 (0.47)	31 (1.22)	16 (0.63)	32 (1.26)	19 (0.75)	33 (1.30)	21 (0.83)	35 (1.38)	26 (1.02)	36 (1.42)	31 (1.22)						
May	109 (4.29)	80 (3.15)	111 (4.37)	84 (3.31)	114 (4.49)	87 (3.43)	117 (4.61)	90 (3.54)	121 (4.76)	100 (3.94)	123 (4.84)	105 (4.13)						
June	146 (5.75)	118 (4.65)	152 (5.98)	124 (4.88)	154 (6.06)	135 (5.31)	157 (6.18)	143 (5.63)	164 (6.46)	149 (5.87)	168 (6.61)	154 (6.06)						
July	141 (5.55)	134 (5.28)	144 (5.67)	137 (5.39)	146 (5.75)	140 (5.51)	148 (5.83)	143 (5.63)	149 (5.87)	147 (5.79)	153 (6.02)	151 (5.94)						
Season	427 (16.81)	344 (13.55)	438 (17.24)	361 (14.21)	446 (17.56)	381 (15.00)	455 (17.92)	397 (15.63)	469 (18.47)	422 (16.62)	480 (18.89)	441 (17.35)						

REGION: 17 Bend
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	23 (0.91)	13 (0.51)	24 (0.94)	14 (0.55)	24 (0.94)	16 (0.63)	25 (0.98)	18 (0.71)	25 (0.98)	20 (0.79)	26 (1.02)	22 (0.87)	25 (0.98)	20 (0.79)	26 (1.02)	22 (0.87)	25 (0.98)	20 (0.79)
June	79 (3.11)	56 (2.20)	81 (3.19)	63 (2.48)	82 (3.23)	68 (2.68)	83 (3.27)	72 (2.83)	87 (3.43)	77 (3.03)	89 (3.50)	79 (3.11)	87 (3.43)	77 (3.03)	89 (3.50)	79 (3.11)	87 (3.43)	77 (3.03)
July	178 (7.01)	169 (6.65)	181 (7.13)	173 (6.81)	184 (7.24)	176 (6.93)	187 (7.36)	180 (7.09)	190 (7.48)	184 (7.24)	192 (7.56)	189 (7.44)	190 (7.48)	184 (7.24)	192 (7.56)	189 (7.44)	190 (7.48)	184 (7.24)
Aug	145 (5.71)	135 (5.31)	146 (5.75)	139 (5.47)	148 (5.83)	144 (5.67)	152 (5.98)	148 (5.83)	159 (6.26)	153 (6.02)	163 (6.42)	157 (6.18)	159 (6.26)	153 (6.02)	163 (6.42)	157 (6.18)	159 (6.26)	153 (6.02)
Sep	95 (3.74)	81 (3.19)	99 (3.90)	84 (3.31)	104 (4.09)	87 (3.43)	106 (4.17)	93 (3.66)	110 (4.33)	105 (4.13)	112 (4.41)	108 (4.25)	110 (4.33)	105 (4.13)	112 (4.41)	108 (4.25)	110 (4.33)	105 (4.13)
Oct	23 (0.91)	9 (0.35)	24 (0.94)	11 (0.43)	25 (0.98)	16 (0.63)	26 (1.02)	18 (0.71)	27 (1.06)	21 (0.83)	28 (1.10)	26 (1.02)	27 (1.06)	21 (0.83)	28 (1.10)	26 (1.02)	27 (1.06)	21 (0.83)
Season	543 (21.39)	463 (18.21)	555 (21.85)	484 (19.05)	567 (22.31)	507 (19.97)	579 (22.78)	529 (20.83)	598 (23.54)	560 (22.04)	610 (24.01)	581 (22.87)	598 (23.54)	560 (22.04)	610 (24.01)	581 (22.87)	598 (23.54)	560 (22.04)

REGION: 18 Klamath
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	58 (2.28)	45 (1.77)	60 (2.36)	48 (1.89)	61 (2.40)	51 (2.01)	63 (2.48)	55 (2.17)	66 (2.60)	58 (2.28)	68 (2.68)	64 (2.52)						
June	130 (5.12)	108 (4.25)	132 (5.20)	115 (4.53)	133 (5.24)	121 (4.76)	137 (5.39)	126 (4.96)	141 (5.55)	134 (5.28)	144 (5.67)	139 (5.47)						
July	167 (6.57)	161 (6.34)	169 (6.65)	165 (6.50)	172 (6.77)	168 (6.61)	176 (6.93)	172 (6.77)	185 (7.28)	180 (7.09)	191 (7.52)	185 (7.28)						
Aug	131 (5.16)	125 (4.92)	133 (5.24)	129 (5.08)	136 (5.35)	132 (5.20)	140 (5.51)	136 (5.35)	142 (5.59)	142 (5.59)	146 (5.75)	146 (5.75)						
Season	486 (19.13)	439 (17.28)	494 (19.45)	457 (18.00)	502 (19.76)	472 (18.58)	516 (20.31)	489 (19.25)	534 (21.02)	514 (20.24)	549 (21.62)	534 (21.02)						

REGION: 18 Klamath
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	41 (1.61)	26 (1.02)	42 (1.65)	29 (1.14)	43 (1.69)	31 (1.22)	44 (1.73)	34 (1.34)	45 (1.77)	39 (1.54)	46 (1.81)	43 (1.69)						
June	117 (4.61)	95 (3.74)	119 (4.69)	101 (3.98)	121 (4.76)	107 (4.21)	124 (4.88)	113 (4.45)	127 (5.00)	121 (4.76)	131 (5.16)	126 (4.96)						
July	205 (8.07)	200 (7.87)	207 (8.15)	204 (8.03)	210 (8.27)	209 (8.23)	216 (8.50)	213 (8.39)	226 (8.90)	223 (8.78)	233 (9.17)	229 (9.02)						
Aug	153 (6.02)	144 (5.67)	155 (6.10)	148 (5.83)	157 (6.18)	153 (6.02)	162 (6.38)	158 (6.22)	166 (6.54)	165 (6.50)	169 (6.65)	169 (6.65)						
Sep	24 (0.94)	19 (0.75)	24 (0.94)	20 (0.79)	25 (0.98)	22 (0.87)	25 (0.98)	23 (0.91)	26 (1.02)	25 (0.98)	27 (1.06)	26 (1.02)						
Season	540 (21.25)	484 (19.05)	547 (21.53)	502 (19.77)	556 (21.88)	522 (20.55)	571 (22.47)	541 (21.31)	590 (23.23)	573 (22.56)	606 (23.85)	593 (23.34)						

REGION: 18 Klamath
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
April	39 (1.54)	18 (0.71)	40 (1.57)	22 (0.87)	42 (1.65)	26 (1.02)	44 (1.73)	31 (1.22)	46 (1.81)	36 (1.42)	46 (1.81)	36 (1.42)	46 (1.81)	40 (1.57)	46 (1.81)	40 (1.57)	46 (1.81)	40 (1.57)
May	111 (4.37)	86 (3.39)	115 (4.53)	91 (3.58)	118 (4.65)	96 (3.78)	122 (4.80)	103 (4.06)	128 (5.04)	111 (4.37)	128 (5.04)	111 (4.37)	128 (5.04)	122 (4.80)	132 (5.20)	122 (4.80)	132 (5.20)	122 (4.80)
June	157 (6.18)	133 (5.24)	161 (6.34)	140 (5.51)	164 (6.46)	147 (5.79)	166 (6.54)	153 (6.02)	172 (6.77)	162 (6.38)	172 (6.77)	162 (6.38)	172 (6.77)	168 (6.61)	176 (6.93)	168 (6.61)	176 (6.93)	168 (6.61)
July	165 (6.50)	159 (6.26)	167 (6.57)	163 (6.42)	169 (6.85)	166 (6.54)	173 (6.81)	170 (6.69)	182 (7.17)	178 (7.01)	182 (7.17)	178 (7.01)	182 (7.17)	183 (7.20)	188 (7.40)	183 (7.20)	188 (7.40)	183 (7.20)
Aug	16 (0.63)	15 (0.59)	16 (0.63)	16 (0.63)	17 (0.67)	16 (0.63)	17 (0.67)	17 (0.67)	18 (0.71)	17 (0.67)	18 (0.71)	17 (0.67)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)	18 (0.71)
Season	488 (19.22)	411 (16.19)	499 (19.64)	432 (17.01)	510 (20.08)	451 (17.76)	522 (20.55)	474 (18.66)	546 (21.50)	504 (19.85)	546 (21.50)	504 (19.85)	546 (21.50)	531 (20.89)	560 (22.05)	531 (20.89)	560 (22.05)	531 (20.89)

REGION: 18 Klamath
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
April	73 (2.87)	44 (1.73)	77 (3.03)	51 (2.01)	82 (3.23)	58 (2.28)	84 (3.31)	66 (2.60)	89 (3.50)	77 (3.03)	89 (3.50)	77 (3.03)	89 (3.50)	82 (3.23)	91 (3.58)	82 (3.23)	91 (3.58)	82 (3.23)
May	110 (4.33)	84 (3.31)	113 (4.45)	90 (3.54)	118 (4.65)	97 (3.82)	123 (4.84)	104 (4.09)	128 (5.04)	112 (4.41)	128 (5.04)	112 (4.41)	128 (5.04)	122 (4.80)	132 (5.20)	122 (4.80)	132 (5.20)	122 (4.80)
June	138 (5.43)	114 (4.49)	140 (5.51)	123 (4.84)	141 (5.55)	129 (5.08)	145 (5.71)	134 (5.28)	150 (5.91)	143 (5.63)	150 (5.91)	143 (5.63)	150 (5.91)	148 (5.83)	153 (6.02)	148 (5.83)	153 (6.02)	148 (5.83)
July	179 (7.05)	172 (6.77)	181 (7.13)	176 (6.93)	184 (7.24)	180 (7.09)	187 (7.36)	184 (7.24)	196 (7.72)	192 (7.56)	196 (7.72)	192 (7.56)	196 (7.72)	197 (7.76)	202 (7.95)	197 (7.76)	202 (7.95)	197 (7.76)
Aug	145 (5.71)	137 (5.39)	146 (5.75)	141 (5.55)	149 (5.87)	145 (5.71)	153 (6.02)	149 (5.87)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	155 (6.10)	160 (6.30)	160 (6.30)	160 (6.30)	160 (6.30)	160 (6.30)
Sep	107 (4.21)	93 (3.66)	110 (4.33)	97 (3.82)	113 (4.45)	102 (4.02)	116 (4.57)	107 (4.21)	119 (4.69)	113 (4.45)	119 (4.69)	113 (4.45)	119 (4.69)	117 (4.61)	121 (4.76)	117 (4.61)	121 (4.76)	117 (4.61)
Oct	32 (1.26)	16 (0.63)	33 (1.30)	20 (0.79)	34 (1.34)	23 (0.91)	35 (1.38)	28 (1.10)	37 (1.46)	32 (1.26)	37 (1.46)	32 (1.26)	37 (1.46)	38 (1.50)	39 (1.54)	38 (1.50)	39 (1.54)	38 (1.50)
Season	784 (30.86)	660 (25.98)	800 (31.50)	698 (27.48)	821 (32.33)	734 (28.91)	843 (33.19)	772 (30.39)	874 (34.42)	824 (32.44)	874 (34.42)	824 (32.44)	874 (34.42)	864 (34.03)	898 (35.35)	864 (34.03)	898 (35.35)	864 (34.03)

REGION: 18 Klamath
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	24 (0.94)	14 (0.55)	24 (0.94)	17 (0.67)	25 (0.98)	18 (0.71)	25 (0.98)	20 (0.79)	26 (1.02)	23 (0.91)	27 (1.06)	25 (0.98)	27 (1.06)	25 (0.98)	27 (1.06)	25 (0.98)	27 (1.06)	25 (0.98)
June	82 (3.23)	64 (2.52)	84 (3.31)	69 (2.72)	85 (3.35)	74 (2.91)	87 (3.43)	79 (3.11)	89 (3.50)	83 (3.27)	92 (3.62)	88 (3.46)	92 (3.62)	88 (3.46)	92 (3.62)	88 (3.46)	92 (3.62)	88 (3.46)
July	199 (7.83)	192 (7.56)	201 (7.91)	197 (7.76)	203 (7.99)	202 (7.95)	208 (8.19)	207 (8.15)	219 (8.62)	216 (8.50)	225 (8.86)	222 (8.74)	225 (8.86)	222 (8.74)	225 (8.86)	222 (8.74)	225 (8.86)	222 (8.74)
Aug	167 (6.57)	160 (6.30)	169 (6.65)	164 (6.46)	172 (6.77)	169 (6.65)	176 (6.93)	174 (6.85)	179 (7.05)	179 (7.05)	184 (7.24)	184 (7.24)	184 (7.24)	184 (7.24)	184 (7.24)	184 (7.24)	184 (7.24)	184 (7.24)
Sep	114 (4.49)	100 (3.94)	117 (4.61)	104 (4.09)	119 (4.69)	108 (4.25)	122 (4.80)	115 (4.53)	127 (5.00)	122 (4.80)	129 (5.08)	125 (4.92)	129 (5.08)	125 (4.92)	129 (5.08)	125 (4.92)	129 (5.08)	125 (4.92)
Oct	27 (1.06)	13 (0.51)	27 (1.06)	16 (0.63)	28 (1.10)	19 (0.75)	29 (1.14)	23 (0.91)	30 (1.18)	27 (1.06)	32 (1.26)	31 (1.22)	32 (1.26)	31 (1.22)	32 (1.26)	31 (1.22)	32 (1.26)	31 (1.22)
Season	613 (24.12)	543 (21.38)	622 (24.48)	567 (22.33)	632 (24.88)	590 (23.22)	647 (25.47)	618 (24.34)	670 (26.37)	650 (25.59)	689 (27.12)	675 (26.56)	689 (27.12)	675 (26.56)	689 (27.12)	675 (26.56)	689 (27.12)	675 (26.56)

REGION: 19 Lakeview
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	61 (2.40)	48 (1.89)	62 (2.44)	51 (2.01)	64 (2.52)	53 (2.09)	66 (2.60)	56 (2.20)	68 (2.68)	60 (2.36)	69 (2.72)	62 (2.44)	69 (2.72)	62 (2.44)	69 (2.72)	62 (2.44)	69 (2.72)	62 (2.44)
June	133 (5.24)	103 (4.06)	136 (5.35)	110 (4.33)	139 (5.47)	121 (4.76)	141 (5.55)	130 (5.12)	146 (5.75)	140 (5.51)	150 (5.91)	145 (5.71)	150 (5.91)	145 (5.71)	150 (5.91)	145 (5.71)	150 (5.91)	145 (5.71)
July	165 (6.50)	158 (6.22)	168 (6.61)	162 (6.38)	171 (6.73)	166 (6.54)	173 (6.81)	170 (6.69)	175 (6.89)	174 (6.85)	177 (6.97)	177 (6.97)	177 (6.97)	177 (6.97)	177 (6.97)	177 (6.97)	177 (6.97)	177 (6.97)
Aug	127 (5.00)	121 (4.76)	130 (5.12)	125 (4.92)	131 (5.16)	129 (5.08)	135 (5.31)	134 (5.28)	139 (5.47)	139 (5.47)	142 (5.59)	142 (5.59)	142 (5.59)	142 (5.59)	142 (5.59)	142 (5.59)	142 (5.59)	142 (5.59)
Season	486 (19.14)	430 (16.93)	496 (19.52)	448 (17.64)	505 (19.88)	469 (18.47)	515 (20.27)	490 (19.29)	528 (20.79)	513 (20.19)	538 (21.19)	526 (20.71)	538 (21.19)	526 (20.71)	538 (21.19)	526 (20.71)	538 (21.19)	526 (20.71)

REGION: 19 Lakeview
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	43 (1.69)	26 (1.02)	44 (1.73)	28 (1.10)	45 (1.77)	31 (1.22)	46 (1.81)	35 (1.38)	46 (1.81)	35 (1.38)	46 (1.81)	35 (1.38)	46 (1.81)	39 (1.54)	47 (1.85)	41 (1.61)	47 (1.85)	41 (1.61)
June	118 (4.65)	91 (3.58)	121 (4.76)	98 (3.86)	124 (4.88)	108 (4.25)	127 (5.00)	116 (4.57)	127 (5.00)	116 (4.57)	127 (5.00)	116 (4.57)	131 (5.16)	125 (4.92)	136 (5.35)	130 (5.12)	136 (5.35)	130 (5.12)
July	202 (7.95)	195 (7.68)	206 (8.11)	199 (7.83)	209 (8.23)	203 (7.99)	212 (8.35)	207 (8.15)	212 (8.35)	207 (8.15)	212 (8.35)	207 (8.15)	214 (8.43)	212 (8.35)	216 (8.50)	216 (8.50)	216 (8.50)	216 (8.50)
Aug	148 (5.83)	140 (5.51)	150 (5.91)	144 (5.67)	152 (5.98)	148 (5.83)	156 (6.14)	153 (6.02)	156 (6.14)	153 (6.02)	161 (6.34)	158 (6.22)	163 (6.42)	158 (6.22)	163 (6.42)	163 (6.42)	163 (6.42)	163 (6.42)
Sep	23 (0.91)	20 (0.79)	23 (0.91)	21 (0.83)	24 (0.94)	22 (0.87)	24 (0.94)	23 (0.91)	24 (0.94)	23 (0.91)	24 (0.94)	23 (0.91)	25 (0.98)	24 (0.94)	26 (1.02)	25 (0.98)	26 (1.02)	25 (0.98)
Season	534 (21.03)	472 (18.58)	544 (21.42)	490 (19.29)	554 (21.80)	512 (20.16)	565 (22.24)	534 (21.03)	577 (22.72)	558 (21.97)	588 (23.14)	575 (22.63)						

REGION: 19 Lakeview
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	42 (1.65)	29 (1.14)	43 (1.69)	32 (1.26)	44 (1.73)	35 (1.38)	46 (1.81)	38 (1.50)	48 (1.89)	42 (1.65)	49 (1.93)	44 (1.73)	49 (1.93)	42 (1.65)	49 (1.93)	44 (1.73)	49 (1.93)	44 (1.73)
May	118 (4.65)	89 (3.50)	120 (4.72)	94 (3.70)	123 (4.84)	99 (3.90)	127 (5.00)	104 (4.09)	131 (5.16)	113 (4.45)	134 (5.28)	119 (4.69)	134 (5.28)	113 (4.45)	134 (5.28)	119 (4.69)	134 (5.28)	119 (4.69)
June	161 (6.34)	129 (5.08)	165 (6.50)	136 (5.35)	168 (6.61)	150 (5.91)	171 (6.73)	159 (6.26)	176 (6.93)	169 (6.65)	182 (7.17)	176 (6.93)	182 (7.17)	169 (6.65)	182 (7.17)	176 (6.93)	182 (7.17)	176 (6.93)
July	163 (6.42)	156 (6.14)	165 (6.50)	160 (6.30)	168 (6.61)	164 (6.46)	171 (6.73)	167 (6.57)	172 (6.77)	172 (6.77)	174 (6.85)	174 (6.85)	174 (6.85)	172 (6.77)	174 (6.85)	174 (6.85)	174 (6.85)	174 (6.85)
Aug	16 (0.63)	15 (0.59)	16 (0.63)	15 (0.59)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	17 (0.67)	17 (0.67)	18 (0.71)	17 (0.67)	18 (0.71)	17 (0.67)	18 (0.71)	17 (0.67)
Season	500 (19.69)	418 (16.45)	509 (20.04)	437 (17.20)	519 (20.42)	464 (18.28)	531 (20.90)	484 (19.05)	544 (21.42)	513 (20.19)	557 (21.94)	530 (20.87)						

REGION: 19 Lakeview
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.
April	82 (3.23)	64 (2.52)	85 (3.35)	69 (2.72)	88 (3.46)	74 (2.91)	91 (3.58)	79 (3.11)	94 (3.70)	84 (3.31)	97 (3.82)	89 (3.50)	116 (4.57)	89 (3.50)	119 (4.69)	122 (4.80)	100 (3.94)	125 (4.92)
May	141 (5.55)	111 (4.37)	144 (5.67)	118 (4.65)	147 (5.79)	130 (5.12)	150 (5.91)	139 (5.47)	155 (6.10)	149 (5.87)	160 (6.30)	154 (6.06)	175 (6.89)	169 (6.65)	178 (7.01)	182 (7.17)	177 (6.97)	184 (7.24)
June	175 (6.89)	169 (6.65)	178 (7.01)	173 (6.81)	182 (7.17)	177 (6.97)	184 (7.24)	181 (7.13)	186 (7.32)	185 (7.28)	188 (7.40)	188 (7.40)	141 (5.55)	133 (5.24)	143 (5.63)	144 (5.67)	141 (5.55)	148 (5.83)
July	141 (5.55)	133 (5.24)	143 (5.63)	137 (5.39)	144 (5.67)	141 (5.55)	148 (5.83)	147 (5.79)	153 (6.02)	152 (5.98)	155 (6.10)	155 (6.10)	103 (4.06)	89 (3.50)	105 (4.13)	108 (4.25)	100 (3.94)	111 (4.37)
Aug	103 (4.06)	89 (3.50)	105 (4.13)	95 (3.74)	108 (4.25)	100 (3.94)	111 (4.37)	105 (4.13)	113 (4.45)	110 (4.33)	114 (4.49)	113 (4.45)	34 (1.34)	25 (0.98)	34 (1.34)	36 (1.42)	32 (1.26)	37 (1.46)
Sep	34 (1.34)	25 (0.98)	34 (1.34)	28 (1.10)	34 (1.34)	30 (1.18)	36 (1.42)	32 (1.26)	37 (1.46)	36 (1.42)	38 (1.50)	38 (1.50)	792 (31.19)	680 (26.76)	808 (31.82)	715 (28.15)	825 (32.48)	752 (29.61)
Oct	792 (31.19)	680 (26.76)	808 (31.82)	715 (28.15)	825 (32.48)	752 (29.61)	845 (33.27)	788 (31.02)	870 (34.25)	829 (32.64)	887 (34.92)	855 (33.66)						

REGION: 20 Harney Valley
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.	ET mm	Net IRR mm in.	ET crop in.
May	61 (2.40)	49 (1.93)	62 (2.44)	51 (2.01)	63 (2.48)	53 (2.09)	64 (2.52)	57 (2.24)	67 (2.64)	64 (2.52)	71 (2.80)	66 (2.60)	133 (5.24)	111 (4.37)	135 (5.31)	138 (5.43)	129 (5.08)	142 (5.59)
June	133 (5.24)	111 (4.37)	135 (5.31)	117 (4.61)	138 (5.43)	129 (5.08)	142 (5.59)	134 (5.28)	147 (5.79)	140 (5.51)	152 (5.98)	145 (5.71)	160 (6.30)	154 (6.06)	163 (6.42)	167 (6.57)	159 (6.26)	170 (6.69)
July	160 (6.30)	154 (6.06)	163 (6.42)	156 (6.14)	167 (6.57)	159 (6.26)	170 (6.69)	163 (6.42)	172 (6.77)	169 (6.65)	174 (6.85)	171 (6.73)	126 (4.96)	120 (4.72)	128 (5.04)	123 (4.84)	127 (5.00)	132 (5.20)
Aug	126 (4.96)	120 (4.72)	128 (5.04)	123 (4.84)	129 (5.08)	127 (5.00)	132 (5.20)	130 (5.12)	138 (5.43)	134 (5.28)	141 (5.55)	138 (5.43)	480 (18.90)	434 (17.08)	488 (19.21)	447 (17.60)	497 (19.56)	468 (18.43)
Season	480 (18.90)	434 (17.08)	488 (19.21)	447 (17.60)	497 (19.56)	468 (18.43)	508 (20.00)	484 (19.06)	524 (20.63)	507 (19.96)	538 (21.18)	520 (20.47)						

REGION: 20 Harney Valley
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	42 (1.65)	30 (1.18)	43 (1.69)	32 (1.26)	44 (1.73)	35 (1.38)	45 (1.77)	38 (1.50)	46 (1.81)	43 (1.69)	47 (1.85)	44 (1.73)	48 (1.89)	45 (1.77)	49 (1.93)	46 (1.81)	47 (1.85)	44 (1.73)
June	119 (4.69)	97 (3.82)	122 (4.80)	103 (4.06)	124 (4.88)	115 (4.53)	127 (5.00)	120 (4.72)	132 (5.20)	126 (4.96)	136 (5.35)	130 (5.12)	141 (5.63)	135 (5.40)	145 (5.85)	139 (5.62)	144 (5.80)	138 (5.57)
July	196 (7.72)	189 (7.44)	199 (7.83)	192 (7.56)	204 (8.03)	196 (7.72)	207 (8.15)	200 (7.87)	209 (8.23)	204 (8.03)	212 (8.35)	208 (8.19)	219 (8.67)	212 (8.40)	225 (8.87)	216 (8.62)	221 (8.76)	214 (8.59)
Aug	143 (5.63)	139 (5.47)	145 (5.71)	143 (5.63)	149 (5.87)	147 (5.79)	152 (5.98)	151 (5.94)	159 (6.26)	155 (6.10)	162 (6.38)	160 (6.30)	169 (6.67)	164 (6.50)	171 (6.73)	167 (6.65)	171 (6.73)	167 (6.65)
Sep	22 (0.87)	19 (0.75)	22 (0.87)	20 (0.79)	23 (0.91)	21 (0.83)	24 (0.94)	22 (0.87)	24 (0.94)	23 (0.91)	24 (0.94)	23 (0.91)	24 (0.94)	23 (0.91)	24 (0.94)	23 (0.91)	24 (0.94)	23 (0.91)
Season	522 (20.56)	474 (18.66)	531 (20.90)	490 (19.30)	544 (21.42)	514 (20.25)	555 (21.84)	531 (20.90)	570 (22.44)	551 (21.69)	581 (22.87)	565 (22.25)	592 (23.35)	572 (23.00)	597 (23.57)	577 (23.22)	592 (23.35)	577 (23.22)

REGION: 20 Harney Valley
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	40 (1.57)	28 (1.10)	41 (1.61)	31 (1.22)	42 (1.65)	34 (1.34)	44 (1.73)	37 (1.46)	45 (1.77)	41 (1.61)	47 (1.85)	43 (1.69)	48 (1.89)	45 (1.77)	49 (1.93)	46 (1.81)	47 (1.85)	44 (1.73)
May	118 (4.65)	93 (3.66)	120 (4.72)	97 (3.82)	122 (4.80)	100 (3.94)	126 (4.96)	108 (4.25)	130 (5.12)	119 (4.69)	137 (5.39)	125 (4.92)	141 (5.63)	135 (5.40)	145 (5.85)	139 (5.62)	144 (5.80)	138 (5.57)
June	160 (6.30)	139 (5.47)	166 (6.54)	145 (5.71)	168 (6.61)	158 (6.22)	171 (6.73)	163 (6.42)	179 (7.05)	168 (6.61)	183 (7.20)	173 (6.81)	191 (7.41)	183 (7.20)	197 (7.57)	187 (7.41)	191 (7.41)	183 (7.20)
July	159 (6.26)	152 (5.98)	160 (6.30)	154 (6.06)	164 (6.46)	157 (6.18)	167 (6.57)	160 (6.30)	169 (6.65)	164 (6.46)	171 (6.73)	167 (6.65)	179 (7.05)	173 (6.81)	183 (7.20)	173 (6.81)	183 (7.20)	173 (6.81)
Aug	15 (0.59)	14 (0.55)	15 (0.59)	15 (0.59)	16 (0.63)	15 (0.59)	16 (0.63)	16 (0.63)	17 (0.67)	16 (0.63)	17 (0.67)	16 (0.63)	17 (0.67)	16 (0.63)	17 (0.67)	16 (0.63)	17 (0.67)	16 (0.63)
Season	492 (19.37)	426 (16.76)	502 (19.76)	442 (17.40)	512 (20.15)	464 (18.27)	524 (20.62)	484 (19.06)	540 (21.26)	508 (20.00)	555 (21.84)	525 (20.66)	562 (21.17)	542 (20.82)	567 (21.43)	547 (21.17)	562 (21.17)	547 (21.17)

REGION: 20 Harney Valley
CROP: Mint

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.
March	1	(0.04)	1	(0.04)	1	(0.04)	1	(0.04)	1	(0.04)	1	(0.04)	1	(0.04)	1	(0.04)	1	(0.04)
April	41	(1.61)	27	(1.06)	42	(1.65)	30	(1.18)	43	(1.71)	34	(1.34)	45	(1.77)	37	(1.46)	46	(1.81)
May	117	(4.61)	92	(3.62)	120	(4.72)	96	(3.78)	121	(4.76)	100	(3.94)	124	(4.88)	108	(4.25)	129	(5.08)
June	166	(6.54)	142	(5.59)	169	(6.65)	149	(5.87)	172	(6.77)	161	(6.34)	177	(6.97)	168	(6.61)	185	(7.28)
July	173	(6.81)	168	(6.61)	176	(6.93)	170	(6.69)	181	(7.13)	173	(6.81)	184	(7.24)	177	(6.97)	187	(7.36)
Aug	22	(0.87)	21	(0.83)	22	(0.87)	22	(0.87)	22	(0.87)	22	(0.87)	23	(0.91)	23	(0.91)	24	(0.94)
Season	520	(20.48)	451	(17.75)	530	(20.86)	468	(18.43)	540	(21.26)	491	(19.34)	554	(21.81)	514	(20.24)	572	(22.51)
																	587	(23.10)
																	555	(21.84)

REGION: 20 Harney Valley
CROP: Pasture

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.	ET crop mm	ET crop in.	Net IRR mm in.
April	77	(3.03)	61	(2.40)	79	(3.11)	64	(2.52)	81	(3.19)	69	(2.72)	85	(3.35)	76	(2.99)	89	(3.50)
May	117	(4.61)	93	(3.66)	121	(4.76)	97	(3.82)	124	(4.88)	100	(3.94)	126	(4.96)	109	(4.29)	131	(5.16)
June	141	(5.55)	119	(4.69)	143	(5.63)	125	(4.92)	146	(5.75)	137	(5.39)	150	(5.91)	142	(5.59)	155	(6.10)
July	171	(6.73)	164	(6.46)	172	(6.77)	166	(6.54)	177	(6.97)	170	(6.69)	180	(7.09)	173	(6.81)	183	(7.20)
Aug	138	(5.43)	133	(5.24)	140	(5.51)	136	(5.35)	141	(5.55)	140	(5.51)	144	(5.67)	143	(5.63)	150	(5.91)
Sep	97	(3.82)	87	(3.43)	100	(3.94)	91	(3.58)	104	(4.09)	95	(3.74)	107	(4.21)	99	(3.90)	109	(4.29)
Oct	31	(1.22)	25	(0.98)	32	(1.26)	27	(1.06)	34	(1.34)	29	(1.14)	35	(1.38)	31	(1.22)	36	(1.42)
Season	772	(30.39)	682	(26.86)	787	(30.98)	706	(27.79)	807	(31.77)	740	(29.13)	827	(32.57)	773	(30.43)	853	(33.58)
																	874	(34.40)
																	839	(33.03)

REGION: 21 Dayville-Canyon City
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	53 (2.09)	36 (1.42)	54 (2.13)	39 (1.54)	55 (2.17)	42 (1.65)	58 (2.28)	46 (1.81)	60 (2.36)	51 (2.01)	63 (2.48)	55 (2.17)	110 (4.33)	77 (3.03)	111 (4.37)	81 (3.19)	114 (4.49)	84 (3.31)
May	133 (5.24)	102 (4.02)	135 (5.31)	109 (4.29)	136 (5.35)	116 (4.57)	138 (5.43)	125 (4.92)	147 (5.79)	134 (5.28)	151 (5.96)	139 (5.47)	167 (6.57)	156 (6.14)	168 (6.61)	160 (6.30)	170 (6.69)	163 (6.42)
June	130 (5.12)	121 (4.76)	132 (5.20)	124 (4.88)	135 (5.31)	128 (5.04)	139 (5.47)	132 (5.20)	142 (5.59)	137 (5.39)	146 (5.75)	141 (5.55)	94 (3.70)	76 (2.99)	97 (3.82)	81 (3.19)	98 (3.86)	89 (3.50)
Season	687 (27.05)	568 (22.36)	697 (27.44)	594 (23.39)	708 (27.87)	622 (24.49)	725 (28.54)	659 (25.95)	747 (29.41)	693 (27.29)	771 (30.35)	714 (28.11)						

REGION: 21 Dayville-Canyon City
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	13 (0.51)	1 (0.04)	14 (0.55)	2 (0.08)	15 (0.59)	3 (0.12)	16 (0.63)	4 (0.16)	18 (0.71)	8 (0.31)	19 (0.75)	10 (0.39)	77 (3.03)	52 (2.05)	79 (3.11)	56 (2.20)	81 (3.19)	61 (2.40)
April	134 (5.28)	99 (3.90)	136 (5.35)	104 (4.09)	139 (5.47)	108 (4.25)	144 (5.67)	121 (4.76)	148 (5.83)	127 (5.00)	153 (6.02)	130 (5.12)	161 (6.34)	127 (5.00)	164 (6.46)	134 (5.28)	167 (6.57)	143 (5.63)
May	137 (5.39)	130 (5.12)	139 (5.47)	132 (5.20)	140 (5.51)	134 (5.28)	141 (5.55)	137 (5.39)	144 (5.67)	140 (5.51)	146 (5.75)	141 (5.55)	522 (20.55)	409 (16.11)	532 (20.94)	428 (16.85)	542 (21.33)	449 (17.68)
Season	522 (20.55)	409 (16.11)	532 (20.94)	428 (16.85)	542 (21.33)	449 (17.68)	553 (21.77)	481 (18.93)	573 (22.57)	513 (20.19)	590 (23.23)	529 (20.82)						

REGION: 21 Dayville-Canyon City
CROP: Mint

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)	1 (0.04)
April	43 (1.69)	19 (0.75)	44 (1.73)	24 (0.94)	45 (1.77)	27 (1.06)	46 (1.81)	30 (1.18)	47 (1.85)	35 (1.38)	48 (1.89)	38 (1.50)	49 (1.93)	40 (1.62)	50 (1.97)	41 (1.66)	51 (2.01)	42 (1.70)
May	116 (4.57)	82 (3.23)	119 (4.69)	86 (3.39)	121 (4.76)	91 (3.58)	125 (4.92)	102 (4.02)	128 (5.04)	108 (4.25)	131 (5.16)	111 (4.37)	134 (5.28)	114 (4.49)	137 (5.40)	117 (4.60)	140 (5.52)	120 (4.71)
June	166 (6.54)	132 (5.20)	169 (6.65)	139 (5.47)	171 (6.73)	148 (5.83)	173 (6.81)	159 (6.26)	182 (7.17)	170 (6.69)	189 (7.44)	176 (6.93)	196 (7.80)	184 (7.32)	203 (8.07)	190 (7.59)	207 (8.36)	198 (7.87)
July	181 (7.13)	170 (6.69)	183 (7.20)	174 (6.85)	184 (7.24)	177 (6.97)	186 (7.32)	180 (7.09)	190 (7.48)	185 (7.28)	193 (7.60)	187 (7.36)	203 (8.07)	198 (7.59)	207 (8.36)	200 (7.94)	213 (8.65)	205 (8.45)
Aug	22 (0.87)	22 (0.87)	23 (0.91)	22 (0.87)	23 (0.91)	23 (0.91)	24 (0.94)	24 (0.94)	24 (0.94)	24 (0.94)	24 (0.94)	24 (0.94)	24 (0.94)	24 (0.94)	24 (0.94)	24 (0.94)	24 (0.94)	24 (0.94)
Season	529 (20.84)	426 (16.78)	539 (21.22)	446 (17.56)	545 (21.45)	467 (18.39)	555 (21.84)	496 (19.53)	572 (22.52)	523 (20.58)	586 (23.07)	537 (21.14)	599 (23.56)	554 (22.09)	607 (23.95)	567 (22.58)	619 (24.44)	580 (23.11)

REGION: 21 Dayville-Canyon City
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	52 (2.05)	36 (1.42)	53 (2.09)	39 (1.54)	54 (2.13)	42 (1.65)	55 (2.17)	45 (1.77)	59 (2.32)	51 (2.01)	60 (2.36)	54 (2.13)						
May	118 (4.65)	84 (3.31)	120 (4.72)	88 (3.46)	122 (4.80)	92 (3.62)	127 (5.00)	104 (4.09)	130 (5.12)	110 (4.33)	134 (5.28)	113 (4.45)						
June	142 (5.59)	109 (4.29)	145 (5.71)	117 (4.61)	147 (5.79)	125 (4.92)	150 (5.91)	135 (5.31)	156 (6.14)	144 (5.67)	161 (6.34)	149 (5.87)						
July	178 (7.01)	167 (6.57)	180 (7.09)	171 (6.73)	181 (7.13)	174 (6.85)	183 (7.20)	177 (6.97)	187 (7.36)	182 (7.17)	190 (7.48)	184 (7.24)						
Aug	139 (5.47)	129 (5.08)	141 (5.55)	133 (5.24)	144 (5.67)	137 (5.39)	148 (5.83)	141 (5.55)	152 (5.98)	147 (5.79)	156 (6.14)	150 (5.91)						
Sep	101 (3.98)	82 (3.23)	103 (4.06)	87 (3.43)	104 (4.09)	95 (3.74)	105 (4.13)	100 (3.94)	108 (4.25)	105 (4.13)	114 (4.49)	108 (4.25)						
Oct	48 (1.89)	32 (1.26)	50 (1.97)	35 (1.38)	51 (2.01)	38 (1.50)	53 (2.09)	41 (1.61)	57 (2.24)	50 (1.97)	59 (2.32)	53 (2.09)						
Season	778 (30.64)	639 (25.16)	792 (31.19)	670 (26.39)	803 (31.62)	703 (27.67)	821 (32.33)	743 (29.24)	849 (33.41)	789 (31.07)	874 (34.41)	811 (31.94)						

REGION: 22 Wallowa Valley
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	51 (2.01)	30 (1.18)	53 (2.09)	33 (1.30)	55 (2.17)	38 (1.50)	57 (2.24)	42 (1.65)	60 (2.36)	47 (1.85)	64 (2.52)	50 (1.97)						
May	105 (4.13)	61 (2.40)	106 (4.17)	67 (2.64)	108 (4.25)	72 (2.83)	110 (4.33)	82 (3.23)	115 (4.53)	94 (3.70)	118 (4.65)	101 (3.98)						
June	121 (4.76)	80 (3.15)	123 (4.84)	88 (3.46)	126 (4.96)	96 (3.78)	129 (5.08)	104 (4.09)	133 (5.24)	112 (4.41)	135 (5.31)	118 (4.65)						
July	156 (6.14)	139 (5.47)	157 (6.18)	145 (5.71)	160 (6.30)	150 (5.91)	163 (6.42)	154 (6.06)	167 (6.57)	158 (6.22)	169 (6.65)	161 (6.34)						
Aug	126 (4.96)	113 (4.45)	129 (5.08)	118 (4.65)	132 (5.20)	122 (4.80)	134 (5.28)	127 (5.00)	138 (5.43)	133 (5.24)	140 (5.51)	135 (5.31)						
Sep	87 (3.43)	62 (2.44)	89 (3.50)	67 (2.64)	91 (3.58)	74 (2.91)	94 (3.70)	82 (3.23)	99 (3.90)	90 (3.54)	101 (3.98)	95 (3.74)						
Season	646 (25.43)	485 (19.09)	657 (25.86)	518 (20.40)	672 (26.46)	552 (21.73)	687 (27.05)	591 (23.26)	712 (28.03)	634 (24.96)	727 (28.62)	660 (25.99)						

REGION: 22 Wallowa Valley
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
April	51 (2.01)	22 (0.87)	52 (2.05)	26 (1.02)	54 (2.13)	31 (1.22)	56 (2.20)	36 (1.42)	58 (2.28)	43 (1.69)	62 (2.44)	48 (1.89)						
May	119 (4.69)	76 (2.99)	121 (4.76)	82 (3.23)	122 (4.80)	87 (3.43)	125 (4.92)	97 (3.82)	131 (5.16)	109 (4.29)	135 (5.31)	117 (4.61)						
June	146 (5.75)	103 (4.06)	148 (5.83)	112 (4.41)	152 (5.98)	121 (4.76)	157 (6.18)	130 (5.12)	161 (6.34)	140 (5.51)	164 (6.46)	146 (5.75)						
July	169 (6.65)	153 (6.02)	171 (6.73)	159 (6.26)	174 (6.85)	164 (6.46)	177 (6.97)	188 (6.61)	182 (7.17)	172 (6.77)	184 (7.24)	176 (6.93)						
Aug	31 (1.22)	25 (0.98)	31 (1.22)	27 (1.06)	31 (1.22)	29 (1.14)	32 (1.26)	30 (1.18)	33 (1.30)	32 (1.26)	33 (1.30)	33 (1.30)						
Season	516 (20.32)	379 (14.92)	523 (20.59)	406 (15.98)	533 (20.98)	432 (17.01)	547 (21.53)	461 (18.15)	565 (22.25)	496 (19.52)	578 (22.75)	520 (20.48)						

REGION: 22 Wallowa Valley
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years								
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.							
March	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	14 (0.55)	2 (0.08)	15 (0.59)	4 (0.16)	17 (0.67)	7 (0.28)	17 (0.67)	8 (0.31)	73 (2.87)	41 (1.61)	76 (2.99)	46 (1.81)	79 (3.11)	53 (2.09)	82 (3.23)	60 (2.36)	86 (3.39)	68 (2.68)	89 (3.50)	73 (2.87)
April	127 (5.00)	82 (3.23)	129 (5.08)	88 (3.46)	130 (5.12)	94 (3.70)	133 (5.24)	104 (4.09)	140 (5.51)	117 (4.61)	143 (5.63)	124 (4.88)	146 (5.75)	102 (4.02)	148 (5.83)	111 (4.37)	152 (5.98)	120 (4.72)	156 (6.14)	129 (5.08)	161 (6.34)	139 (5.47)	164 (6.46)	145 (5.71)
May	128 (5.04)	113 (4.45)	129 (5.08)	119 (4.69)	131 (5.16)	123 (4.84)	133 (5.24)	126 (4.96)	137 (5.39)	129 (5.08)	138 (5.43)	132 (5.20)	487 (19.17)	339 (13.35)	496 (19.53)	365 (14.37)	506 (19.92)	392 (15.43)	519 (20.44)	423 (16.65)	541 (21.30)	460 (18.12)	551 (21.69)	482 (18.97)
Season	487 (19.17)	339 (13.35)	496 (19.53)	365 (14.37)	506 (19.92)	392 (15.43)	519 (20.44)	423 (16.65)	541 (21.30)	460 (18.12)	551 (21.69)	482 (18.97)												

REGION: 22 Wallowa Valley
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
Jan	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.04)	1 (0.04)	0 (0.00)	1 (0.04)	1 (0.04)	0 (0.00)	2 (0.08)	0 (0.00)	0 (0.00)	0 (0.00)
Feb	3 (0.12)	0 (0.00)	4 (0.16)	4 (0.16)	0 (0.00)	7 (0.28)	7 (0.28)	1 (0.04)	8 (0.31)	8 (0.31)	1 (0.04)	9 (0.35)	9 (0.35)	1 (0.04)	10 (0.39)	1 (0.04)	1 (0.04)	1 (0.04)
March	15 (0.59)	1 (0.04)	16 (0.63)	16 (0.63)	1 (0.04)	16 (0.63)	16 (0.63)	1 (0.04)	17 (0.67)	17 (0.67)	1 (0.04)	18 (0.71)	18 (0.71)	1 (0.04)	20 (0.79)	3 (0.12)	3 (0.12)	3 (0.12)
April	43 (1.69)	13 (0.51)	45 (1.77)	45 (1.77)	18 (0.71)	46 (1.81)	46 (1.81)	23 (0.91)	47 (1.85)	47 (1.85)	29 (1.14)	49 (1.93)	49 (1.93)	35 (1.38)	52 (2.05)	39 (1.54)	39 (1.54)	39 (1.54)
May	68 (2.68)	30 (1.18)	69 (2.72)	69 (2.72)	35 (1.38)	70 (2.76)	70 (2.76)	41 (1.61)	71 (2.80)	71 (2.80)	47 (1.85)	73 (2.87)	73 (2.87)	58 (2.28)	75 (2.95)	63 (2.48)	63 (2.48)	63 (2.48)
June	103 (4.06)	62 (2.44)	104 (4.09)	104 (4.09)	71 (2.80)	107 (4.21)	107 (4.21)	79 (3.11)	110 (4.33)	110 (4.33)	86 (3.39)	115 (4.53)	115 (4.53)	95 (3.74)	117 (4.61)	100 (3.94)	100 (3.94)	100 (3.94)
July	169 (6.65)	151 (5.94)	171 (6.73)	171 (6.73)	158 (6.22)	173 (6.81)	173 (6.81)	164 (6.46)	176 (6.93)	176 (6.93)	168 (6.61)	180 (7.09)	180 (7.09)	171 (6.73)	183 (7.20)	173 (6.81)	173 (6.81)	173 (6.81)
Aug	152 (5.98)	139 (5.47)	156 (6.14)	156 (6.14)	143 (5.63)	159 (6.26)	159 (6.26)	147 (5.79)	162 (6.38)	162 (6.38)	151 (5.94)	164 (6.46)	164 (6.46)	159 (6.26)	167 (6.57)	162 (6.38)	162 (6.38)	162 (6.38)
Sep	108 (4.25)	79 (3.11)	110 (4.33)	110 (4.33)	84 (3.31)	112 (4.41)	112 (4.41)	93 (3.66)	113 (4.45)	113 (4.45)	101 (3.98)	118 (4.65)	118 (4.65)	110 (4.33)	121 (4.76)	115 (4.53)	115 (4.53)	115 (4.53)
Oct	63 (2.48)	30 (1.18)	64 (2.52)	64 (2.52)	35 (1.38)	65 (2.56)	65 (2.56)	41 (1.61)	70 (2.76)	70 (2.76)	49 (1.93)	71 (2.80)	71 (2.80)	61 (2.40)	72 (2.83)	67 (2.64)	67 (2.64)	67 (2.64)
Nov	11 (0.43)	1 (0.04)	12 (0.47)	12 (0.47)	1 (0.04)	13 (0.51)	13 (0.51)	1 (0.04)	17 (0.67)	17 (0.67)	1 (0.04)	19 (0.75)	19 (0.75)	1 (0.04)	20 (0.79)	5 (0.20)	5 (0.20)	5 (0.20)
Dec	1 (0.04)	0 (0.00)	1 (0.04)	1 (0.04)	0 (0.00)	1 (0.04)	1 (0.04)	0 (0.00)	1 (0.04)	1 (0.04)	0 (0.00)	1 (0.04)	1 (0.04)	0 (0.00)	1 (0.04)	0 (0.00)	0 (0.00)	0 (0.00)
Season	736 (28.97)	506 (19.91)	752 (29.60)	752 (29.60)	546 (21.51)	769 (30.28)	769 (30.28)	591 (23.27)	793 (31.23)	793 (31.23)	634 (24.96)	818 (32.22)	818 (32.22)	692 (27.24)	840 (33.06)	728 (28.68)	728 (28.68)	728 (28.68)

REGION: 22 Wallowa Valley
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
March	13 (0.51)	3 (0.12)	14 (0.55)	14 (0.55)	5 (0.20)	15 (0.59)	15 (0.59)	6 (0.24)	17 (0.67)	17 (0.67)	9 (0.35)	18 (0.71)	18 (0.71)	10 (0.39)	19 (0.75)	12 (0.47)	12 (0.47)	12 (0.47)
April	77 (3.03)	45 (1.77)	81 (3.19)	81 (3.19)	50 (1.97)	84 (3.31)	84 (3.31)	57 (2.24)	86 (3.39)	86 (3.39)	64 (2.52)	88 (3.46)	88 (3.46)	72 (2.83)	96 (3.78)	76 (2.99)	76 (2.99)	76 (2.99)
May	113 (4.45)	68 (2.68)	114 (4.49)	114 (4.49)	74 (2.91)	115 (4.53)	115 (4.53)	80 (3.15)	117 (4.61)	117 (4.61)	90 (3.54)	124 (4.88)	124 (4.88)	102 (4.02)	127 (5.00)	109 (4.29)	109 (4.29)	109 (4.29)
June	129 (5.08)	86 (3.39)	131 (5.16)	131 (5.16)	95 (3.74)	134 (5.28)	134 (5.28)	106 (4.17)	136 (5.35)	136 (5.35)	113 (4.45)	142 (5.59)	142 (5.59)	120 (4.72)	145 (5.71)	127 (5.00)	127 (5.00)	127 (5.00)
July	166 (6.54)	150 (5.91)	168 (6.61)	168 (6.61)	156 (6.14)	171 (6.73)	171 (6.73)	162 (6.38)	174 (6.85)	174 (6.85)	166 (6.54)	179 (7.05)	179 (7.05)	170 (6.69)	181 (7.13)	173 (6.81)	173 (6.81)	173 (6.81)
Aug	135 (5.31)	122 (4.80)	138 (5.43)	138 (5.43)	127 (5.00)	141 (5.55)	141 (5.55)	131 (5.16)	143 (5.63)	143 (5.63)	136 (5.35)	145 (5.71)	145 (5.71)	142 (5.59)	148 (5.83)	144 (5.67)	144 (5.67)	144 (5.67)
Sep	94 (3.70)	68 (2.68)	95 (3.74)	95 (3.74)	73 (2.87)	97 (3.82)	97 (3.82)	80 (3.15)	100 (3.94)	100 (3.94)	89 (3.50)	105 (4.13)	105 (4.13)	97 (3.82)	108 (4.25)	101 (3.98)	101 (3.98)	101 (3.98)
Oct	54 (2.13)	20 (0.79)	56 (2.20)	56 (2.20)	27 (1.06)	58 (2.28)	58 (2.28)	33 (1.30)	60 (2.36)	60 (2.36)	41 (1.61)	62 (2.44)	62 (2.44)	51 (2.01)	65 (2.56)	57 (2.24)	57 (2.24)	57 (2.24)
Season	781 (30.75)	562 (22.14)	797 (31.37)	797 (31.37)	607 (23.89)	815 (32.09)	815 (32.09)	655 (25.79)	833 (32.80)	833 (32.80)	708 (27.86)	863 (33.97)	863 (33.97)	764 (30.07)	889 (35.01)	799 (31.45)	799 (31.45)	799 (31.45)

REGION: 22 Wallowa Valley
CROP: Peas

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	33 (1.30)	13 (0.51)	34 (1.34)	17 (0.67)	35 (1.38)	20 (0.79)	36 (1.42)	24 (0.94)	37 (1.46)	28 (1.10)	39 (1.54)	32 (1.26)						
May	114 (4.49)	70 (2.76)	116 (4.57)	76 (2.99)	117 (4.61)	81 (3.19)	120 (4.72)	91 (3.58)	125 (4.92)	104 (4.09)	128 (5.04)	111 (4.37)						
June	146 (5.75)	102 (4.02)	148 (5.83)	111 (4.37)	152 (5.98)	120 (4.72)	156 (6.14)	129 (5.08)	161 (6.34)	139 (5.47)	164 (6.46)	145 (5.71)						
July	147 (5.79)	134 (5.28)	148 (5.83)	139 (5.47)	151 (5.94)	144 (5.67)	153 (6.02)	147 (5.79)	157 (6.18)	151 (5.94)	159 (6.26)	154 (6.06)						
Season	440 (17.33)	319 (12.57)	446 (17.57)	343 (13.50)	455 (17.91)	365 (14.37)	465 (18.30)	391 (15.39)	480 (18.90)	422 (16.60)	490 (19.30)	442 (17.40)						

REGION: 22 Wallowa Valley
CROP: Potatoes

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	32 (1.26)	10 (0.39)	33 (1.30)	14 (0.55)	33 (1.30)	17 (0.67)	34 (1.34)	21 (0.83)	35 (1.38)	26 (1.02)	35 (1.38)	28 (1.10)						
June	79 (3.11)	45 (1.77)	80 (3.15)	52 (2.05)	82 (3.23)	59 (2.32)	85 (3.35)	66 (2.60)	87 (3.43)	72 (2.83)	90 (3.54)	76 (2.99)						
July	176 (6.93)	159 (6.26)	177 (6.97)	164 (6.46)	180 (7.09)	171 (6.73)	183 (7.20)	175 (6.89)	186 (7.32)	179 (7.05)	188 (7.40)	181 (7.13)						
Aug	155 (6.10)	143 (5.63)	159 (6.26)	147 (5.79)	162 (6.38)	152 (5.98)	165 (6.50)	156 (6.14)	167 (6.57)	163 (6.42)	170 (6.69)	166 (6.54)						
Sep	102 (4.02)	76 (2.99)	103 (4.06)	82 (3.23)	104 (4.09)	89 (3.50)	107 (4.21)	96 (3.78)	113 (4.45)	103 (4.06)	115 (4.53)	108 (4.25)						
Oct	15 (0.59)	6 (0.24)	15 (0.59)	8 (0.31)	15 (0.59)	10 (0.39)	16 (0.63)	12 (0.47)	16 (0.63)	14 (0.55)	17 (0.67)	16 (0.63)						
Season	559 (22.01)	439 (17.28)	567 (22.33)	467 (18.39)	576 (22.68)	498 (19.59)	590 (23.23)	526 (20.71)	604 (23.78)	557 (21.93)	615 (24.21)	575 (22.64)						

REGION: 23 Grande Ronde Valley
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	53 (2.09)	30 (1.18)	55 (2.17)	33 (1.30)	56 (2.20)	36 (1.42)	58 (2.28)	40 (1.57)	60 (2.36)	48 (1.89)	63 (2.48)	51 (2.01)	63 (2.48)	48 (1.89)	63 (2.48)	51 (2.01)	63 (2.48)	48 (1.89)
May	106 (4.17)	62 (2.44)	107 (4.21)	68 (2.58)	108 (4.25)	75 (2.95)	111 (4.37)	83 (3.27)	116 (4.57)	93 (3.66)	122 (4.80)	101 (3.98)	122 (4.80)	93 (3.66)	122 (4.80)	101 (3.98)	122 (4.80)	93 (3.66)
June	123 (4.84)	84 (3.31)	126 (4.96)	90 (3.54)	128 (5.04)	98 (3.86)	130 (5.12)	107 (4.21)	133 (5.24)	115 (4.53)	137 (5.39)	120 (4.72)	137 (5.39)	115 (4.53)	137 (5.39)	120 (4.72)	137 (5.39)	115 (4.53)
July	165 (6.50)	149 (5.87)	167 (6.57)	155 (6.10)	169 (6.65)	160 (6.30)	171 (6.73)	165 (6.50)	173 (6.81)	170 (6.69)	177 (6.97)	174 (6.85)	177 (6.97)	170 (6.69)	177 (6.97)	174 (6.85)	177 (6.97)	170 (6.69)
Aug	137 (5.39)	124 (4.88)	138 (5.43)	128 (5.04)	139 (5.47)	132 (5.20)	141 (5.55)	136 (5.35)	145 (5.71)	141 (5.55)	151 (5.94)	144 (5.67)	151 (5.94)	141 (5.55)	151 (5.94)	144 (5.67)	151 (5.94)	141 (5.55)
Sep	94 (3.70)	73 (2.87)	97 (3.82)	77 (3.03)	99 (3.90)	81 (3.19)	100 (3.94)	89 (3.50)	102 (4.02)	97 (3.82)	105 (4.13)	101 (3.98)	105 (4.13)	97 (3.82)	105 (4.13)	101 (3.98)	105 (4.13)	97 (3.82)
Season	678 (26.69)	522 (20.55)	690 (27.16)	551 (21.69)	699 (27.51)	582 (22.92)	711 (27.99)	620 (24.40)	729 (28.71)	664 (26.14)	755 (29.71)	691 (27.21)	755 (29.71)	664 (26.14)	755 (29.71)	691 (27.21)	755 (29.71)	664 (26.14)

REGION: 23 Grande Ronde Valley
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	53 (2.09)	20 (0.79)	54 (2.13)	24 (0.94)	55 (2.17)	28 (1.10)	57 (2.24)	33 (1.30)	60 (2.36)	40 (1.57)	62 (2.44)	48 (1.89)	62 (2.44)	40 (1.57)	62 (2.44)	48 (1.89)	62 (2.44)	40 (1.57)
May	120 (4.72)	75 (2.95)	122 (4.80)	83 (3.27)	124 (4.88)	90 (3.54)	127 (5.00)	97 (3.82)	132 (5.20)	108 (4.25)	137 (5.39)	117 (4.61)	137 (5.39)	108 (4.25)	137 (5.39)	117 (4.61)	137 (5.39)	108 (4.25)
June	149 (5.87)	106 (4.17)	152 (5.98)	115 (4.53)	155 (6.10)	124 (4.88)	157 (6.18)	134 (5.28)	161 (6.34)	142 (5.59)	166 (6.54)	149 (5.87)	166 (6.54)	142 (5.59)	166 (6.54)	149 (5.87)	166 (6.54)	142 (5.59)
July	179 (7.05)	163 (6.42)	182 (7.17)	169 (6.65)	184 (7.24)	175 (6.89)	187 (7.36)	180 (7.09)	188 (7.40)	184 (7.24)	192 (7.56)	189 (7.44)	192 (7.56)	184 (7.24)	192 (7.56)	189 (7.44)	192 (7.56)	184 (7.24)
Aug	33 (1.30)	30 (1.18)	34 (1.34)	31 (1.22)	34 (1.34)	32 (1.26)	35 (1.38)	33 (1.30)	36 (1.42)	34 (1.34)	37 (1.46)	36 (1.42)	37 (1.46)	34 (1.34)	37 (1.46)	36 (1.42)	37 (1.46)	34 (1.34)
Season	534 (21.03)	394 (15.51)	544 (21.42)	422 (16.61)	552 (21.73)	449 (17.67)	563 (22.16)	477 (18.79)	577 (22.72)	508 (19.99)	594 (23.39)	539 (21.23)	594 (23.39)	508 (19.99)	594 (23.39)	539 (21.23)	594 (23.39)	508 (19.99)

REGION: 23 Grande Ronde Valley
CROP: Grain (Winter)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.
March	14 (0.55)	1 (0.04)	1 (0.04)	15 (0.59)	1 (0.04)	1 (0.04)	15 (0.59)	1 (0.04)	1 (0.04)	16 (0.63)	2 (0.08)	2 (0.08)	18 (0.71)	6 (0.24)	6 (0.24)	18 (0.71)	9 (0.35)	9 (0.35)
April	76 (2.99)	41 (1.61)	79 (3.11)	79 (3.11)	45 (1.77)	81 (3.19)	81 (3.19)	50 (1.97)	83 (3.27)	57 (2.24)	88 (3.46)	67 (2.64)	92 (3.62)	67 (2.64)	92 (3.62)	92 (3.62)	73 (2.87)	73 (2.87)
May	129 (5.08)	81 (3.19)	131 (5.16)	131 (5.16)	89 (3.50)	132 (5.20)	132 (5.20)	96 (3.78)	134 (5.28)	105 (4.13)	140 (5.51)	115 (4.53)	147 (5.79)	115 (4.53)	147 (5.79)	147 (5.79)	126 (4.96)	126 (4.96)
June	149 (5.87)	105 (4.13)	152 (5.98)	152 (5.98)	114 (4.49)	155 (6.10)	155 (6.10)	123 (4.84)	157 (6.18)	133 (5.24)	161 (6.34)	141 (5.55)	166 (6.54)	141 (5.55)	166 (6.54)	166 (6.54)	148 (5.83)	148 (5.83)
July	135 (5.31)	121 (4.76)	137 (5.39)	137 (5.39)	126 (4.96)	139 (5.47)	139 (5.47)	131 (5.16)	142 (5.59)	134 (5.28)	144 (5.67)	139 (5.47)	145 (5.71)	139 (5.47)	145 (5.71)	145 (5.71)	142 (5.59)	142 (5.59)
Season	503 (19.80)	349 (13.73)	514 (20.23)	375 (14.76)	522 (20.55)	401 (15.79)	532 (20.95)	431 (16.97)	551 (21.69)	468 (18.43)	568 (22.37)	498 (19.60)						

REGION: 23 Grande Ronde Valley
CROP: Grass Seed (Fall)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.	ET mm	ET crop in.	Net IRR in.
Jan	1 (0.04)	0 (0.00)	0 (0.00)	2 (0.08)	0 (0.00)	0 (0.00)	2 (0.08)	0 (0.00)	0 (0.00)	4 (0.16)	0 (0.00)	0 (0.00)	5 (0.20)	0 (0.00)	0 (0.00)	5 (0.20)	0 (0.00)	0 (0.00)
Feb	10 (0.39)	1 (0.04)	1 (0.04)	11 (0.43)	1 (0.04)	1 (0.04)	13 (0.51)	1 (0.04)	1 (0.04)	14 (0.55)	1 (0.04)	1 (0.04)	16 (0.63)	1 (0.04)	1 (0.04)	18 (0.71)	1 (0.04)	1 (0.04)
March	34 (1.34)	2 (0.08)	36 (1.42)	36 (1.42)	3 (0.12)	3 (0.12)	37 (1.46)	3 (0.12)	3 (0.12)	38 (1.50)	8 (0.31)	8 (0.31)	42 (1.65)	15 (0.59)	15 (0.59)	45 (1.77)	22 (0.87)	22 (0.87)
April	84 (3.31)	47 (1.85)	87 (3.43)	87 (3.43)	52 (2.05)	89 (3.50)	89 (3.50)	57 (2.24)	92 (3.62)	64 (2.52)	98 (3.86)	75 (2.95)	100 (3.94)	75 (2.95)	100 (3.94)	100 (3.94)	81 (3.19)	81 (3.19)
May	130 (5.12)	82 (3.23)	132 (5.20)	132 (5.20)	90 (3.54)	133 (5.24)	133 (5.24)	97 (3.82)	135 (5.31)	106 (4.17)	141 (5.55)	116 (4.57)	148 (5.83)	116 (4.57)	148 (5.83)	148 (5.83)	127 (5.00)	127 (5.00)
June	150 (5.91)	105 (4.13)	153 (6.02)	153 (6.02)	115 (4.53)	156 (6.14)	156 (6.14)	125 (4.92)	158 (6.22)	134 (5.28)	162 (6.38)	143 (5.63)	167 (6.57)	143 (5.63)	167 (6.57)	167 (6.57)	150 (5.91)	150 (5.91)
July	200 (7.87)	184 (7.24)	202 (7.95)	202 (7.95)	141 (5.55)	204 (8.03)	204 (8.03)	145 (5.71)	206 (8.11)	202 (7.95)	210 (8.27)	208 (8.19)	215 (8.46)	208 (8.19)	215 (8.46)	215 (8.46)	212 (8.35)	212 (8.35)
Aug	149 (5.87)	137 (5.39)	151 (5.94)	151 (5.94)	141 (5.55)	152 (5.98)	152 (5.98)	145 (5.71)	154 (6.06)	149 (5.87)	158 (6.22)	154 (6.06)	163 (6.42)	154 (6.06)	163 (6.42)	163 (6.42)	157 (6.18)	157 (6.18)
Sep	52 (2.05)	32 (1.26)	54 (2.13)	54 (2.13)	36 (1.42)	55 (2.17)	55 (2.17)	40 (1.57)	55 (2.17)	45 (1.77)	56 (2.20)	52 (2.05)	58 (2.28)	52 (2.05)	58 (2.28)	58 (2.28)	55 (2.17)	55 (2.17)
Oct	44 (1.73)	11 (0.43)	45 (1.77)	45 (1.77)	18 (0.71)	45 (1.77)	45 (1.77)	26 (1.02)	46 (1.81)	30 (1.18)	49 (1.93)	38 (1.50)	50 (1.97)	38 (1.50)	50 (1.97)	50 (1.97)	44 (1.73)	44 (1.73)
Nov	12 (0.47)	1 (0.04)	13 (0.51)	13 (0.51)	1 (0.04)	14 (0.55)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	18 (0.71)	18 (0.71)	2 (0.08)	2 (0.08)
Dec	1 (0.04)	0 (0.00)	1 (0.04)	1 (0.04)	0 (0.00)	2 (0.08)	2 (0.08)	0 (0.00)	2 (0.08)	0 (0.00)	3 (0.12)	0 (0.00)	4 (0.16)	0 (0.00)	0 (0.00)	4 (0.16)	0 (0.00)	0 (0.00)
Season	867 (34.14)	602 (23.69)	887 (34.92)	647 (25.48)	902 (35.51)	691 (27.20)	919 (36.18)	740 (29.13)	957 (37.68)	803 (31.62)	991 (39.02)	851 (33.52)						

REGION: 23 Grande Ronde Valley
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	1 (0.04)	0 (0.00)	2 (0.08)	0 (0.00)	3 (0.12)	0 (0.00)	5 (0.20)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)	6 (0.24)	0 (0.00)
Feb	8 (0.31)	0 (0.00)	8 (0.31)	0 (0.00)	9 (0.35)	1 (0.04)	10 (0.39)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	13 (0.51)	1 (0.04)	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)
March	16 (0.63)	1 (0.04)	17 (0.67)	1 (0.04)	17 (0.67)	1 (0.04)	18 (0.71)	1 (0.04)	20 (0.79)	1 (0.04)	20 (0.79)	1 (0.04)	21 (0.83)	1 (0.04)	21 (0.83)	1 (0.04)	21 (0.83)	1 (0.04)
April	46 (1.81)	13 (0.51)	47 (1.85)	16 (0.63)	48 (1.89)	21 (0.83)	49 (1.93)	26 (1.02)	52 (2.05)	33 (1.30)	52 (2.05)	33 (1.30)	53 (2.09)	40 (1.57)	53 (2.09)	40 (1.57)	53 (2.09)	40 (1.57)
May	70 (2.76)	29 (1.14)	71 (2.80)	35 (1.38)	72 (2.83)	40 (1.57)	73 (2.87)	46 (1.81)	74 (2.91)	55 (2.17)	74 (2.91)	55 (2.17)	78 (3.07)	59 (2.32)	78 (3.07)	59 (2.32)	78 (3.07)	59 (2.32)
June	106 (4.17)	64 (2.52)	108 (4.25)	73 (2.87)	110 (4.33)	82 (3.23)	112 (4.41)	91 (3.58)	115 (4.53)	98 (3.86)	115 (4.53)	98 (3.86)	118 (4.65)	103 (4.06)	118 (4.65)	103 (4.06)	118 (4.65)	103 (4.06)
July	179 (7.05)	163 (6.42)	181 (7.13)	169 (6.65)	184 (7.24)	175 (6.89)	186 (7.32)	179 (7.05)	189 (7.44)	184 (7.24)	189 (7.44)	184 (7.24)	193 (7.60)	189 (7.44)	193 (7.60)	189 (7.44)	193 (7.60)	189 (7.44)
Aug	165 (6.50)	151 (5.94)	167 (6.57)	157 (6.18)	169 (6.65)	161 (6.34)	171 (6.73)	166 (6.54)	176 (6.93)	171 (6.73)	176 (6.93)	171 (6.73)	183 (7.20)	175 (6.89)	183 (7.20)	175 (6.89)	183 (7.20)	175 (6.89)
Sep	114 (4.49)	90 (3.54)	117 (4.61)	96 (3.78)	120 (4.72)	102 (4.02)	121 (4.76)	110 (4.23)	123 (4.84)	118 (4.65)	123 (4.84)	118 (4.65)	127 (5.00)	122 (4.80)	127 (5.00)	122 (4.80)	127 (5.00)	122 (4.80)
Oct	67 (2.64)	33 (1.30)	69 (2.72)	41 (1.61)	71 (2.80)	48 (1.89)	74 (2.91)	54 (2.13)	78 (3.07)	63 (2.48)	78 (3.07)	63 (2.48)	81 (3.19)	71 (2.80)	81 (3.19)	71 (2.80)	81 (3.19)	71 (2.80)
Nov	19 (0.75)	1 (0.04)	20 (0.79)	1 (0.04)	21 (0.83)	1 (0.04)	22 (0.87)	2 (0.08)	26 (1.02)	2 (0.08)	26 (1.02)	2 (0.08)	29 (1.14)	10 (0.39)	29 (1.14)	10 (0.39)	29 (1.14)	10 (0.39)
Dec	1 (0.04)	0 (0.00)	1 (0.04)	0 (0.00)	2 (0.08)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)	3 (0.12)	0 (0.00)
Season	792 (31.19)	545 (21.45)	808 (31.82)	589 (23.18)	826 (32.51)	632 (24.89)	844 (33.22)	676 (26.62)	875 (34.45)	726 (28.59)	875 (34.45)	726 (28.59)	910 (35.84)	774 (30.47)	910 (35.84)	774 (30.47)	910 (35.84)	774 (30.47)

REGION: 23 Grande Ronde Valley
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	15 (0.59)	2 (0.08)	16 (0.63)	3 (0.12)	16 (0.63)	4 (0.16)	18 (0.71)	6 (0.24)	19 (0.75)	10 (0.39)	19 (0.75)	10 (0.39)	20 (0.79)	12 (0.47)	20 (0.79)	12 (0.47)	20 (0.79)	12 (0.47)
April	81 (3.19)	45 (1.77)	83 (3.27)	50 (1.97)	85 (3.35)	54 (2.13)	88 (3.46)	60 (2.36)	93 (3.66)	72 (2.83)	93 (3.66)	72 (2.83)	97 (3.82)	78 (3.07)	97 (3.82)	78 (3.07)	97 (3.82)	78 (3.07)
May	113 (4.45)	68 (2.68)	115 (4.53)	74 (2.91)	117 (4.61)	83 (3.27)	120 (4.72)	92 (3.62)	125 (4.92)	102 (4.02)	125 (4.92)	102 (4.02)	129 (5.08)	110 (4.33)	129 (5.08)	110 (4.33)	129 (5.08)	110 (4.33)
June	133 (5.24)	89 (3.50)	135 (5.31)	98 (3.86)	138 (5.43)	107 (4.21)	140 (5.51)	117 (4.61)	143 (5.63)	126 (4.96)	143 (5.63)	126 (4.96)	148 (5.83)	133 (5.24)	148 (5.83)	133 (5.24)	148 (5.83)	133 (5.24)
July	177 (6.97)	161 (6.34)	179 (7.05)	167 (6.57)	180 (7.09)	172 (6.77)	182 (7.17)	177 (6.97)	185 (7.28)	182 (7.17)	185 (7.28)	182 (7.17)	189 (7.44)	187 (7.36)	189 (7.44)	187 (7.36)	189 (7.44)	187 (7.36)
Aug	147 (5.79)	134 (5.28)	149 (5.87)	138 (5.43)	151 (5.94)	142 (5.59)	154 (6.06)	147 (5.79)	156 (6.14)	151 (5.94)	156 (6.14)	151 (5.94)	162 (6.38)	154 (6.06)	162 (6.38)	154 (6.06)	162 (6.38)	154 (6.06)
Sep	101 (3.98)	78 (3.07)	104 (4.09)	83 (3.27)	106 (4.17)	89 (3.50)	108 (4.25)	97 (3.82)	111 (4.37)	105 (4.13)	111 (4.37)	105 (4.13)	112 (4.41)	108 (4.25)	112 (4.41)	108 (4.25)	112 (4.41)	108 (4.25)
Oct	58 (2.28)	25 (0.98)	59 (2.32)	33 (1.30)	61 (2.40)	40 (1.57)	64 (2.52)	46 (1.81)	67 (2.64)	53 (2.09)	67 (2.64)	53 (2.09)	69 (2.72)	60 (2.36)	69 (2.72)	60 (2.36)	69 (2.72)	60 (2.36)
Season	825 (32.49)	602 (23.70)	840 (33.07)	646 (25.43)	854 (33.62)	691 (27.20)	874 (34.40)	742 (29.22)	899 (35.39)	801 (31.53)	899 (35.39)	801 (31.53)	926 (36.47)	842 (33.14)	926 (36.47)	842 (33.14)	926 (36.47)	842 (33.14)

REGION: 23 Grande Ronde Valley
CROP: Peas

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	35 (1.38)	13 (0.51)	36 (1.42)	16 (0.63)	36 (1.42)	19 (0.75)	37 (1.46)	22 (0.87)	39 (1.54)	28 (1.10)	40 (1.57)	32 (1.26)	40 (1.57)	32 (1.26)	40 (1.57)	32 (1.26)	40 (1.57)	32 (1.26)
May	115 (4.53)	69 (2.72)	116 (4.57)	75 (2.95)	118 (4.65)	83 (3.27)	121 (4.76)	92 (3.62)	126 (4.96)	102 (4.02)	131 (5.16)	111 (4.37)	131 (5.16)	111 (4.37)	131 (5.16)	111 (4.37)	131 (5.16)	111 (4.37)
June	148 (5.83)	105 (4.13)	151 (5.94)	114 (4.49)	154 (6.06)	123 (4.84)	156 (6.14)	133 (5.24)	160 (6.30)	141 (5.55)	165 (6.50)	148 (5.83)	165 (6.50)	148 (5.83)	165 (6.50)	148 (5.83)	165 (6.50)	148 (5.83)
July	156 (6.14)	143 (5.63)	157 (6.18)	147 (5.79)	159 (6.26)	151 (5.94)	160 (6.30)	156 (6.14)	163 (6.42)	161 (6.34)	167 (6.57)	164 (6.46)	167 (6.57)	164 (6.46)	167 (6.57)	164 (6.46)	167 (6.57)	164 (6.46)
Season	454 (17.88)	330 (12.99)	460 (18.11)	352 (13.86)	467 (18.39)	376 (14.80)	474 (18.66)	403 (15.87)	488 (19.22)	432 (17.01)	503 (19.80)	455 (17.92)	488 (19.22)	432 (17.01)	503 (19.80)	455 (17.92)	488 (19.22)	432 (17.01)

REGION: 23 Grande Ronde Valley
CROP: Potatoes

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	33 (1.30)	10 (0.39)	33 (1.30)	13 (0.51)	34 (1.34)	16 (0.63)	34 (1.34)	21 (0.83)	35 (1.38)	25 (0.98)	35 (1.38)	28 (1.10)	35 (1.38)	25 (0.98)	35 (1.38)	28 (1.10)	35 (1.38)	28 (1.10)
June	81 (3.19)	48 (1.89)	83 (3.27)	54 (2.13)	84 (3.31)	59 (2.32)	85 (3.35)	68 (2.68)	88 (3.46)	73 (2.87)	90 (3.54)	76 (2.99)	88 (3.46)	73 (2.87)	90 (3.54)	76 (2.99)	88 (3.46)	73 (2.87)
July	187 (7.36)	172 (6.77)	189 (7.44)	177 (6.97)	190 (7.48)	183 (7.20)	192 (7.56)	188 (7.40)	196 (7.72)	194 (7.64)	200 (7.87)	198 (7.80)	196 (7.72)	194 (7.64)	200 (7.87)	198 (7.80)	196 (7.72)	194 (7.64)
Aug	168 (6.61)	156 (6.14)	172 (6.77)	161 (6.34)	175 (6.89)	165 (6.50)	177 (6.97)	170 (6.69)	180 (7.09)	175 (6.89)	185 (7.28)	177 (6.97)	180 (7.09)	175 (6.89)	185 (7.28)	177 (6.97)	180 (7.09)	175 (6.89)
Sep	108 (4.25)	86 (3.39)	111 (4.37)	91 (3.58)	113 (4.45)	96 (3.78)	115 (4.53)	104 (4.09)	117 (4.61)	111 (4.37)	120 (4.72)	115 (4.53)	117 (4.61)	111 (4.37)	120 (4.72)	115 (4.53)	117 (4.61)	111 (4.37)
Oct	16 (0.63)	7 (0.28)	16 (0.63)	9 (0.35)	17 (0.67)	12 (0.47)	17 (0.67)	14 (0.55)	18 (0.71)	15 (0.59)	18 (0.71)	17 (0.67)	18 (0.71)	15 (0.59)	18 (0.71)	17 (0.67)	18 (0.71)	15 (0.59)
Season	593 (23.34)	479 (18.86)	604 (23.78)	505 (19.88)	613 (24.14)	531 (20.90)	620 (24.42)	565 (22.24)	634 (24.97)	593 (23.34)	648 (25.50)	611 (24.06)	634 (24.97)	593 (23.34)	648 (25.50)	611 (24.06)	634 (24.97)	593 (23.34)

REGION: 24 Baker Valley
CROP: Alfalfa Hay

		5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
April	53 (2.09)	39 (1.54)	54 (2.13)	42 (1.65)	55 (2.17)	46 (1.81)	57 (2.24)	51 (2.01)	59 (2.32)	55 (2.17)	62 (2.44)	57 (2.24)	62 (2.44)	57 (2.24)	62 (2.44)	57 (2.24)	62 (2.44)	57 (2.24)	62 (2.44)
May	108 (4.25)	82 (3.23)	111 (4.37)	87 (3.43)	115 (4.53)	90 (3.54)	117 (4.61)	94 (3.70)	120 (4.72)	99 (3.90)	122 (4.80)	103 (4.06)	122 (4.80)	103 (4.06)	122 (4.80)	103 (4.06)	122 (4.80)	103 (4.06)	122 (4.80)
June	130 (5.12)	98 (3.86)	132 (5.20)	103 (4.06)	133 (5.24)	110 (4.33)	135 (5.31)	121 (4.76)	141 (5.55)	130 (5.12)	148 (5.83)	135 (5.31)	148 (5.83)	135 (5.31)	148 (5.83)	135 (5.31)	148 (5.83)	135 (5.31)	148 (5.83)
July	171 (6.73)	156 (6.14)	172 (6.77)	161 (6.34)	174 (6.85)	166 (6.54)	177 (6.97)	171 (6.73)	182 (7.17)	176 (6.93)	183 (7.20)	178 (7.01)	183 (7.20)	178 (7.01)	183 (7.20)	178 (7.01)	183 (7.20)	178 (7.01)	183 (7.20)
Aug	135 (5.31)	122 (4.80)	137 (5.39)	126 (4.96)	139 (5.47)	130 (5.12)	141 (5.55)	134 (5.28)	146 (5.75)	142 (5.59)	152 (5.98)	148 (5.83)	152 (5.98)	148 (5.83)	152 (5.98)	148 (5.83)	152 (5.98)	148 (5.83)	152 (5.98)
Sep	99 (3.90)	86 (3.39)	101 (3.98)	91 (3.58)	104 (4.09)	96 (3.78)	108 (4.25)	102 (4.02)	110 (4.33)	106 (4.17)	116 (4.57)	109 (4.29)	116 (4.57)	109 (4.29)	116 (4.57)	109 (4.29)	116 (4.57)	109 (4.29)	116 (4.57)
Season	696 (27.40)	583 (22.96)	707 (27.84)	610 (24.02)	720 (28.35)	638 (25.12)	735 (28.93)	673 (26.50)	758 (29.84)	708 (27.88)	783 (30.82)	730 (28.74)	783 (30.82)	730 (28.74)	783 (30.82)	730 (28.74)	783 (30.82)	730 (28.74)	783 (30.82)

REGION: 24 Baker Valley
CROP: Corn (Field)

		5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.
May	55 (2.17)	35 (1.38)	56 (2.20)	38 (1.50)	57 (2.24)	41 (1.61)	58 (2.28)	45 (1.77)	59 (2.32)	49 (1.93)	60 (2.36)	51 (2.01)	60 (2.36)	49 (1.93)	60 (2.36)	51 (2.01)	60 (2.36)	49 (1.93)	60 (2.36)
June	118 (4.65)	86 (3.39)	121 (4.76)	90 (3.54)	122 (4.80)	97 (3.82)	124 (4.88)	109 (4.29)	129 (5.08)	119 (4.69)	134 (5.28)	125 (4.92)	134 (5.28)	119 (4.69)	134 (5.28)	125 (4.92)	134 (5.28)	119 (4.69)	134 (5.28)
July	206 (8.11)	191 (7.52)	208 (8.19)	197 (7.76)	210 (8.27)	202 (7.95)	214 (8.43)	207 (8.15)	218 (8.58)	212 (8.35)	219 (8.62)	215 (8.46)	219 (8.62)	212 (8.35)	219 (8.62)	215 (8.46)	219 (8.62)	212 (8.35)	219 (8.62)
Aug	166 (6.54)	153 (6.02)	168 (6.61)	158 (6.22)	170 (6.69)	162 (6.38)	173 (6.81)	167 (6.57)	179 (7.05)	178 (7.01)	186 (7.32)	183 (7.20)	179 (7.05)	178 (7.01)	186 (7.32)	183 (7.20)	186 (7.32)	178 (7.01)	186 (7.32)
Sep	90 (3.54)	76 (2.99)	92 (3.62)	81 (3.19)	95 (3.74)	86 (3.39)	98 (3.86)	91 (3.58)	100 (3.94)	96 (3.78)	105 (4.13)	98 (3.86)	100 (3.94)	96 (3.78)	105 (4.13)	98 (3.86)	105 (4.13)	96 (3.78)	105 (4.13)
Season	635 (25.01)	541 (21.30)	645 (25.38)	564 (22.21)	654 (25.74)	588 (23.15)	667 (26.26)	619 (24.36)	685 (26.97)	654 (25.76)	704 (27.71)	672 (26.45)	685 (26.97)	654 (25.76)	704 (27.71)	672 (26.45)	704 (27.71)	672 (26.45)	704 (27.71)

REGION: 24 Baker Valley
CROP: Corn (Sweet)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	32 (1.26)	21 (0.83)	33 (1.30)	23 (0.91)	33 (1.30)	25 (0.98)	34 (1.34)	26 (1.02)	34 (1.34)	26 (1.02)	34 (1.34)	29 (1.14)	35 (1.38)	30 (1.18)	35 (1.38)	30 (1.18)	35 (1.38)	30 (1.18)
June	99 (3.90)	68 (2.68)	102 (4.02)	73 (2.87)	103 (4.06)	81 (3.19)	104 (4.09)	90 (3.54)	107 (4.21)	101 (3.98)	107 (4.21)	101 (3.98)	113 (4.45)	105 (4.13)	113 (4.45)	105 (4.13)	113 (4.45)	105 (4.13)
July	195 (7.68)	180 (7.09)	196 (7.72)	185 (7.28)	199 (7.83)	191 (7.52)	202 (7.95)	196 (7.72)	206 (8.11)	201 (7.91)	206 (8.11)	201 (7.91)	207 (8.15)	203 (7.99)	207 (8.15)	203 (7.99)	207 (8.15)	203 (7.99)
Aug	166 (6.54)	153 (6.02)	168 (6.61)	158 (6.22)	170 (6.69)	162 (6.38)	173 (6.81)	167 (6.57)	179 (7.05)	176 (6.93)	179 (7.05)	176 (6.93)	186 (7.32)	182 (7.17)	186 (7.32)	182 (7.17)	186 (7.32)	182 (7.17)
Sep	19 (0.75)	18 (0.71)	19 (0.75)	19 (0.75)	20 (0.79)	20 (0.79)	21 (0.83)	20 (0.79)	21 (0.83)	20 (0.79)	21 (0.83)	21 (0.83)	22 (0.87)	22 (0.87)	22 (0.87)	22 (0.87)	22 (0.87)	22 (0.87)
Season	511 (20.13)	440 (17.33)	518 (20.40)	458 (18.03)	525 (20.67)	479 (18.86)	534 (21.02)	499 (19.64)	547 (21.54)	528 (20.79)	547 (21.54)	528 (20.79)	563 (22.17)	542 (21.34)	563 (22.17)	542 (21.34)	563 (22.17)	542 (21.34)

REGION: 24 Baker Valley
CROP: Grain (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	52 (2.05)	36 (1.42)	53 (2.09)	40 (1.57)	55 (2.17)	44 (1.73)	56 (2.20)	48 (1.89)	58 (2.28)	53 (2.09)	58 (2.28)	53 (2.09)	60 (2.36)	56 (2.20)	60 (2.36)	56 (2.20)	60 (2.36)	56 (2.20)
May	123 (4.84)	95 (3.74)	127 (5.00)	100 (3.94)	130 (5.12)	104 (4.09)	132 (5.20)	109 (4.29)	135 (5.31)	115 (4.53)	135 (5.31)	115 (4.53)	140 (5.51)	119 (4.69)	140 (5.51)	119 (4.69)	140 (5.51)	119 (4.69)
June	158 (6.22)	121 (4.76)	162 (6.38)	127 (5.00)	165 (6.50)	136 (5.35)	168 (6.61)	148 (5.83)	174 (6.85)	159 (6.26)	174 (6.85)	159 (6.26)	180 (7.09)	166 (6.54)	180 (7.09)	166 (6.54)	180 (7.09)	166 (6.54)
July	186 (7.32)	171 (6.73)	188 (7.40)	176 (6.93)	190 (7.48)	182 (7.17)	193 (7.60)	187 (7.36)	198 (7.80)	191 (7.52)	198 (7.80)	191 (7.52)	200 (7.87)	194 (7.64)	200 (7.87)	194 (7.64)	200 (7.87)	194 (7.64)
Aug	32 (1.26)	29 (1.14)	33 (1.30)	30 (1.18)	33 (1.30)	31 (1.22)	34 (1.34)	32 (1.26)	35 (1.38)	34 (1.34)	35 (1.38)	34 (1.34)	36 (1.42)	36 (1.42)	36 (1.42)	36 (1.42)	36 (1.42)	36 (1.42)
Season	551 (21.69)	452 (17.79)	563 (22.17)	473 (18.62)	573 (22.57)	497 (19.56)	583 (22.95)	524 (20.63)	600 (23.62)	552 (21.74)	600 (23.62)	552 (21.74)	616 (24.25)	571 (22.49)	616 (24.25)	571 (22.49)	616 (24.25)	571 (22.49)

REGION: 24 Baker Valley
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	12 (0.47)	4 (0.16)	13 (0.51)	6 (0.24)	13 (0.51)	7 (0.28)	14 (0.55)	8 (0.31)	15 (0.59)	11 (0.43)	17 (0.67)	13 (0.51)	17 (0.67)	11 (0.43)	15 (0.59)	89 (3.50)	83 (3.27)	148 (5.83)
April	76 (2.99)	56 (2.20)	78 (3.07)	60 (2.36)	80 (3.15)	64 (2.52)	82 (3.23)	73 (2.87)	87 (3.43)	79 (3.11)	89 (3.50)	83 (3.27)	89 (3.50)	79 (3.11)	87 (3.43)	148 (5.83)	127 (5.00)	179 (7.05)
May	130 (5.12)	103 (4.06)	135 (5.31)	107 (4.21)	138 (5.43)	112 (4.41)	140 (5.51)	117 (4.61)	143 (5.63)	123 (4.84)	148 (5.83)	127 (5.00)	148 (5.83)	123 (4.84)	143 (5.63)	179 (7.05)	165 (6.50)	151 (5.94)
June	157 (6.18)	121 (4.76)	161 (6.34)	127 (5.00)	164 (6.46)	135 (5.31)	167 (6.57)	147 (5.79)	173 (6.81)	158 (6.22)	179 (7.05)	165 (6.50)	179 (7.05)	158 (6.22)	173 (6.81)	151 (5.94)	145 (5.71)	584 (22.99)
July	140 (5.51)	127 (5.00)	141 (5.55)	133 (5.24)	143 (5.63)	137 (5.39)	145 (5.71)	141 (5.55)	149 (5.87)	144 (5.67)	151 (5.94)	145 (5.71)	151 (5.94)	144 (5.67)	149 (5.87)	584 (22.99)	533 (20.99)	
Season	515 (20.27)	411 (16.18)	528 (20.78)	433 (17.05)	538 (21.18)	455 (17.91)	548 (21.57)	486 (19.13)	567 (22.33)	515 (20.27)	584 (22.99)	533 (20.99)	584 (22.99)	515 (20.27)	567 (22.33)			

REGION: 24 Baker Valley
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Jan	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (0.08)	0 (0.00)	0 (0.00)	0 (0.00)
Feb	2 (0.08)	0 (0.00)	5 (0.20)	0 (0.00)	6 (0.24)	0 (0.00)	7 (0.28)	0 (0.00)	8 (0.31)	0 (0.00)	10 (0.39)	4 (0.16)	10 (0.39)	0 (0.00)	10 (0.39)	4 (0.16)	9 (0.35)	139 (5.47)
March	14 (0.55)	1 (0.04)	14 (0.55)	1 (0.04)	15 (0.59)	1 (0.04)	16 (0.63)	3 (0.12)	17 (0.67)	8 (0.31)	20 (0.79)	9 (0.35)	20 (0.79)	8 (0.31)	17 (0.67)	82 (3.23)	82 (3.23)	20 (0.79)
April	44 (1.73)	28 (1.10)	45 (1.77)	32 (1.26)	47 (1.85)	34 (1.34)	48 (1.89)	38 (1.50)	49 (1.93)	44 (1.73)	50 (1.97)	46 (1.81)	50 (1.97)	44 (1.73)	49 (1.93)	124 (4.88)	116 (4.57)	197 (7.76)
May	71 (2.80)	46 (1.81)	72 (2.83)	50 (1.97)	73 (2.87)	53 (2.09)	74 (2.91)	57 (2.24)	76 (2.99)	61 (2.40)	77 (3.03)	65 (2.56)	77 (3.03)	61 (2.40)	76 (2.99)	124 (4.88)	116 (4.57)	197 (7.76)
June	111 (4.37)	80 (3.15)	113 (4.45)	84 (3.31)	115 (4.53)	91 (3.58)	117 (4.61)	101 (3.98)	119 (4.69)	111 (4.37)	124 (4.88)	116 (4.57)	124 (4.88)	111 (4.37)	119 (4.69)	124 (4.88)	116 (4.57)	197 (7.76)
July	185 (7.28)	171 (6.73)	187 (7.36)	176 (6.93)	189 (7.44)	180 (7.09)	192 (7.56)	184 (7.24)	196 (7.72)	189 (7.44)	197 (7.76)	192 (7.56)	197 (7.76)	189 (7.44)	196 (7.72)	183 (7.20)	179 (7.05)	139 (5.47)
Aug	163 (6.42)	150 (5.91)	165 (6.50)	155 (6.10)	168 (6.61)	159 (6.26)	170 (6.69)	163 (6.42)	176 (6.93)	173 (6.81)	183 (7.20)	179 (7.05)	183 (7.20)	173 (6.81)	176 (6.93)	139 (5.47)	132 (5.20)	82 (3.23)
Sep	120 (4.72)	107 (4.21)	123 (4.84)	113 (4.45)	125 (4.92)	118 (4.65)	129 (5.08)	123 (4.84)	133 (5.24)	129 (5.08)	139 (5.47)	132 (5.20)	139 (5.47)	129 (5.08)	133 (5.24)	82 (3.23)	82 (3.23)	20 (0.79)
Oct	69 (2.72)	55 (2.17)	72 (2.83)	59 (2.32)	74 (2.91)	62 (2.44)	78 (3.07)	67 (2.64)	81 (3.19)	78 (3.07)	82 (3.23)	82 (3.23)	82 (3.23)	78 (3.07)	81 (3.19)	20 (0.79)	13 (0.51)	0 (0.00)
Nov	12 (0.47)	1 (0.04)	13 (0.51)	1 (0.04)	17 (0.67)	1 (0.04)	19 (0.75)	3 (0.12)	20 (0.79)	10 (0.39)	20 (0.79)	13 (0.51)	20 (0.79)	10 (0.39)	20 (0.79)	0 (0.00)	0 (0.00)	0 (0.00)
Dec	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Season	791 (31.14)	639 (25.16)	809 (31.84)	671 (26.42)	829 (32.63)	699 (27.53)	850 (33.47)	739 (29.10)	875 (34.46)	803 (31.60)	904 (35.59)	838 (33.00)	904 (35.59)	803 (31.60)	875 (34.46)			

REGION: 24 Baker Valley
CROP: Onions

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.
April	16	(0.63)	12 (0.47)	16	(0.63)	13 (0.51)	16	(0.63)	14 (0.55)	17	(0.67)	15 (0.59)	17	(0.67)	16 (0.63)	17	(0.67)	17 (0.67)
May	77	(3.03)	55 (2.17)	78	(3.07)	60 (2.36)	80	(3.15)	63 (2.48)	82	(3.23)	66 (2.60)	83	(3.27)	69 (2.72)	84	(3.31)	72 (2.83)
June	120	(4.72)	93 (3.66)	123	(4.84)	97 (3.82)	126	(4.96)	102 (4.02)	128	(5.04)	113 (4.45)	131	(5.16)	122 (4.80)	138	(5.43)	127 (5.00)
July	189	(7.44)	177 (6.97)	190	(7.48)	182 (7.17)	192	(7.56)	186 (7.32)	196	(7.72)	191 (7.52)	201	(7.91)	195 (7.68)	203	(7.99)	197 (7.76)
Aug	150	(5.91)	139 (5.47)	152	(5.98)	143 (5.63)	154	(6.06)	147 (5.79)	157	(6.18)	150 (5.91)	162	(6.38)	158 (6.22)	168	(6.61)	165 (6.50)
Sep	47	(1.85)	43 (1.69)	48	(1.89)	45 (1.77)	49	(1.93)	47 (1.85)	51	(2.01)	49 (1.93)	52	(2.05)	51 (2.01)	54	(2.13)	52 (2.05)
Season	599	(23.58)	519 (20.43)	607	(23.89)	540 (21.26)	617	(24.29)	559 (22.01)	631	(24.85)	584 (23.00)	646	(25.44)	611 (24.06)	664	(26.14)	630 (24.81)

REGION: 24 Baker Valley
CROP: Pasture

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.	ET mm	crop in.	Net IRR mm in.
March	13	(0.51)	7 (0.28)	14	(0.55)	9 (0.35)	15	(0.59)	9 (0.35)	15	(0.59)	11 (0.43)	17	(0.67)	13 (0.51)	19	(0.75)	14 (0.55)
April	80	(3.15)	59 (2.32)	82	(3.23)	63 (2.48)	84	(3.31)	68 (2.68)	86	(3.39)	78 (3.07)	89	(3.50)	83 (3.27)	94	(3.70)	87 (3.43)
May	116	(4.57)	89 (3.50)	119	(4.69)	93 (3.66)	122	(4.80)	97 (3.82)	125	(4.92)	102 (4.02)	128	(5.04)	107 (4.21)	131	(5.16)	111 (4.37)
June	139	(5.47)	106 (4.17)	141	(5.55)	110 (4.33)	142	(5.59)	118 (4.65)	144	(5.67)	130 (5.12)	151	(5.94)	140 (5.51)	158	(6.22)	145 (5.71)
July	182	(7.17)	168 (6.61)	184	(7.24)	173 (6.81)	186	(7.32)	178 (7.01)	189	(7.44)	183 (7.20)	194	(7.64)	187 (7.36)	196	(7.72)	190 (7.48)
Aug	144	(5.67)	132 (5.20)	146	(5.75)	136 (5.35)	148	(5.83)	140 (5.51)	150	(5.91)	145 (5.71)	156	(6.14)	154 (6.06)	161	(6.34)	159 (6.26)
Sep	107	(4.21)	93 (3.66)	109	(4.29)	99 (3.90)	111	(4.37)	103 (4.06)	115	(4.53)	108 (4.25)	118	(4.65)	113 (4.45)	123	(4.84)	116 (4.57)
Oct	60	(2.36)	46 (1.81)	61	(2.40)	49 (1.93)	64	(2.52)	52 (2.05)	67	(2.64)	57 (2.24)	70	(2.76)	64 (2.52)	72	(2.83)	69 (2.72)
Season	841	(33.11)	700 (27.55)	856	(33.70)	732 (28.81)	872	(34.33)	765 (30.13)	891	(35.09)	814 (32.04)	923	(36.34)	861 (33.89)	954	(37.56)	891 (35.09)

REGION: 24 Baker Valley
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm	Net IRR mm in.
April	34 (1.34)	24 (0.94)	35 (1.38)	26 (1.02)	35 (1.38)	29 (1.14)	36 (1.42)	31 (1.22)	37 (1.46)	34 (1.34)	39 (1.54)	36 (1.42)	39 (1.54)	36 (1.42)	39 (1.54)	36 (1.42)	39 (1.54)	36 (1.42)
May	118 (4.65)	90 (3.54)	121 (4.76)	95 (3.74)	124 (4.88)	99 (3.90)	126 (4.96)	104 (4.09)	130 (5.12)	109 (4.29)	133 (5.24)	113 (4.45)	133 (5.24)	113 (4.45)	133 (5.24)	113 (4.45)	133 (5.24)	113 (4.45)
June	157 (6.18)	121 (4.76)	161 (6.34)	127 (5.00)	164 (6.46)	135 (5.31)	167 (6.57)	147 (5.79)	173 (6.81)	158 (6.22)	179 (7.05)	165 (6.50)	179 (7.05)	165 (6.50)	179 (7.05)	165 (6.50)	179 (7.05)	165 (6.50)
July	160 (6.30)	151 (5.94)	162 (6.38)	155 (6.10)	163 (6.42)	159 (6.26)	166 (6.54)	163 (6.42)	171 (6.73)	166 (6.54)	172 (6.77)	168 (6.61)	172 (6.77)	168 (6.61)	172 (6.77)	168 (6.61)	172 (6.77)	168 (6.61)
Season	469 (18.47)	386 (15.18)	479 (18.86)	403 (15.86)	486 (19.14)	422 (16.61)	495 (19.49)	445 (17.52)	511 (20.12)	467 (18.39)	523 (20.60)	482 (18.98)	523 (20.60)	482 (18.98)	523 (20.60)	482 (18.98)	523 (20.60)	482 (18.98)

REGION: 24 Baker Valley
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm	Net IRR mm in.
May	33 (1.30)	20 (0.79)	34 (1.34)	21 (0.83)	34 (1.34)	23 (0.91)	35 (1.38)	25 (0.98)	35 (1.38)	27 (1.06)	36 (1.42)	30 (1.18)	35 (1.38)	27 (1.06)	36 (1.42)	30 (1.18)	36 (1.42)	30 (1.18)
June	84 (3.31)	57 (2.24)	86 (3.39)	62 (2.44)	87 (3.43)	67 (2.64)	88 (3.46)	75 (2.95)	90 (3.54)	85 (3.35)	96 (3.78)	89 (3.50)	90 (3.54)	85 (3.35)	96 (3.78)	89 (3.50)	96 (3.78)	89 (3.50)
July	192 (7.56)	179 (7.05)	194 (7.64)	184 (7.24)	196 (7.72)	188 (7.40)	200 (7.87)	193 (7.60)	203 (7.99)	198 (7.80)	205 (8.07)	200 (7.87)	203 (7.99)	198 (7.80)	205 (8.07)	200 (7.87)	205 (8.07)	200 (7.87)
Aug	166 (6.54)	154 (6.06)	168 (6.61)	159 (6.26)	170 (6.69)	162 (6.38)	173 (6.81)	166 (6.54)	179 (7.05)	175 (6.89)	186 (7.32)	182 (7.17)	179 (7.05)	175 (6.89)	186 (7.32)	182 (7.17)	186 (7.32)	182 (7.17)
Sep	114 (4.49)	102 (4.02)	116 (4.57)	107 (4.21)	119 (4.69)	112 (4.41)	122 (4.80)	116 (4.57)	125 (4.92)	121 (4.76)	131 (5.16)	125 (4.92)	125 (4.92)	121 (4.76)	131 (5.16)	125 (4.92)	131 (5.16)	125 (4.92)
Oct	16 (0.63)	14 (0.55)	17 (0.67)	15 (0.59)	17 (0.67)	16 (0.63)	18 (0.71)	17 (0.67)	18 (0.71)	18 (0.71)	19 (0.75)	19 (0.75)	18 (0.71)	18 (0.71)	19 (0.75)	19 (0.75)	19 (0.75)	19 (0.75)
Season	605 (23.83)	526 (20.71)	615 (24.22)	548 (21.57)	623 (24.54)	568 (22.37)	636 (25.03)	592 (23.31)	650 (25.59)	624 (24.57)	673 (26.50)	645 (25.39)	650 (25.59)	624 (24.57)	673 (26.50)	645 (25.39)	673 (26.50)	645 (25.39)

REGION: 25 Pine and Eagle valleys
CROP: Alfalfa Hay

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
April	71 (2.80)	57 (2.24)	73 (2.87)	61 (2.40)	75 (2.95)	65 (2.56)	78 (3.07)	71 (2.80)	83 (3.27)	78 (3.07)	86 (3.39)	81 (3.19)						
May	139 (5.47)	113 (4.45)	143 (5.63)	118 (4.65)	147 (5.79)	123 (4.84)	152 (5.98)	136 (5.35)	159 (6.26)	154 (6.06)	165 (6.50)	164 (6.46)						
June	167 (6.57)	139 (5.47)	171 (6.73)	148 (5.83)	173 (6.81)	158 (6.22)	180 (7.09)	168 (6.61)	190 (7.48)	175 (6.89)	197 (7.76)	179 (7.05)						
July	195 (7.68)	189 (7.44)	198 (7.80)	191 (7.52)	200 (7.87)	194 (7.64)	206 (8.11)	197 (7.76)	217 (8.54)	206 (8.11)	221 (8.70)	212 (8.35)						
Aug	142 (5.59)	136 (5.35)	144 (5.67)	140 (5.51)	146 (5.75)	143 (5.63)	148 (5.83)	146 (5.75)	151 (5.94)	150 (5.91)	153 (6.02)	153 (6.02)						
Sep	103 (4.06)	92 (3.62)	105 (4.13)	95 (3.74)	108 (4.25)	99 (3.90)	110 (4.33)	103 (4.06)	112 (4.41)	108 (4.25)	115 (4.53)	113 (4.45)						
Season	817 (32.17)	726 (28.57)	834 (32.83)	753 (29.65)	849 (33.42)	782 (30.79)	874 (34.41)	821 (32.33)	912 (35.90)	871 (34.29)	937 (36.90)	902 (35.52)						

REGION: 25 Pine and Eagle valleys
CROP: Corn (Field)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
May	65 (2.56)	46 (1.81)	66 (2.60)	49 (1.93)	66 (2.60)	53 (2.09)	68 (2.68)	60 (2.36)	70 (2.76)	65 (2.56)	71 (2.80)	68 (2.68)						
June	146 (5.75)	120 (4.72)	148 (5.83)	128 (5.04)	151 (5.94)	140 (5.51)	158 (6.22)	149 (5.87)	165 (6.50)	156 (6.14)	169 (6.65)	160 (6.30)						
July	234 (9.21)	227 (8.94)	237 (9.33)	230 (9.06)	240 (9.45)	233 (9.17)	247 (9.72)	236 (9.29)	260 (10.24)	247 (9.72)	264 (10.39)	255 (10.04)						
Aug	174 (6.85)	167 (6.57)	176 (6.93)	171 (6.73)	178 (7.01)	174 (6.85)	183 (7.20)	178 (7.01)	187 (7.36)	182 (7.17)	188 (7.40)	186 (7.32)						
Sep	93 (3.66)	83 (3.27)	95 (3.74)	87 (3.43)	96 (3.78)	90 (3.54)	97 (3.82)	94 (3.70)	101 (3.98)	97 (3.82)	104 (4.09)	102 (4.02)						
Season	712 (28.03)	643 (25.31)	722 (28.43)	665 (26.19)	731 (28.78)	690 (27.16)	753 (29.64)	717 (28.23)	783 (30.84)	747 (29.41)	796 (31.33)	771 (30.36)						

REGION: 25 Pine and Eagle valleys
CROP: Corn (Sweet)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	37 (1.46)	27 (1.06)	37 (1.46)	28 (1.10)	38 (1.50)	31 (1.22)	38 (1.50)	35 (1.38)	39 (1.54)	38 (1.50)	40 (1.57)	39 (1.54)	40 (1.57)	39 (1.54)	40 (1.57)	39 (1.54)	40 (1.57)	39 (1.54)
June	119 (4.69)	93 (3.66)	121 (4.76)	102 (4.02)	124 (4.88)	111 (4.37)	129 (5.08)	118 (4.65)	135 (5.31)	124 (4.88)	138 (5.43)	127 (5.00)	138 (5.43)	127 (5.00)	138 (5.43)	127 (5.00)	138 (5.43)	127 (5.00)
July	220 (8.66)	213 (8.39)	222 (8.74)	216 (8.50)	225 (8.86)	219 (8.62)	231 (9.09)	222 (8.74)	243 (9.57)	232 (9.13)	246 (9.69)	239 (9.41)	246 (9.69)	239 (9.41)	246 (9.69)	239 (9.41)	246 (9.69)	239 (9.41)
Aug	174 (6.85)	167 (6.57)	176 (6.93)	171 (6.73)	178 (7.01)	174 (6.85)	183 (7.20)	178 (7.01)	187 (7.36)	182 (7.17)	188 (7.40)	186 (7.32)	188 (7.40)	186 (7.32)	188 (7.40)	186 (7.32)	188 (7.40)	186 (7.32)
Sep	20 (0.79)	20 (0.79)	20 (0.79)	20 (0.79)	20 (0.79)	20 (0.79)	21 (0.83)	21 (0.83)	21 (0.83)	21 (0.83)	22 (0.87)	21 (0.83)	22 (0.87)	21 (0.83)	22 (0.87)	21 (0.83)	22 (0.87)	21 (0.83)
Season	570 (22.45)	520 (20.47)	576 (22.68)	537 (21.14)	585 (23.04)	555 (21.85)	602 (23.70)	574 (22.61)	625 (24.61)	597 (23.51)	634 (24.96)	612 (24.10)	625 (24.61)	597 (23.51)	634 (24.96)	612 (24.10)	625 (24.61)	597 (23.51)

REGION: 25 Pine and Eagle valleys
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	66 (2.60)	48 (1.89)	67 (2.64)	52 (2.05)	68 (2.68)	56 (2.20)	70 (2.76)	61 (2.40)	74 (2.91)	69 (2.72)	76 (2.99)	72 (2.83)	74 (2.91)	69 (2.72)	76 (2.99)	72 (2.83)	76 (2.99)	72 (2.83)
May	158 (6.22)	130 (5.12)	161 (6.34)	136 (5.35)	165 (6.50)	141 (5.55)	171 (6.73)	155 (6.10)	179 (7.05)	175 (6.89)	191 (7.52)	185 (7.28)	179 (7.05)	175 (6.89)	191 (7.52)	185 (7.28)	191 (7.52)	185 (7.28)
June	203 (7.99)	171 (6.73)	208 (8.19)	180 (7.09)	211 (8.31)	194 (7.64)	220 (8.66)	206 (8.11)	231 (9.09)	214 (8.43)	239 (9.41)	220 (8.66)	231 (9.09)	214 (8.43)	239 (9.41)	220 (8.66)	239 (9.41)	220 (8.66)
July	214 (8.43)	206 (8.11)	216 (8.50)	209 (8.23)	219 (8.62)	212 (8.35)	225 (8.86)	215 (8.46)	237 (9.33)	225 (8.86)	241 (9.49)	232 (9.13)	237 (9.33)	225 (8.86)	241 (9.49)	232 (9.13)	241 (9.49)	232 (9.13)
Aug	34 (1.34)	34 (1.34)	34 (1.34)	34 (1.34)	34 (1.34)	34 (1.34)	36 (1.42)	36 (1.42)	36 (1.42)	36 (1.42)	37 (1.46)	37 (1.46)	36 (1.42)	36 (1.42)	37 (1.46)	37 (1.46)	37 (1.46)	37 (1.46)
Season	675 (26.58)	589 (23.19)	686 (27.01)	611 (24.06)	697 (27.45)	637 (25.08)	722 (28.43)	673 (26.49)	757 (29.80)	719 (28.32)	784 (30.87)	746 (29.36)	757 (29.80)	719 (28.32)	784 (30.87)	746 (29.36)	784 (30.87)	746 (29.36)

REGION: 25 Pine and Eagle valleys
CROP: Grain (Winter)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.		
March	18 (0.71)	6 (0.24)	19 (0.75)	8 (0.31)	19 (0.75)	11 (0.43)	20 (0.79)	13 (0.51)	21 (0.83)	16 (0.63)	22 (0.87)	17 (0.67)						
April	101 (3.98)	80 (3.15)	104 (4.09)	85 (3.35)	107 (4.21)	90 (3.54)	110 (4.33)	97 (3.82)	117 (4.61)	108 (4.25)	122 (4.80)	115 (4.53)						
May	169 (6.65)	138 (5.43)	173 (6.81)	145 (5.71)	178 (7.01)	153 (6.02)	184 (7.24)	169 (6.65)	193 (7.60)	189 (7.44)	200 (7.87)	200 (7.87)						
June	203 (7.99)	171 (6.73)	207 (8.15)	181 (7.13)	210 (8.27)	194 (7.64)	218 (8.58)	205 (8.07)	231 (9.09)	214 (8.43)	239 (9.41)	219 (8.62)						
July	161 (6.34)	154 (6.06)	163 (6.42)	157 (6.18)	165 (6.50)	159 (6.26)	169 (6.65)	162 (6.38)	178 (7.01)	168 (6.61)	182 (7.17)	173 (6.81)						
Season	652 (25.67)	549 (21.61)	666 (26.22)	576 (22.68)	679 (26.74)	607 (23.89)	701 (27.59)	646 (25.43)	740 (29.14)	695 (27.36)	765 (30.12)	724 (28.50)						

REGION: 25 Pine and Eagle valleys
CROP: Grass Seed (Spring)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.		ET crop mm in.	Net IRR mm in.	
Jan	1 (0.04)	0 (0.00)		1 (0.04)	0 (0.00)		1 (0.04)	0 (0.00)		2 (0.08)	0 (0.00)		3 (0.12)	0 (0.00)		6 (0.24)	0 (0.00)	
Feb	7 (0.28)	0 (0.00)		8 (0.31)	0 (0.00)		9 (0.35)	0 (0.00)		11 (0.43)	0 (0.00)		13 (0.51)	0 (0.00)		14 (0.55)	4 (0.16)	
March	22 (0.87)	2 (0.08)		22 (0.87)	2 (0.08)		23 (0.91)	7 (0.28)		24 (0.94)	10 (0.39)		26 (1.02)	15 (0.59)		28 (1.10)	16 (0.63)	
April	54 (2.13)	38 (1.50)		55 (2.17)	41 (1.61)		57 (2.24)	44 (1.73)		58 (2.28)	48 (1.89)		61 (2.40)	55 (2.17)		62 (2.44)	58 (2.28)	
May	83 (3.27)	60 (2.36)		84 (3.31)	63 (2.48)		86 (3.39)	66 (2.60)		87 (3.43)	76 (2.99)		92 (3.62)	86 (3.39)		93 (3.66)	89 (3.50)	
June	135 (5.31)	110 (4.33)		138 (5.43)	117 (4.61)		140 (5.51)	128 (5.04)		148 (5.83)	135 (5.31)		153 (6.02)	143 (5.63)		158 (6.22)	147 (5.79)	
July	209 (8.23)	202 (7.95)		211 (8.31)	205 (8.07)		214 (8.43)	208 (8.19)		220 (8.66)	211 (8.31)		229 (9.02)	220 (8.66)		233 (9.17)	227 (8.94)	
Aug	170 (6.69)	165 (6.50)		171 (6.73)	168 (6.61)		172 (6.77)	172 (6.77)		178 (7.01)	175 (6.89)		184 (7.24)	179 (7.05)		185 (7.28)	183 (7.20)	
Sep	124 (4.88)	110 (4.33)		126 (4.96)	115 (4.53)		128 (5.04)	120 (4.72)		130 (5.12)	125 (4.92)		134 (5.28)	130 (5.12)		138 (5.43)	135 (5.31)	
Oct	78 (3.07)	65 (2.56)		83 (3.27)	69 (2.72)		85 (3.35)	73 (2.87)		86 (3.39)	79 (3.11)		92 (3.62)	85 (3.35)		94 (3.70)	87 (3.43)	
Nov	17 (0.67)	1 (0.04)		19 (0.75)	1 (0.04)		20 (0.79)	2 (0.08)		22 (0.87)	2 (0.08)		27 (1.06)	11 (0.43)		29 (1.14)	18 (0.71)	
Dec	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)		3 (0.12)	0 (0.00)	
Season	900 (35.44)	753 (29.65)		918 (36.15)	781 (30.75)		935 (36.82)	820 (32.28)		966 (38.04)	861 (33.89)		1014 (39.91)	924 (36.39)		1043 (41.05)	964 (37.95)	

REGION: 25 Pine and Eagle valleys
CROP: Onions

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	19 (0.75)	15 (0.59)	19 (0.75)	17 (0.67)	20 (0.79)	18 (0.71)	20 (0.79)	19 (0.79)	20 (0.79)	19 (0.75)	21 (0.83)	20 (0.79)	21 (0.83)	20 (0.79)	21 (0.83)	20 (0.79)	21 (0.83)	20 (0.79)
May	92 (3.62)	71 (2.80)	94 (3.70)	75 (2.95)	95 (3.74)	79 (3.11)	98 (3.86)	86 (3.39)	102 (4.02)	96 (3.78)	104 (4.09)	100 (3.94)	104 (4.09)	100 (3.94)	104 (4.09)	100 (3.94)	104 (4.09)	100 (3.94)
June	150 (5.91)	127 (5.00)	153 (6.02)	134 (5.28)	157 (6.18)	142 (5.59)	162 (6.38)	152 (5.98)	170 (6.69)	160 (6.30)	177 (6.97)	166 (6.54)	177 (6.97)	166 (6.54)	177 (6.97)	166 (6.54)	177 (6.97)	166 (6.54)
July	215 (8.46)	208 (8.19)	217 (8.54)	211 (8.31)	220 (8.66)	214 (8.43)	226 (8.90)	218 (8.58)	238 (9.37)	227 (8.94)	242 (9.53)	236 (9.29)	242 (9.53)	236 (9.29)	242 (9.53)	236 (9.29)	242 (9.53)	236 (9.29)
Aug	156 (6.14)	151 (5.94)	157 (6.18)	154 (6.06)	158 (6.22)	157 (6.18)	165 (6.50)	161 (6.34)	169 (6.65)	165 (6.50)	170 (6.69)	168 (6.61)	170 (6.69)	168 (6.61)	170 (6.69)	168 (6.61)	170 (6.69)	168 (6.61)
Sep	48 (1.89)	45 (1.77)	48 (1.89)	46 (1.81)	49 (1.93)	48 (1.89)	51 (2.01)	49 (1.93)	52 (2.05)	51 (2.01)	54 (2.13)	53 (2.09)	54 (2.13)	53 (2.09)	54 (2.13)	53 (2.09)	54 (2.13)	53 (2.09)
Season	680 (26.77)	617 (24.29)	688 (27.08)	637 (25.08)	699 (27.52)	658 (25.91)	722 (28.44)	685 (26.97)	752 (29.61)	719 (28.32)	768 (30.24)	743 (29.26)	768 (30.24)	743 (29.26)	768 (30.24)	743 (29.26)	768 (30.24)	743 (29.26)

REGION: 25 Pine and Eagle valleys
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	20 (0.79)	12 (0.47)	21 (0.83)	13 (0.51)	21 (0.83)	15 (0.59)	22 (0.87)	18 (0.71)	24 (0.94)	20 (0.79)	26 (1.02)	21 (0.83)	26 (1.02)	21 (0.83)	26 (1.02)	21 (0.83)	26 (1.02)	21 (0.83)
April	108 (4.25)	85 (3.35)	110 (4.33)	91 (3.58)	113 (4.45)	96 (3.78)	118 (4.65)	107 (4.21)	127 (5.00)	117 (4.61)	132 (5.20)	122 (4.80)	132 (5.20)	122 (4.80)	132 (5.20)	122 (4.80)	132 (5.20)	122 (4.80)
May	148 (5.83)	120 (4.72)	152 (5.98)	126 (4.96)	157 (6.18)	132 (5.20)	162 (6.38)	146 (5.75)	170 (6.69)	165 (6.30)	176 (6.93)	175 (6.89)	176 (6.93)	175 (6.89)	176 (6.93)	175 (6.89)	176 (6.93)	175 (6.89)
June	178 (7.01)	148 (5.83)	182 (7.17)	157 (6.18)	185 (7.28)	168 (6.61)	192 (7.56)	179 (7.05)	202 (7.95)	187 (7.36)	210 (8.27)	191 (7.52)	210 (8.27)	191 (7.52)	210 (8.27)	191 (7.52)	210 (8.27)	191 (7.52)
July	208 (8.19)	201 (7.91)	211 (8.31)	204 (8.03)	213 (8.39)	207 (8.15)	219 (8.62)	210 (8.27)	231 (9.09)	219 (8.62)	235 (9.25)	225 (8.86)	235 (9.25)	225 (8.86)	235 (9.25)	225 (8.86)	235 (9.25)	225 (8.86)
Aug	152 (5.98)	146 (5.75)	154 (6.06)	149 (5.87)	156 (6.14)	152 (5.98)	159 (6.26)	155 (6.10)	163 (6.42)	159 (6.26)	164 (6.46)	162 (6.38)	164 (6.46)	162 (6.38)	164 (6.46)	162 (6.38)	164 (6.46)	162 (6.38)
Sep	110 (4.33)	98 (3.86)	112 (4.41)	102 (4.02)	113 (4.45)	106 (4.17)	115 (4.53)	111 (4.37)	118 (4.65)	115 (4.53)	122 (4.80)	119 (4.69)	122 (4.80)	119 (4.69)	122 (4.80)	119 (4.69)	122 (4.80)	119 (4.69)
Oct	69 (2.72)	54 (2.13)	72 (2.83)	57 (2.24)	75 (2.95)	62 (2.44)	77 (3.03)	68 (2.68)	80 (3.15)	72 (2.83)	81 (3.19)	74 (2.91)	80 (3.15)	72 (2.83)	81 (3.19)	74 (2.91)	81 (3.19)	74 (2.91)
Season	993 (39.10)	864 (34.02)	1014 (39.92)	899 (35.39)	1033 (40.67)	938 (36.92)	1064 (41.90)	994 (39.14)	1115 (43.89)	1054 (41.50)	1146 (45.12)	1089 (42.88)	1115 (43.89)	1054 (41.50)	1146 (45.12)	1089 (42.88)	1146 (45.12)	1089 (42.88)

REGION: 25 Pine and Eagle valleys
CROP: Peas

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	42 (1.65)	31 (1.22)	43 (1.69)	34 (1.34)	45 (1.77)	37 (1.46)	46 (1.81)	40 (1.57)	48 (1.89)	45 (1.77)	49 (1.93)	47 (1.85)						
May	150 (5.91)	122 (4.80)	153 (6.02)	127 (5.00)	157 (6.18)	132 (5.20)	163 (6.42)	146 (5.75)	175 (6.89)	167 (6.57)	180 (7.09)	177 (6.97)						
June	203 (7.99)	171 (6.73)	207 (8.15)	181 (7.13)	211 (8.31)	194 (7.64)	219 (8.62)	205 (8.07)	231 (9.09)	215 (8.46)	239 (9.41)	223 (8.78)						
July	184 (7.24)	180 (7.09)	186 (7.32)	182 (7.17)	188 (7.40)	185 (7.28)	193 (7.60)	187 (7.36)	204 (8.03)	195 (7.68)	208 (8.19)	201 (7.91)						
Season	579 (22.79)	504 (19.84)	589 (23.18)	524 (20.64)	601 (23.66)	548 (21.58)	621 (24.45)	578 (22.75)	658 (25.90)	622 (24.48)	676 (26.62)	648 (25.51)						

REGION: 25 Pine and Eagle valleys
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	37 (1.46)	24 (0.94)	38 (1.50)	27 (1.06)	38 (1.50)	31 (1.22)	39 (1.54)	35 (1.38)	39 (1.54)	38 (1.50)	40 (1.57)	40 (1.57)						
June	100 (3.94)	79 (3.11)	102 (4.02)	87 (3.43)	104 (4.09)	93 (3.66)	109 (4.29)	100 (3.94)	114 (4.49)	105 (4.13)	116 (4.57)	107 (4.21)						
July	217 (8.54)	211 (8.31)	219 (8.62)	214 (8.43)	222 (8.74)	217 (8.54)	229 (9.02)	219 (8.62)	240 (9.45)	229 (9.02)	244 (9.61)	236 (9.29)						
Aug	174 (6.85)	168 (6.61)	176 (6.93)	172 (6.77)	178 (7.01)	175 (6.89)	183 (7.20)	178 (7.01)	187 (7.36)	183 (7.20)	188 (7.40)	186 (7.32)						
Sep	117 (4.61)	104 (4.09)	120 (4.72)	109 (4.29)	121 (4.76)	113 (4.45)	123 (4.84)	118 (4.65)	127 (5.00)	123 (4.84)	131 (5.16)	128 (5.04)						
Oct	18 (0.71)	16 (0.63)	19 (0.75)	17 (0.67)	20 (0.79)	18 (0.71)	20 (0.79)	19 (0.75)	21 (0.83)	20 (0.79)	21 (0.83)	21 (0.83)						
Season	663 (26.11)	602 (23.69)	674 (26.54)	626 (24.65)	683 (26.89)	647 (25.47)	703 (27.68)	669 (26.35)	728 (28.67)	698 (27.48)	740 (29.14)	718 (28.26)						

REGION: 26 Malheur
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	88 (3.46)	74 (2.91)	89 (3.50)	78 (3.07)	93 (3.66)	82 (3.23)	96 (3.78)	85 (3.35)	99 (3.90)	94 (3.70)	101 (3.98)	99 (3.90)	101 (3.98)	99 (3.90)	101 (3.98)	99 (3.90)	101 (3.98)	99 (3.90)
May	134 (5.28)	110 (4.33)	136 (5.35)	115 (4.53)	138 (5.43)	119 (4.69)	140 (5.51)	125 (4.92)	144 (5.67)	134 (5.28)	151 (5.94)	137 (5.39)	151 (5.94)	137 (5.39)	151 (5.94)	137 (5.39)	151 (5.94)	137 (5.39)
June	160 (6.30)	139 (5.47)	163 (6.42)	145 (5.71)	166 (6.54)	151 (5.94)	169 (6.65)	158 (6.22)	173 (6.81)	167 (6.57)	181 (7.13)	173 (6.81)	181 (7.13)	173 (6.81)	181 (7.13)	173 (6.81)	181 (7.13)	173 (6.81)
July	199 (7.83)	194 (7.64)	201 (7.91)	196 (7.72)	203 (7.99)	200 (7.87)	205 (8.07)	203 (7.99)	207 (8.15)	207 (8.15)	212 (8.35)	209 (8.23)	212 (8.35)	209 (8.23)	212 (8.35)	209 (8.23)	212 (8.35)	209 (8.23)
Aug	156 (6.14)	149 (5.87)	157 (6.18)	152 (5.98)	158 (6.22)	156 (6.14)	160 (6.30)	159 (6.26)	165 (6.50)	164 (6.46)	168 (6.61)	166 (6.54)	168 (6.61)	166 (6.54)	168 (6.61)	166 (6.54)	168 (6.61)	166 (6.54)
Sep	110 (4.33)	103 (4.06)	113 (4.45)	106 (4.17)	115 (4.53)	110 (4.33)	118 (4.65)	114 (4.49)	122 (4.80)	118 (4.65)	124 (4.88)	120 (4.72)	124 (4.88)	120 (4.72)	124 (4.88)	120 (4.72)	124 (4.88)	120 (4.72)
Oct	56 (2.20)	47 (1.85)	57 (2.24)	50 (1.97)	59 (2.32)	53 (2.09)	60 (2.36)	56 (2.20)	61 (2.40)	59 (2.32)	63 (2.48)	62 (2.44)	63 (2.48)	62 (2.44)	63 (2.48)	62 (2.44)	63 (2.48)	62 (2.44)
Season	903 (35.54)	816 (32.13)	916 (36.05)	842 (33.15)	932 (36.69)	871 (34.29)	948 (37.32)	900 (35.43)	971 (38.23)	943 (37.13)	1000 (39.37)	966 (38.03)	1000 (39.37)	966 (38.03)	1000 (39.37)	966 (38.03)	1000 (39.37)	966 (38.03)

REGION: 26 Malheur
CROP: Corn (Field)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	63 (2.48)	46 (1.81)	64 (2.52)	49 (1.93)	64 (2.52)	52 (2.05)	65 (2.56)	56 (2.20)	66 (2.60)	60 (2.36)	68 (2.68)	62 (2.44)	66 (2.60)	60 (2.36)	68 (2.68)	62 (2.44)	68 (2.68)	62 (2.44)
June	120 (4.72)	100 (3.94)	122 (4.80)	107 (4.21)	124 (4.88)	112 (4.41)	126 (4.96)	118 (4.65)	132 (5.20)	127 (5.00)	135 (5.31)	133 (5.24)	132 (5.20)	127 (5.00)	135 (5.31)	133 (5.24)	135 (5.31)	133 (5.24)
July	234 (9.21)	228 (8.98)	237 (9.33)	231 (9.09)	239 (9.41)	235 (9.25)	242 (9.53)	238 (9.37)	244 (9.61)	244 (9.61)	250 (9.84)	247 (9.72)	244 (9.61)	244 (9.61)	250 (9.84)	247 (9.72)	250 (9.84)	247 (9.72)
Aug	192 (7.56)	185 (7.28)	193 (7.60)	189 (7.44)	194 (7.64)	193 (7.50)	197 (7.76)	197 (7.76)	204 (8.03)	202 (7.95)	207 (8.15)	205 (8.07)	204 (8.03)	202 (7.95)	207 (8.15)	205 (8.07)	207 (8.15)	205 (8.07)
Sep	117 (4.61)	109 (4.29)	119 (4.69)	112 (4.41)	122 (4.80)	115 (4.53)	125 (4.92)	119 (4.69)	130 (5.12)	124 (4.88)	131 (5.16)	127 (5.00)	130 (5.12)	124 (4.88)	131 (5.16)	127 (5.00)	131 (5.16)	127 (5.00)
Oct	17 (0.67)	14 (0.55)	17 (0.67)	15 (0.59)	18 (0.71)	16 (0.63)	18 (0.71)	17 (0.67)	19 (0.75)	18 (0.71)	19 (0.75)	18 (0.71)	19 (0.75)	18 (0.71)	19 (0.75)	18 (0.71)	19 (0.75)	18 (0.71)
Season	743 (29.25)	682 (26.85)	752 (29.61)	703 (27.67)	761 (29.96)	723 (28.47)	773 (30.44)	745 (29.34)	795 (31.31)	775 (30.51)	810 (31.89)	792 (31.18)	795 (31.31)	775 (30.51)	810 (31.89)	792 (31.18)	810 (31.89)	792 (31.18)

REGION: 26 Malheur
CROP: Corn (Silage)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	69 (2.72)	50 (1.97)	69 (2.72)	54 (2.13)	70 (2.76)	57 (2.24)	71 (2.80)	61 (2.40)	72 (2.83)	65 (2.56)	74 (2.91)	67 (2.64)						
June	146 (5.75)	125 (4.92)	148 (5.83)	131 (5.16)	150 (5.91)	137 (5.39)	153 (6.02)	143 (5.63)	161 (6.34)	155 (6.10)	165 (6.50)	159 (6.26)						
July	241 (9.49)	236 (9.29)	244 (9.61)	238 (9.37)	247 (9.72)	242 (9.53)	249 (9.80)	247 (9.72)	251 (9.88)	251 (9.88)	257 (10.12)	254 (10.00)						
Aug	192 (7.56)	185 (7.28)	193 (7.60)	189 (7.44)	194 (7.64)	193 (7.60)	197 (7.76)	197 (7.76)	204 (8.03)	202 (7.95)	207 (8.15)	205 (8.07)						
Sep	129 (5.08)	121 (4.76)	131 (5.16)	124 (4.88)	134 (5.28)	128 (5.04)	138 (5.43)	132 (5.20)	143 (5.63)	137 (5.39)	144 (5.67)	140 (5.51)						
Oct	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)						
Season	780 (30.72)	720 (28.34)	788 (31.04)	739 (29.10)	798 (31.43)	760 (29.92)	811 (31.93)	783 (30.83)	834 (32.83)	813 (32.00)	850 (33.47)	828 (32.60)						

REGION: 26 Malheur
CROP: Corn (Sweet)

	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
MONTH	ET crop mm	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
May	64 (2.52)	45 (1.77)	64 (2.52)	49 (1.93)	64 (2.52)	52 (2.05)	65 (2.56)	56 (2.20)	66 (2.60)	60 (2.36)	68 (2.68)	62 (2.44)						
June	125 (4.92)	104 (4.09)	127 (5.00)	112 (4.41)	129 (5.08)	117 (4.61)	132 (5.20)	124 (4.88)	137 (5.39)	133 (5.24)	141 (5.55)	138 (5.43)						
July	236 (9.29)	230 (9.06)	239 (9.41)	233 (9.17)	241 (9.49)	237 (9.33)	244 (9.61)	240 (9.45)	246 (9.69)	246 (9.69)	252 (9.92)	249 (9.80)						
Aug	84 (3.31)	82 (3.23)	85 (3.35)	84 (3.31)	86 (3.39)	85 (3.35)	87 (3.43)	87 (3.43)	89 (3.50)	89 (3.50)	90 (3.54)	90 (3.54)						
Season	509 (20.04)	461 (18.15)	515 (20.28)	478 (18.82)	520 (20.48)	491 (19.34)	528 (20.80)	507 (19.96)	538 (21.18)	528 (20.79)	551 (21.69)	539 (21.21)						

REGION: 26 Malheur
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)	3 (0.12)
April	56 (2.20)	42 (1.65)	58 (2.28)	45 (1.77)	59 (2.32)	49 (1.93)	60 (2.36)	52 (2.05)	61 (2.40)	57 (2.24)	62 (2.44)	60 (2.36)	62 (2.44)	60 (2.36)	62 (2.44)	60 (2.36)	62 (2.44)	60 (2.36)
May	104 (4.09)	82 (3.23)	105 (4.13)	86 (3.39)	106 (4.17)	91 (3.58)	108 (4.25)	96 (3.78)	110 (4.33)	101 (3.98)	114 (4.49)	103 (4.06)	114 (4.49)	103 (4.06)	114 (4.49)	103 (4.06)	114 (4.49)	103 (4.06)
June	184 (7.24)	161 (6.34)	187 (7.36)	168 (6.61)	190 (7.48)	175 (6.89)	194 (7.64)	182 (7.17)	200 (7.87)	193 (7.60)	205 (8.07)	199 (7.83)	205 (8.07)	193 (7.60)	205 (8.07)	199 (7.83)	205 (8.07)	193 (7.60)
July	226 (8.90)	221 (8.70)	229 (9.02)	224 (8.82)	231 (9.09)	228 (8.98)	234 (9.21)	231 (9.09)	236 (9.29)	236 (9.29)	241 (9.49)	238 (9.37)	241 (9.49)	236 (9.29)	241 (9.49)	238 (9.37)	241 (9.49)	238 (9.37)
Aug	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)	17 (0.67)
Season	590 (23.22)	526 (20.71)	599 (23.58)	543 (21.38)	606 (23.85)	563 (22.17)	617 (24.29)	582 (22.92)	628 (24.72)	608 (23.94)	644 (25.36)	621 (24.45)	628 (24.72)	608 (23.94)	644 (25.36)	621 (24.45)	644 (25.36)	621 (24.45)

REGION: 26 Malheur
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Feb	8 (0.31)	1 (0.04)	8 (0.31)	1 (0.04)	9 (0.35)	1 (0.04)	9 (0.35)	3 (0.12)	10 (0.39)	5 (0.20)	12 (0.47)	9 (0.35)	10 (0.39)	5 (0.20)	12 (0.47)	9 (0.35)	12 (0.47)	9 (0.35)
March	38 (1.50)	22 (0.87)	40 (1.57)	24 (0.94)	41 (1.61)	27 (1.06)	42 (1.65)	30 (1.18)	44 (1.73)	35 (1.38)	45 (1.77)	39 (1.54)	44 (1.73)	35 (1.38)	45 (1.77)	39 (1.54)	45 (1.77)	39 (1.54)
April	87 (3.43)	73 (2.87)	90 (3.54)	76 (2.99)	92 (3.62)	80 (3.15)	97 (3.82)	85 (3.35)	100 (3.94)	94 (3.70)	101 (3.98)	99 (3.90)	100 (3.94)	94 (3.70)	101 (3.98)	99 (3.90)	101 (3.98)	99 (3.90)
May	150 (5.91)	127 (5.00)	154 (6.06)	132 (5.20)	157 (6.18)	138 (5.43)	159 (6.26)	145 (5.71)	164 (6.46)	152 (5.98)	171 (6.73)	156 (6.14)	164 (6.46)	152 (5.98)	171 (6.73)	156 (6.14)	171 (6.73)	156 (6.14)
June	195 (7.68)	171 (6.73)	199 (7.83)	179 (7.05)	202 (7.95)	187 (7.36)	206 (8.11)	194 (7.64)	213 (8.39)	205 (8.07)	220 (8.66)	212 (8.35)	213 (8.39)	205 (8.07)	220 (8.66)	212 (8.35)	220 (8.66)	212 (8.35)
July	165 (6.50)	162 (6.38)	168 (6.61)	164 (6.46)	170 (6.69)	166 (6.54)	171 (6.73)	168 (6.61)	172 (6.77)	171 (6.73)	176 (6.93)	173 (6.81)	172 (6.77)	171 (6.73)	176 (6.93)	173 (6.81)	176 (6.93)	173 (6.81)
Season	643 (25.33)	556 (21.89)	659 (25.92)	576 (22.68)	671 (26.40)	599 (23.58)	684 (26.92)	625 (24.61)	703 (27.68)	662 (26.06)	725 (28.54)	688 (27.09)	703 (27.68)	662 (26.06)	725 (28.54)	688 (27.09)	725 (28.54)	688 (27.09)

REGION: 26 Malheur
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
Jan	1 (0.04)	0 (0.00)	0 (0.00)	1 (0.04)	0 (0.00)	0 (0.00)	2 (0.08)	0 (0.00)	0 (0.00)	5 (0.20)	0 (0.00)	0 (0.00)	6 (0.24)	0 (0.00)	0 (0.00)	9 (0.35)	0 (0.00)	0 (0.00)
Feb	9 (0.35)	1 (0.04)	1 (0.04)	10 (0.39)	1 (0.04)	1 (0.04)	12 (0.47)	1 (0.04)	1 (0.04)	13 (0.51)	2 (0.08)	2 (0.08)	14 (0.55)	4 (0.16)	4 (0.16)	15 (0.59)	10 (0.39)	10 (0.39)
March	22 (0.87)	6 (0.24)	6 (0.24)	22 (0.87)	8 (0.31)	8 (0.31)	23 (0.91)	11 (0.43)	11 (0.43)	23 (0.91)	14 (0.55)	14 (0.55)	24 (0.94)	16 (0.63)	16 (0.63)	25 (0.98)	21 (0.83)	21 (0.83)
April	52 (2.05)	40 (1.57)	40 (1.57)	53 (2.09)	42 (1.65)	42 (1.65)	54 (2.13)	45 (1.77)	45 (1.77)	55 (2.17)	48 (1.89)	48 (1.89)	57 (2.24)	52 (2.05)	52 (2.05)	58 (2.28)	55 (2.17)	55 (2.17)
May	81 (3.19)	59 (2.32)	59 (2.32)	82 (3.23)	63 (2.48)	63 (2.48)	83 (3.27)	68 (2.68)	68 (2.68)	84 (3.31)	73 (2.87)	73 (2.87)	85 (3.35)	77 (3.03)	77 (3.03)	88 (3.46)	80 (3.15)	80 (3.15)
June	132 (5.20)	111 (4.37)	111 (4.37)	134 (5.28)	117 (4.61)	117 (4.61)	136 (5.35)	123 (4.84)	123 (4.84)	139 (5.47)	129 (5.08)	129 (5.08)	144 (5.67)	137 (5.39)	137 (5.39)	148 (5.83)	143 (5.63)	143 (5.63)
July	213 (8.59)	208 (8.19)	208 (8.19)	215 (8.66)	211 (8.31)	211 (8.31)	218 (8.58)	214 (8.43)	214 (8.43)	220 (8.66)	217 (8.54)	217 (8.54)	222 (8.74)	222 (8.74)	222 (8.74)	227 (8.94)	224 (8.82)	224 (8.82)
Aug	188 (7.40)	181 (7.13)	181 (7.13)	189 (7.44)	184 (7.24)	184 (7.24)	190 (7.48)	188 (7.40)	188 (7.40)	193 (7.60)	192 (7.56)	192 (7.56)	199 (7.83)	198 (7.80)	198 (7.80)	202 (7.95)	201 (7.91)	201 (7.91)
Sep	132 (5.20)	125 (4.92)	125 (4.92)	136 (5.35)	128 (5.04)	128 (5.04)	138 (5.43)	132 (5.20)	132 (5.20)	142 (5.59)	136 (5.35)	136 (5.35)	148 (5.83)	141 (5.55)	141 (5.55)	149 (5.87)	144 (5.67)	144 (5.67)
Oct	85 (3.35)	75 (2.95)	75 (2.95)	90 (3.54)	79 (3.11)	79 (3.11)	92 (3.62)	83 (3.27)	83 (3.27)	94 (3.70)	87 (3.43)	87 (3.43)	96 (3.78)	93 (3.66)	93 (3.66)	98 (3.86)	96 (3.78)	96 (3.78)
Nov	22 (0.87)	2 (0.08)	2 (0.08)	23 (0.91)	5 (0.20)	5 (0.20)	24 (0.94)	10 (0.39)	10 (0.39)	28 (1.10)	15 (0.59)	15 (0.59)	30 (1.18)	18 (0.71)	18 (0.71)	32 (1.26)	20 (0.79)	20 (0.79)
Dec	1 (0.04)	0 (0.00)	0 (0.00)	1 (0.04)	0 (0.00)	0 (0.00)	1 (0.04)	0 (0.00)	0 (0.00)	3 (0.12)	0 (0.00)	0 (0.00)	5 (0.20)	0 (0.00)	0 (0.00)	6 (0.24)	0 (0.00)	0 (0.00)
Season	938 (36.95)	808 (31.81)	808 (31.81)	956 (37.64)	838 (32.99)	838 (32.99)	973 (38.30)	875 (34.45)	875 (34.45)	999 (39.34)	913 (35.94)	913 (35.94)	1030 (40.55)	958 (37.72)	958 (37.72)	1057 (41.61)	994 (39.14)	994 (39.14)

REGION: 26 Malheur
CROP: Onions

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	Net IRR mm in.
April	47 (1.85)	37 (1.46)	37 (1.46)	48 (1.89)	40 (1.57)	40 (1.57)	49 (1.93)	42 (1.65)	42 (1.65)	50 (1.97)	45 (1.77)	45 (1.77)	51 (2.01)	48 (1.89)	48 (1.89)	52 (2.05)	50 (1.97)	50 (1.97)
May	84 (3.31)	65 (2.56)	65 (2.56)	85 (3.35)	69 (2.72)	69 (2.72)	86 (3.39)	73 (2.87)	73 (2.87)	87 (3.43)	78 (3.07)	78 (3.07)	88 (3.46)	81 (3.19)	81 (3.19)	91 (3.58)	83 (3.27)	83 (3.27)
June	139 (5.47)	120 (4.72)	120 (4.72)	140 (5.51)	126 (4.96)	126 (4.96)	143 (5.63)	132 (5.20)	132 (5.20)	146 (5.75)	136 (5.35)	136 (5.35)	151 (5.94)	144 (5.67)	144 (5.67)	156 (6.14)	150 (5.91)	150 (5.91)
July	216 (8.50)	212 (8.35)	212 (8.35)	219 (8.62)	214 (8.43)	214 (8.43)	221 (8.70)	216 (8.50)	216 (8.50)	223 (8.78)	220 (8.66)	220 (8.66)	225 (8.86)	225 (8.86)	225 (8.86)	231 (9.09)	228 (8.98)	228 (8.98)
Aug	149 (5.87)	144 (5.67)	144 (5.67)	151 (5.94)	146 (5.75)	146 (5.75)	152 (5.98)	148 (5.83)	148 (5.83)	153 (6.02)	153 (6.02)	153 (6.02)	158 (6.22)	157 (6.18)	157 (6.18)	160 (6.30)	160 (6.30)	160 (6.30)
Season	635 (25.00)	578 (22.76)	578 (22.76)	643 (25.31)	595 (23.43)	595 (23.43)	651 (25.63)	611 (24.05)	611 (24.05)	659 (25.95)	632 (24.87)	632 (24.87)	673 (26.49)	655 (25.79)	655 (25.79)	690 (27.16)	671 (26.43)	671 (26.43)

REGION: 26 Malheur
CROP: Pasture

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	8 (0.31)	8 (0.31)	9 (0.35)	8 (0.31)	9 (0.35)	9 (0.35)	9 (0.35)	9 (0.35)	9 (0.35)	9 (0.35)	9 (0.35)	9 (0.35)	10 (0.39)	10 (0.39)	10 (0.39)	10 (0.39)	10 (0.39)	10 (0.39)
April	101 (3.98)	84 (3.31)	102 (4.02)	89 (3.50)	107 (4.21)	93 (3.66)	109 (4.29)	97 (3.82)	113 (4.45)	106 (4.17)	116 (4.57)	112 (4.41)	116 (4.57)	112 (4.41)	116 (4.57)	112 (4.41)	116 (4.57)	112 (4.41)
May	142 (5.59)	118 (4.65)	144 (5.67)	122 (4.80)	146 (5.75)	127 (5.00)	149 (5.87)	133 (5.24)	153 (6.02)	143 (5.63)	160 (6.30)	146 (5.75)	160 (6.30)	146 (5.75)	160 (6.30)	146 (5.75)	160 (6.30)	146 (5.75)
June	170 (6.69)	148 (5.83)	174 (6.85)	154 (6.06)	177 (6.97)	162 (6.38)	181 (7.13)	169 (6.65)	186 (7.32)	179 (7.05)	192 (7.56)	185 (7.28)	192 (7.56)	185 (7.28)	192 (7.56)	185 (7.28)	192 (7.56)	185 (7.28)
July	212 (8.35)	207 (8.15)	213 (8.39)	209 (8.23)	216 (8.50)	213 (8.39)	219 (8.62)	216 (8.50)	221 (8.70)	220 (8.66)	226 (8.90)	222 (8.74)	226 (8.90)	222 (8.74)	226 (8.90)	222 (8.74)	226 (8.90)	222 (8.74)
Aug	164 (6.46)	160 (6.30)	166 (6.54)	163 (6.42)	168 (6.61)	167 (6.57)	171 (6.73)	170 (6.69)	177 (6.97)	175 (6.89)	179 (7.05)	178 (7.01)	179 (7.05)	178 (7.01)	179 (7.05)	178 (7.01)	179 (7.05)	178 (7.01)
Sep	120 (4.72)	110 (4.33)	121 (4.76)	113 (4.45)	122 (4.80)	116 (4.57)	126 (4.96)	120 (4.72)	130 (5.12)	124 (4.88)	132 (5.20)	127 (5.00)	130 (5.12)	124 (4.88)	132 (5.20)	127 (5.00)	130 (5.12)	127 (5.00)
Oct	78 (3.07)	65 (2.56)	79 (3.11)	68 (2.68)	82 (3.23)	71 (2.80)	83 (3.27)	76 (2.99)	85 (3.35)	82 (3.23)	87 (3.43)	85 (3.35)	85 (3.35)	82 (3.23)	87 (3.43)	85 (3.35)	87 (3.43)	85 (3.35)
Season	995 (39.17)	900 (35.44)	1008 (39.69)	926 (36.45)	1027 (40.42)	958 (37.72)	1047 (41.22)	990 (38.96)	1075 (42.32)	1039 (40.90)	1102 (43.40)	1065 (41.93)	1075 (42.32)	1039 (40.90)	1102 (43.40)	1065 (41.93)	1102 (43.40)	1065 (41.93)

REGION: 26 Malheur
CROP: Potatoes

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
April	22 (0.87)	17 (0.67)	23 (0.91)	19 (0.75)	23 (0.91)	20 (0.79)	24 (0.94)	21 (0.83)	24 (0.94)	23 (0.91)	25 (0.98)	24 (0.94)	24 (0.94)	23 (0.91)	25 (0.98)	24 (0.94)	25 (0.98)	24 (0.94)
May	69 (2.72)	50 (1.97)	69 (2.72)	53 (2.09)	70 (2.76)	57 (2.24)	71 (2.80)	62 (2.44)	72 (2.83)	66 (2.60)	74 (2.91)	68 (2.68)	72 (2.83)	66 (2.60)	74 (2.91)	68 (2.68)	74 (2.91)	68 (2.68)
June	165 (6.50)	144 (5.67)	167 (6.57)	150 (5.91)	170 (6.69)	157 (6.18)	174 (6.85)	163 (6.42)	179 (7.05)	173 (6.81)	186 (7.32)	179 (7.05)	179 (7.05)	173 (6.81)	186 (7.32)	179 (7.05)	186 (7.32)	179 (7.05)
July	244 (9.61)	239 (9.41)	247 (9.72)	242 (9.53)	250 (9.84)	244 (9.61)	252 (9.92)	249 (9.80)	254 (10.00)	254 (10.00)	260 (10.24)	258 (10.16)	254 (10.00)	254 (10.00)	260 (10.24)	258 (10.16)	260 (10.24)	258 (10.16)
Aug	186 (7.32)	180 (7.09)	187 (7.36)	183 (7.20)	188 (7.40)	187 (7.36)	191 (7.52)	191 (7.52)	197 (7.76)	196 (7.72)	200 (7.87)	199 (7.83)	197 (7.76)	196 (7.72)	200 (7.87)	199 (7.83)	200 (7.87)	199 (7.83)
Sep	68 (2.68)	65 (2.56)	69 (2.72)	66 (2.60)	70 (2.76)	68 (2.68)	73 (2.87)	69 (2.72)	75 (2.95)	72 (2.83)	76 (2.99)	73 (2.87)	75 (2.95)	72 (2.83)	76 (2.99)	73 (2.87)	76 (2.99)	73 (2.87)
Season	754 (29.70)	695 (27.37)	762 (30.00)	713 (28.08)	771 (30.36)	733 (28.86)	785 (30.90)	755 (29.73)	801 (31.53)	784 (30.87)	821 (32.31)	801 (31.53)	801 (31.53)	784 (30.87)	821 (32.31)	801 (31.53)	821 (32.31)	801 (31.53)

REGION: 27 Jordan Valley
CROP: Alfalfa Hay

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.
April	78 (3.07)	59 (2.32)		80 (3.15)	64 (2.52)		84 (3.31)	69 (2.72)		88 (3.46)	78 (3.07)		91 (3.58)	83 (3.27)		92 (3.62)	87 (3.43)	
May	121 (4.76)	93 (3.66)		123 (4.84)	99 (3.90)		126 (4.96)	106 (4.17)		130 (5.12)	115 (4.53)		135 (5.31)	127 (5.00)		138 (5.43)	132 (5.20)	
June	147 (5.79)	121 (4.76)		151 (5.94)	129 (5.08)		153 (6.02)	135 (5.31)		157 (6.18)	145 (5.71)		161 (6.34)	154 (6.06)		166 (6.54)	158 (6.22)	
July	181 (7.13)	175 (6.89)		183 (7.20)	178 (7.01)		186 (7.32)	181 (7.13)		188 (7.40)	184 (7.24)		190 (7.48)	186 (7.32)		194 (7.64)	188 (7.40)	
Aug	142 (5.59)	139 (5.47)		145 (5.71)	142 (5.59)		148 (5.83)	144 (5.67)		151 (5.94)	149 (5.87)		156 (6.14)	154 (6.06)		160 (6.30)	159 (6.26)	
Sep	103 (4.06)	93 (3.66)		106 (4.17)	98 (3.86)		107 (4.21)	105 (4.13)		109 (4.29)	108 (4.25)		113 (4.45)	112 (4.41)		115 (4.53)	114 (4.49)	
Oct	54 (2.13)	42 (1.65)		55 (2.17)	45 (1.77)		57 (2.24)	48 (1.89)		58 (2.28)	51 (2.01)		60 (2.36)	57 (2.24)		61 (2.40)	60 (2.36)	
Season	826 (32.53)	722 (28.41)		843 (33.18)	755 (29.73)		861 (33.89)	788 (31.02)		881 (34.67)	830 (32.68)		906 (35.66)	873 (34.36)		926 (36.46)	898 (35.36)	

REGION: 27 Jordan Valley
CROP: Corn (Silage)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.	ET crop mm in.	Net IRR mm in.	mm in.
May	65 (2.56)	43 (1.69)		66 (2.60)	47 (1.85)		67 (2.64)	52 (2.05)		69 (2.72)	57 (2.24)		70 (2.76)	62 (2.44)		70 (2.76)	66 (2.60)	
June	135 (5.31)	110 (4.33)		138 (5.43)	118 (4.65)		140 (5.51)	125 (4.92)		143 (5.63)	133 (5.24)		150 (5.91)	145 (5.71)		155 (6.10)	150 (5.91)	
July	220 (8.66)	212 (8.35)		223 (8.78)	214 (8.43)		225 (8.86)	217 (8.54)		227 (8.94)	221 (8.70)		231 (9.09)	225 (8.86)		237 (9.33)	228 (8.98)	
Aug	174 (6.85)	172 (6.77)		177 (6.97)	175 (6.89)		182 (7.17)	179 (7.05)		186 (7.32)	184 (7.24)		191 (7.52)	190 (7.48)		197 (7.76)	196 (7.72)	
Sep	121 (4.76)	109 (4.29)		124 (4.88)	114 (4.49)		126 (4.96)	118 (4.65)		128 (5.04)	123 (4.84)		133 (5.24)	129 (5.08)		136 (5.35)	132 (5.20)	
Oct	2 (0.08)	2 (0.08)		2 (0.08)	2 (0.08)		3 (0.12)	3 (0.12)		3 (0.12)	3 (0.12)		3 (0.12)	3 (0.12)		3 (0.12)	3 (0.12)	
Season	717 (28.22)	648 (25.51)		730 (28.74)	670 (26.39)		743 (29.26)	694 (27.33)		756 (29.77)	721 (28.38)		778 (30.64)	754 (29.69)		798 (31.42)	775 (30.53)	

REGION: 27 Jordan Valley
CROP: Grain (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
March	3 (0.12)	2 (0.08)	3 (0.12)	2 (0.08)	3 (0.12)	2 (0.08)	3 (0.12)	2 (0.08)	3 (0.12)	2 (0.08)	3 (0.12)	2 (0.08)	3 (0.12)	2 (0.08)	3 (0.12)	2 (0.08)	3 (0.12)	2 (0.08)
April	52 (2.05)	32 (1.26)	53 (2.09)	37 (1.46)	55 (2.17)	41 (1.61)	56 (2.20)	46 (1.81)	58 (2.28)	50 (1.97)	60 (2.36)	53 (2.09)	62 (2.44)	55 (2.17)	64 (2.52)	57 (2.25)	66 (2.60)	59 (2.33)
May	96 (3.78)	68 (2.68)	98 (3.86)	76 (2.99)	100 (3.94)	82 (3.23)	103 (4.06)	90 (3.54)	106 (4.17)	97 (3.82)	108 (4.25)	101 (3.98)	104 (4.33)	102 (4.01)	106 (4.41)	103 (4.14)	108 (4.52)	105 (4.25)
June	170 (6.69)	143 (5.63)	174 (6.85)	152 (5.98)	177 (6.97)	158 (6.22)	181 (7.13)	167 (6.57)	185 (7.28)	178 (7.01)	192 (7.56)	183 (7.20)	196 (7.82)	189 (7.55)	202 (8.01)	195 (7.74)	208 (8.28)	201 (7.97)
July	206 (8.11)	199 (7.83)	209 (8.23)	203 (7.99)	211 (8.31)	205 (8.07)	213 (8.39)	208 (8.19)	217 (8.54)	211 (8.31)	222 (8.74)	214 (8.43)	226 (8.90)	220 (8.63)	228 (9.10)	222 (8.74)	232 (9.28)	225 (8.97)
Aug	16 (0.63)	15 (0.59)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)	16 (0.63)
Season	543 (21.38)	459 (18.07)	553 (21.78)	486 (19.13)	562 (22.14)	505 (19.88)	573 (22.57)	530 (20.86)	586 (23.06)	556 (21.90)	604 (23.78)	572 (22.53)	617 (24.27)	588 (23.00)	621 (23.78)	599 (22.53)	641 (25.28)	607 (23.78)

REGION: 27 Jordan Valley
CROP: Grain (Winter)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.	ET crop mm in.	Net IRR mm in.
Feb	8 (0.31)	1 (0.04)	8 (0.31)	1 (0.04)	9 (0.35)	1 (0.04)	9 (0.35)	1 (0.04)	9 (0.35)	1 (0.04)	9 (0.35)	1 (0.04)	9 (0.35)	1 (0.04)	9 (0.35)	1 (0.04)	9 (0.35)	1 (0.04)
March	33 (1.30)	14 (0.55)	34 (1.34)	17 (0.67)	36 (1.42)	21 (0.83)	37 (1.46)	25 (0.98)	40 (1.57)	30 (1.18)	45 (1.77)	32 (1.26)	48 (1.85)	35 (1.34)	50 (1.93)	38 (1.42)	55 (2.01)	40 (1.57)
April	78 (3.07)	58 (2.28)	81 (3.19)	63 (2.48)	85 (3.35)	69 (2.72)	88 (3.46)	78 (3.07)	91 (3.58)	84 (3.31)	93 (3.66)	87 (3.43)	96 (3.74)	90 (3.46)	98 (3.82)	93 (3.66)	100 (3.90)	96 (3.74)
May	136 (5.35)	107 (4.21)	141 (5.55)	115 (4.53)	145 (5.71)	123 (4.84)	148 (5.83)	131 (5.16)	155 (6.10)	144 (5.67)	157 (6.18)	149 (5.87)	164 (6.26)	154 (6.01)	166 (6.34)	157 (6.18)	170 (6.42)	164 (6.26)
June	179 (7.05)	152 (5.98)	184 (7.24)	161 (6.34)	187 (7.36)	168 (6.61)	191 (7.52)	177 (6.97)	196 (7.72)	189 (7.44)	203 (7.99)	193 (7.60)	208 (8.17)	200 (7.89)	212 (8.45)	203 (7.99)	218 (8.71)	210 (8.43)
July	151 (5.94)	145 (5.71)	153 (6.02)	147 (5.79)	154 (6.06)	150 (5.91)	155 (6.10)	152 (5.98)	158 (6.22)	154 (6.06)	162 (6.38)	156 (6.14)	165 (6.46)	161 (6.30)	168 (6.54)	162 (6.38)	170 (6.46)	166 (6.54)
Season	585 (23.02)	477 (18.77)	601 (23.65)	504 (19.85)	616 (24.25)	532 (20.95)	628 (24.72)	564 (22.20)	651 (25.62)	607 (23.90)	672 (26.45)	625 (24.61)	685 (27.30)	648 (25.50)	698 (28.15)	661 (26.45)	715 (29.00)	672 (26.45)

REGION: 27 Jordan Valley
CROP: Grass Seed (Spring)

MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm
Jan	1 (0.04)	0 (0.00)	0 (0.00)	1 (0.04)	0 (0.00)	0 (0.00)	1 (0.04)	0 (0.00)	0 (0.00)	2 (0.08)	0 (0.00)	0 (0.00)	5 (0.20)	0 (0.00)	0 (0.00)	6 (0.24)	0 (0.00)	0 (0.00)
Feb	8 (0.31)	1 (0.04)	1 (0.04)	9 (0.35)	1 (0.04)	1 (0.04)	10 (0.39)	1 (0.04)	1 (0.04)	13 (0.51)	1 (0.04)	1 (0.04)	13 (0.51)	7 (0.28)	7 (0.28)	14 (0.55)	8 (0.31)	8 (0.31)
March	18 (0.71)	2 (0.08)	3 (0.12)	18 (0.71)	3 (0.12)	3 (0.12)	19 (0.75)	6 (0.24)	6 (0.24)	21 (0.83)	10 (0.39)	10 (0.39)	23 (0.91)	13 (0.51)	13 (0.51)	24 (0.94)	15 (0.59)	15 (0.59)
April	48 (1.89)	30 (1.18)	33 (1.30)	49 (1.93)	33 (1.30)	33 (1.30)	51 (2.01)	37 (1.46)	37 (1.46)	52 (2.05)	44 (1.73)	44 (1.73)	54 (2.13)	47 (1.85)	47 (1.85)	56 (2.20)	50 (1.97)	50 (1.97)
May	76 (2.99)	51 (2.01)	56 (2.20)	78 (3.07)	56 (2.20)	56 (2.20)	79 (3.11)	62 (2.44)	62 (2.44)	81 (3.19)	68 (2.68)	68 (2.68)	82 (3.23)	74 (2.91)	74 (2.91)	83 (3.27)	78 (3.07)	78 (3.07)
June	123 (4.84)	98 (3.86)	106 (4.17)	126 (4.96)	106 (4.17)	106 (4.17)	128 (5.04)	112 (4.41)	112 (4.41)	131 (5.16)	120 (4.72)	120 (4.72)	134 (5.28)	129 (5.08)	129 (5.08)	140 (5.51)	135 (5.31)	135 (5.31)
July	195 (7.68)	188 (7.40)	190 (7.48)	197 (7.76)	190 (7.48)	190 (7.48)	199 (7.83)	193 (7.60)	193 (7.60)	202 (7.95)	197 (7.76)	197 (7.76)	206 (8.11)	201 (7.91)	201 (7.91)	208 (8.19)	203 (7.99)	203 (7.99)
Aug	171 (6.73)	168 (6.61)	172 (6.77)	174 (6.85)	172 (6.77)	172 (6.77)	178 (7.01)	175 (6.89)	175 (6.89)	182 (7.17)	181 (7.13)	181 (7.13)	187 (7.36)	186 (7.32)	186 (7.32)	193 (7.60)	192 (7.56)	192 (7.56)
Sep	125 (4.92)	113 (4.45)	118 (4.65)	128 (5.04)	118 (4.65)	118 (4.65)	129 (5.08)	123 (4.84)	123 (4.84)	131 (5.16)	128 (5.04)	128 (5.04)	137 (5.39)	133 (5.24)	133 (5.24)	140 (5.51)	136 (5.35)	136 (5.35)
Oct	83 (3.27)	66 (2.60)	72 (2.83)	85 (3.35)	72 (2.83)	72 (2.83)	86 (3.39)	77 (3.03)	77 (3.03)	90 (3.56)	80 (3.15)	80 (3.15)	94 (3.70)	90 (3.54)	90 (3.54)	96 (3.78)	93 (3.66)	93 (3.66)
Nov	20 (0.79)	2 (0.08)	3 (0.12)	21 (0.83)	3 (0.12)	3 (0.12)	23 (0.91)	7 (0.28)	7 (0.28)	27 (1.06)	12 (0.47)	12 (0.47)	29 (1.14)	16 (0.63)	16 (0.63)	31 (1.22)	21 (0.83)	21 (0.83)
Dec	1 (0.04)	0 (0.00)	0 (0.00)	1 (0.04)	0 (0.00)	0 (0.00)	1 (0.04)	0 (0.00)	0 (0.00)	3 (0.12)	0 (0.00)	0 (0.00)	3 (0.12)	0 (0.00)	0 (0.00)	6 (0.24)	0 (0.00)	0 (0.00)
Season	869 (34.21)	719 (28.31)	887 (34.93)	754 (29.68)	904 (35.60)	793 (31.23)	935 (36.82)	841 (33.11)	967 (38.08)	896 (35.27)	997 (39.25)	931 (36.64)						

REGION: 27 Jordan Valley
CROP: Pasture

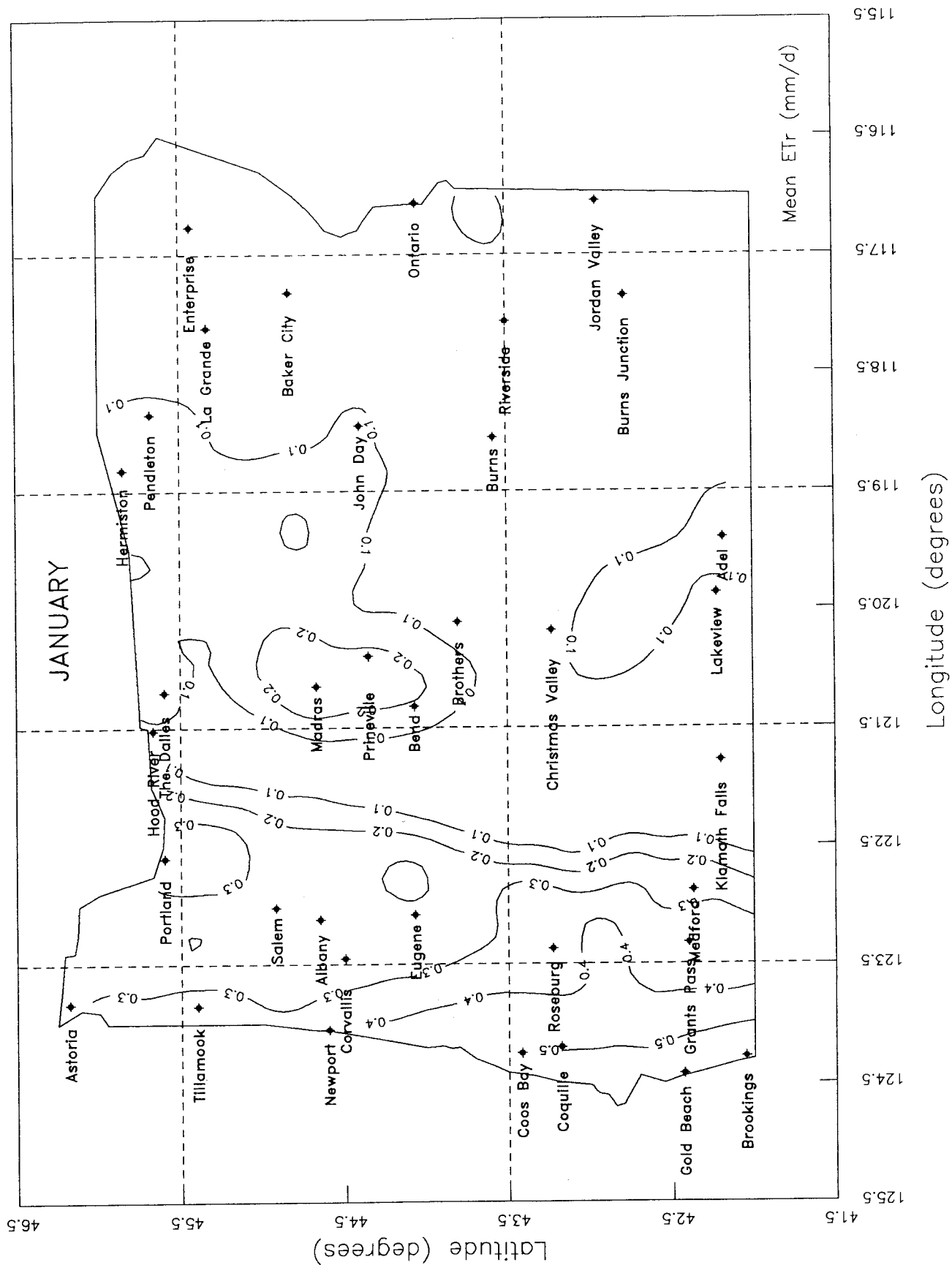
MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm	ET crop mm in.	Net IRR mm in.	Net mm
March	7 (0.28)	6 (0.24)	6 (0.24)	8 (0.31)	6 (0.24)	6 (0.24)	8 (0.31)	7 (0.28)	7 (0.28)	8 (0.31)	7 (0.28)	7 (0.28)	9 (0.35)	9 (0.35)	9 (0.35)	9 (0.35)	9 (0.35)	9 (0.35)
April	89 (3.50)	68 (2.68)	73 (2.87)	92 (3.62)	73 (2.87)	73 (2.87)	96 (3.78)	79 (3.11)	79 (3.11)	101 (3.98)	88 (3.46)	88 (3.46)	104 (4.09)	95 (3.74)	95 (3.74)	106 (4.17)	99 (3.90)	99 (3.90)
May	128 (5.04)	100 (3.94)	107 (4.21)	135 (5.31)	107 (4.21)	107 (4.21)	137 (5.39)	114 (4.49)	114 (4.49)	139 (5.47)	123 (4.84)	123 (4.84)	145 (5.71)	135 (5.31)	135 (5.31)	148 (5.83)	140 (5.51)	140 (5.51)
June	157 (6.18)	131 (5.16)	140 (5.51)	161 (6.34)	140 (5.51)	140 (5.51)	164 (6.46)	145 (5.71)	145 (5.71)	167 (6.57)	154 (6.06)	154 (6.06)	172 (6.77)	165 (6.50)	165 (6.50)	178 (7.01)	169 (6.65)	169 (6.65)
July	193 (7.60)	185 (7.28)	189 (7.44)	195 (7.68)	189 (7.44)	189 (7.44)	198 (7.80)	193 (7.60)	193 (7.60)	200 (7.87)	196 (7.72)	196 (7.72)	203 (7.99)	199 (7.83)	199 (7.83)	207 (8.15)	201 (7.91)	201 (7.91)
Aug	151 (5.94)	149 (5.87)	151 (5.94)	154 (6.06)	151 (5.94)	151 (5.94)	158 (6.22)	154 (6.06)	154 (6.06)	161 (6.34)	159 (6.26)	159 (6.26)	165 (6.50)	164 (6.46)	164 (6.46)	170 (6.69)	169 (6.65)	169 (6.65)
Sep	111 (4.37)	98 (3.86)	105 (4.13)	114 (4.49)	105 (4.13)	105 (4.13)	116 (4.57)	113 (4.45)	113 (4.45)	118 (4.65)	116 (4.57)	116 (4.57)	121 (4.76)	120 (4.72)	120 (4.72)	123 (4.84)	121 (4.76)	121 (4.76)
Oct	75 (2.95)	58 (2.28)	62 (2.44)	77 (3.03)	62 (2.44)	62 (2.44)	79 (3.11)	67 (2.64)	67 (2.64)	81 (3.19)	71 (2.80)	71 (2.80)	84 (3.31)	79 (3.11)	79 (3.11)	85 (3.35)	83 (3.27)	83 (3.27)
Season	911 (35.86)	795 (31.31)	936 (36.84)	833 (32.78)	956 (37.64)	872 (34.34)	975 (38.38)	914 (35.99)	1003 (39.48)	966 (38.02)	1026 (40.39)	991 (39.00)						

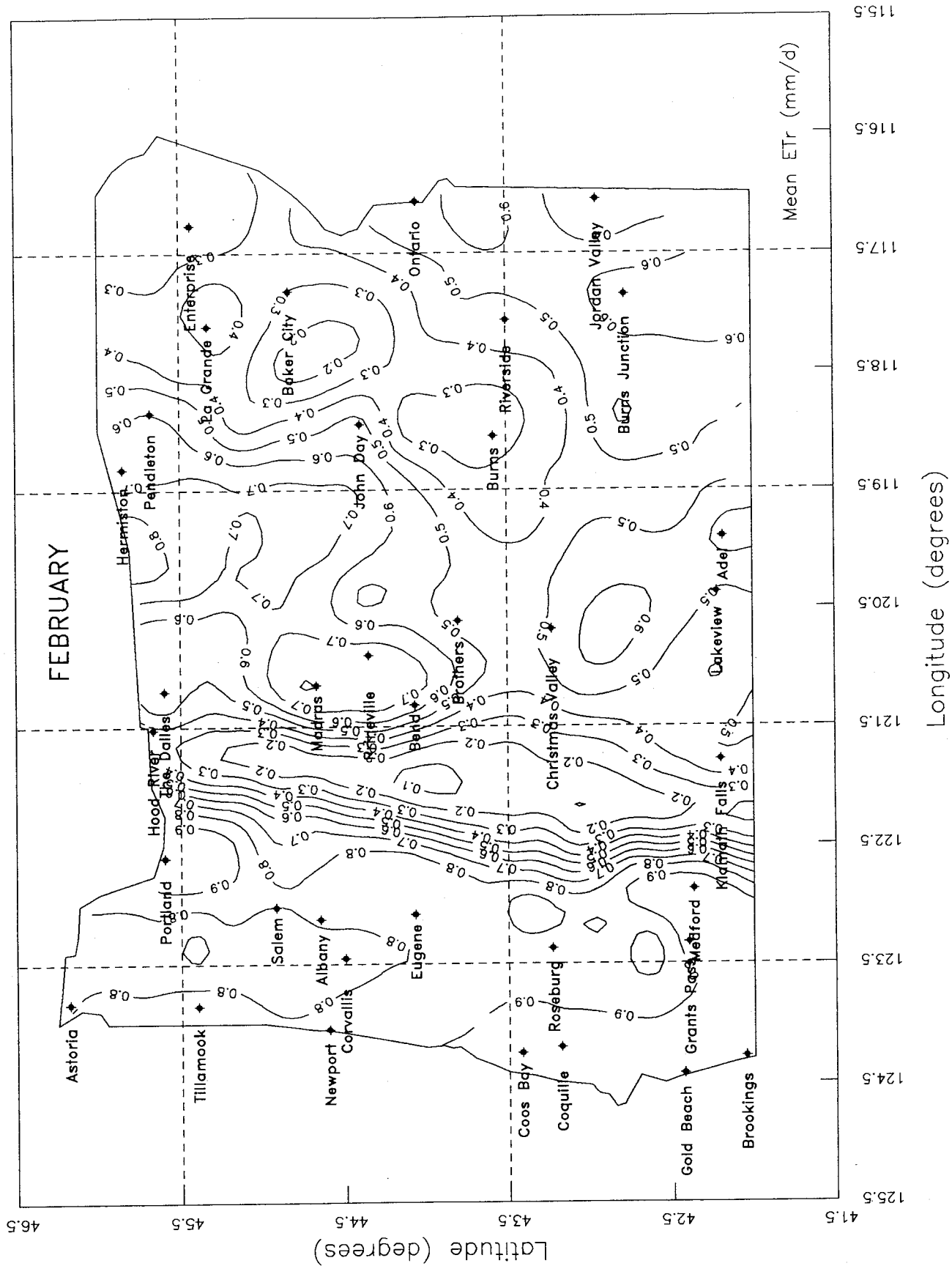
REGION: 27 Jordan Valley
CROP: Potatoes

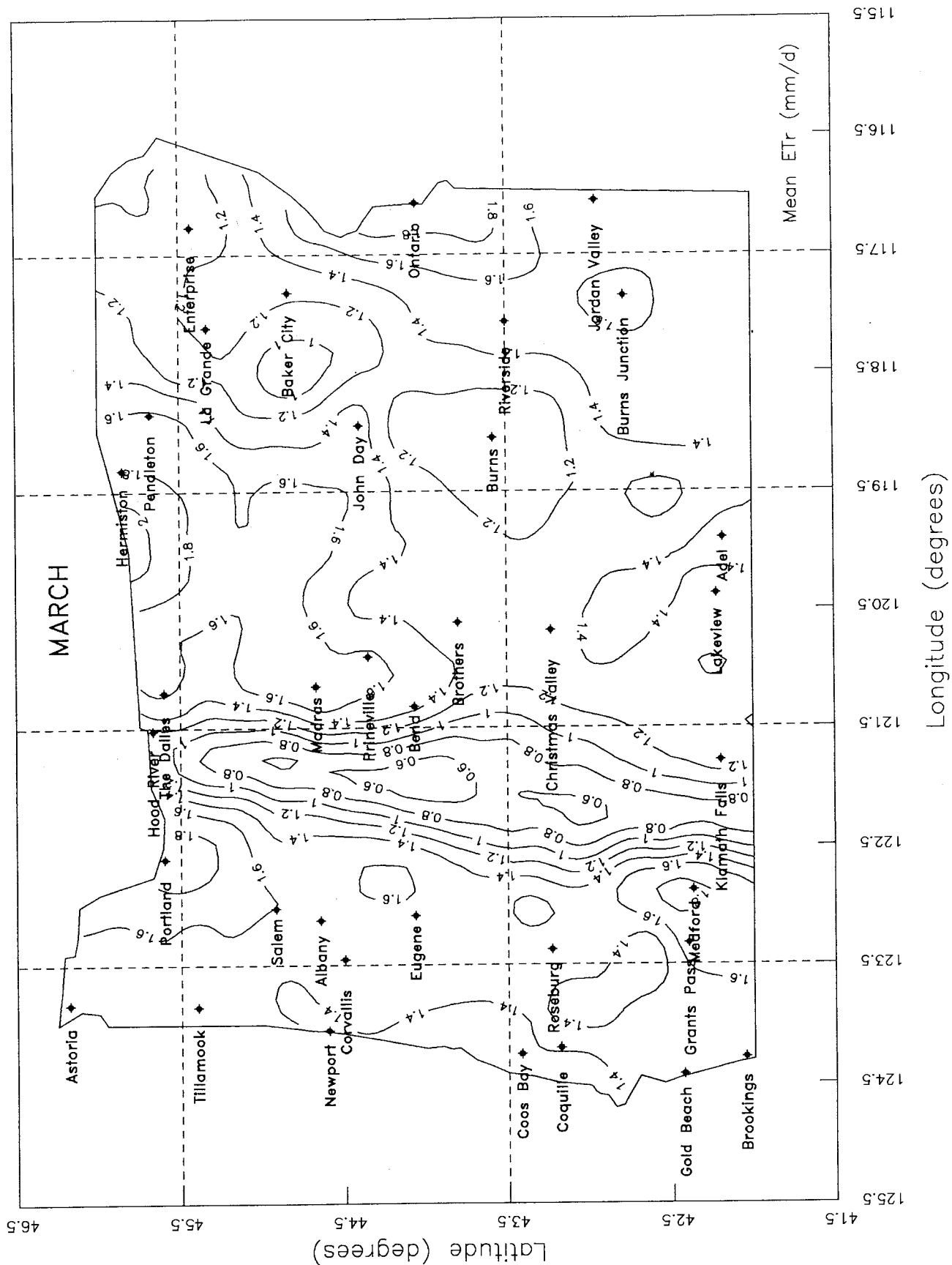
MONTH	5 out of 10 years			6 out of 10 years			7 out of 10 years			8 out of 10 years			9 out of 10 years			19 out of 20 years		
	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.	ET crop mm	Net IRR mm in.
April	20 (0.79)	12 (0.47)	21 (0.83)	15 (0.59)	22 (0.87)	16 (0.63)	22 (0.87)	19 (0.75)	23 (0.91)	21 (0.83)	24 (0.94)	22 (0.87)	24 (0.94)	21 (0.83)	24 (0.94)	22 (0.87)	24 (0.94)	21 (0.83)
May	65 (2.56)	42 (1.65)	66 (2.60)	47 (1.85)	67 (2.64)	52 (2.05)	68 (2.68)	57 (2.24)	70 (2.76)	62 (2.44)	70 (2.76)	65 (2.56)	70 (2.76)	62 (2.44)	70 (2.76)	65 (2.56)	70 (2.76)	62 (2.44)
June	152 (5.98)	126 (4.96)	156 (6.14)	137 (5.39)	158 (6.22)	142 (5.59)	162 (6.38)	148 (5.83)	166 (6.54)	160 (6.30)	172 (6.77)	164 (6.46)	172 (6.77)	160 (6.30)	172 (6.77)	164 (6.46)	172 (6.77)	160 (6.30)
July	222 (8.74)	215 (8.46)	225 (8.86)	218 (8.58)	227 (8.94)	221 (8.70)	229 (9.02)	224 (8.82)	233 (9.17)	228 (8.98)	239 (9.41)	231 (9.09)	239 (9.41)	228 (8.98)	239 (9.41)	231 (9.09)	239 (9.41)	228 (8.98)
Aug	170 (6.69)	167 (6.57)	172 (6.77)	170 (6.69)	176 (6.93)	174 (6.85)	180 (7.09)	179 (7.05)	185 (7.28)	185 (7.28)	191 (7.52)	190 (7.48)	191 (7.52)	185 (7.28)	191 (7.52)	190 (7.48)	191 (7.52)	185 (7.28)
Sep	64 (2.52)	58 (2.28)	65 (2.56)	61 (2.40)	66 (2.60)	64 (2.52)	67 (2.64)	67 (2.64)	70 (2.76)	69 (2.72)	72 (2.83)	71 (2.80)	72 (2.83)	69 (2.72)	72 (2.83)	71 (2.80)	72 (2.83)	69 (2.72)
Season	693 (27.28)	620 (24.39)	705 (27.76)	648 (25.50)	716 (28.20)	669 (26.34)	728 (28.68)	694 (27.33)	747 (29.42)	725 (28.55)	768 (30.23)	743 (29.26)	768 (30.23)	725 (28.55)	768 (30.23)	743 (29.26)	768 (30.23)	725 (28.55)

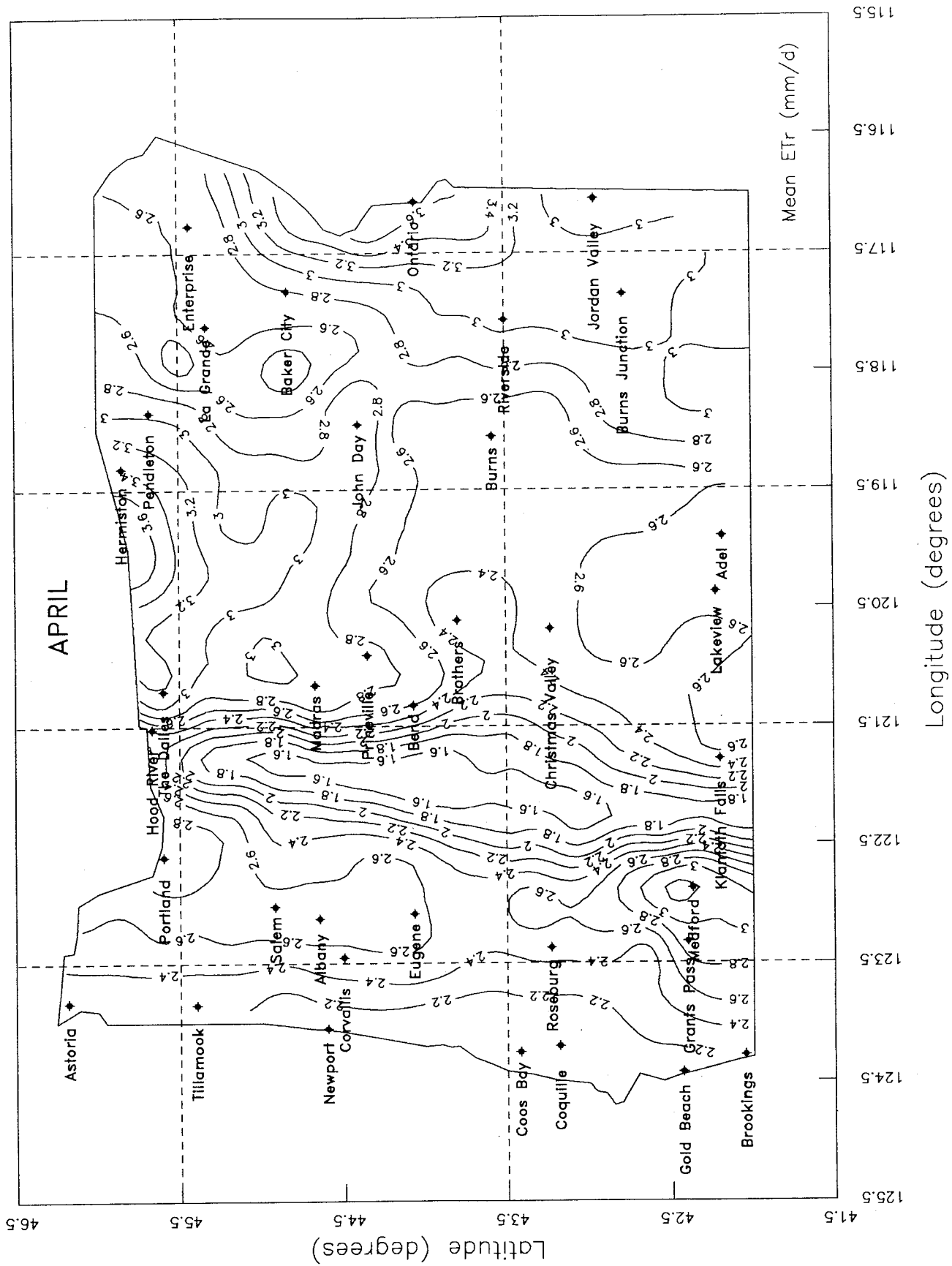
3.2 ET_{ref} CONTOUR MAPS

Contour plots of ET_{ref} are a useful tool for private firms and government agencies involved in water resources management, hydrologic balance studies, water quality planning, and environmental analysis. A series of plots, one for each month, are included which indicate the mean (50 percent probability or 5 out of 10 years) monthly ET_{ref} over the state in millimeters per day (mm/d). The monthly total ET_{ref} in millimeters is obtained by multiplying the plotted value for the site of interest by the number of days in the month. Recall that ET_{ref} represents the water use by a fully developed grass cover of uniform height, disease and weed free, in a well-watered environment. For other vegetation covers, K_c values should be applied as shown in Equation (2).

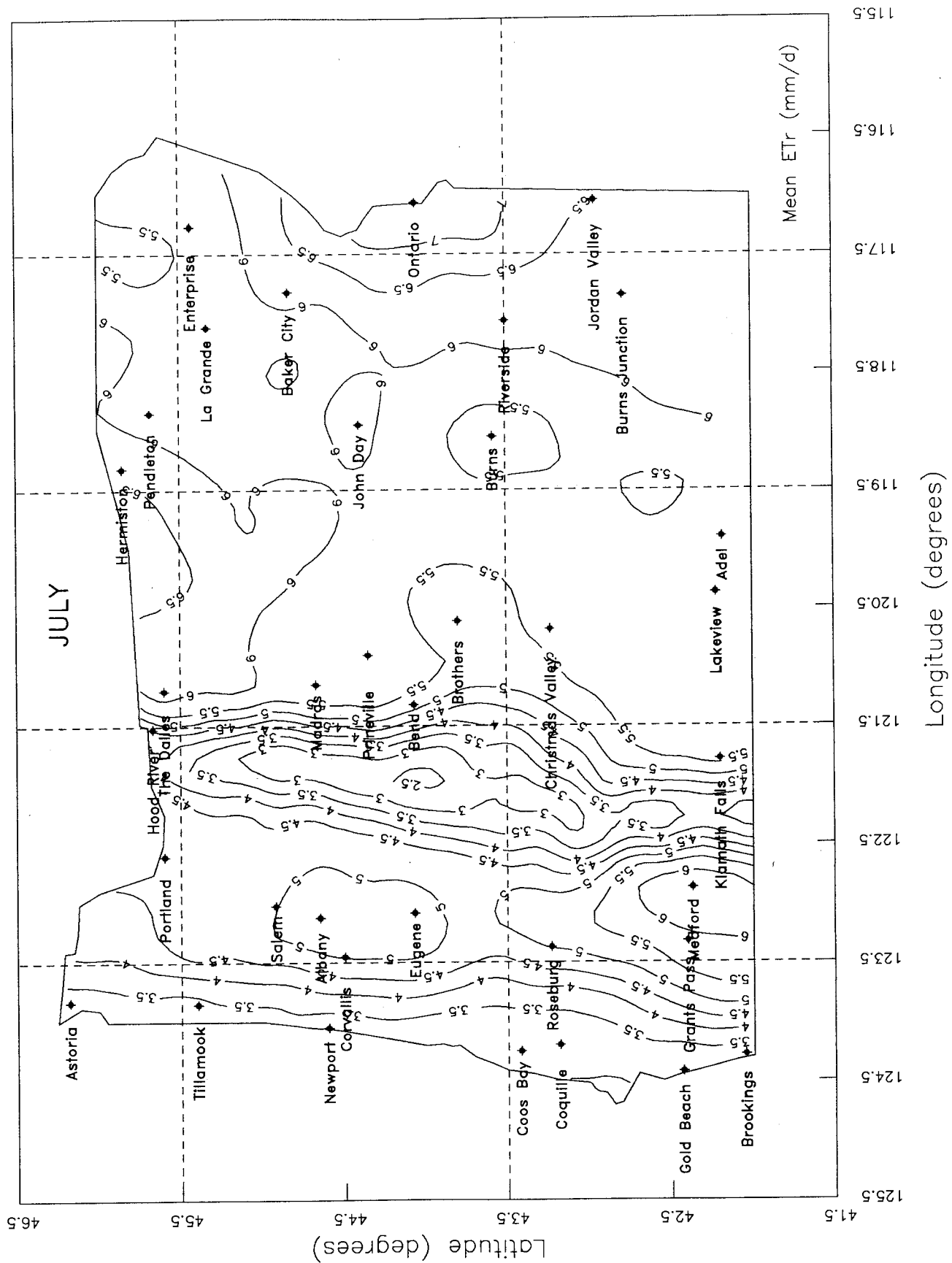


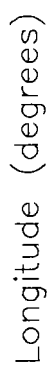


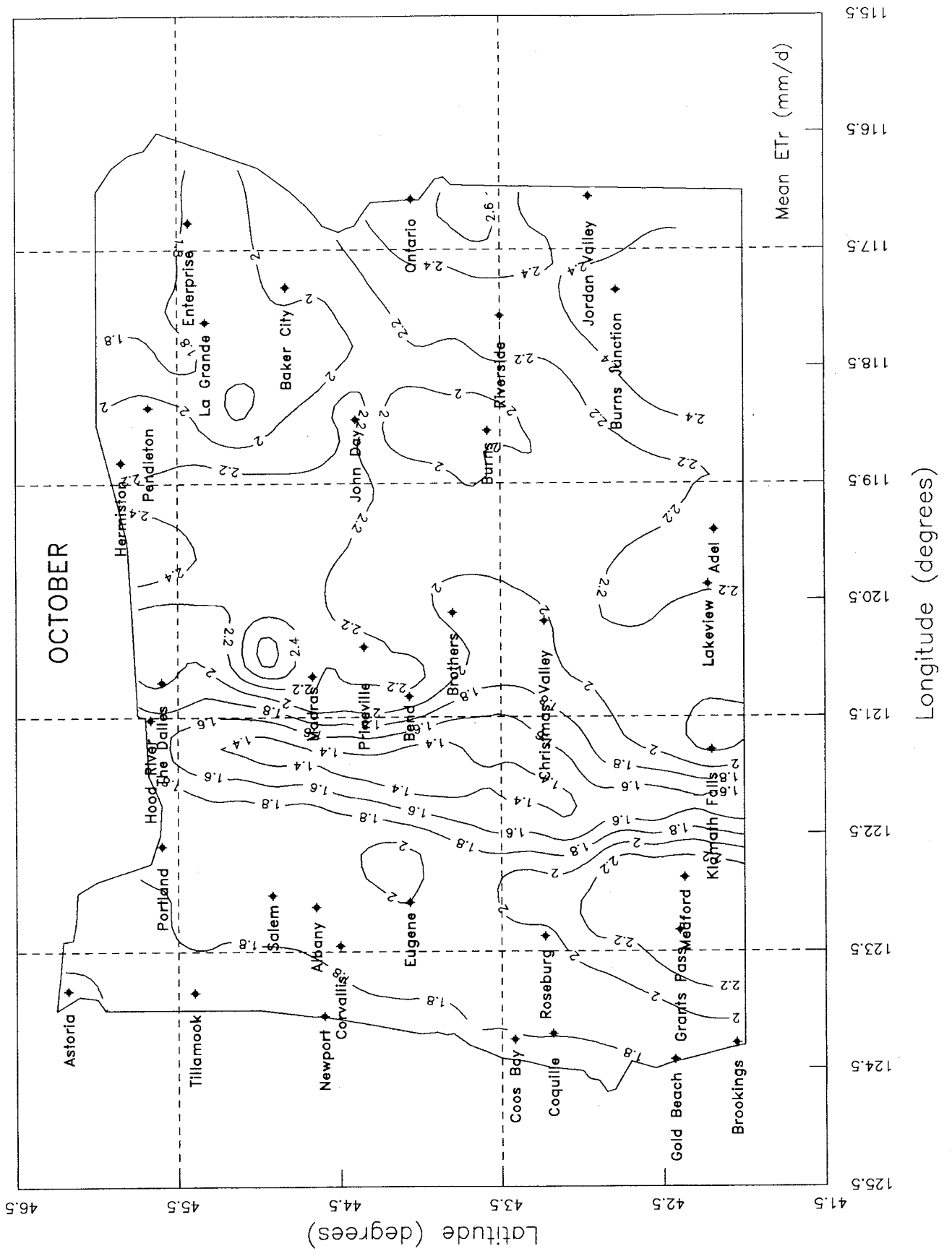


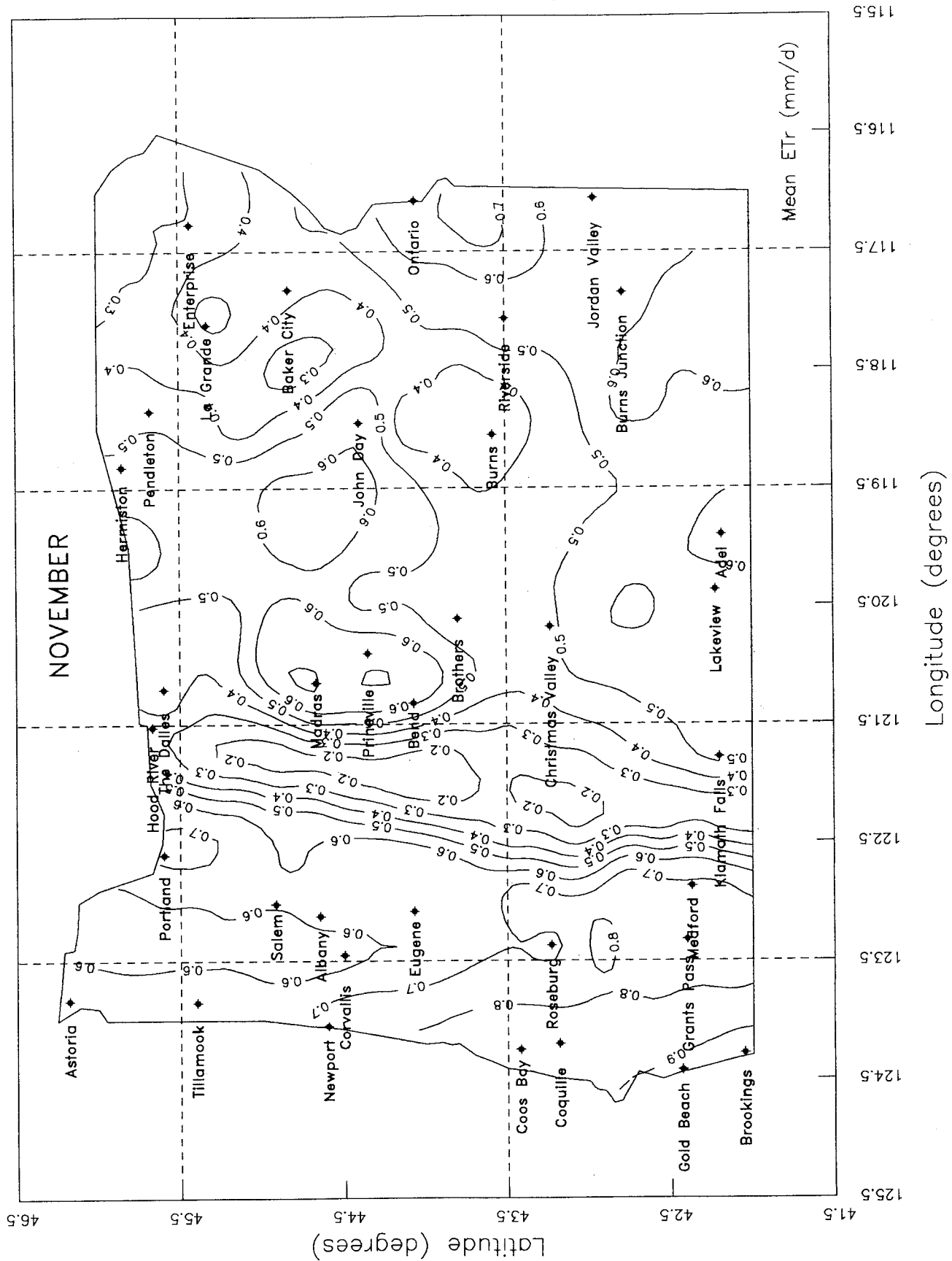


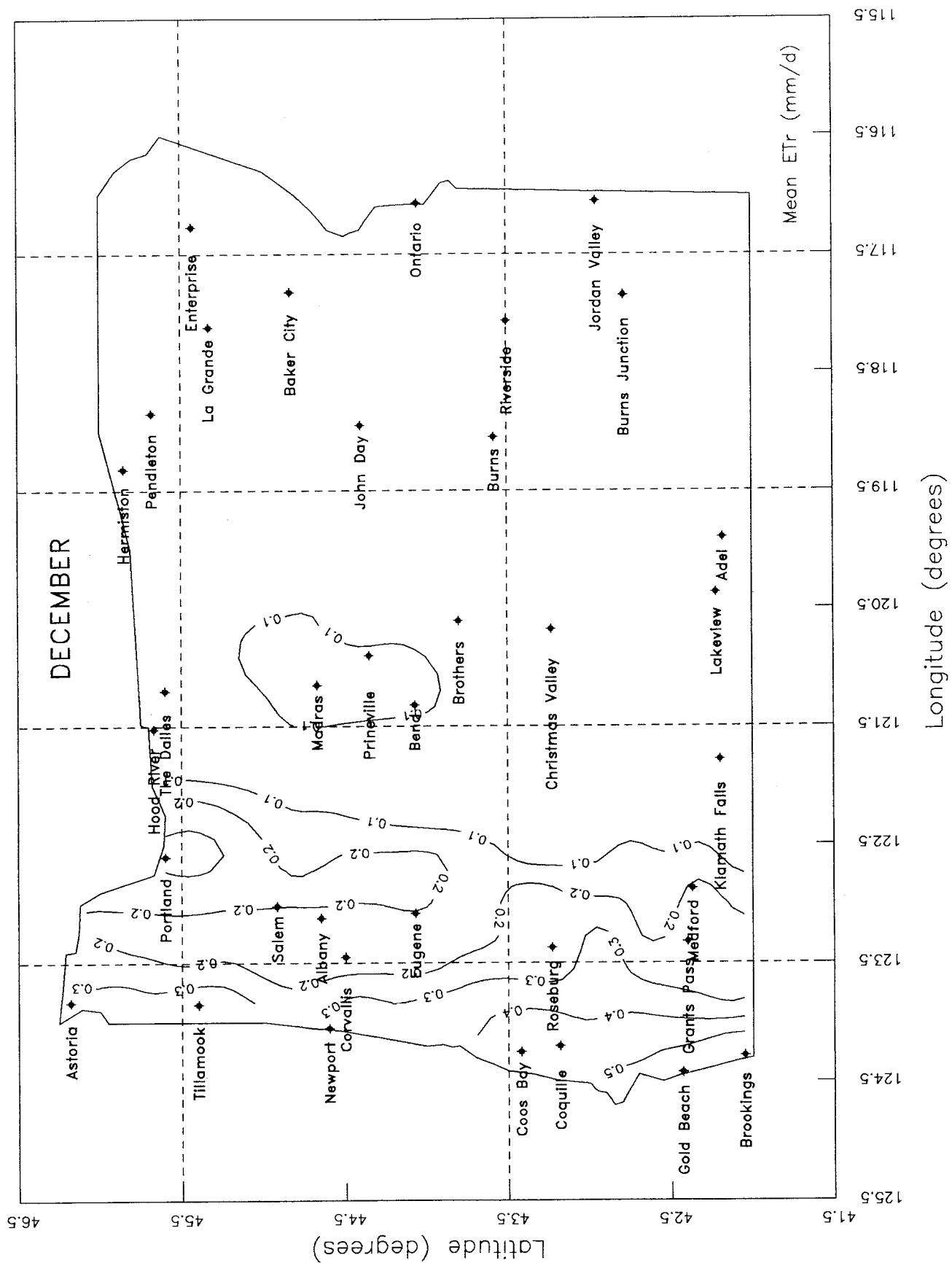












4 EXAMPLES

4.1 APPLICATION TO SYSTEM DESIGN

In this section, we will demonstrate application of the ET_{crop} and Net Irrigation Requirement tables for irrigation system design using the example of potatoes grown in the Hermiston area. First, locate those tables applicable to the Hermiston area. Figure 1 and Table 1 show that Hermiston is in region number 14. Table 2 indicates that the pages corresponding to this area for ET_{crop} and Net Irrigation Requirements are from 103 to 111. Turning to this section, we see that the crops are listed in alphabetical order. There are three tables for potatoes, depending on an early, mid, or late planting dates. Assume that for contract purposes, the growing season will correspond to the mid planting date (April 10) shown in Table 1. Planting dates and growing seasons indicated in Table 1 are general guidelines, but are generally accurate enough for irrigation system design and management purposes in Oregon.

Next, choose the proper design probability level for your situation. This level depends on the crop's susceptibility to water stress, the value of the crop, and the grower's acceptable level of risk. The higher the probability level you choose, the less risk there will be for crop damage due to extreme weather conditions, but the system costs will be higher. It is a judgement call and what is acceptable to one grower or system designer may not work for another.

Table 4 suggests general guidelines for probability levels for different crop types. These values are based on relative value of the crops, susceptibility to water stress, and adaptability of the crop to explore a large volume of soil within the potential root zone. Values in Table 4 should be considered as starting values that may be modified by the grower and designer for specific cases.

Table 4. Suggested range of probability levels in percent for irrigation system design based on type of crop.

CROP TYPE	PROBABILITY LEVEL	
	MINIMUM	MAXIMUM
Field Crops	50	70
Orchards - New Planting	70	80
Orchards - Mature	50	60
Specialty Crops	80	90

Continuing with the example, let's assume we decide to use the Specialty Crop probability levels for design considering the value of potatoes and the relative susceptibility to quality damage from water stress. Assume that the grower and designer are satisfied with an 80 percent or 8 out of 10 year design level. The irrigation system capacity is based on the peak month water requirement, applying the concept that if the capacity is adequate for the maximum use month, it is adequate for any other month. From the table for Hermiston, the peak month is July with an ET_{crop} of 226 mm (8.9 in.). Analysis of climatic data for the region indicates that no effective precipitation is expected at this probability level for July and therefore the net irrigation requirement is also 226 mm (8.9 in.).

The net irrigation requirement is the estimate of the amount of water which will be used by the crop. This amount of water must be delivered to the active root zone for maximum production. Certain amounts of water applied to the field will not reach the root zone. Water that leaves the field in spray and wind drift from a sprinkler system, runs off the low point of the field (required for some types of surface irrigation systems), or percolates through the soil past the root zone is not considered to be available to meet the net irrigation requirement of the crop. Some of this water may be used to leach salts out of the root zone or have other beneficial uses, but it is not considered to meet the net irrigation requirement as defined in this report.

We developed a system of irrigation efficiencies to calculate the volume of water required at different points in an irrigation system based on the net irrigation requirement (Cuenca, 1989). The combined application and distribution pattern efficiency, E_c , accounts for deep percolation, runoff, and water leaving the field as spray and wind drift. It is extremely problematic to estimate the combined efficiency for different types of irrigation systems because it is a function of soil type, crop type, meteorological conditions, system design, and management. Table 5 presents a range of combined efficiencies for different types of irrigation systems. The values given in Table 5 should be considered as starting values if no specific information is available for the particular system in question. These values are based on attainable values for systems that are generally well designed and managed. A lower efficiency is related to systems with a lower level of management or operating in an arid climate. The higher values can be considered for well managed systems or a humid climate. These values should be modified if reliable local information is available for the system in question. See Cuenca (1989) for more details and methods to compute the combined efficiency for various types of systems.

Table 5. Suggested combined application and distribution pattern efficiencies in percent for various types of irrigation systems assuming reasonable system design and management.

SYSTEM	COMBINED EFFICIENCY	
	LOW	HIGH
Basin, level border, level furrow, graded border, or graded furrow surface with tailwater return	80	95
Graded border and graded furrow surface with no tailwater return but with cutback	65	75
Graded border and graded furrow surface with no tailwater return and no cutback	40	65
Hand-move and side-roll sprinkler with offsets	70	80
Solid set sprinkler with low wind design	55	65
Solid set sprinkler with high wind design	65	75
Big gun with low wind design	60	70
Big gun with high wind design	70	80
Continuous move sprinkler - center pivot or linear move	75	85
Trickle (or drip)	80	90
Subsurface	85	95

The gross irrigation requirement, or amount of water that must be applied to the field, is obtained by dividing the net irrigation requirement by the combined distribution and application pattern efficiency. In equation form,

$$i_g = \frac{i_n}{E_c} \quad (3)$$

where i_g = gross irrigation depth, mm
 i_n = net irrigation depth, mm
 E_c = combined efficiency, decimal fraction

For this example, assume that the irrigation system in Hermiston is a graded furrow that is well designed and well managed, with no tailwater return, but uses a cutback of the stream size when the water reaches the end of the furrow. The combined efficiency for this case, from Table 5, is 75 percent and the gross depth is calculated as,

$$i_g = \frac{226 \text{ mm}}{0.75} = 301 \text{ mm} \quad (4)$$

so that i_g is equal to 301 mm (11.9 in.).

The gross volume of water (V_g) required for the irrigation system during the month is equal to the gross depth multiplied by the area (A) planted to potatoes, taking care that the units are consistent. The required system flow rate (Q) is equal to the gross volume divided by the total time (T) of irrigation during the peak month, again paying attention to consistency of units. Let's work an example assuming that the area of potatoes to be irrigated is 25 ha (62 ac) and that the total time of irrigation for the month is 320 h [i.e. two 8 h sets per day, 5 days per week for 4 weeks].

$$V_g = i_g(A) \quad (5)$$

$$V_g = 301 \text{ mm} \left(\frac{1 \text{ m}}{1000 \text{ mm}} \right) 25 \text{ ha} \left(\frac{10,000 \text{ m}^2}{\text{ha}} \right) = 75,250 \text{ m}^3 \quad (6)$$

or

$$V_g = 11.9 \text{ in.} \left(\frac{1 \text{ ft}}{12 \text{ in.}} \right) 62 \text{ ac} = 61.5 \text{ ac} \cdot \text{ft} \quad (7)$$

The flow rate required for the system is,

$$Q = \frac{V_g}{T} \quad (8)$$

$$Q = \frac{75,250 \text{ m}^3}{320 \text{ h}} \left(\frac{1 \text{ h}}{60 \text{ min}} \right) \left(\frac{1000 \text{ L}}{1 \text{ m}^3} \right) = 3916 \text{ L/min} \quad (9)$$

or

$$Q = \frac{61.5 \text{ ac} \cdot \text{ft}}{320 \text{ h}} \left(\frac{326,000 \text{ gal}}{1 \text{ ac} \cdot \text{ft}} \right) \left(\frac{1 \text{ h}}{60 \text{ min}} \right) = 1044 \text{ gpm} \quad (10)$$

The table given in the Appendix may be applied for conversion between English system units and the Système International (SI - commonly called metric system) more generally used throughout the world. Final system design should be based on manufactured capacity of available equipment and cooperative efforts of the grower and an experienced system designer or engineer. Trade-offs will be required considering operating schedule, area to be irrigated, required flow rate, soil water-holding capacity, and soil intake rate.

4.2 APPLICATION TO IRRIGATION SCHEDULING

Irrigation scheduling involves determining the time and required depth of irrigation throughout the growing season. Numerous irrigation scheduling methods are available. Traditional methods may depend on a fixed, calendar-based schedule that may be modified depending on observed crop status. Some scheduling methods include monitoring meteorological variables and estimating crop water use over the period of interest using a method such as the FAO Blaney-Criddle applied in this report. Others involve monitoring soil moisture content using devices ranging from a simple soil sampler to a sophisticated neutron probe. The objective of all of the methods is to assist the grower in applying the correct amount of water to replenish that used by the crop since the last irrigation.

The crop water requirements in this report are based on an average of 46 years of meteorological data. Since no year is average, the Crop Water Use tables in this report should only be used for planning irrigations. Actual decisions should be based on observed meteorological and crop conditions since the last irrigation.

The following example shows how to use the crop water requirement tables for scheduling irrigations for the example mid-season potato crop for the Hermiston area. Assume that the irrigation system has been designed, based on the peak month crop water requirement and soil water-holding capacity of the root zone, to apply a net irrigation depth of 50 mm (2.0 in.) for each irrigation. If the system is going to be operated in the same manner (i.e. same set time) all season, the question is what irrigation interval should be anticipated for planning purposes during August.

From the mid-season potato table for Hermiston, the net irrigation requirement for August is seen to be 193 mm (7.60 in.) for 8 out of 10 years. Since there are 31 days in August, the estimated daily water use is 6.2 mm/d (0.25 in./d). If a net depth of 50 mm (2.0 in.) is to be applied for each irrigation, the irrigation interval, I_f , is calculated as,

$$I_f = \frac{i_a}{ET_{crop}} \quad (11)$$

$$I_f = \frac{50 \text{ mm}}{6.23 \text{ mm/d}} = 8 \text{ d} \quad (12)$$

For planning purposes, we could anticipate irrigating the same field every 8 days during August. This result would have to be modified to account for actual meteorological and crop conditions at the time of operation.

5 REFERENCES

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6 APPENDIX

APPENDIX A. Conversion between English and Système International (SI) units for quantities applicable to irrigation system design and management.

QUANTITY	FROM: ENGLISH UNITS	TO: SI UNITS	MULTIPLY BY:
Area	in. ²	m ²	0.000 645 16
	ft. ²	m ²	0.092 903 04
	in. ²	mm ²	645.16
	in. ²	cm ²	6.451 6
	acre	ha	0.404 687 3
	mile ²	km ²	2.589.998
Flow, mass, rate	lb/min	kg/min	0.453.592 4
	lb/s	kg/s	0.453.592 4
	g/min	g/min	
	ton (short)/h	t/h, Mg/h	0.907 184 7
Flow, volume	ft ³ /s	m ³ /s	0.028 316 85
	ft ³ /s	m ³ /min	1.699 011
	gal/s (gps)	L/s	3.785 412
	gal/s (gps)	m ³ /s	0.003 785 412
	gal/min (gpm)	L/min	3.785 412
	gal/min (gpm)	L/s	0.063 090 20
	oz/s	mL/s	29.573 53
	oz/min	mL/min	29.573 53
	gal/h	L/h	3.785 412
	ft ³ /s	m ³ /s	0.028 316 85
Length	mile	km	1.609 344
	rod	m	5.029 210
	yd	m	0.914.4
	ft	m	0.304 8
	in.	cm	2.54
	in.	mm	25.4
Mass	ton (long)	t, Mg	1.016 047
	ton (short)	t, Mg	0.907 184 7
	lb	kg	0.453 592 4
	slug	kg	14.593 90
	oz	g	28.349 52

QUANTITY	FROM: ENGLISH UNITS	TO: SI UNITS	MULTIPLY BY:
Volume	yd ³	m ³	0.764 554 9
	ft ³	m ³	0.028 316 85
	bushel	L	35.239 07
	ft ³	L	28.316 85
	in. ³	L	0.016 387 06
	in. ³	cm ³	16.387 06
	gal	L	3.785 412
	qt	L	0.946 352 9
	pt	L	0.473 176 5
	oz	mL	29.573 53
	acre · ft	m ³	1 233.489
		dam ³	1.233.489
	bushel (U.S.)	m ³	0.035 239 07
Volume per area	gal/acre	L/ha	9.353 958
Volume per time	gal/h	L/h	3.785 412

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APPENDIX G

Fertilizer Guides

Nutrient Management for Pastures: Western Oregon and Western Washington

A. Moore, G. Pirelli, S. Filley, S. Fransen, D. Sullivan, M. Fery, and T. Thomson

Photo: Amber Moore, © Oregon State University

Forage production is of primary importance to livestock enterprises and the agricultural economy in the Pacific Northwest. When properly managed, pastures can produce forage for pennies per pound of dry matter and can serve as the main feed source for western Oregon and Washington livestock operations.

Good soil fertility is an essential part of a successful forage management program. Science-based nutrient management, combined with a dense stand of grass or grass/clover species, can provide a sustainable source of forage. This publication provides nutrient management concepts and recommendations for western Oregon and western Washington pastures used primarily for grazing. It also includes concepts related to conserving forage as hay or silage when forage production exceeds grazing needs. The topics discussed in this publication will help livestock producers develop a sustainable forage production system.

Nutrient management practices may not be beneficial unless system-wide best management practices for pasture systems are implemented. Animal management practices have a tremendous influence on pasture productivity. Poor management practices, such as overgrazing and grazing animals on saturated soils, will greatly reduce or even eliminate the positive effects of soil fertility improvements. Therefore, a secondary goal of this publication is to address general pasture management practices that may affect the pasture's ability to respond to recommended nutrient management practices.

Forage management practices and nutrient use efficiency

The biological and economic response to a nutrient application to a pasture depends on several factors:

- **Species composition:** A dense stand of cool-season pasture grasses (e.g., tall fescue, orchardgrass, perennial ryegrass) and a clover species (e.g., white clover, subclover, red clover) will respond well to nutrient applications, assuming that the soil pH is appropriate for the species in the mix.
- **Plant density:** Early-establishment stands will likely be thin. As the pasture stand ages, tillering increases in grasses and branching increases in legumes, resulting in a denser stand. Younger, thinner stands are subject to weedy species invasion, while aged, dense stands provide a more competitive environment against invading weeds and native grasses.
- **Stage of growth:** Plants in the vegetative growth phase with adequate leaf area are more likely to show a response to a nutrient application than are overgrazed plants or plants that are close to maturity. Pasture plants are classified as being in growth phase I, II, or III, with phase II being the optimal phase for fertilizer application. Further guidance on how to adjust fertilizer applications and grazing management based on growth stage is provided in Appendix 1 (page 12). For more information on managing plants in pasture

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systems, see *The Western Oregon and Washington Pasture Calendar* (PNW 699).

- **Stand age:** The longer a pasture plant is present in a stand, the older are its genetics. Plant breeders have focused on genetic improvements that allow new forage cultivars to outperform older versions of the same species in growth rate, yield, digestibility, and other attributes. When a new stand is established, the resulting increase in pasture productivity may also promote an improved response to fertilizer applications.
- **Balance of soil nutrients before N applications:** If pasture soils are very low in an essential nutrient, forage yield will be limited by that nutrient even if other nutrients are applied. For example, if phosphorus (P) is the most limiting factor in a pasture, nitrogen (N) application will not provide the expected outcome. To get the best response from N applications, make sure all other essential plant nutrients are at recommended levels.

■ Amount of defoliation by grazing animals:

As animals graze the forages in a pasture, plant regrowth replaces the consumed forage. However, excessive defoliation caused by overgrazing will slow the rate of regrowth and will prevent plants from effectively using N and other critical plant nutrients in the soil.

Soil testing

Soil nutrient testing is essential to determine the amount of nutrients available in the soil for plant growth and how much fertilizer is needed to optimize forage yield and quality.

For new, conventionally tilled seedings, test the soil prior to planting. For established and no-till pastures, plan to have soil analyzed every 2 years if fertility is within recommended levels. Test annually if fertility is below recommended levels and nutrient deficiencies are common. Collect the samples near the same date each year, since nutrient levels vary seasonally.

Summary

Before planting

Lime	When soil pH is below 5.5, broadcast lime according to Table 2. See page 4.
Nitrogen (N)	Broadcast or band 20 to 25 lb N/acre. See page 5.
Phosphorus (P)	When soil test P is below 30 ppm, broadcast or band P according to Table 4. See page 10.
Potassium (K)	When soil test K is below 200 ppm, broadcast K according to Table 5. Banding K is permitted at less than 60 lb K ₂ O/acre. See page 10.
Sulfur (S)	Sulfate-S may be broadcast or band applied to new fields at a rate of 15 to 25 lb S/acre. See page 10.
Magnesium (Mg)	When soil test Mg is below 0.8 meq/100 g or 100 ppm, replace 1 ton lime/acre of the lime requirement with 1 ton dolomite/acre. See page 5.
Calcium (Ca)	When soil test Ca is below 5 meq/100 g or 1,000 ppm, apply 1 ton lime/acre. See page 4.
Boron (B)	For clover pastures, 2 to 3 lb B/acre is recommended when soil test B is below 0.7 ppm. Use a broadcast application; do not band B. See page 11.

Established stands

Lime	For stand age under 5 years, top-dress lime if pH in the top 6 to 8 inches is below 5.5. For stand age over 5 years, top-dress lime if pH in the top 2 inches is below 5.5. Follow Table 2, page 4.
Nitrogen (N)	Top-dress N when grass is actively growing in early spring and early fall. On irrigated pastures, apply additional N in the summer. See Table 3, Figure 4, and pages 6–9.
Phosphorus (P)	When soil test P is below 30 ppm, top-dress P in either the fall or spring. See Table 4 and page 10.
Potassium (K)	When soil test K is below 200 ppm, top-dress K in either the fall or spring. See Table 5 and page 10.
Sulfur (S)	Top-dress sulfate-S in the spring or fall at a rate of 20 to 30 lb S/acre every year or 40 to 50 lb S/acre every other year. See page 10.
Magnesium (Mg)	When soil test Mg is below 0.8 meq/100 g or 100 ppm, apply either 1 ton dolomite/acre (if pH < 5.5) or 500 lb K-Mag/acre (if pH > 5.5). See page 5.
Calcium (Ca)	When soil test Ca is below 5.0 meq/100 g or 1,000 ppm, apply 1 ton lime/acre. See page 4.
Boron (B)	For clover pastures, broadcast application of 2 to 3 lb B/acre is recommended when soil test B is below 0.7 ppm. See page 11.
Selenium (Se)	Refer to <i>Selenium Supplementation Strategies for Livestock in Oregon</i> (EM 9094) to determine whether you should consider correcting Se deficiencies in grazing animals via fertilizer applications. See page 11.
Molybdenum (Mo)	For clover pastures, Mo deficiencies can be corrected by following lime recommendations in this guide. See page 11.

Collect samples from the tillage depth, about 6 to 8 inches for pastures in this region. For complete instructions on how to take a soil sample, see *A Guide to Collecting Soil Samples for Farms and Gardens* (EC 628). Additional information on soil sampling frequency and the management unit approach can be found in *Monitoring Soil Nutrients Using a Management Unit Approach* (PNW 570).

For fields that have been established for more than 5 years and for no-till systems, a stratified sampling approach provides additional information for long-term management. Dividing the sample into two parts, surface to 2 inches and 2 to 6 inches, for separate analyses can reveal accumulation of less mobile nutrients near the soil surface. To learn more about the stratified sampling approach, see *Evaluating Soil Nutrients and pH by Depth in Situations of Limited or No Tillage in Western Oregon* (EM 9014).

For pastures west of the Cascades, soil samples should be analyzed for the following:

- pH (1:2 soil:water ratio)
- Lime requirement test (SMP buffer method)
- Plant-available phosphorus (P) (Bray P1 method)
- Extractable potassium (K), calcium (Ca), and magnesium (Mg)

In fields where clover and other legumes are grown, also analyze for hot-water-extractable boron (B).

Soil testing for nitrogen (N) and sulfur (S) in pasture systems is not recommended, as these tests are poor predictors of the plant availability of these nutrients.

When selecting a laboratory to analyze samples, contact the lab to confirm that they do the recommended tests and to determine shipping and handling procedures. To find a lab specializing in soil testing, refer to *Analytical Laboratories Serving Oregon* (EM 8677). A current list of soil testing labs that are accredited through the North American Proficiency Testing Performance Assessment Program (NAPT-PAP) can be found at <https://www.naptprogram.org/pap/labs>.

Soil acidity, lime, Ca, and Mg

Soil acidity

Soils in western Oregon and western Washington are naturally acidic. Repeated applications of ammonium-based N fertilizers can contribute to additional soil acidification.

Soil pH is a measure of soil acidity. Acidic soil conditions occur when soil pH levels are below 7.0. Soil pH decreases with increasing acidity.

As soils become more acidic, forage yields are reduced due to a combination of nutrient toxicities (aluminum or manganese) and nutrient deficiencies (P, K, Ca, Mo, or N). Highly acidic soils greatly limit the effectiveness of fertilizer applications, as chemical and biological processes in the soil prevent many nutrients from being in a plant-available form.

The recommended minimum soil pH for most grasses and legumes grown in pasture systems is between 5.5 and 6.0, depending on the plant species. Minimum recommended soil pH values for specific species are listed in Table 1.

Some plants may persist below these soil pH levels, depending on factors such as soil type and rooting depth. However, when soil pH is below recommended levels, forage yield and quality can decline dramatically in response to even a minor decrease in soil pH. Plant species shift can also occur at pH levels below 5.5, with acid-tolerant grasses such as bentgrass persisting over less acid-tolerant plant species such as white clover and orchardgrass. To learn more about general concepts related to soil acidity, see *Soil Acidity in Oregon* (EM 9061).

Applying N fertilizer will not combat acidity. More information on acidification and N fertilizers can be found on page 9 under “Nitrogen fertilizer source.”

Table 1. Minimum recommended soil pH levels for pasture plant species commonly grown in western Oregon and western Washington.

Recommended minimum soil pH					
	5.0	5.2	5.5	5.8	6.0
	More acid tolerant -----> Less acid tolerant				
Grass	Bentgrass	—	Annual ryegrass Tall fescue Perennial ryegrass	Orchardgrass	—
Legumes	—	Subterranean clover	Crimson clover Peas Vetch	White clover	Red clover

Adapted from *Soil Acidity in Oregon: Understanding and Using Concepts for Crop Production* (EM 9061) Appendix A.

Lime

The most cost-effective method for correcting soil acidity is lime application. Lime products originate from ground limestone, which is composed of calcium carbonate compounds. The Ca ions from lime replace acidifying H⁺ ions on soil particles. The carbonate compounds then react with the replaced H ions to form water and carbon dioxide, thereby decreasing the proportion of H ions in the soil and raising soil pH. Calcium alone does not increase soil pH, so gypsum (CaSO₄), CaCl₂, CaNO₃, and other soluble Ca products are not recommended for addressing soil acidity issues.

Lime applications are often considered to be one of the most important management practices in a productive pasture system. Research conducted in Tillamook and Lane counties in Oregon showed a yield increase of 1,000 and 3,000 lb forage/acre, respectively, when lime was top-dressed at a rate of 2 ton/acre (Rogers, 1995). The effects of a lime application may last only 2 or 3 years. Therefore, plan to apply lime regularly to maintain forage quality and yields.

Lime applications are costly, and growth response to lime may take between 6 months to a year. To reduce yearly cost, apply lime to one or two fields each year. Avoid spreading a small amount of lime over a large number of fields, as applications of less than 0.5 ton/acre may be too small to significantly increase soil pH. Think of lime as an “investment” that will pay back over many years each time livestock graze and with each hay or silage harvest.

Lime application recommendations are based on SMP buffer test results. Follow the guidelines in the soil testing section of this guide (page 3) to determine the appropriate soil sampling depth for your specific pasture conditions.

Apply lime to grass and grass/clover pastures if the soil pH is below 5.5. Use the soil test SMP buffer value and Table 2 to determine the amount of lime required. Note that lime application rates are reduced for established fields to avoid smothering plants with the lime material.

The lime recommendations in Table 2 are based on a target soil pH value of 5.8. For fields with less acid-tolerant species, consider using the upper end of the recommended lime application rate. If it is cost-prohibitive to add the recommended amount of lime, even a lower lime rate of 1 to 2 ton/acre will be beneficial.

To ensure adequate soil pH for several years and to avoid the

need for a top-dress lime application, a reasonable approach is to raise soil pH to 0.2 to 0.3 pH unit above the recommended minimum pH level in Table 1. To achieve this goal, increase lime application rates by approximately 0.5 ton/acre above the recommendations in Table 2.

For new seedings established with tillage, preplant application of lime to bare soil is the most effective application method and produces the fastest response. The material can be thoroughly mixed into the soil ahead of planting so that it has time to react and change the pH throughout the tillage depth. In addition, a large amount of lime can be added during field cultivation, thereby quickly raising a low soil pH to desired levels.

For existing pastures or no-till pastures, top-dress lime before fall rains begin and soils become muddy and waterlogged. During the first winter, lime will move only about 1 inch below the soil surface.

When top-dressing, apply no more than 2 ton/acre of the appropriate lime source to avoid smothering or injuring plants (Table 2). Top-dressed lime applications above 2 ton/acre will produce little or no additional soil pH or crop response (Rogers, 1995).

Avoid grazing livestock on recently limed fields, as lime materials can cause eye injury and respiratory issues. To avoid this risk, producers often delay grazing until the spring following a lime application.

Calcium (Ca) and magnesium (Mg)

Calcium is needed by plants to support cell wall structures, while Mg is needed for chlorophyll and protein synthesis. Calcium and Mg usually exist in the soil in adequate quantities when soil pH is above 5.5. If the Ca soil test is below 1,000 ppm (5 meq Ca/100 g of soil) and soil pH is above 5.0, add 1 ton lime/acre.

Table 2. Lime application rates for grass or grass/white clover pastures.¹

If the SMP buffer test for lime is ²	At seeding	Established field
	Apply this amount of lime and incorporate (t/a)	Top-dress this amount of lime (t/a)
Below 5.5	4 to 5	2
5.5 to 5.8	3 to 4	2
5.8 to 6.1	2 to 3	2
6.1 to 6.5	1 to 2	1 to 2
Above 6.5	0 to 1	0 to 1

¹Liming rate is based on 100-score lime, which is an index of calcium carbonate content, moisture, and fineness. For more information about lime materials and lime score, see EM 9057, *Applying Lime to Raise Soil pH for Crop Production (Western Oregon)*.

²OSU lime recommendations are calibrated specifically for the SMP buffer. Recommendations have not been established for Sikora or other buffer pH methods.

Maintaining sufficient levels of Mg in the soil is especially important in pasture systems to prevent grass tetany, a livestock disease caused by Mg-deficient forage. When soil requires lime and is low in Mg (less than 100 ppm or 0.8 meq Mg/100 g of soil), use 1 ton/acre dolomitic lime as a source of both Ca and Mg. Dolomitic lime and ground limestone have about the same ability to neutralize soil acidity. If lime is not needed and Mg levels are low, apply K-Mag (21% K, 10% Mg, 21% S) at a rate of 500 lb K-Mag/acre. For more information on managing soils to prevent grass tetany, see the sidebar “Grass tetany” or visit “Spring Pastures—Grass Tetany and Bloat” at <http://www.ansc.purdue.edu/beef/articles/GrassTetanyBloat.pdf>.

Nitrogen (N)

Nitrogen fertilization is an important practice in pasture production systems, as N is needed by forage crops to support plant growth, protein synthesis, and tillering (see the sidebar “Grass yield and protein response to N fertilizer”). Forage yield and feed quality are reduced when N is insufficient, while excessive N can result in forage nitrate toxicities, nitrate leaching, and production of forage in excess of what can be consumed by grazing animals. Nitrogen deficiencies in pastures often can be detected visually. The majority of the stand will appear pale green, with urine and manure areas remaining dark green.

New pastures

For new pasture stands, an application of 20 to 25 lb N/acre is recommended at seeding. Fertilizer N can be broadcast or banded approximately 1 to 2 inches below the seed. If fertilizer is banded, application rates

Grass tetany

Grass tetany, also called hypomagnesemia or low blood serum magnesium, is characterized by an uncoordinated gait, convulsions, coma, and animal death. It is primarily due to low dietary Mg but can also be caused by a certain combination (ratio) of minerals in the diet. Several factors associated with fertilizing practices can lead to grass tetany in grazing livestock.

Soil conditions:

- Soils low in Mg lead to forages low in Mg.
- Rapid plant growth after N fertilizer application can reduce plant Mg concentration.
- Excessive K fertilization leads to high K concentrations in forage, which can reduce Mg concentrations.

Forage conditions:

- Forage Mg percentage is an indicator of tetany risk:
 - *Tetany-prone*: less than 0.12 percent Mg
 - *Marginal*: 0.12 to 0.18 percent Mg
 - *Safe*: 0.2 to 0.25 percent Mg
- A forage tetany ratio greater than 2.2 is not safe for livestock consumption. This ratio is calculated as: $(\%K/39) / [(\%Ca/20) + (\%Mg/12.1)]$

Avoid these conditions by following recommendations for Mg, N, and K fertilizer applications. Delay K fertilization until after the early-spring tetany period. Avoid grazing animals with high Mg requirements, such as cows in early lactation, on pastures that might contribute to grass tetany. To be safe, add supplemental Mg to the ration or to a mineral block.

Grass yield and protein response to N fertilizer

Grass responds to applied N by increasing dry matter yield and protein. Forage protein requirements differ, depending on the type of livestock and its age/maturity. Forage analyses for crude protein can be used to adjust the N fertilizer application rate to meet site-specific forage quality goals.

Figure 1 demonstrates the relationship between N fertilizer rate, grass yield, and protein. At low rates of N fertilizer input, grass yield increases, while protein remains low. Each increment of additional N fertilizer increases yield by a smaller amount (diminishing returns). When grass no longer responds to N input with increased yield, the added N contributes to an accelerated rate of increase in grass protein.

Although grass in this field trial was not grazed, the growth stage harvested (late vegetative growth; 15- to 18-inch height) and the harvest interval (30 to 40 days) was similar to that recommended for grazing.

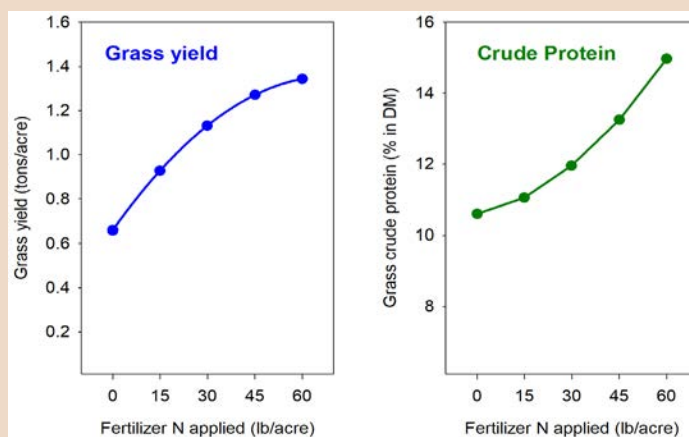


Figure 1. Nitrogen fertilizer increases yield and crude protein in tall fescue harvested at the late vegetative growth stage. Granular N fertilizer (34-0-0) was applied at 0 to 60 lb N/acre after each harvest, a few days prior to sprinkler irrigation. Puyallup, WA, Puyallup sandy loam soil, 3 percent soil organic matter. Adapted from Sullivan, et al., 2002.

should not exceed 100 lb N + K₂O/acre to avoid seed germination issues caused by salt burn.

Established pastures

For established fields, factors such as plant species, forage yield potential, and time of year influence the optimal amount of N required by the pasture crop to produce high-quality and high-yielding forages. See the following guidance to understand how each of these factors affects N use in forage pastures.

Plant species

Forage pastures are typically composed of high-yielding grasses (e.g., annual ryegrass, perennial ryegrass, orchardgrass, tall fescue) and legumes (e.g., white clover, subclover and other annual clovers, red clover, annual or hairy vetch, birdsfoot trefoil) or a combination of the two. High-yielding grasses will readily absorb plant-available forms of N (nitrate-N and ammonium-N). Low-yielding grasses, including bentgrass, velvetgrass, and rattail fescue, have naturally low forage yield and quality potential. Thus, they have a lower requirement for N than high-yielding species.

The presence of legumes in a pasture (Figure 2) reduces the amount of N fertilizer needed to support forage production. Legumes can produce their own N through the process of biological N fixation. *Rhizobium* or *Bradyrhizobium* bacteria infect legume roots, and the resulting root nodules convert N₂ gas from the atmosphere to ammonium-N compounds that can be used by the plant. An example of the N contribution of legumes is shown in Figure 3.

Although most pasture fields have naturally abundant *Rhizobium* bacteria, naturally occurring bacteria often are less efficient than those in commercially available inoculum. Thus, inoculation of legume seed is recommended when legumes are planted.

When excessive amounts of N are available, N fixation is reduced, and legumes behave like grasses by using N from the soil instead of fixing N₂ from the atmosphere. Applying excessive N to a mixed grass/legume stand will also shift the stand composition toward grass species, resulting in lower forage quality and increased N fertilizer requirement over time.

Realistic yield potential

Effective N management practices in pasture systems are based on realistic estimates of forage yield for individual fields. Each pasture has an upper limit to how much yield can be achieved. Yield potential is influenced by soil texture, soil depth, drainage, forage type, precipitation, temperature, weed pressure, manure application history, and irrigation practices. For more information, see Appendix 2 (page 13).

Nitrogen fertilizer response of mixed grass/legume stands

Nitrogen fertilizer application rates should take into consideration the species and density of grasses and legumes present. Forage stands that contain significant amounts of legumes require less N from fertilizer.

Figure 2 shows that relatively high forage yields can be produced with minimal N fertilizer inputs when legumes are present. In Figure 2, the same dry matter yield was produced with:

- Grass alone, with a fertilizer rate of 125 lb N/acre
- Grass/legume mix with no N fertilizer applied

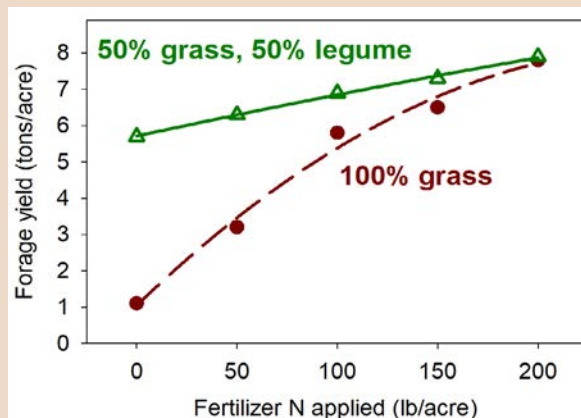
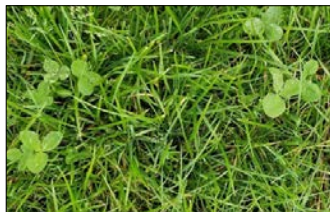


Figure 3. Forage dry matter yield response to N fertilizer in irrigated grass/legume pastures. Pastures were grazed by beef cattle three or four times annually. Approximately half of the annual forage dry matter yield was produced by a hay crop. Data collected at field sites near Ogden, UT. Adapted from Koenig, et al. (2002).

100% grass



75% grass/25% legume



50% grass/50% legume



25% grass/75% legume



Figure 2. Visual guide for grass:legume ratio in pasture. Legumes contribute plant-available N, so N fertilizer applications can be reduced as the percentage of legume increases.

Photos: Amber Moore, © Oregon State University

Time of year

Nitrogen application should be coordinated with appropriate temperatures, moisture availability, and the need for an increase in forage yield. Nitrogen applications are not recommended in November and December, as N applied to cold, wet soils in winter can be leached beyond the root zone or washed off the fields in runoff before slow-growing plants can use the fertilizer.

Winter to early spring (January to April). Proper N management is especially important during winter and early spring, as adequate N is needed to support rapid plant growth between April and June. Local temperatures impact the start date for winter/early-spring fertilization. For example, pastures in the warmer south-coast region may respond to N fertilizer applied in January or early February, while pastures in the cooler Cascade

regions may not respond to N fertilizer applications until mid-March or early April. An N application timing schedule specific to pastures in subregions of western Washington and western Oregon is illustrated in Figure 4.

PASTURE NITROGEN CALENDAR												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
North coast		→				→			→			
South coast	→						→		→			
Puget Sound, I-5 corridor, inland western WA		→				→			→			
Willamette Valley		→			→				→			
Cascade foothills			→			→		→				

Figure 4. Pasture N calendar. Additional applications for irrigated pastures are indicated by dashed lines. This calendar is only an approximation, based on typical climatic conditions of pasture production subregions in western Oregon and western Washington. Other site-specific factors should be considered when determining the exact timing of N fertilizer application, as described in the “Time of year” section.

T-Sum method for early-spring forage production on grazed pastures

For well-managed pastures containing grass species, the T-Sum method can be used to estimate the appropriate date for the first N fertilizer application. T-Sum 200 is an accumulation of growing degree days (or heat units) on a Celsius degree basis, starting on January 1. See Appendix 3 (page 14) for T-Sum calculation details.

The T-Sum 200 date falls between late January and early February, depending on the year and location. Typical early-spring N fertilizer application dates based on T-Sum are:

- **Western Oregon** (Willamette Valley): January 25 to February 15
- **Western Washington** (30-year average): Aberdeen (February 8), Centralia (February 10), Buckley (February 14), Mt. Vernon (February 16)

Nitrogen applied at T-Sum 200 can increase the amount of early forage produced for grazing livestock. Field research in Coos, Douglas, Tillamook, and Benton counties (Oregon) demonstrated an average increase in harvestable dry matter of 750 to 1,000 lb/acre from a T-Sum 200 application of 60 lb N/acre (Pirelli, et al., 2004; Peters and Hart, 2007). The recommended N application rate at T-Sum 200 is 40 to 60 lb N/acre, depending on the grass yield potential.

The T-Sum 200 method for early N application is not appropriate for all pastures, as a pasture with a poor stand may have growth-limiting factors that would prevent plant growth response to an early N application. Below are

characteristics of a field that would be well suited for use of the T-Sum 200 method:

- *Fields containing grass or a grass/legume forage mix*, such as tall fescue, orchardgrass, or perennial ryegrass combined with a clover. Bentgrass and legume-only pastures are not ideal for early-spring N application.
- *Fields that are not overgrazed in the fall*. Adequate leaf area in the fall ensures that plants have sufficient carbohydrate for winter survival and early-spring growth. For optimal response to T-Sum fertilization, 3 inches of forage should remain throughout the winter.
- *Well-drained fields free of standing water*. Wet, poorly drained soil does not permit forage growth.
- *The field is accessible to equipment for N application in January/February*.
- *The field has enough plant growth to support grazing in March or early April* without damaging the grass stand or the field. Three inches of forage should remain after spring grazing.
- *Soil pH and fertility are properly managed*, following recommendations provided in this publication.
- *Soil compaction and other production factors are not greatly limiting crop growth*.

In summary, the N application at T-Sum 200 can be used in western Oregon and western Washington to increase forage yield on fields that are well positioned to respond to an early application of N.

Another site-specific factor that impacts winter/early-spring fertilization is precipitation and drainage. In western Oregon and western Washington, heavy rainfall may cause pastures to become saturated. On poorly drained soils, N applications must be delayed until there is no standing water and the soil water table has dropped enough to allow safe use of fertilizer application equipment.

See the sidebar “T-Sum method for early-spring forage production on grazed pastures” (page 7) for more information.

Late spring to early summer (April to July).

Intensively grazed pastures that are expected to produce a high level of forage through June should receive additional applications of N. For grass pastures, N fertilizer applications should follow each cutting or major grazing event, so multiple applications may be required. For grass/legume pastures, N fertilizer applications may be less frequent.

After mid-May, apply N only if moisture is sufficient for additional growth. July applications are recommended only for irrigated coastal pastures.

Late summer to fall (August to September). In western Oregon and western Washington, the pasture growing season begins when fall rains begin. Do not apply fall N if adequate rain does not fall until late October or if the air temperature drops below freezing in October, as these conditions will greatly limit fall tillering and growth.

Many growers apply fertilizers to dry soil and note that the granules disappear before any rain falls, raising concerns that fertilizer N may have been lost to the atmosphere through ammonia volatilization. Although a small amount of fertilizer N may be lost this way, most

of the “missing” N fertilizer has been dissolved by dew and has moved into the surface soil.

Although limited use of N fertilizer in the fall can stimulate forage regrowth after fall rains, it is important to recognize that too much fall N can lead to vigorous plant growth that reduces winter hardiness. As temperatures decline in the fall, plants produce a type of “antifreeze” called proline. This antifreeze accumulates in every living plant cell, but only when excessive N is not available. Thus, excess N inhibits plants from preparing for winter, leaving them susceptible to injury or death from the first major cold event.

Other factors

Other factors may increase N requirements above recommendations in this publication, including low soil organic matter content (less than 2 percent) and harvesting of forage for hay. Factors that can decrease N requirements below recommendations include a history of manure or biosolids applications, N recycling from intensive grazing, high soil organic matter content (greater than 4 percent), and anything that limits plant growth (weed pressure, high water table, acidic soil conditions, extreme weather conditions, etc.).

Recommended N rates

Annual N recommendations are provided in Table 3 to give a general idea of the amount of N needed for optimal growth. However, because so many factors influence N management in pasture systems, you should expect to adjust these values as needed to reflect your specific situation. The N recommendations in Table 3 are based on those found in *Pasture and Grazing Management in the Northwest* (PNW 614). For information on estimating yield potential, see Appendix 2 (page 13).

Table 3. Annual nitrogen recommendations for grazed pasture systems in western Oregon and western Washington, based on realistic yield potential and plant composition.

	Yield potential of the field			
	1–2 ton/acre ¹	2–4 ton/acre	4–6 ton/acre	6–8 ton/acre
	N recommendation (lb N/acre)			
100% grass	50	75 ²	100 to 150 ²	150 to 200 ²
75% grass/25% legume	25	50	75 to 100 ²	100 to 150 ²
50% grass/50% legume	0	25	50	75
25% grass/75% legume	0	0	25	50

Adapted from *Pasture and Grazing Management in the Northwest* (PNW 614)

¹T-sum applications are not economical for low-yielding pastures.

²For higher yielding pastures with grass-dominated plant species, split the total N rate into two or three separate applications following guidelines in this publication and the N application calendar in Figure 4 (page 7).

Nitrogen fertilizer source

Common granular N fertilizers for pasture include urea (46-0-0) and ammonium sulfate (21-0-0-24S). Common liquid fertilizers include urea-ammonium nitrate (32-0-0) and ammonium polyphosphate (10-34-0).

Some of the N from some granular or liquid N fertilizers can be lost as a gas (ammonia; NH_3) during the first week after N fertilizer application to pasture. This type of N loss is of concern only with urea and fertilizer mixtures that contain urea (e.g., urea-ammonium nitrate). Fertilizers that do not contain urea (e.g., ammonium sulfate) do not lose a significant amount of N as NH_3 gas. Losses of N as ammonia gas can be high (10 to 30 percent of N applied). However, on western Oregon pastures, losses typically are less than 5 percent of N applied. Irrigation or rain (more than 0.5 inch) within a few days after application moves urea into the soil and reduces the amount of N lost as gas.

Newer N fertilizer products include additives to reduce ammonia loss following fertilizer application. Products such as polymer-coated urea or urea treated with a urease inhibitor (e.g., Agrotain) can reduce

ammonia loss from surface-applied urea. However, they are unlikely to routinely prevent enough NH_3 loss to justify their extra cost. The risk of NH_3 loss is highest with early-fall N fertilizer applications to dry soil, so fertilizer additives that reduce ammonia loss are most likely to provide benefit under these conditions.

Nitrogen fertilization is the most important driver for soil acidification (decreased soil pH) in pastures. The most acidifying fertilizers supply all of their N as ammonium-N. Fertilizers that supply some N as urea are less acidifying per pound of N. Manure, compost, and other organic N sources are generally less acidifying than commercial N fertilizers, as they contain mostly organic N and also supply basic cations (Ca, Mg, K, and sodium). *Soil Acidity in Oregon: Understanding and Using Concepts for Crop Production* (EM 9061) provides a quantitative comparison of acidity produced by various N fertilizer materials in soil.

See the sidebar “Supplying nutrients to pasture with manure or municipal biosolids” for additional information about using organic materials to supply N for pastures. Not all “organic” sources are allowed under certified organic production rules (e.g., National Organic Program). Contact your organic certifier regarding appropriate organic sources.

Supplying nutrients to pasture with manure or municipal biosolids

Animal manures or municipal biosolids can be used to supply a portion of the nutrients needed for pasture. Both biosolids and manure supply N, P, Ca, Mg, S, and micronutrients. Manure also provides K, but biosolids do not contain significant amounts of K.

Manure and biosolids vary in nutrient composition depending on water content, added materials (e.g., bedding), and processing (composting or “aging”). A recent nutrient analysis of your manure or biosolids source is always recommended. General “book values” for manure nutrient content can be found in *Fertilizing with Manure and Other Organic Amendments* (PNW 533). You can read more about municipal biosolids in *Fertilizing with Biosolids* (PNW 508).

Manure or biosolids contain both rapidly available N (in ammonium form) and slowly available N (in organic form). Relative to urea, biosolids and manure are generally 30 to 50 percent as effective per unit of total N applied during the first year after application (Sullivan, et al., 2000; Cogger, et al., 2001). Thus, biosolids or manure applied at 100 lb total N/acre will supply 30 to 50 lb plant-available N/acre. Most of the plant-available N from manure or biosolids is utilized by the first two or three forage harvests after application.

Unlike mineral fertilizers (e.g., urea), biosolids or manure can be applied in fall and will stimulate pasture growth early in the following spring. Fields for fall or early-spring manure or biosolids application must be managed carefully to prevent runoff.

When any N source (manure, biosolids, or urea) is applied, soil becomes more acidic with time. The acidity results from the nitrification process (conversion of ammonium to nitrate-N). At a given rate of plant-available N application, biosolids and urea have a similar soil acidification effect. Manure is slightly less acidifying than urea.

Only a few manures (e.g., dairy solids from lagoons or mechanical solids separators) are suitable for high-rate application to supply P and K prior to reseeding a pasture. These manures generally contain 1 to 2 percent total N and have a C:N ratio of 15 or greater. Most other manures or biosolids will supply too much N if applied at rates needed to supply P and K.



Photo: Dan Sullivan, © Oregon State University
Figure 5. Application of dairy slurry at a research trial (Sullivan, et al., 2000), Buckley, WA.

Phosphorus (P)

Adequate levels of soil P are important for root production in grass and clover pastures. Phosphorus applications favor legumes; therefore, they can be used to support legume growth in a grass/legume pasture.

Visual symptoms of pastures with inadequate P include limited root mass and depth (which can be difficult to quantify without a comparison), stunted aboveground forage (short, small leaves), and a light to dark purple color on leaves and/or stems of both grasses and clovers.

Because P binds to the soil, it can accumulate in the soil and does not need to be applied as often as N. Phosphorus accumulation can be documented with soil testing.

Recommendations for P application rates based on the Bray P soil test are provided in Table 4.

For new seedlings, P fertilizer may be banded with the seed or broadcast and incorporated prior to seeding. Band 1 to 2 inches to the side or below the seed to avoid burning newly emerging seedlings.

For established fields, P can be applied in either the fall or spring. Fall P applications can be advantageous, as pasture grasses are developing their primary growing points and roots at this time. Spring applications can also be useful, as cool spring temperatures and acidic soil conditions reduce P solubility, thus inhibiting new root development and P uptake by plants. In either case, apply P to established pastures before growth begins.

Potassium (K)

Potassium supports water transport and metabolic function in pasture plants and, therefore, is essential for optimal growth of clover/grass pastures. Potassium is particularly important for legume species, as grasses compete with clovers for K.

High-producing pastures can rapidly decrease soil test K values. Potassium deficiency is indicated by light-colored spots around the margins of clover leaves and yellow to brown coloring of grass leaf tips. However, growth responses to K fertilizer often can be obtained before deficiency symptoms are detected.

If you apply K-rich animal manures to your pasture, be mindful of the potential for excessive levels of K, which can lead to grass tetany issues for grazing animals.

Potassium fertilizer guidelines are found in Table 5. For new pastures, broadcast K and incorporate into the seedbed prior to seeding. If the soil test is below 125 ppm, band an additional 20 lb K₂O at the time of planting. Potassium can be banded with N and P. If fertilizer is banded, application rates should not exceed 100 lb N + K₂O/acre to avoid seed germination issues caused by salt burn. At least 1 inch of soil should separate the seed and fertilizer. Note that K fertilization at planting will not meet the need for K in subsequent years.

For nonirrigated established pastures, apply K in the fall or spring, following recommendations in Table 5. In high-yielding irrigated pastures, split applications (late spring and midsummer) are recommended to reduce K-induced Mg deficiencies that may lead to grass tetany. For more information, see the sidebar “Grass tetany” (page 5) or “Spring Pastures—Grass Tetany and Bloat” (<http://www.ansc.purdue.edu/beef/articles/GrassTetanyBloat.pdf>).

Sulfur (S)

Plants take up S in the form of sulfate (SO₄). For new fields, broadcast or band sulfate-S fertilizers at a rate of 15 to 25 lb S/acre. On established fields, top-dress S at a rate of 20 to 30 lb S/acre annually or 40 to 50 lb

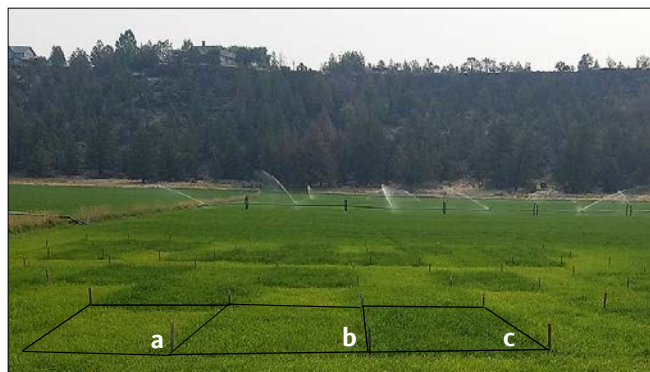


Photo: Mylen Bohle, © Oregon State University

Figure 6. Experimental plots compare N and S treatments: (a) no N or S application, (b) 60 lb N/acre with no S, and (c) 60 lb N/acre with S added. Orchardgrass in Terrebonne, OR.

Table 4. Phosphorus application rates for pastures.

If the Bray soil test for P is (ppm)	Apply this amount of phosphate (P ₂ O ₅) (lb/a)
0 to 15	100 to 60
15 to 30	60 to 0
Above 30	0

Table 5. Potassium application rates for pastures.

If the soil test for K is (ppm)	Apply this amount of potash (K ₂ O) (lb/a)
0 to 125	150 to 100
125 to 200	100 to 70
Above 200	0

S/acre every 2 years. Sulfate-S fertilizers can be applied in fall or spring with good results. Figure 6 (page 10) shows plant response to S application.

Nitrogen fertilizer applications without adequate S fertilization can result in rapid decline of the clover component of a grass/clover mixture. An N:S ratio greater than 10:1 in a forage tissue analysis may indicate S deficiency. Sulfur-deficient plants respond rapidly to sulfate-S application. During the rainy season, plants can recover from S deficiency in 3 to 4 weeks following a broadcast sulfate-S application.

Fertilizers containing sulfate-S include ammonium sulfate (24% S), gypsum (16 to 19% S), and potassium magnesium sulfate (21% S; often called K-Mag or Sul-Po-Mag). Fertilizer dealers also offer fused prills of urea-ammonium sulfate, such as Urea-Sul (33% N, 11% S). Sulfate fertilizers are not very water soluble, so they typically are not fertigated. Liquid fertilizer N:S mixes typically contain thiosulfate (S_2O_3); the most common is ammonium thiosulfate (12% N, 26% S).

Sulfur can also be supplied as elemental S. Elemental S acidifies soil and slowly releases plant-available sulfate-S. To be an effective S source, elemental S must be applied well ahead of crop demand or be of very fine particle size (less than 0.1 mm diameter; Rasmussen and Kresge, 1986).

Selenium deficiencies can be triggered by S applications. See PNW 614, *Pasture and Grazing Management in the Northwest* (chapter 3, “Soils, Fertility, and Nutrient Management for Pastures”) for more details.

Boron (B)

Legumes have a higher B requirement than grasses, as B is used to support root nodulation in legume crops. Too much B can be highly toxic to plants and animals. Therefore, apply B only if soil tests indicate a need. Do not exceed suggested rates.

If the soil test for B is below 0.7 ppm, an application of 2 to 3 lb B/acre is recommended. Spring applications are preferred because B, like N and S, can leach. However, fall applications are also appropriate.

To avoid acute B toxicity issues, never band B-containing fertilizer materials. Distribute B evenly over the field. Solubor (sodium borate) is a suitable source of B. It can be applied evenly over a field via spray application. Dry B fertilizer can be mixed with other fertilizers. However, be aware that crop damage can occur if too much B is added or if B is not evenly dispersed throughout the fertilizer blend.

Selenium (Se)

Selenium is not an essential plant nutrient, but it is an essential nutrient for animals. A variety of methods can be used to provide Se to animals, including applications of Se-enriched fertilizers to pastures and forage crops. To learn more about strategies for providing Se to grazing animals via Se fertilization, see *Selenium Supplementation Strategies for Livestock in Oregon* (EM 9094).

Molybdenum (Mo)

Molybdenum is used by legumes to facilitate N fixation. Existing Mo in the soil becomes more plant-available as pH increases in acidic soils. Therefore, liming to maintain soil pH above the recommended threshold (pH 5.5 for most pasture species) is an effective way to ensure adequate Mo supply.

If soil acidity can't be overcome with lime applications, and tissue Mo is below 0.3 ppm, legumes may benefit from an application of 0.4 lb Mo/acre. Molybdenum can be applied in a foliar spray as sodium molybdate.

Keep in mind that an application of Mo will correct only Mo deficiency issues. It will not correct Mn toxicity, Al toxicity, P deficiency, Ca deficiency, Mg deficiency, or other issues caused by acidic soil conditions. Therefore, liming is the best way to correct Mo deficiency issues, as it will correct these related problems at the same time.

Molybdenum toxicities in livestock, or molybdenosis, can occur when Cu:Mo ratios in forage tissue are below 2:1. While uncommon, this problem can occur on fields low in Cu that receive excessive Mo applications. If you suspect Mo toxicities, monitor forage concentrations of Mo and Cu. To learn more, see Meyer, et al., 1999.

Appendix 1. Plant Growth Phase, Grazing Management, and Nutrient Management

Although growth rates are influenced by temperature, moisture, solar radiation, and overall soil fertility, grazing management has a profound impact on pasture production. Plant growth phases are used to describe pasture growth and the potential for forage production (Figure 7). Phase I (lag phase), Phase II (vegetative or log phase), and Phase III (maturity or senescence phase) describe the stages of growth and their impacts on grazing and forage production.

In **Phase I**, plants grow slowly because they lack sufficient leaf area for photosynthesis. In western Oregon and Washington, a pasture with less than 3 inches of plant height is considered to be in Phase I and should not be grazed until growth exceeds 3 inches. Keeping pasture plants in Phase I greatly reduces their response to nutrient application. It also can have negative effects on animals, such as grass tetany in the spring or weight loss due to low forage intake. If the pasture is constantly overgrazed throughout the growing season, it will not transition out of Phase I into more advanced growth phases.

Phase II (3 to 12 inches of growth) is desired in pastures. Plants grow most rapidly and efficiently in this stage. When grazing animals reduce pasture height to 3 inches, move the animals to another pasture with adequate growth. The resulting rest period will allow for regrowth in the first pasture. Managing pastures in this manner, referred to as a rotational grazing system, allows plants to develop sufficient leaf area for efficient use of sunlight. During hot weather, leaving 4 inches of growth will reduce soil temperatures as much as 10°F compared to an overgrazed pasture in Phase I.

It is important to maintain pastures in Phase II during the critical late-summer and early-fall period. Two major plant activities occur during this period: root regeneration and formation of shoots (growing points) for the following year. Overgrazing or excessive forage harvest inhibits root system rebuilding and the formation of shoots for spring growth, resulting in reduced forage production during the next growing season. Allowing plants to store carbohydrates in the fall is also essential for long-term pasture production.

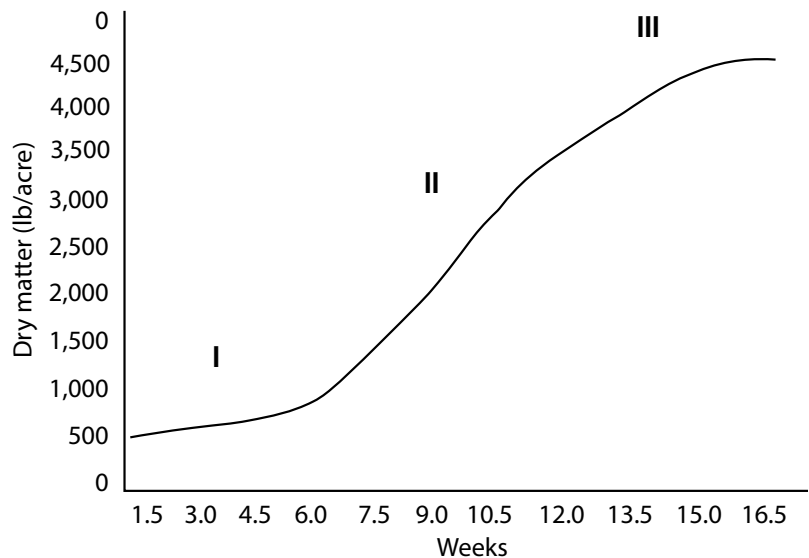


Figure 7. Example of orchardgrass growth phase response to time. Data collected at Monmouth, OR, March to July 1985. Data from G. Pirelli.

Finally, the insulation from taller forage keeps plants growing later in the fall and helps start growth earlier in the spring.

Do not graze plants below 3 inches in late summer and fall, even if the plants are dry and dormant. Grazing below this height will reduce forage response to a T-Sum 200 N application the next year.

Phase III (greater than 12 inches, varying by species and variety) is the reproductive phase. During this phase, plant growth slows, the lower leaves become shaded and die, and the seedhead emerges. Grazing efficiency is reduced due to trampling, the response to nutrient application is reduced, and animal performance suffers.

The most efficient use of Phase III pasture is as conserved forage, such as hay or silage. With the major perennial grass and legume pasture species grown on the westside, regrowth will emerge following a hay or silage harvest, assuming nutrients and water are adequate. Plants will again progress through Phase I and Phase II if conditions allow. The ability to manage pasture species strictly as pasture or in combination with one or more hay or silage harvests is one of the greatest attributes of westside pastures.

Appendix 2. Realistic Yield Estimations

By estimating a pasture's realistic yield, you can determine the amount of N needed to support optimal forage quality and yield. Yield potential is influenced by soil texture, soil depth, drainage, forage type, precipitation, temperature, weed pressure, manure application history, and irrigation practices. Realistic yield estimates are based on the estimated average yield from a 3- to 5-year period.

Estimating forage yield is more challenging in grazed systems than in row crop systems because the forage is not collected at a single harvest event. A variety of methods can be used to estimate forage yield in a grazed pasture. One simple method uses a combination of animal units and bale yield estimates.

The number of animal units can help you estimate the amount of pasture dry matter consumed by grazing animals, based on the amount needed to maintain their body weight. Most grazing animals will digest approximately 2.5 percent of their body weight as feed on a daily basis. In a grazed forage system, grazed yield (dry weight basis) is estimated using the following calculation. (Grey-shaded areas represent required producer inputs.)

$$\frac{\text{no. animals}}{\text{acre}} * \text{animal wt (lb)} * \text{days in field} * 0.025 * \frac{1 \text{ ton}}{2,000 \text{ lb}} = \text{grazed forage yield (ton/acre)}$$

Table 6 shows examples of estimated grazed yield, based on animal type and typical grazing periods in western Oregon and western Washington.

In addition to grazed forage yield, pastures may also be baled for hay during peak growth seasons when forage production exceeds the amount consumed by the animals. Baled yield should be added to grazed yield to determine a pasture's total realistic yield. Baled yield (dry weight basis) can be estimated using the following

calculation. (Grey-shaded areas represent required producer inputs.)

$$\frac{\text{no. bales}}{\text{acre}} * \text{bale wt (lb)} * \frac{100 - \text{moisture content (\%)}}{100} * \frac{1 \text{ ton}}{2,000 \text{ lb}} = \text{baled forage yield (ton/acre)}$$

Table 7 lists examples of estimated baled yield, based on bale size and number of bales harvested per acre.

Other methods of estimating yield include the clipping method, the rising plate method, and the pasture ruler method. These methods are based on relatively direct measurements of plant growth or biomass content over the production season. Therefore, they are more labor intensive but potentially more accurate than the animal yield/baled yield calculations described above. To learn more about these methods, see Hall, 2007.

Table 7. Estimated baled yield (dry matter) in a pasture system that is baled for hay, based on number of bales harvested and bale weight.¹

Number of bales/a	Bale weight (lb/a)		
	70	110	1,400
	Dry matter yield (ton/a)		
5	0.1	0.2	3.0
10	0.3	0.5	6.0
20	0.6	0.9	—
40	1.2	1.9	—
60	1.8	2.8	—
80	2.4	3.7	—

¹Moisture content of forage tissue in the bales is assumed to be 15 percent.

Table 6. Estimated grazed yield (dry matter) in a grazed pasture, based on animal type, number of animals in the field, and number of days on the field.¹

Animal type			Days on pasture field			
			15	30	45	60
200-lb sheep	1,000-lb beef cattle (animals/a)	1,300-lb beef cattle	Grazed yield (ton dry matter/a/yr)			
5	1	—	0.2	0.4	0.6	0.8
10	2	1	0.4	0.8	1.1	1.5
15	3	2	0.6	1.1	1.7	2.3
20	4	3	0.8	1.5	2.3	3.0
25	5	4	0.9	1.9	2.8	3.8

¹Intake per day is assumed to be 2.5 percent of the animal's body weight.

Appendix 3. Calculating T-Sum in Oregon from Weather Data

T-Sum 200 is an accumulation of heat units (in degrees C) for consecutive days beginning January 1, until a total of 200 is reached. Research shows that certain plants such as cool-season grasses initiate growth at or near this time. A heat unit, or growing degree day (GDD), is the average of the high and low temperature for the day, in degrees Celsius. If the temperature is below 0°C, the heat unit is 0. The formula for calculating a T-Sum heat unit is:

$$\frac{\text{maximum } ^\circ\text{C} + \text{minimum } ^\circ\text{C}}{2}$$

For example, if the high for January 1 is 11.7°C and the low is 4.4°C, the number of heat units for that day is 8.1 (11.7 + 4.4 ÷ 2 = 8.1).

T-Sum calculations are available online from OSU Integrated Plant Protection Center (<http://uspest.org>). You can see degree day accumulation on a regional map or estimate T-Sum for a specific weather station using an online degree day model.

When using an online calculator, specify the following:

- Lower temperature threshold for degree day accumulation (biofix) = 0°C
- Start date: January 1
- Calculation method: Simple average growing degree days

Some online degree day calculators use degrees F; in this case, T-Sum 200 occurs when 360 degrees F have accumulated (1°C = 1.8°F).

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APPENDIX H

Geisseler Study on Crop Nitrogen Uptake

Nitrogen concentrations in harvested plant parts – Update 03/2021



Includes updated values for

- **Carrots**
- **Corn for silage**
- **Cotton**
- **Peaches**
- **Pistachios**
- **Plums**
- **Pomegranates**
- **Tomatoes, processing**
- **Safflower**
- **Sunflower**
- **Walnuts**
- **Perennial parts of trees**

Daniel Geisseler

March 31, 2021



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Summary

Nitrogen (N) balances in agricultural fields are important components of the Central Valley Irrigated Lands Regulatory Program. The ratio of N applied to N removed is a key metric for the Central Valley Regional Water Quality Control Board. The approach involves growers reporting applied N and yield to the water quality coalitions. The coalitions in turn convert yield to N removed and report various statistics to the Water Quality Control Board. Nitrogen accumulated into perennial plant tissues may also be counted as “removed”. For these calculations, reliable values of N concentrations in the harvested parts and perennial tissues of crops are needed.

The present report is an update of a similar 2016 report. Samples for carrots, silage corn, peaches, pistachios, plums, pomegranates, sunflower, safflower, and processing tomatoes were collected from Central Valley locations between 2017 and 2020 and analyzed for total N. In addition, recently published data for cotton, walnuts and N in perennial parts of almonds were included.

The updated values are highlighted in Tables 1-3. The results of the analyses are presented and discussed in more detail starting on page 10.

Table 1: Overview of N concentrations in harvested plant parts of field crops. The highlighted commodities are those updated in this report.

Commodity	Last update	N in harvested plant parts		CV (%)	Page
Alfalfa - Hay		62.3	lbs N/ton @ 12% moisture	12.5	
Alfalfa - Silage		24.0	lbs N/ton @ 65% moisture	17.5	
Barley - Grain		33.6	lbs N/ton @ 12% moisture	14.6	
Barley - Straw		15.4	lbs N/ton @ 12% moisture	31.3	
Beans, dry - Blackeye		73.0	lbs N/ton @ 12% moisture	10.4	
Beans, dry - Garbanzo		67.2	lbs N/ton @ 12% moisture	11.3	
Beans, dry - Lima		72.3	lbs N/ton @ 12% moisture	5.4	
Corn - Grain		24.0	lbs N/ton @ 15.5% moisture	20.8	
Corn - Silage	03/2021	7.53	lbs N/ton @ 70% moisture	10.9	11
Cotton	03/2021	43.4	lbs N/ton lint & seed	16.1	13
Fescue, Tall - Hay		50.8	lbs N/ton @ 12% moisture	16.2	
Oat - Grain		37.7	lbs N/ton @ 12% moisture	9.6	
Oat - Straw		14.8	lbs N/ton @ 12% moisture	34.7	
Oat - Hay		21.7	lbs N/ton @ 12% moisture	18.2	
Orchard Grass - Hay		54.5	lbs N/ton @ 12% moisture	20.0	
Ryegrass, Perennial - Hay		54.9	lbs N/ton @ 12% moisture	16.8	
Safflower	03/2021	51.7	lbs N/ton @ 8% moisture	10.2	23
Sorghum - Grain		33.0	lbs N/ton @ 13.5% moisture	29.7	
Sorghum - Silage		7.34	lbs N/ton @ 65% moisture	21.0	
Sunflower	03/2021	63.2	lbs N/ton @ 8% moisture	11.1	25
Triticale - Grain		40.4	lbs N/ton @ 12% moisture	13.0	
Triticale - Straw		11.5	lbs N/ton @ 12% moisture	38.3	
Triticale - Silage		9.03	lbs N/ton @ 70% moisture	13.7	
Wheat, common - Grain		43.0	lbs N/ton @ 12% moisture	10.3	
Wheat - Straw		13.8	lbs N/ton @ 12% moisture	33.0	
Wheat - Silage		10.5	lbs N/ton @ 70% moisture	18.6	
Wheat, durum - Grain		42.1	lbs N/ton @ 12% moisture	3.7	

Table 2: Overview of N concentrations in harvested plant parts of vegetables. The highlighted commodities are those updated in this report.

Commodity	Last update	N in harvested plant parts	CV (%)	Page
Asparagus		5.85 lbs N/ton of fresh spears	14.0	
Beans, green (snap beans)		5.78 lbs/ton of fresh weight	25.7	
Broccoli		11.2 lbs N/ton of fresh weight	20.4	
Carrots	03/2021	2.80 lbs/ton of fresh weight	22.7	10
Corn, sweet		7.17 lbs/ton of fresh ears	13.1	
Cucumbers		2.16 lbs/ton of fresh weight	17.4	
Garlic		15.1 lbs/ton of fresh weight	19.5	
Lettuce, Iceberg		2.63 lbs/ton of fresh weight	16.7	
Lettuce, Romaine		3.62 lbs/ton of fresh weight	13.7	
Melons, Cantaloupe		4.87 lbs/ton of melons	15.5	
Melons, Honeydew		2.95 lbs/ton of melons	22.1	
Melons, Watermelons		1.39 lbs/ton of melons	23.9	
Onions		3.94 lbs/ton of fresh weight	19.7	
Pepper, Bell		3.31 lbs/ton of fresh weight	7.9	
Potatoes		6.24 lbs/ton of fresh weight	13.6	
Pumpkin		7.36 lbs/ton of fresh weight	10.1	
Squash		3.67 lbs/ton of fresh weight	22.4	
Sweet potatoes		4.74 lbs/ton of fresh weight	16.8	
Tomatoes, fresh market		2.61 lbs/ton of fresh weight	16.5	
Tomatoes, processing	03/2021	2.92 lbs/ton of fresh weight	15.0	26

Table 3: Overview of N concentrations in harvested plant parts of tree and vine crops. The highlighted commodities are those updated in this report.

Commodity	Last update	N in harvested plant parts		CV (%)	Page
Almonds		136	lbs/ton of kernels	4.1	
Apples		1.08	lbs/ton of fruits	35.1	
Apricots		5.56	lbs/ton of fruits	114	
Cherries		4.42	lbs/ton of fruits	19.8	
Figs		2.54	lbs/ton of fruits	18.1	
Grapefruit		2.96	lbs/ton of fruits	7.8	
Grapes - Raisins		10.1	lbs/ton @ 15% moisture	5.8	
Grapes - Table		2.26	lbs/ton of grapes	5.8	
Grapes - Wine		3.60	lbs/ton of grapes	13.0	
Lemons		2.58	lbs/ton of fruits	10.0	
Nectarines		3.64	lbs/ton of fruits	27.1	
Olives		6.28	lbs/ton of olives	22.8	
Oranges		2.96	lbs/ton of fruits	10.9	
Peaches	03/2021	3.04	lbs/ton of fruits	19.0	15
Pears		1.29	lbs/ton of fruits	17.9	
Pistachios	03/2021	20.4	lbs N/ton net green weight	21.6	17
Plums	03/2021	2.27	lbs/ton of fruits	14.5	19
Pomegranate	03/2021	3.96	lbs/ton of fruits	15.4	21
Prunes		11.2	lbs/ton of dried fruits	16.3	
Tangerines		2.54	lbs/ton of fruits	29.2	
Walnuts	03/2021	31.8	lbs N/ton of nuts @ 8% moist.	10.9	28

Introduction

The ratio of N applied to N removed is a key metric in the Central Valley Irrigated Lands Regulatory Program (CVILRP). Growers report applied N and yield to agricultural water quality coalitions. The coalitions in turn convert yield to N removed from fields and report various statistics to the Central Valley Regional Water Quality Control Board. Nitrogen accumulated into perennial plant tissues may also be counted as “removed”. For these calculations, reliable values of N concentrations in the harvested parts and perennial tissues of crops are needed.

For a report released in 2016, we mined the scientific literature for data on N concentrations in harvested crop parts with an emphasis on California data (Geisseler, 2016). For many commodities, a robust dataset of recent samples from California was not available. With financial support from the California Department of Food and Agriculture – Fertilizer Research and Education Program (CDFA-FREP) and the help of the Kings River Watershed Coalition, John Dickey and his team at the Southern San Joaquin Valley Management Practices Evaluation Program collected a large number of samples, which were then analyzed in the author's nutrient management lab at UC Davis. The present report is an update of the 2016 report and includes results from samples collected in California between 2017 and 2020 for carrots, silage corn, peaches, pistachios, plums, pomegranates, sunflower, safflower, and processing tomatoes. In addition, recently published data for cotton, walnuts and N in perennial parts of almonds were included. Data from California that were included in the 2016 report were combined with the new results for these crops, while data based on samples from other regions were removed.

Procedures

Sample acquisition

Sampling protocols containing methods and logistical information were developed and shared with industry partners. Methods generally took advantage of existing steps in production or processing where/when samples are routinely collected, often to assess the quality of the material harvested from a field to help establish equitable pricing and/or to guide subsequent processing, packing, and marketing. Obtaining samples at these steps in production and processing avoided interruption of normal operations at cooperating facilities. Furthermore, since decisions based on these samples are consequential, the industry has designed approaches to produce samples that represent harvested lots or whole fields. In some cases, packed boxes of fruit were provided to represent the fields where they were harvested. Samples were generally refrigerated (for high-moisture commodities like stone fruit) or kept cool and dry (for low-moisture commodities like oilseeds, or dried samples of silage) to stabilize them until processing commenced.

Processing tomato samples were obtained with the help of the Processing Tomato Advisory Board (PTAB) several times during the harvest season at three different grading stations. One station was located in the Sacramento Valley, and the other two in the Tulare Lake Basin. Peach, plum, pistachio, and pomegranate samples were obtained from processing and packing facilities. Safflower samples were obtained from partner growers in the Sacramento Valley and Tulare Lake Basin. Sunflower samples were

provided by a seed company, as most of California's sunflower are grown for seed. Carrots were obtained from processing and packing partners in the Tulare Lake Basin. The existing dataset for silage corn was complemented with samples from an irrigation and N rate trial conducted in the Tulare Lake Basin.

Sample processing and analysis

The new samples included in this updated report were all analyzed in the nutrient management lab at UC Davis. Samples for the different commodities were analyzed for total N by dry combustion (Nelson and Sommers, 1996) on an elemental analyzer (Costech Analytical Technologies, Valencia, CA). A standard curve using acetanilide was prepared for each batch of samples. After every 11 samples, an acetanilide sample was analyzed for quality control.

Only finely ground samples can be analyzed on the elemental analyzer. Sample preparation depended on the commodity. Samples were always dried first and then ground to a fine powder. Every time samples were dried, the initial and final weights were recorded to determine the dry matter content. This allowed calculating the N concentration in the fresh weight of the crops. Samples were always mixed thoroughly before taking subsamples to ensure that subsamples were representative of the larger sample. The following procedures were used for the different commodities:

A random subsample of 6-8 carrot roots were sliced lengthwise, and dried in an oven at 60 °C until reaching a constant weight. The dried carrots were first ground on a Wiley mill to pass a 1 mm screen, and then passed through a small disc mill two times.

Silage corn samples were received dry and chopped. They were first ground on a Wiley mill to pass a 1 mm screen. After mixing the ground sample, a subsample was placed in a scintillation vial and ball milled on a paint shaker.

Safflower samples were first dried in an oven at 60 °C until reaching a constant weight. A subsample was then mixed with an equal amount of cellulose powder and first ground on a Micro-Mill II Grinder (Bel-Art Products, Wayne, NJ), followed by ball milling on a paint shaker. Mixing with cellulose was necessary, as analysis by dry combustion requires the material to be a fine powder. Due to their oil content, grinding safflower seeds without cellulose produced a paste. The weight of the cellulose and safflower seeds used was recorded for each sample and used to correct for the N concentration in the safflower seeds. The cellulose powder was also analyzed by dry combustion and found to contain no N. Sunflower samples were processed the same way.

The flesh and pits of peaches and plums were first separated. The pits were dried in an oven at 105 °C, crushed with a heavy weight, ground on a Micro-Mill II Grinder (Bel-Art Products, Wayne, NJ) and ball milled on a paint shaker. The flesh (including the skin) was cut into small pieces and converted to a paste in a food processor. A subsample was freeze-dried and then ball milled on a paint shaker.

Pistachio samples were dried in an oven at 60 °C until a constant weight was reached. They were then ground on a Wiley mill to pass a 1 mm screen. To be able to grind the samples to a fine powder, the were mixed with cellulose as described for safflower and then ground on a Micro-Mill II Grinder (Bel-Art Products, Wayne, NJ), followed by ball milling on a paint shaker.

Random subsamples of 5 fresh pomegranates were sliced into quarters and mixed in a food processor until homogenized. The resulting paste and liquid was dried in an oven at 60 °C until reaching a constant weight. The samples were then ground in a coffee grinder until reaching a dust-like consistency, and ball milled on a paint shaker.

Processing tomato samples were received as juice from the PTAB stations, juice they produce in a blender under vacuum to characterize each load of tomatoes. The samples were mixed well and a subsample was freeze-dried and ball milled on a paint shaker.

Data analysis

Nitrogen concentrations are expressed in lbs/ton at a moisture content common for the commodities at harvest or after drying. For each commodity, we calculated the **mean** of each dataset and the weighted mean among datasets. The weight of a dataset was determined by the number of observations

The measures of variability determined are **standard deviation (SD)** and **range** (smallest and largest value in the dataset). The overall SD in this report represents the pooled SD across the different datasets with more than one observation. If the distribution of the data is approximately normal, then about 68% of the data values are within one SD of the mean, and about 95% are within two SD. To facilitate comparison of different commodities, we calculated the **coefficient of variation (CV)**, which is expressed as the SD in % of the mean. Data presentation followed the outline from the 2016 report.

Results and discussion

Detailed analyses for specific commodities can be found in the second part of this report.

Nitrogen accumulation in permanent tissues of trees

For perennial crops, the value of N removed at harvest does not include N accumulation in perennial tissue (e.g. trunk, roots, or branches). From the point of view of N budgeting, N accumulating in perennial tissue over the years is no longer available and can be considered removed. Based on a literature review of a few studies from California available at the time, we concluded in the 2016 report that the amount of N stored in permanent tree tissue most commonly increases by an average of about 10 to 40 lbs/acre each year. Recently, Patrick Brown and collaborators published values based on their research in almond orchards (Brown et al., 2020). The values represent N demand for leaf and woody biomass (Table 4).

Table 4: Nitrogen demand of almond orchards based on orchard age (Brown et al., 2020)

Age (years)	Nitrogen demand for leaf and woody biomass (lbs/acre)
1	30
2	55
3	65
4	55
5	45
6-15	40
16-25	30

Limitations

Nitrogen concentrations in harvested crop parts can vary considerably from field to field and from one year to the next. The variability statistics provided for each coefficient is an indication of the expected magnitude variation. For a single year, the calculated amount of N removed, and thus the N balance or N ratio, may differ considerably from their actual values.

Calculating the amount of N removed based on yield and N concentration will underestimate the amount of N removed for crops where cull or trash is removed from the field but not included in the reported yield. For a more accurate estimate of the total amount of N removed from the field, N in cull or trash needs to be included (e.g. as a % of the N in the marketable portion of the yield).

Furthermore, reported yields need to be converted to the units and moisture content associated with the crop's N concentration if different from Tables 1 through 3.

References

- Brown, P.H., Saa, S., Muhammad, S., Khalsa, S.D., 2020. Nitrogen Best Management Practices. Available online at: <https://www.almonds.com/almond-industry/orchard-management/soil-health-and-nutrients/nutrient-management>
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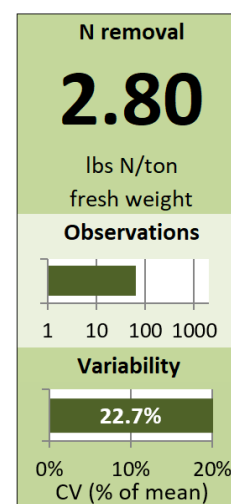
Carrots

Data sources

From 2018 to 2021, carrot samples from 64 Central Valley fields were analyzed. The samples did not include foliage.

Data sources and number of observations.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Own analyses	California	14	2018	1	14
Own analyses	California	35	2019	1	35
Own analyses	California	5	2020	1	5
Own analyses	California	10	2021	1	10
Overall					64



Summary of carrot N removal data.

Source	Summary (lbs/ton of fresh weight)			CV (%)
	mean	SD	Range	
Own analyses 2018	2.78	0.51	2.01 - 4.11	18.4
Own analyses 2019	2.85	0.65	1.61 - 4.69	22.9
Own analyses 2020	2.97	0.81	1.98 - 4.08	27.4
Own analyses 2021	2.55	0.63	1.67 - 3.32	24.7
Overall	2.80	0.63	1.61 - 4.69	22.7

Variability

The variability in the dataset is relatively large. The dry matter content ranged from 9.8 and 13.4% and was therefore not a major contributor to the observed variability. The available data do not allow for an in-depth analysis of the factors contributing to the variability.

Discussion

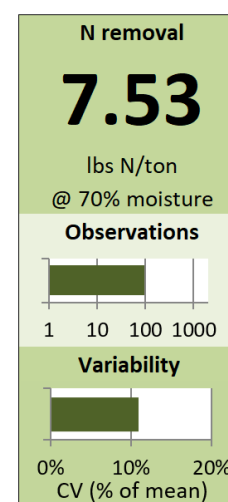
The average value for N removed is based on 64 samples collected from different California fields over several years and can be considered a good estimate of N concentrations in California carrots.

Corn – Silage

Data sources

A total of 96 observations from three California sources were included in the report. In summer 2014, Heguy and Silva-del-Rio from UC Cooperative Extension visited 20 San Joaquin Valley dairy farms during corn silage harvest, and collected a composite sample from five truckloads of corn silage for nutrient analysis. From 1997 to 2011, Peter Robinson, Cooperative Extension Specialist for Dairy Nutrition and Management at UC Davis, collected samples from commercial dairy farms. In both cases, the silage was analyzed for crude protein. The values from these two sources were already included in the 2016 report.

In addition, we received and analyzed samples from a field trial in Fresno County where two varieties, different N application rates and deficit irrigation treatments were compared. The trial was managed by Bob Hutmacher, UCCE Extension Specialist, and Nick Clark, UCCE Farm Advisor for Kings, Tulare and Fresno counties.



Data sources and number of observations.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Heguy and Silva-del-Rio, 2014	California	20	2014	1	20
Robinson, 2011	California		1997-2011		52
Irrigation & N trial	California	1	2017	1	12
Irrigation & N trial	California	1	2018	1	12
Overall					96

Summary statistics of corn silage N removal data.

Source	Summary (lbs N/ton @ 70% moisture)			
	mean	SD	Range	CV (%)
Heguy and Silva-del-Rio, 2014	7.39	0.58	6.0 - 8.4	7.8
Robinson, 2011	7.62	0.87	5.0 - 10.4	11.3
Irrigation & N trial 2017	7.59	0.78	6.8 - 9.5	10.3
Irrigation & N trial 2018	7.32	1.00	5.9 - 8.9	13.6
Overall	7.53	0.82	5.0 - 10.4	10.9

Variability

The variability of the data is intermediate with a CV of 10.9% of the mean. Since the samples were collected from a large number of farms in different years, such variability can be expected. A factor that will contribute to variability across field is the moisture content of the silage, since it ranged from 60 to 81% in the two datasets from dairy farms. For this report, the N concentration was calculated for a moisture content of 70%.

In the irrigation and N rate trial, the factors year, irrigation level (ranging from 50 to 100% of ET), and variety had no effect on N concentration in the plants. The trial also included three N application rates, namely 0, 120 and 240 lbs N/acre. Nitrogen concentration in the plants was significantly lower in the zero N treatment, while the other two N treatments did not differ significantly. Since the production of silage corn without N applications is not a common practice in California, the values from the zero N treatment were not included in this report.

Discussion

72 samples were collected from dairy farms in the Central Valley. The dairy farms were not selected based on their silage quality. In addition, the 24 samples from the irrigation and N rate trial provide insight into the effects of different factors on N concentration in silage corn. Therefore, the estimate for N removed can be considered a very good estimate of Central Valley corn silage.

References

- Robinson, P., 2011. Assays of individual samples of California feedstuffs. Available online at: http://animalscience.ucdavis.edu/faculty/robinson/Projects_folder/pdf/assays_2010_12.pdf
- Heguy, J., Silva-del-Rio, N., 2014. 2014 Corn Silage Audit. Available online at: <http://corn.ucanr.edu/files/221127.pdf>

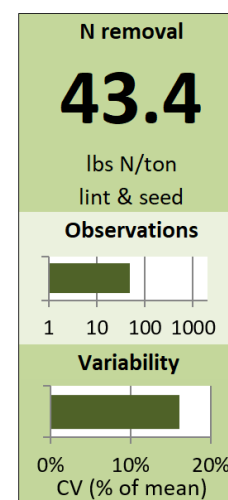
Cotton

Data sources

The data is from N rate trials carried out at different locations in Fresno and Kings County between 1998 and 2000 (Fritschi et al., 2003, 2004) and from trials conducted at the West Side Research and Extension Center from 2006 through 2015. Both Pima and Acala cotton varieties were included.

Relevance

The trials have been carried out at several locations in the main cotton growing area of the Central Valley. The results can be considered a good estimate of the N concentration in cotton from the Central Valley.



Data sources and number of observations.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Acala					
Fritschi et al., 2003, 2004	California	2	1998-2000	3	20
Hutmacher, 2019	California	1	2006-2015	10	8
Pima					
Fritschi et al., 2003, 2004	California	1	1999-2000	2	7
Hutmacher, 2019	California	1	2006-2015	10	14
Overall					49

Summary statistics of cotton N removal data.

Source	Summary (lbs N/ton lint & seed)			
	mean	SD	Range	CV (%)
Acala				
Fritschi et al., 2003, 2004	47.3	9.6	26.3 - 63.2	20.2
Hutmacher, 2019	41.9	2.3	38 - 44	5.5
Pima				
Fritschi et al., 2003, 2004	33.1	6.9	23.3 - 41	20.9
Hutmacher, 2019	43.9	3.1	36 - 48	7.1
Overall	43.4	7.0	23.3 - 63.2	16.1

Variability

Fritschi et al. (2004) did not find a clear effect of N application rate on N concentrations in cotton seeds. In their study, carried out in Fresno and Kings County, N application rates ranged from 0 to 200 lbs/acre. In the same study, the N concentration in Pima cotton tended to be lower than that of Acala cotton; however, the difference was not statistically significant. More recent data by Hutmacher (2019) suggest that there is no difference between N concentrations of these two types of cotton.

Discussion

When cotton is harvested, lint and seeds are removed from the field. Across all datasets, 43.4 lbs N were removed from the field per ton of lint and seed. When yield is expressed in tons of lint, about 124 lbs are removed from the field. This conversion is based on the average gin turnout of 35.4% reported by Fritschi et al. (2003, 2004).

All values in this updated report are from studies carried out in California and can be considered a good estimate of N concentration in California cotton. Currently ongoing studies will allow further improvements of the average values. With a larger dataset, it may be possible to determine with certainty whether Acala and Pima cotton differ in their N removal.

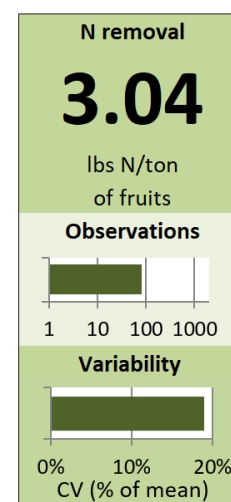
References

- Fritschi, F.B., Roberts, B.A., Travis, R.L., Rains, D.W., Hutmacher, R.B., 2003. Response of irrigated Acala and Pima cotton to nitrogen fertilization: growth, dry matter partitioning, and yield. *Agronomy Journal* 95, 133-146.
- Fritschi, F.B., Roberts, B.A., Travis, R.L., Rains, D.W., Hutmacher, R.B., 2004. Seasonal nitrogen concentration, uptake, and partitioning pattern of irrigated Acala and Pima cotton as influenced by nitrogen fertility level. *Crop Science* 44, 516-527.
- Hutmacher, B., 2019. Comparing nitrogen management practices for Pima and Acala cotton under San Joaquin Valley growing conditions. 2019 Proceedings of the California Plant and Soil Conference, 118-121.

Peaches

Data sources

From 2017 to 2019, 76 samples from commercial orchards in the Central Valley were analyzed. Values from two California studies, which were already part of the 2016 report, were included in the present update. With five observations, these two studies constitute only 6% of the observations in this update.



Data sources and number of observations.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Niederholzer et al., 2001;					
Saenz et al., 1997	California	1	1994	1	3
Weinbaum et al., 1992	California				2
Own analyses	California	8	2017	1	8
Own analyses	California	36	2018	1	36
Own analyses	California	32	2019	1	32
Overall					81

Summary statistics of peach N removal data.

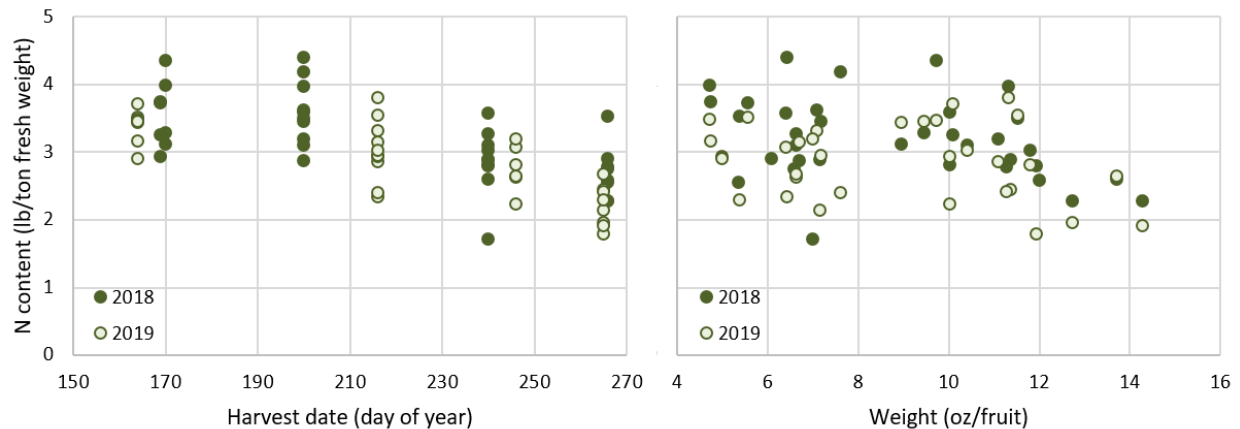
Source	Summary (lbs/ton of fruits)			
	mean	SD	Range	CV (%)
Niederholzer et al., 2001;				
Saenz et al., 1997	2.04	0.59	1.39 - 2.55	28.9
Weinbaum et al., 1992	2.35	0.30	2.14 - 2.56	12.6
Own analyses 2017	3.62	0.56	2.93 - 4.35	15.5
Own analyses 2018	3.18	0.60	1.71 - 4.40	18.8
Own analyses 2019	2.86	0.56	1.78 - 3.81	19.5
Overall	3.04	0.58	1.39 - 4.40	19.0

Variability

The variability in the dataset is relatively large. Nitrogen content in fresh fruits was lower late in the season than during the early season. Across the entire dataset, N content decreased significantly by 0.0107 percent points per day between early June (day of year 160) and mid-September (day of year 260). However, the variability across orchards harvested around the same time was large (see Figure below). The N content in the fruits also decreased with increasing fresh weight per fruit. Even though this

trend was statistically significant, the large variability due to other factors would probably obscure any advantage to tailoring N concentration assumptions to the timing of harvest.

Niederholzer et al. (2001) found that N fertilization considerably increases the N concentration in peaches.



Effect of harvest date and fruit weight on N content in fresh fruits.

Discussion

The average value for N removed is based on 81 samples collected from different California orchards and can be considered a good estimate of N concentrations in California peaches.

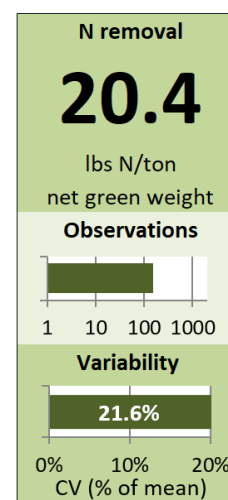
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- Niederholzer, F.J.A., DeJong, T.M., Saenz, J.-L., Muraoka, T.T., Weinbaum, S.A., 2001. Effectiveness of fall versus spring soil fertilization of field-grown peach trees. *Journal of the American Society for Horticultural Science* 125, 644-648.
- Saenz, J. L., DeJong, T.M., Weinbaum, S.A., 1997. Nitrogen stimulated increases in peach yields are associated with extended fruit development period and increased fruit sink capacity. *Journal of the American Society for Horticultural Science* 122, 772-777.
- Weinbaum, S.A., Johnson, R.S., DeJong, T.M., 1992. Causes and consequences of overfertilization in orchards. *HortTechnology* 2, 112-121.

Pistachio

Data sources

In 2018 and 2019, 156 samples from commercial orchards were analyzed for total N. The samples were obtained from trucks arriving for processing. The N concentration is expressed in lbs/ton net green weight. The 2016 report included values from a study carried out by Patrick Brown and his team in four orchards in the southern San Joaquin Valley between 2009 and 2011. These values are not included in this report, as the N content was expressed in lbs/ton dry yield (CPC), which is based on samples of in-shell pistachios.



Data sources and number of observations.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Own analyses	California	97	2018	1	97
Own analyses	California	59	2019	1	59
Overall					156

Summary statistics of pistachio N removal data.

Source	Summary (lbs/ton net green weight)			
	mean	SD	Range	CV (%)
Own analyses 2018	20.4	4.35	11.9 - 35.5	21.4
Own analyses 2019	20.4	4.50	8.0 - 27.8	22.0
Overall	20.4	4.41	8.0 - 35.5	21.6

Trash

The samples we received were free of trash, such as leaves, branches and empty shells. In addition to the pistachio samples, we also received 7 trash samples. **On average, trash contained 15 lbs N/ton.** However, the variability was high with values ranging from 8.7 - 24.1 lbs/ton. At this time, we do not have estimates of the average amount of trash removed from the field per unit yield.

Variability

The variability in the dataset is relatively high. Two factors contribute to the variability. First, the dry matter content of the pistachios ranged from 35 to 65%. Second, the N concentration in the dry pistachios ranged from 1.0 to 3.3%. With a larger range in values, variability in N concentration contributed more to the observed variability. Both moisture and N concentration depend on environmental conditions and management practices. The available data do not allow for a more detailed analysis.

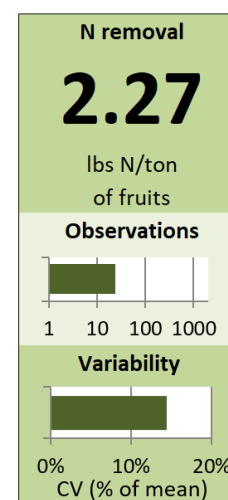
Discussion

The value is a very good estimate for N removed in pistachios in the Central Valley. An estimate of the N removed with trash will require more a robust value of the N concentration in trash and an estimate of ratio between the weights of trash and net green pistachios.

Plums

Data sources

From 2017 to 2019, 23 samples from commercial orchards in the Central Valley were analyzed for total N. Data from one California study that was part of the 2016 report was also included in this update.



Data sources and number of observations.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Weinbaum et al., 1992	California				1
Own analyses	California	12	2018	1	12
Own analyses	California	11	2019	2	11
Overall					24

Summary statistics of plum N removal data.

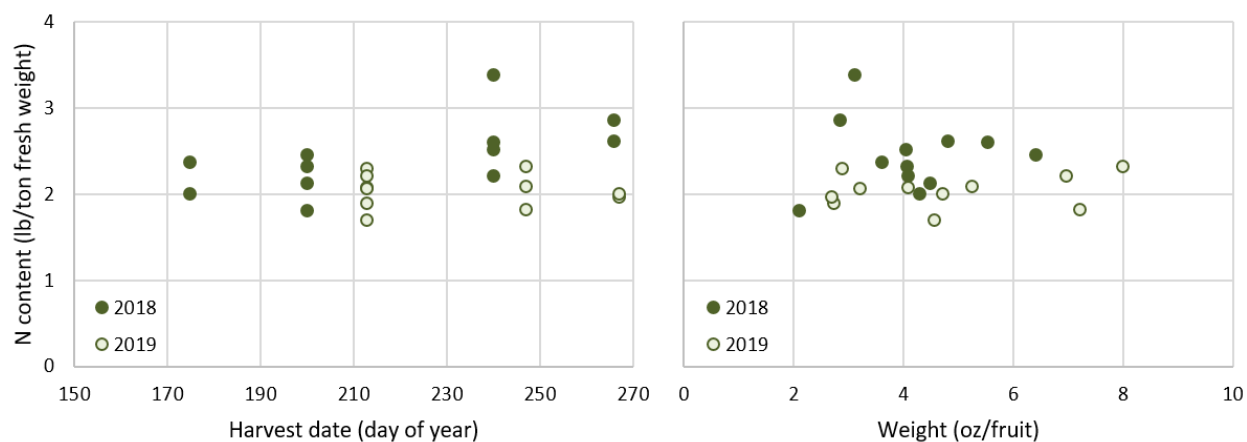
Source	Summary (lbs/ton of fruits)			
	mean	SD	Range	CV (%)
Weinbaum et al., 1992	2.84			
Own analyses 2018	2.44	0.42	1.8 - 3.39	17.06
Own analyses 2019	2.04	0.19	1.7 - 2.31	9.38
Overall	2.27	0.33	1.70-3.39	14.5

Variability

Nitrogen concentrations ranged from 1.7 to 3.4 lbs/ton. With a CV of 14.5%, the variability within the dataset is moderate. In contrast to peaches, harvest date and fruit weight had no significant effect on the N concentration in the fruits (see Figures below).

Discussion

The average N concentration in this update is based on 24 samples from the Central Valley. The number of samples is smaller than for some of the other crops. However, each sample represents a different orchard or size class from the same orchard. Therefore, the average concentration is a relatively good estimate of N concentrations in California plums.



Effect of harvest date and fruit weight on N content in fresh fruits.

References

Weinbaum, S.A., Johnson, R.S., DeJong, T.M., 1992. Causes and consequences of overfertilization in orchards. HortTechnology 2, 112-121.

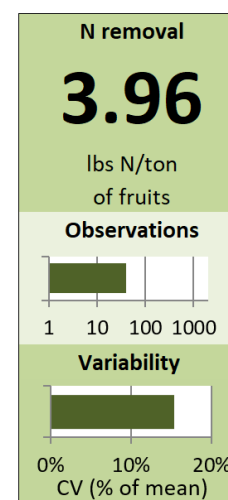
Pomegranate

Data sources

From 2018 to 2020, we analyzed 40 pomegranate samples from commercial orchards in California.

Data sources and number of observations.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Own analyses	California	11	2018	1	11
Own analyses	California	19	2019	1	19
Own analyses	California	10	2020	1	10
Overall					40



Summary statistics of pomegranate N removal data.

Source	Summary (lbs/ton of fruits)			
	mean	SD	Range	CV (%)
Own analyses 2018	4.41	0.81	3.36 - 5.92	18.5
Own analyses 2019	3.45	0.47	2.48 - 4.10	13.7
Own analyses 2020	4.41	0.58	3.90 - 5.63	13.1
Overall	3.96	0.61	2.48 – 5.92	15.4

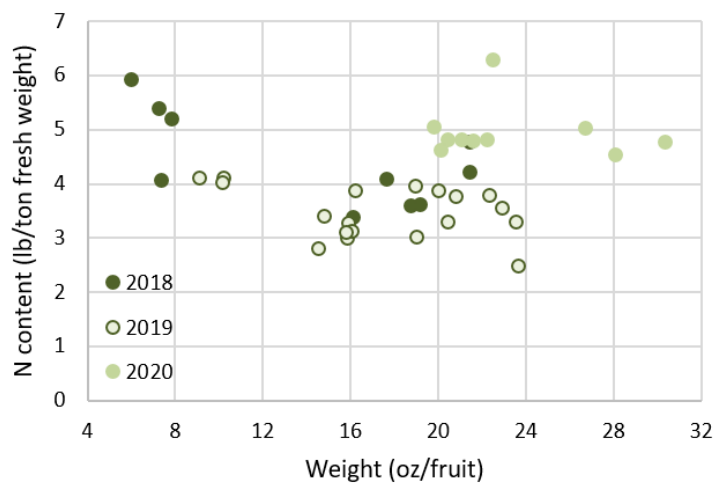
Variability

Nitrogen concentrations ranged from 2.5 to 5.9 lbs/ton. With a CV of 15.4%, the variability within the dataset is moderate.

The weight of fruits can vary considerably, ranging in our dataset from 6 to 32 oz. per fruit. However, there was no correlation between fruit weight and the N concentration in the fruits (see Figure below).

Discussion

The average N concentration in this update is based on 40 samples from California collected at different times over three seasons. Each sample represents a different orchard or block. Therefore, the average concentration is a good estimate of N concentrations in California pomegranates.

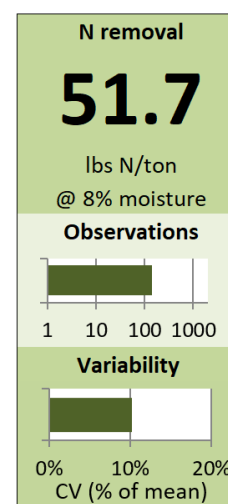


Relationship between N in fruits and fruit weight.

Safflower

Data sources

In 2018 and 2019, we analyzed samples from 128 fields located in the Sacramento Valley and Tulare Lake Basin. Only one study included in the 2016 report was from California (Cavero et al., 1999). This study was carried out at UC Davis and N removal data was obtained directly from the lead author. The values from that study are included in the present update. The other sources in the original report from outside California are not included here.



Data sources and number of observations. Samples received from fields in the Sacramento Valley and Tulare Lake Basin are shown on separate lines.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Cavero et al., 1999	Sacramento Valley	1	1994-95	2	12
Own analyses	Sacramento Valley	1	2018	1	25
Own analyses	Tulare Lake Basin	2	2018	2	49
Own analyses	Sacramento Valley	3	2019	3	10
Own analyses	Tulare Lake Basin	4	2019	4	44
Overall					140

Summary statistics of safflower N removal data. Samples received from fields in the Sacramento Valley (SV) and Tulare Lake Basin (TL) are shown on separate lines.

Source	Summary (lbs N/ton at 8% moisture)			
	mean	SD	Range	CV (%)
Cavero et al., 1999	48.8	7.1	34.8 - 58.6	14.6
Own analyses SV 2018	49.0	7.7	34.8 - 58.4	15.7
Own analyses TL 2018	52.0	2.9	42.5 - 58.1	5.6
Own analyses SV 2019	56.1	7.4	39.2 - 64.1	13.2
Own analyses TL 2019	52.8	4.4	41.5 - 63.0	8.4
Overall	51.7	5.3	34.8 - 64.1	10.2

Variability

With an overall CV of 10.2%, the variability in the dataset was relatively low, even though the N concentrations ranged from 34.8 to 64.1 lbs/ton. Year of harvest and location (Sacramento Valley vs. Tulare Lake Basin) had a small and non-significant effect on N concentration in safflower seeds.

Discussion

The updated value for N removed is based on 140 samples from the Central Valley. Of these, 128 samples were collected from different commercial fields in 2018 and 2019. Therefore, the updated value is a very good estimate of safflower N removal from California fields.

References

Cavero, J., Plant, R.E., Shennan, C., Friedman, D.B., Williams, J.R., Kiniry, J.R., Benson, V.W., 1999. Modeling nitrogen cycling in tomato-safflower and tomato-wheat rotations. *Agricultural Systems* 60, 123-135.

Sunflower

Data sources

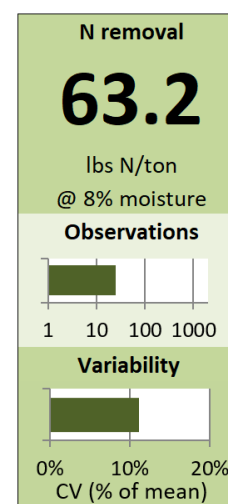
A total of 24 samples from Central Valley fields were received from the 2019 harvest and analyzed. The samples included broken seeds and small pieces of trash.

Data sources and number of observations.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Own analyses	California	24	2019	1	24
Overall					24

Summary statistics of sunflower N removal data.

Source	Summary (lbs N/ton @ 8% moisture)			
	mean	SD	Range	CV (%)
Own analyses 2019	63.2	7.02	42.6 - 75.3	11.1
Overall	63.2	7.02	42.6 - 75.3	11.1



Variability

With a CV of 11.1%, the variability in the dataset is relatively small, even though the values range from 42.6 to 75.3 lbs N/ton.

Discussion

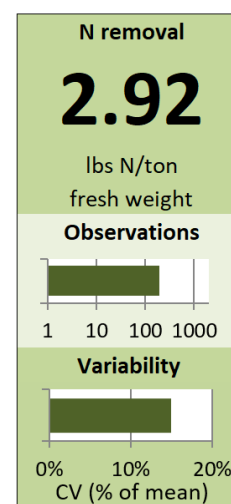
The updated value is based on 24 samples from the Central Valley. None of the values included in the 2016 report were from California and are not included in this update. The average value is a reasonable estimate of the N removed at harvest. Including additional samples from different years would improve the estimate.

Tomato, processing

Data sources

From 2018 to 2020, 171 samples were collected from different commercial fields in the Sacramento Valley and Tulare Lake Basin. We obtained subsamples from PTAB samples taken at the stations for quality analyses. The samples are representative of a load. However, from several fields we obtained samples from multiple loads. The variability among different loads from the same field was small. When multiple samples from a field were obtained, only the average N concentration of the samples from that field is used in this report.

In addition, three studies that were already included in the 2016 report are included in this update. These studies were all carried out recently in commercial fields across the Central Valley. The total number of observations in these studies was 24, with each observation representing a different commercial field.



Data sources and number of observations. Samples received from fields in the Sacramento Valley and San Joaquin Valley are shown on separate lines.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Hartz and Bottoms, 2009	Central Valley	7	2007-2008	2	8
Aegerter, 2015	Central Valley	2	2015	1	2
Lazcano, 2015	Central Valley	14	2013	1	14
Own analyses	Sacramento V.	28	2018	1	28
Own analyses	Tulare Lake Basin	59	2018	1	59
Own analyses	Sacramento V.	30	2019	1	30
Own analyses	Tulare Lake Basin	49	2019	1	49
Own analyses	Tulare Lake Basin	5	2020	1	5
Overall					195

Variability

Nitrogen concentrations ranged from 1.3 to 4.0 lbs/ton. However, out of the 171 samples analyzed for this report, only 7 had N concentrations below 2 lbs/ton. Each observation in the dataset represents a commercial field, meaning the overall variability is due to crop management, variety harvested and differences in environmental conditions. In the dataset analyzed for this study, we did not observe significant differences due to year or location (Sacramento Valley vs. Tulare Lake Basin).

Summary statistics of processing tomato N removal data. Samples received from fields in the Sacramento Valley (SV) and Tulare Lake Basin (TL) are shown on separate lines.

Source	Summary (lbs N/ton fresh weight)			CV (%)
	mean	SD	Range	
Hartz and Bottoms, 2009	3.00	0.28	2.6 - 3.3	9.4
Aegerter, 2015	3.12	0.34	2.8 - 3.6	10.7
Lazcano, 2015	2.52	0.31	1.9 - 3.1	12.4
Own analyses SV 2018	3.08	0.41	2.3 - 3.9	13.3
Own analyses TL 2018	2.78	0.59	1.3 - 4.0	21.1
Own analyses SV 2019	3.05	0.30	2.3 - 3.6	9.8
Own analyses TL 2019	2.98	0.36	1.7 - 3.6	12.2
Own Analyses TL 2020	3.31	0.34	2.8 - 3.7	10.2
Overall	2.92	0.44	1.3 – 4.0	15.0

Discussion

With 195 observations, the sample size is large. Each sample is from a different commercial field in the Central Valley. Therefore, the average value is a very good estimate for processing tomatoes harvested in the Central Valley.

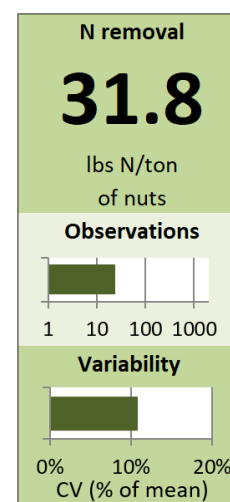
References

- Aegerter, B., 2015. Potential for improved fertigation efficiency via field-based sensing devices. Report submitted to the California Tomato Research Institute. Available online at: <http://tomatonet.org/img/uploadedFiles/AnnualReports/2015%20CTR%20Annual%20Project%20Report.pdf>
Complemented with unpublished data.
- Hartz, T.K., Bottoms, T.G., 2009. Nitrogen Requirements of Drip-irrigated Processing Tomatoes. HortScience 44, 1988-1993.
- Lazcano, C., Wade, J., Horwath, W.R., Burger, M., 2015. Soil sampling protocol reliably estimates preplant NO₃⁻ in SDI tomatoes. California Agriculture 69, 222-229. Available online at: <http://ucanr.edu/repositoryfiles/cav6904p222-159746.pdf>

Walnuts

Data sources

Two studies from California were included in this report. Weinbaum et al. (1991) carried out a study in a 'Hartley' orchard in Stanislaus County from 1985 to 1990. More recently, Pope et al. (2016) determined N concentrations in 'Chandler' and 'Tulare' walnuts in three orchards in the Central Valley over a period of three years. The values reported here are for N removed with fruits (hull, shell and kernel), expressed per ton of nut yield (shell and kernel). The 2016 report included results from the 2013 and 2014 harvests of the trial conducted at different locations in the Central Valley. For this updated report, the results from the 2016 harvest were added.



Relevance

The observations in the table are from two studies carried out in the Central Valley and are a good estimate of the N removed with walnuts. However, it is important to note that the average values of the two studies differ considerably.

Data sources and number of observations.

Source	Sites		Years sampled		Observations
	Location	n	Years	n	
Weinbaum et al., 1991	Stanislaus	1	1985-90	6	6
Pope et al., 2016	Central Valley	3	2013	1	6
Pope et al., 2016	Central Valley	3	2014	1	6
Pope et al., 2016	Central Valley	3	2015	1	6
Overall		1			24

Summary statistics of walnut N removal data.

Source	Summary (lbs/ton of in-shell nuts @ 8% moisture)			
	mean	SD	Range	CV (%)
Weinbaum et al., 1991	40.5	4.34	34.0 - 46.4	10.7
Pope et al., 2016 (year 2013)	26.9	2.56	23.2 - 30.2	9.5
Pope et al., 2016 (year 2014)	29.0	1.63	26.5 - 31.1	5.6
Pope et al., 2016 (year 2015)	30.7	4.42	23.4 - 35.4	14.4
Overall	31.8	3.45	23.2 - 46.4	10.9

Variability

In the study by Pope et al. (2016), walnut N concentration did not differ significantly across the three years of the study, across sites or between 'Chandler' and 'Tulare' walnuts. On average 28.9 lbs N/ton were removed with 'Chandler' walnuts, while 'Tulare' walnuts removed 28.8 lbs N/ton. Differences across

locations contributed most to the observed variability. The variability in N concentration reported by Weinbaum et al. (1991) is caused by differences among years. This trial did not include different fertilization rates or varieties.

Discussion

The dataset is based on two studies carried out in the Central Valley over nine years. The more recent study by Pope et al. (2016) contributed 75% of the values in this report and the variability of the dataset was low despite the fact that different varieties, years and locations were included. Therefore, even though the values of the two studies differ, the average value in this report can be considered a good estimate of N removed with California walnuts.

References

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- Pope, K., DeJong, T., Brown, P., Lampinen, B., Hopmans, J., Fulton, A., Buchner, R., Grant J., Laca, E., 2016. Development of a nutrient budget approach and optimization of fertilizer management in walnut. Walnut Research Reports 2015. Available online at: <https://ucanr.edu/sites/cawalnut/category/Nitrogen/?repository=67350&a=165272>