




Aquifer Vulnerability Analysis Using the Pesticide Root-Zone Model (PRZM2)

Columbia Basin Irrigation Project Area

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Columbia Basin Irrigation Project Area

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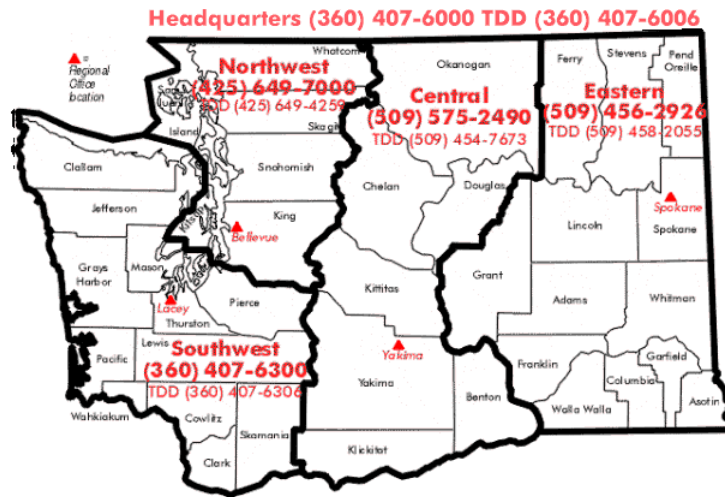
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Abstract

EPA was expected to finalize a rule this year directing states to develop pesticide management plans for four restricted-use pesticides: atrazine, simazine, metolachlor, and alachlor. Under this rule, EPA-approved plans would be required to continue use of these pesticides in the state. The Washington State Department of Agriculture is the lead agency. The U.S. Geological Survey and the Washington State Department of Ecology tested the feasibility of using EPA's Pesticide Root Zone Model (PRZM2) model and a Geographic Information System (GIS) to screen for susceptibility on a regional scale. Ecology ran the model and mapped the results. The USGS has completed a review and evaluation comparing model results to observations and data obtained during the National Water Quality Assessment (NAWQA) study, which will be published in a separate report.

Ecology produced susceptibility maps based on PRZM2 model results for atrazine, using NRCS county-level soil data in the Columbia Basin Irrigation Project Area, Franklin, and Grant Counties. Other inputs include meteorological, crop, and pesticide data obtained from the EPA Center for Exposure Assessment Modeling. Programming assistance was provided by the U.S.G.S.

PRZM2 is a one-dimensional model that tracks the mass balance of pesticide and recharge in the soil column over time. PRZM2 is coupled with a vadose zone model, VADOFT, which can extend the modeling to a specified depth. If you know the depth to water, soils characteristics, and vadose zone characteristics below the soil profile, you can model the fate of the pesticide at the top of the water table.

Because the soils data is of much better resolution than vadose zone information, the strategy was to model the susceptibility of the soils first, group the results, and run scenarios for the vadose zone. Two trial VADOFT runs, one in the Quincy Basin and one in the Pasco Basin, were completed. Both trials demonstrate how the model results at succeeding depths can be compared to a critical concentration, such as the maximum contaminant level (the maximum concentration allowed in drinking water under the Safe Drinking Water Act). With further modeling, the depth to water at which an impact is probable for a range of soil conditions could be explored.

Surficial geology and well logs were used to guide the inputs to the vadose zone model. A much-generalized well depth map for the area, based mostly on electronic well records, was generated to identify areas with the potential for shallow groundwater resources at risk. Ultimately, the PRZM2 modeling results could be compared to the hydrogeologic setting in terms of the surficial geology and the depth to water map. This is important for identifying the hydrogeologic settings that are most vulnerable to transport of pesticides to groundwater.

It is very important to keep limitations, assumptions, uncertainty, and the appropriate use of the model and the model results in mind. The results do not in any sense predict atrazine occurrence in ground water. They point to patterns and conditions that are likely to result in relatively higher vulnerability to atrazine transport through the surface soils.

Landscape scale patterns in soil characteristics become apparent when the model results are mapped. These patterns are related to the soil depositional environment, and also relate to how well atrazine would travel down through different soil profiles, given enough rainfall or irrigation. The model results presented in Appendices A through D and the maps provide a convenient way of comparing which soils and soil/recharge combinations are more sensitive.

The model used together with GIS allows us to track and process large amounts of information about the environment that relate to pesticide fate in the environment. It also gives us flexibility so that we can change the inputs as we come to have better estimates and information.

This project is meant to demonstrate the utility of using the PRZM model and GIS as a tool to aid in planning.

Introduction

The Environmental Protection Agency (EPA) is working on a rule which would require approved Pesticide Management Plans before continued use of atrazine, simazine, metolachlor, or alachlor is allowed. These four chemicals have been targeted because they have been detected in ground water in numerous states. In addition, health risk concerns have led the EPA to set the Maximum Contaminant Level (MCL) for drinking water at low parts per billion levels for these four chemicals.

The Washington State Department of Agriculture (WSDA) is the lead agency for the Pesticide Management Plan (PMP) in the state of Washington. An important element of the PMP involves determining environmental settings that are at a relatively greater risk for pesticides impacting groundwater. Technical support from Ecology and USGS staff involves evaluating the feasibility of using EPA's Pesticide Root Zone Model (PRZM) with a Geographic Information System (GIS) to delineate probable relative susceptibility to subsurface pesticide migration on a regional scale.

PRZM2 is a one-dimensional model that evaluates the effects of irrigation, rainfall, soil and vadose zone characteristics, pesticide characteristics, crop characteristics, and depth on pesticide migration through the subsurface. The model results can be combined with maps of where the modeled conditions occur to show regional patterns of soil characteristics that have relatively higher pollution potential, if the subject chemical were to be used on these soils.

The PRZM2 model results can be used to help delineate pesticide management areas and guide monitoring strategies. PRZM2 can also be used to run various "what if" scenarios to estimate the overall relative result of changes in practices, such as changes in pounds per acre applied or irrigation amount. The depth to water at which an impact is probable for a range of soil conditions can also be explored.

The PRZM2 modeling results could be compared to the hydrogeologic setting in terms of surficial geology and depth to water. The range of modeling results by hydrogeologic setting could be reported, and modeling evaluations based on depth to water for these settings performed. This would make it possible to refer to specific hydrogeologic settings that are at risk for pesticide leaching to groundwater. The specific challenges related to completing this analysis are discussed in the report.

PRZM is widely used and accepted, and is supported by the EPA Center for Exposure Assessment Modeling. It is accepted for environmental modeling submitted for pesticide registration both in the US and in Europe. Other investigators have used PRZM with GIS to screen for relative susceptibility to pesticide leaching on a regional scale (Burkart et al, 1998).

The USGS provided programming support and an evaluation of the feasibility of using PRZM2 and GIS to map relative susceptibility on a regional scale in Washington State. Originally, we had intended to compare a statistical analysis of USGS atrazine data in the Columbia Basin Irrigation Project area with the PRZM model results. Logistic regression analysis produces a map that shows the probability of detecting atrazine in ground water, based on such factors as

actual atrazine use, depth to ground water, surficial geology, landuse, precipitation, soil characteristics, well depths, or other factors. This analysis would have provided us with a comparison between the model results and statistical observations of factors contributing to atrazine detections. We then could possibly use the PRZM model in areas where there was not enough data to run a logistic regression analysis. However, because actual atrazine use data was not available at an appropriate level of detail, the logistic regression analysis could not be completed. The USGS instead completed a review and evaluation of the PRZM model and how it was used for this project, using a subset of the atrazine sampling data from the area. The USGS is planning to publish a report with the findings of this evaluation.

Setting



Photo 1: Entering the Columbia Basin Irrigation Project area.

The PRZM2 model pilot project was run in the Columbia Basin Irrigation Project area (CBIP) in Grant and Franklin Counties. Figure 1 shows the location of the CBIP within the state of Washington.

The Columbia Irrigation Project Area is located on the east side of the Cascade Mountains of the state of Washington, and thus receives minimal rainfall, averaging five inches annually. The desert climate also means higher evapotranspiration rates in the warmer part of the year. Population is concentrated in a few cities and towns, but there is a sparse rural population. The major source of domestic water supply is groundwater. Figure 2 shows the general features of the CBIP.

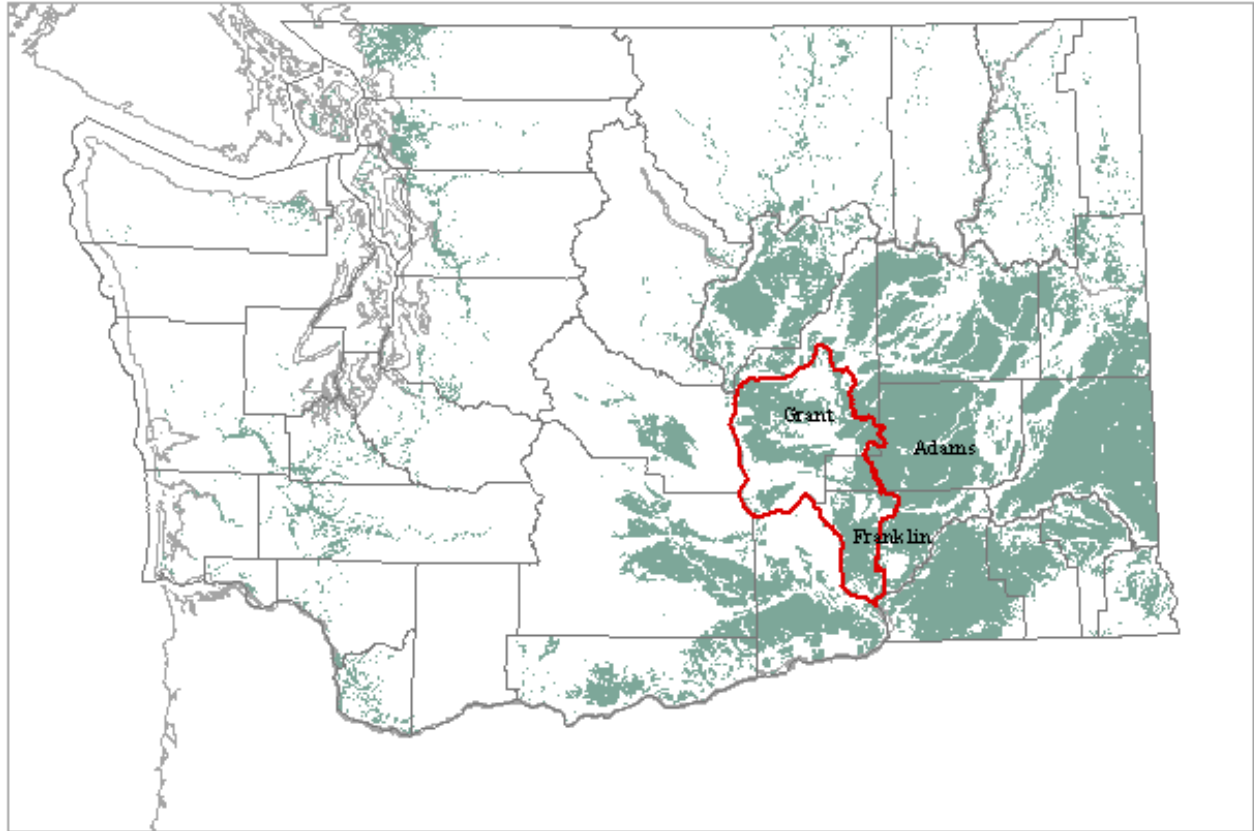


Figure 1: Columbia Basin Irrigation Project area in Adams, Franklin, and Grant Counties, with agricultural areas of Washington in the background.

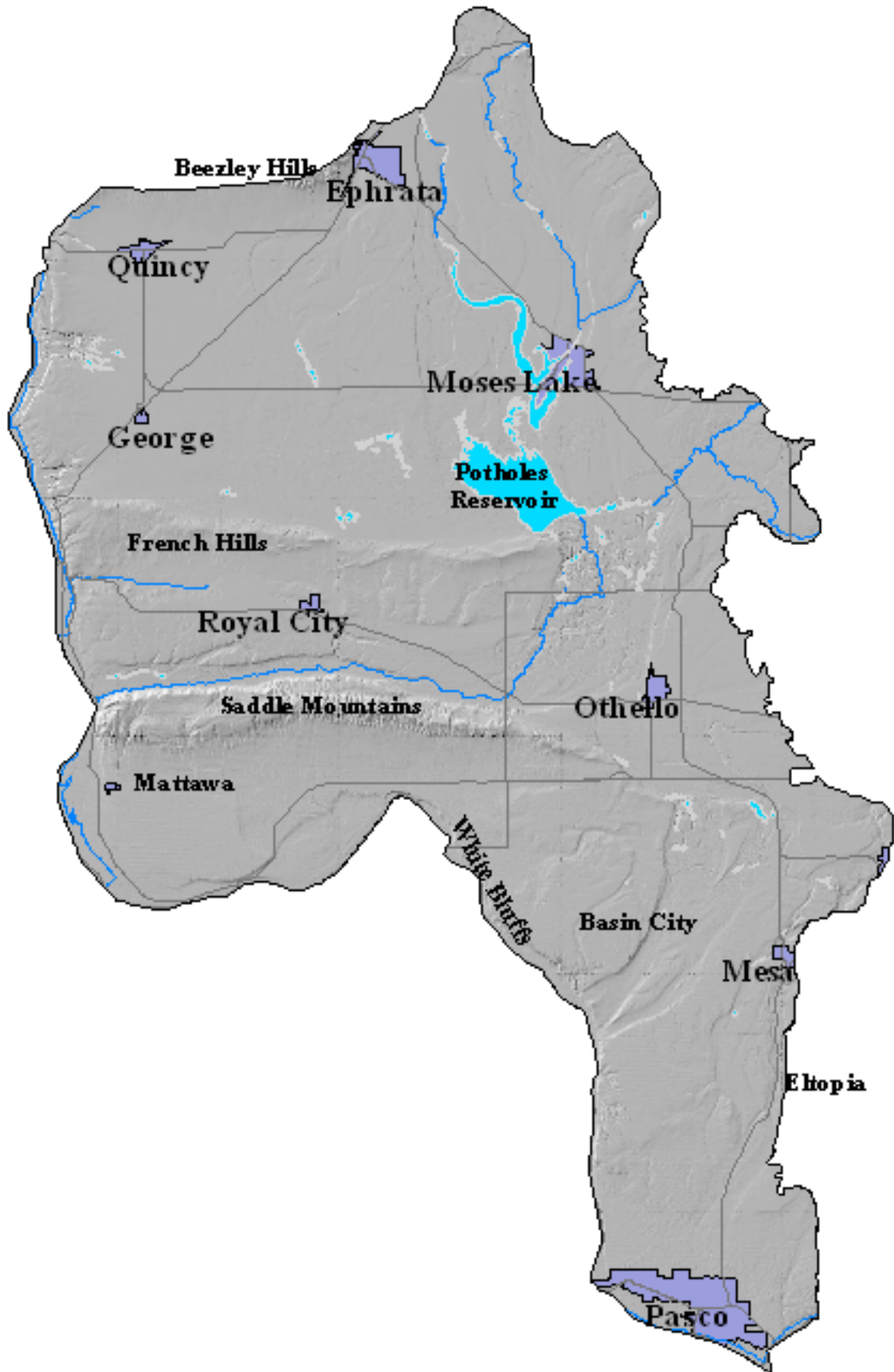


Figure 2: Columbia Basin Irrigation Project area base map.



Photo 2: The Columbia River looking towards the Vantage Bridge.



Photo 3: Most irrigation in the Columbia Basin Irrigation Project area is by overhead sprinkler.

The growing of crops is made possible by irrigation water diverted mainly from the Columbia River. Crops include corn, wheat, hay, potatoes, orchards, onions, grapes, asparagus, and others. The extensive irrigation has created shallow groundwater resources throughout the area. Irrigation return flow also travels back to surface water discharge via wasteways and stream courses.



Photo 4: Irrigated corn in the upper Pasco Basin.



Photo 5: French Hills Wasteway near Quincy diverts excess irrigation water away.

Understanding the geology of an area is critical to understanding the fate and transport of chemicals applied to the land surface. Geology is a dominating control in the occurrence and movement of groundwater. Soils are derived from parent geologic materials that arrived by large-scale geologic processes, including flood basalts, wind-blown silt (loess), flood deposits, lake and alluvial deposits, and landslides. The distribution of soil properties across a region is related to these geologic events. Together with soil properties, the surficial geology is a key factor in understanding the fate and transport of chemicals applied to the land surface.

The geologic setting of the Columbia Basin Irrigation Project (CBIP) area is the Columbia River Basin landscape, which has been formed and reworked by geologic processes that challenge anyone's concept of scale. Between 6 and 16 million years ago, flood basalts poured out from fissures in the earth to cover 80,000 square miles of Idaho, Washington, and Oregon, forming the Columbia Plateau. Nearly 200 separate flows comprise the Columbia River Basalt group, which is up to two miles thick (Allen et al, 1986).



Photo 6: Profile of flood basalts along the Columbia River upstream of Trinidad.

The Columbia Basin Flood basalts underlie the entire CBIP area. Groundwater occurs in the fractured flowtops of the basalts, as well as locally in some of the sedimentary deposits (interbeds) that occur buried between layers of flood basalts. The modeling aspect of this project is concerned with shallow groundwater in the unconsolidated deposits that overlay the basalt. This is because shallow unconfined groundwater is most at risk from pesticide use.

Upwarping of the basalt flows resulted in uplifted terrain like the Saddle Mountains. Downwarping of the basalt flows created the Pasco Basin and the Quincy Basin. These basins filled with deposits over time, and the sediments above the basalt bedrock are deeper there (Drost, 1997).

After the last basalt flood event and over long periods of time, wind-blown fine sand, called loess, and lake deposits, called the Ringold formation, covered vast areas of the landscape. The Ringold Formation consists of fluvial gravel, sand, and overbank deposits, as well as lacustrine and alluvial fan deposits (Reidel, 1998).



Photo 7: Looking north across irrigated fields near Mattawa at the uplifted Saddle Mountains.



Photo 8: Looking south across the Pasco Basin on Highway 395. The Horse Heaven Hills, barely visible in the distance, are across the Columbia River. The Pasco Basin topography slopes steadily down toward the Columbia River.

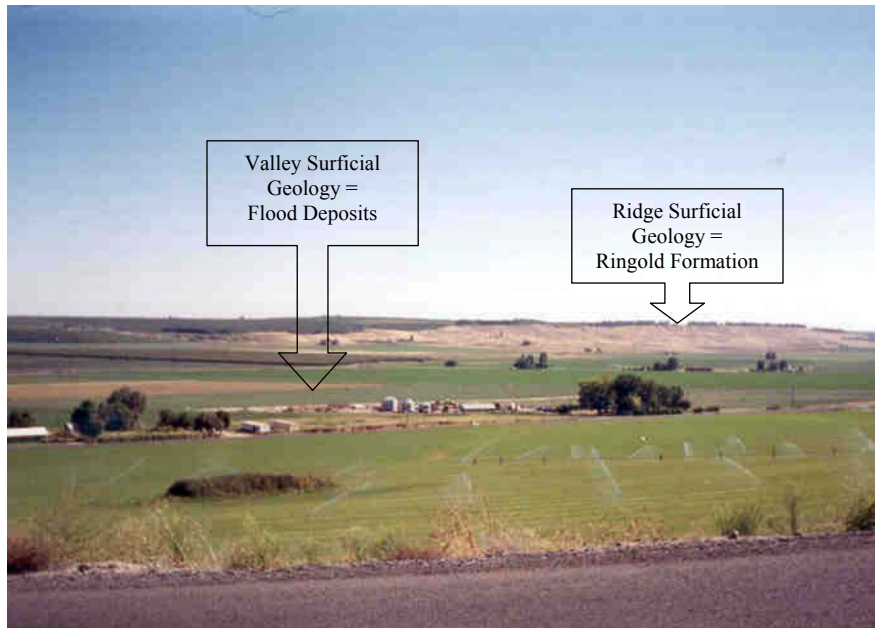


Photo 9: Looking south across an irrigated valley near Basin City. The surficial geology of the ridges on either side of this valley is mapped as Ringold Formation. The valley fill is composed of catastrophic flood deposits, according to the surficial geology map (Washington Department of Natural Resources, 1998).



Photo 10: Ridge at the northern edge of the valley. Same location as in photo 9, opposite direction. Slope failure is induced by water from irrigation atop the ridge.



Photo 11: Irrigation water is being drained out of the Ringold formation to prevent slope failure. Location is near photo 10.

As the Ice Age was drawing to a close, the Cordilleran Ice Sheet advanced and receded, causing ice dams to form in mountain passes. The vast glacial Lake Missoula filled a valley 2000 feet deep behind a wall of ice that formed in the Montana mountains where Missoula is today. The ice dam formed and broke numerous times, and when it broke, it released unimaginable quantities of water that flowed all the way from Missoula, Montana to Portland, Oregon. The effects were so large that you can view enormous ripples the size of hills from an airplane (figure 3), and the channeled scablands from space (figure 4).

This interpretation of geologic history is available to us courtesy of the eminent and extraordinary geologist, J. Harlan Bretz (see Bretz, 1959), along with Joseph Thomas Pardee, the discoverer of the geologic history of glacial Lake Missoula (Allen et al, 1986). These flood events are named the Bretz floods, in honor of J. Harlan Bretz. They are also often referred to as the Missoula floods.

Geologists have found evidence of at least 40 cataclysmic flood events, which together have inundated over 16,000 square miles from the western edge of Montana, through Idaho, across the Columbia Basin, to the Willamette Valley in Oregon. In Cataclysms on the Columbia (Allen et al, 1986) John Allen states that “These floods on the Columbia contained up to ten times the flow of all the rivers in the world, 60 times the flow of the Amazon River.”

The channeled scablands visible in figure 4 were stripped bare by the great Bretz floods as they flowed across the Columbia Basin. The light-colored areas between the dark-colored channels in figure 4 are islands of loess and Ringold formation where the Bretz floods failed to reach. Depressions where the basalt was plucked out by the violence of the floodwaters are lakes called *kolks* when they are filled with water.



Photo 12: Bare basalt scabland in the Othello Channel near Scootenay Lake.

The floods deposited sand, gravel, cobbles, boulders, and backwater deposits in accordance with the physical characteristics of the flow, just like streams and floods do today, except on an enormous scale. Rivers deposit gravel bars, but the Bretz floods deposited huge gravel bars. Some of these are hundreds of feet high and miles long. Layers of silt formed in quiet flood backwaters. Sand deposited just like it does when a stream carries sand along, and then drops it when the flow slows a bit, but the Bretz floods carried and deposited vast quantities of sand over large areas.



Photo 13: Flood deposits over the basalt near Trinidad.



Photo 14: Close-up of flood deposits over the basalt near Trinidad.

If you could perfectly map the patterns of deposits, or *facies*, for each flood event and the pre-flood deposits, you would have a good picture of what you would find at any given location if you drilled down from the top of the land surface to the top of the water table, and below. Much of this type of analysis is done by reviewing and analyzing well logs. An understanding of the geologic history of an area helps to extend the knowledge gained from well logs to a wider area.

The characteristics of the soils and the subsurface material through which groundwater movement occurs result from the geologic processes that have taken place. The patterns of soil distributions and the occurrence and movement of groundwater, therefore, can be understood better when the geologic framework and physiography of a region are understood.

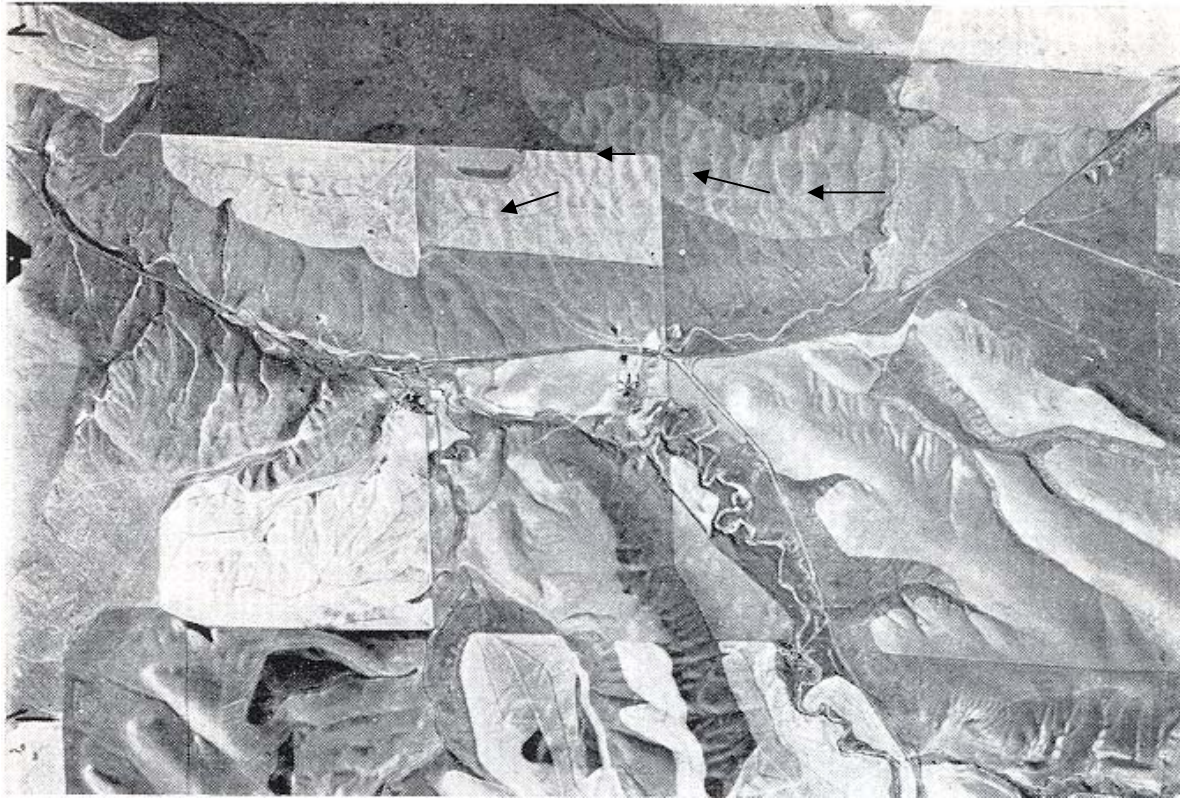


Figure 3: Giant current ripple marks at Staircase Rapids Bar (Bretz, 1959). The black arrows are in the area of the ripples and point in the direction of the flood water flow. The arrows were added to the original photo.

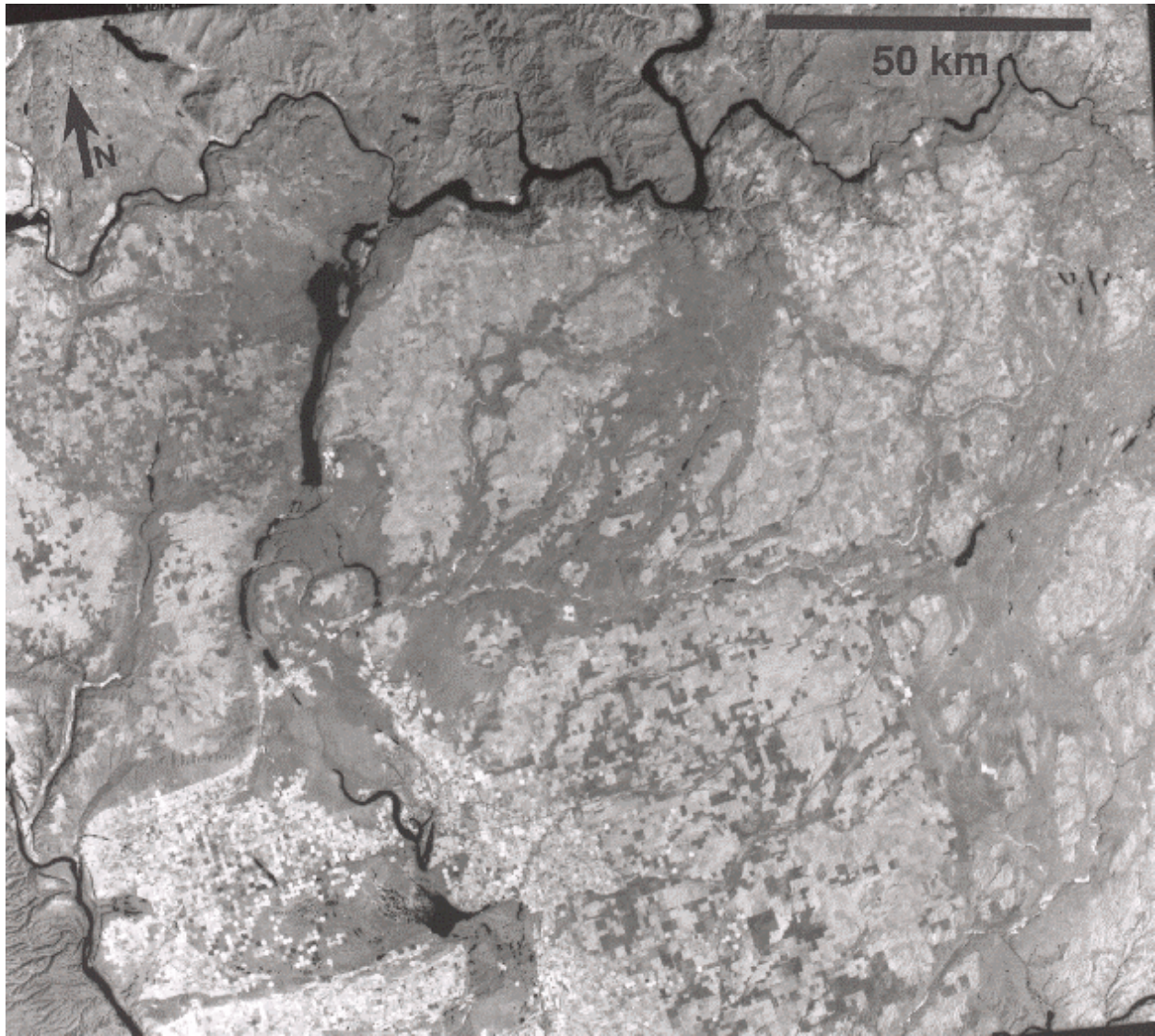


Figure 4: The Columbia Basin from a Landsat satellite photo. The Columbia River is visible in the lower left corner as well as across the top of the photo. The upper half of the Columbia Basin Irrigation Project area is visible in the lower left corner, also.

Model Input

In order to run the PRZM2 model and map the results in GIS, you need information about soils, crop, pesticide chemical characteristics, meteorological data, irrigation, and farm practices.

The Modeling Strategy

To understand the modeling strategy for this project, it helps to know how the model divides the subsurface (figure 5). The PRZM model code deals with the root zone to the bottom of the lowest soil layer data contained in soil data from the National Resource Conservation Service (NRCS). To model below this point, VADOFT is used along with PRZM. The user sets up the input data for modeling of the vadose zone using well logs, site studies, or geologic studies.

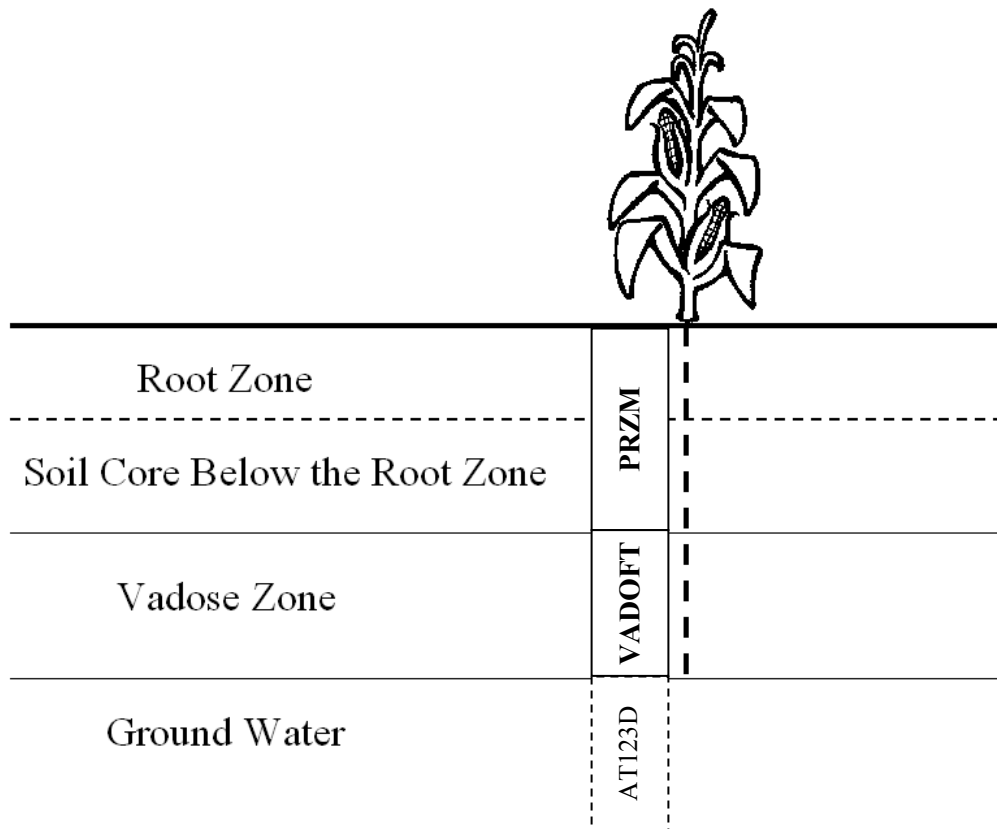


Figure 5: Representation of subsurface zones for the purpose of modeling. Modeling could be extended to groundwater using a groundwater model such as AT123D.

Because the soils data is much more complete and available than the vadose zone below the soil core, the PRZM model was run to the bottom of the soil profile. The vadose zone then was modeled at two trial sites using available well log and site information.

Soils

The most complete and well-mapped data we have for the modeling project is the soil data from the county soil survey conducted by the National Resource Conservation Service (NRCS), where expert field staff sample and map soils. The NRCS publishes these maps in county soil survey bulletins. The electronic version of these maps, SSURGO, is associated with the National Agricultural Soil Information System (NASIS) database. The data for the present modeling project was obtained from the Washington State NRCS office SSURGO GIS covers and NASIS database. This development has made the present regional-scale modeling project possible.

The soils in Grant and Franklin Counties reflect their genesis from the materials deposited by geologic processes over various periods of geologic time, and the soil properties tend to group into regions. Thus, maps of the soil properties for the project area tend to reveal patterns in the soils. Figure 6, 7, and 8 show maps of hydrologic group, drainage, and surface texture, respectively, for Grant and Franklin Counties. Hydrologic Group is a classification of how well water infiltrates into the ground, drainage is a classification of how well water drains, and surface texture is a classification of particle size, such as clay, sand, or gravel.

The soil data is one of the most important data input sources for the PRZM2 model. Various soil properties affect pesticide leaching in various ways. For example, particle size affects the amount of recharge that infiltrates. Organic matter content affects the rate of sorption of the pesticide onto the organic matter as it travels through the soil. The model takes these various soil properties into account mathematically, providing a consistent comparison between different soils. The soils data used for PRZM2 input includes the thickness of each layer, average of the high and low values for bulk density, sand content, clay content, and organic matter. The average of the high and low values was used because these are the values provided in the NRCS county soil survey data.

The sand content was calculated as the percent passing the number 4 sieve minus the percent passing the number 200 sieve (the size boundary between silt and sand). Field capacity and wilting point were calculated using the Brakensiek and Rawls method (PRZM2 manual), and organic carbon was obtained from the average of high and low organic matter from the NRCS county soil survey data divided by a conversion factor of 1.724, in accordance with the PRZM2 manual. The total thickness (core) of the soil was obtained by summing the thickness of all the layers.

Some soils in the area have hard pan layers, which should be mapped and considered, since hard pan acts as an impermeable layer. Figure 9 shows the hard pan layers in Grant County soils.

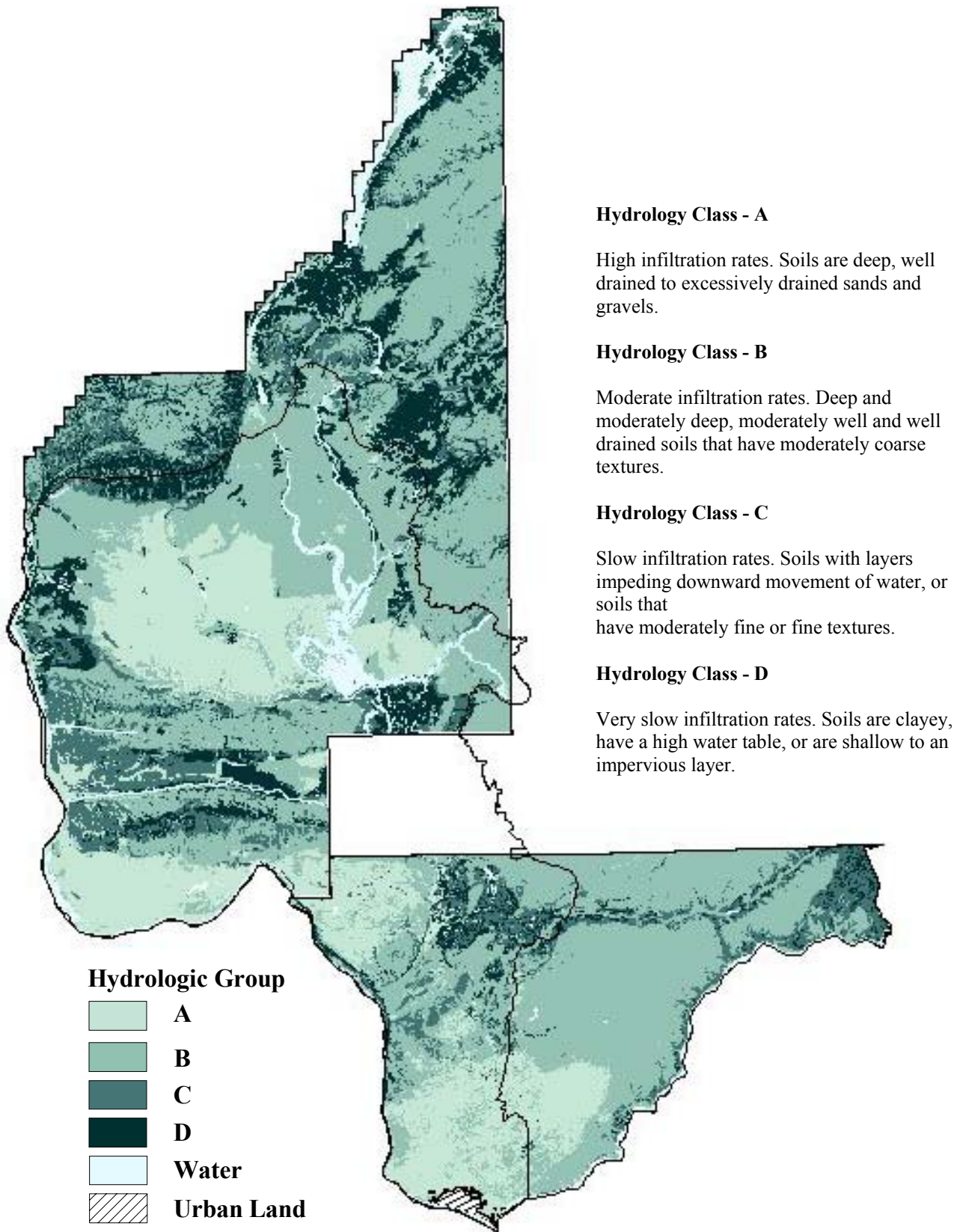
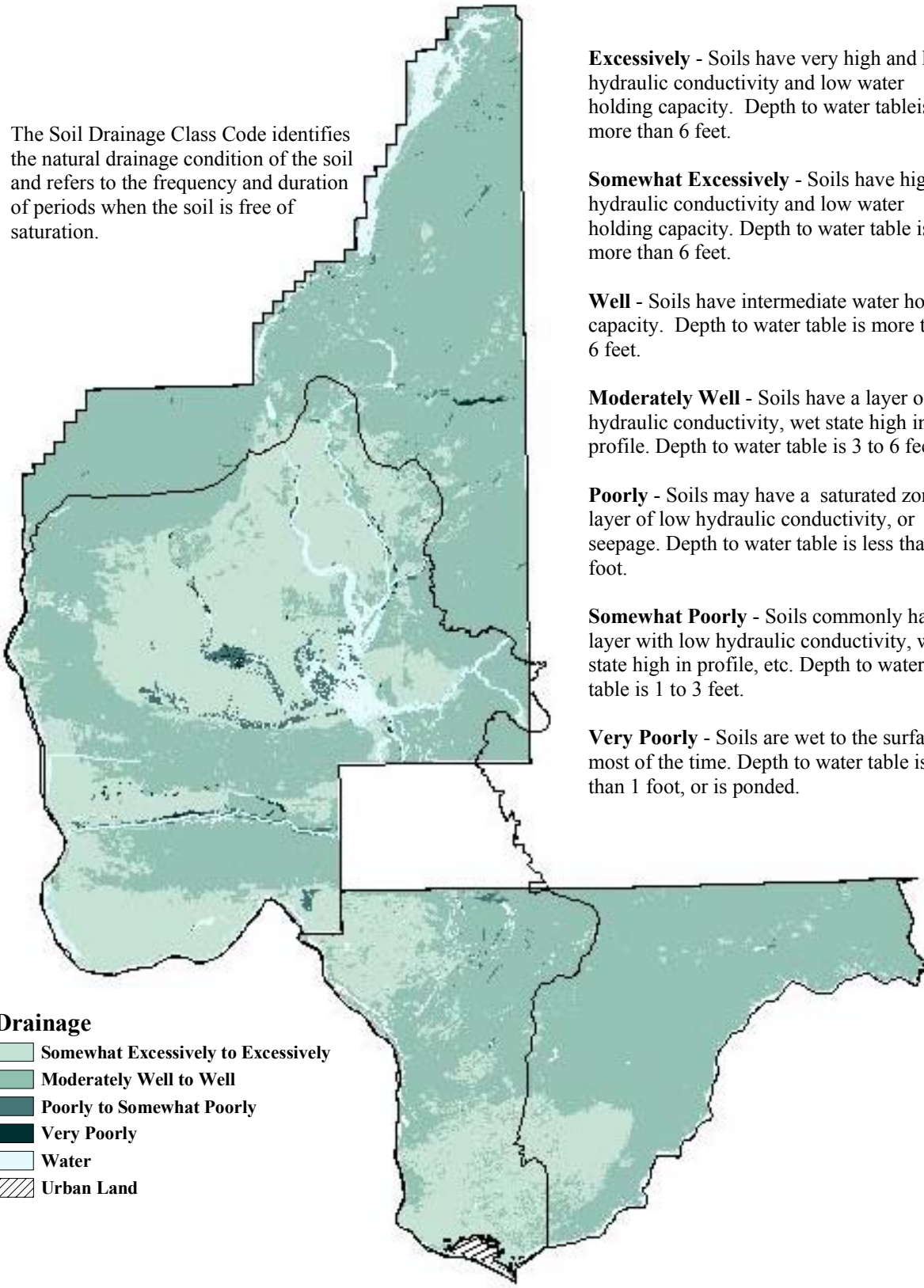


Figure 6: Hydrologic Group, Grant and Franklin Counties

The Soil Drainage Class Code identifies the natural drainage condition of the soil and refers to the frequency and duration of periods when the soil is free of saturation.



Excessively - Soils have very high and high hydraulic conductivity and low water holding capacity. Depth to water table is more than 6 feet.

Somewhat Excessively - Soils have high hydraulic conductivity and low water holding capacity. Depth to water table is more than 6 feet.

Well - Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Moderately Well - Soils have a layer of low hydraulic conductivity, wet state high in the profile. Depth to water table is 3 to 6 feet.

Poorly - Soils may have a saturated zone, a layer of low hydraulic conductivity, or seepage. Depth to water table is less than 1 foot.

Somewhat Poorly - Soils commonly have a layer with low hydraulic conductivity, wet state high in profile, etc. Depth to water table is 1 to 3 feet.

Very Poorly - Soils are wet to the surface most of the time. Depth to water table is less than 1 foot, or is ponded.

- Drainage**
- Somewhat Excessively to Excessively
 - Moderately Well to Well
 - Poorly to Somewhat Poorly
 - Very Poorly
 - Water
 - Urban Land

Figure 7: Drainage, Grant and Franklin Counties

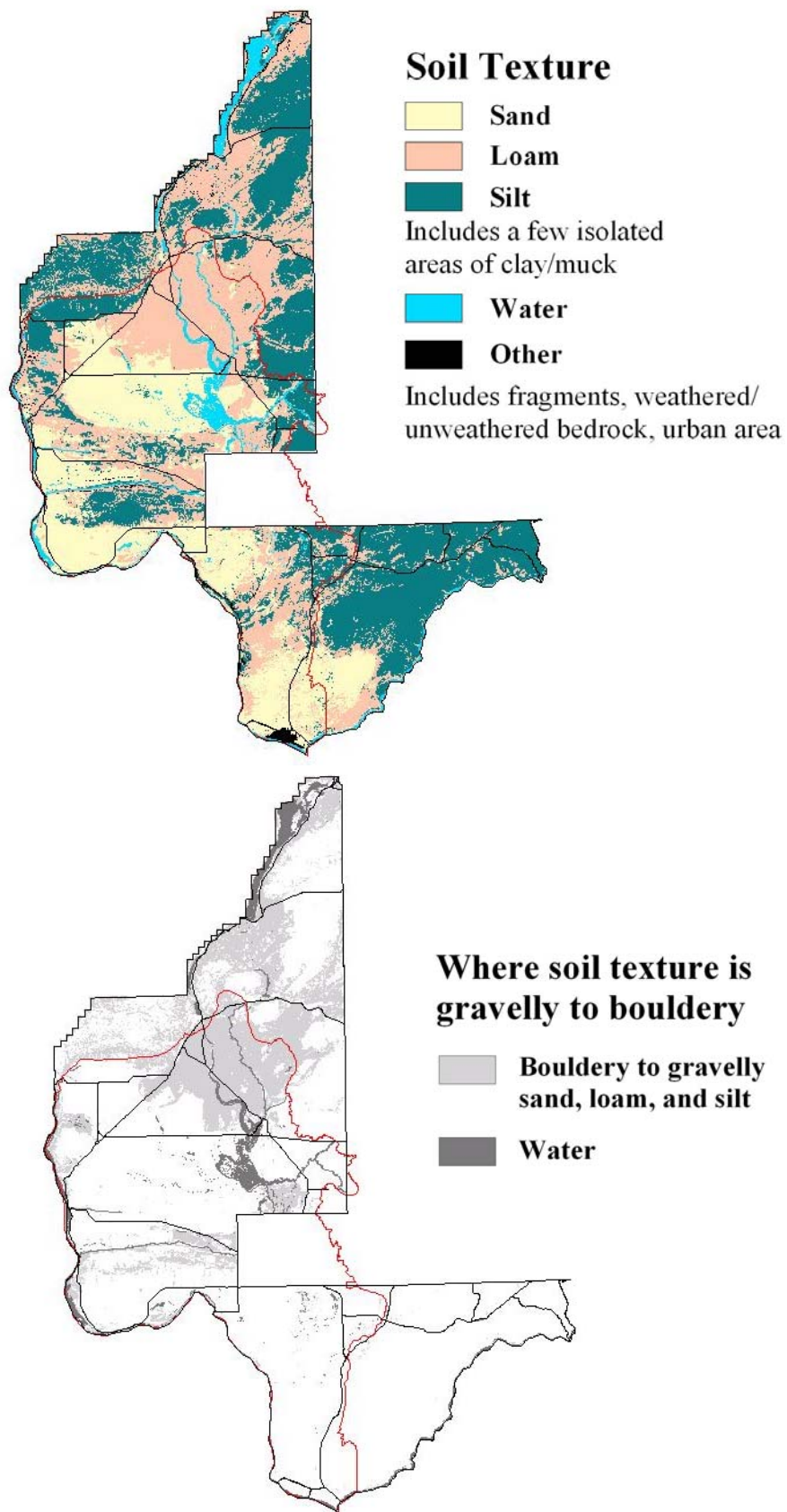


Figure 8: Soil Texture, Grant and Franklin Counties



Figure 9: Hard pan layers in Grant and Franklin Counties

Crop

The model runs for this project used corn as the crop across all scenarios for a couple of reasons. Figure 10 shows model scenario test runs completed for an earlier phase indicating that corn was the most sensitive crop for atrazine leaching. The same set of test runs indicated that the relative results between different soil types for different crops were similar to corn, but slightly lower in magnitude. The PATRIOT model is a user interface that was provided for the PRZM2 model.

Another reason a single crop was chosen for the runs was that the actual crops grown in the CBIP were not mapped, although the Franklin Conservation District is doing this for the Columbia Basin Ground Water Management Area this year.

Other crop characteristics taken from the PATRIOT assumptions were the crop canopy height at maturation, the percent canopy coverage, the rooting depth, and maximum interception storage of the crop.

**Patriot Model Cumulative Results for 10-Year Period
Esquatzel Soils for Atrazine - 1 Kg/Ha Application Rate**

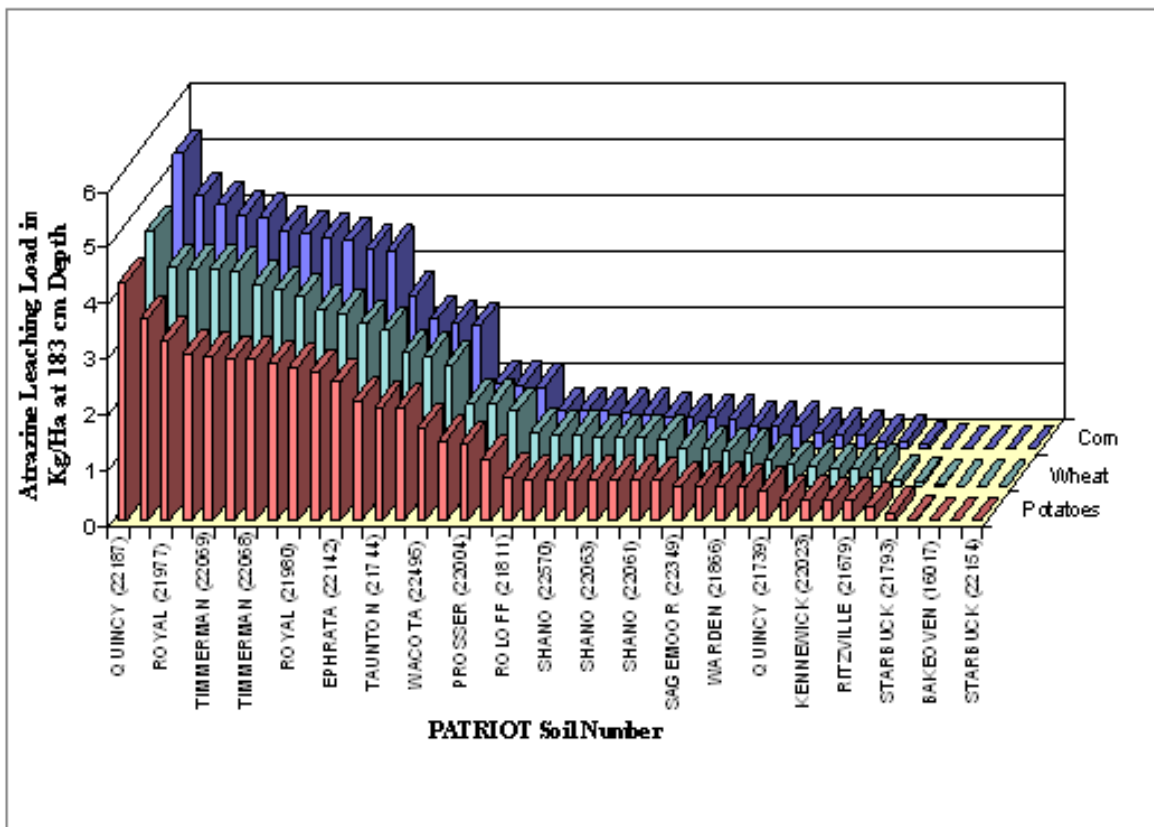


Figure 10: Atrazine leaching comparisons for corn, wheat, and potatoes using PATRIOT.

Pesticide Chemical Characteristics

Of the four chemicals proposed for management under the PMP, atrazine is the most likely to leach below the soil core. Therefore, atrazine was chosen as the pesticide for the model runs. Input values were taken from the PATRIOT generated input file, which draws values from a chemical database provided with PATRIOT. The input values include estimates of the amount of chemical that will adsorb to organic matter vs. the amount that will continue to travel in solution (K_{oc}), which is used to estimate K_d , and solubility. K_d is the soil-water adsorption coefficient, a measure of the pesticide distribution between soil and water (see the University of Guelph Glossary at http://www.uoguelph.ca/GTI/urbanpst/glossa_e.htm).

Meteorological Files

The meteorological data is from a Class A NOAA meteorological station (W25243) located in Yakima. The period of records used for the modeling is from 1974 through 1983. This ten-year period was chosen by taking as the fifth year the year for which the highest amount of precipitation occurred for March through September. In PATRIOT, this was done in order to include the highest rainfall record that occurred during the time pesticides are applied. This technique was retained for this modeling project.

There are other meteorological stations within the study area, but the data is not as complete as for Class A stations. To account for differences in local rainfall, while retaining the other data from the Yakima station as reasonable regional surrogates, adjustments were made to the Yakima rainfall record to reflect local rainfall. This was accomplished by comparing the average monthly rainfall of local stations to the Yakima station average monthly rainfall, and multiplying each Yakima record by that fraction.

Theissen polygons were used to assign the resultant meteorological records spatially to the project area. Figure 11 shows the Theissen polygons and the station locations. For stations that have moved during their period of record, all the locations for the stations are shown, and the Theissen polygon dissolved on the multiple station locations.

Since the Theissen polygons are a simple geographic method for attributing area to a rainfall station, and not physically based (other than proximity), it could improve estimates to use isohyets, especially in areas of significant relief. An isohyet is a line drawn on a map connecting points that receive equal amounts of rainfall.

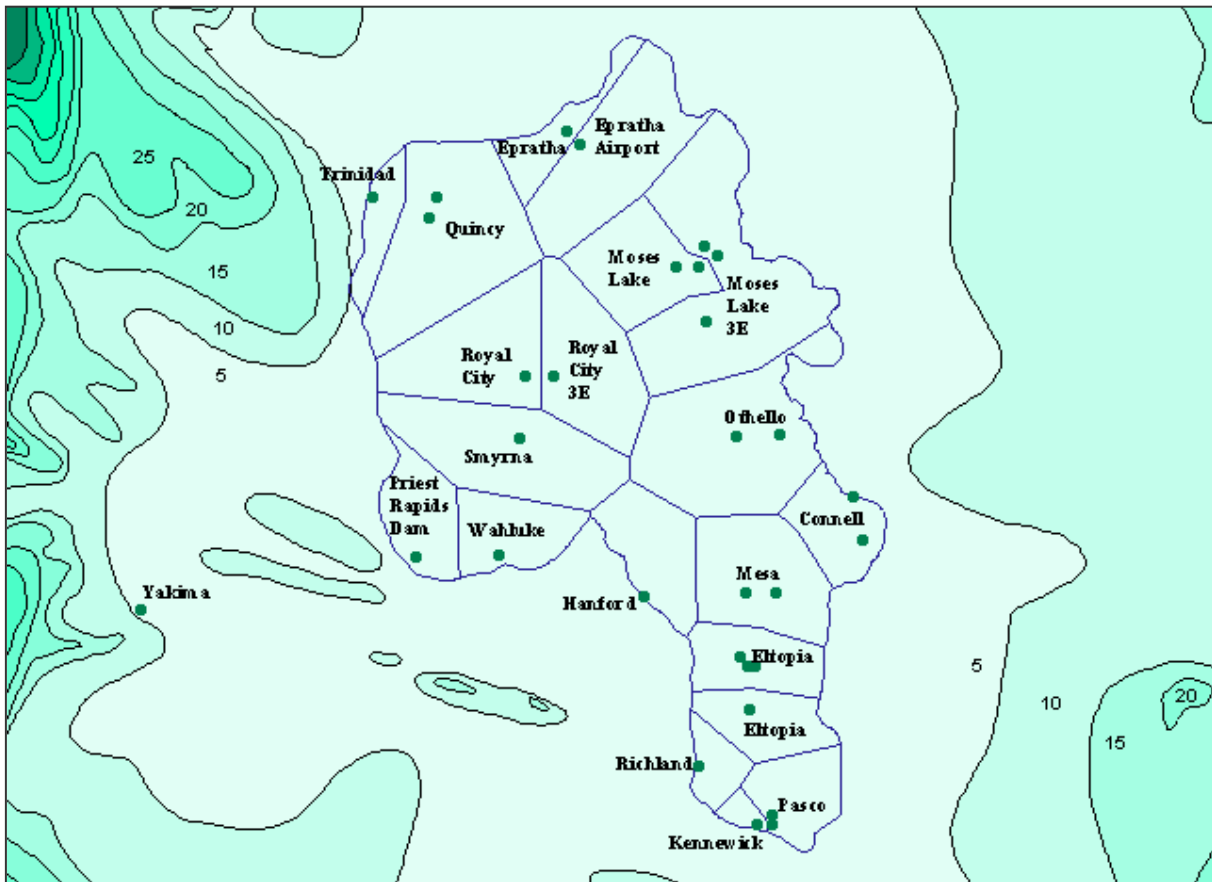


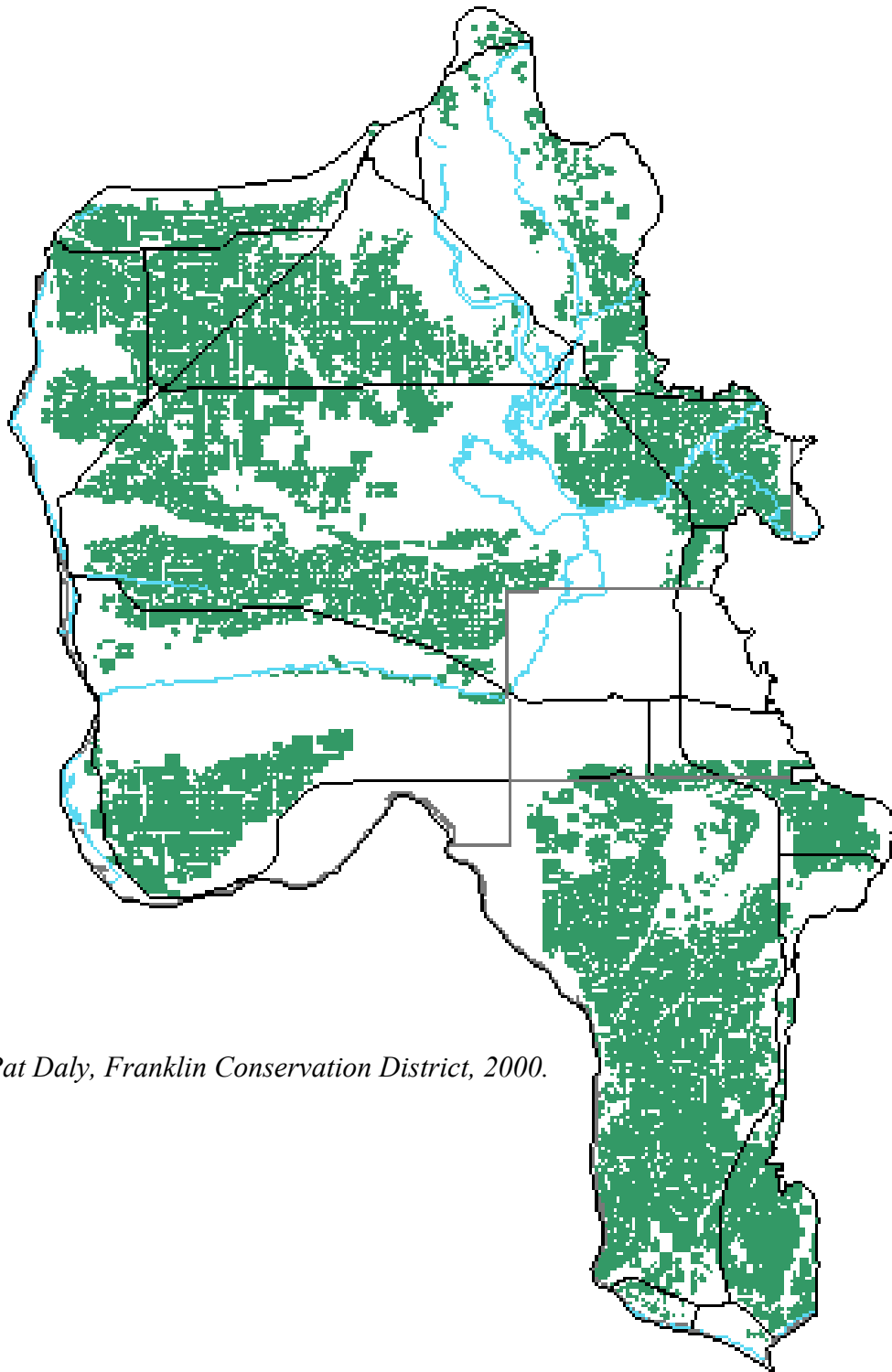
Figure 11: Class A Yakima Station and local meteorological stations, with Thiessen polygons and average yearly precipitation.

Agricultural Areas and Irrigation

Agricultural areas are available from the landuse/landcover GIS cover for the state of Washington (figure 1, page 3). The agricultural areas GIS cover is not a direct PRZM input source, but provides a map of areas where it would make most sense to complete an assessment of vulnerability for pesticides used in agriculture.

A GIS cover of irrigated areas for the Columbia Basin Irrigation Project area was provided by Pat Daly, Franklin County Conservation District (figure 12). PRZM model runs were done both for irrigated and non-irrigated conditions for each soil and rainfall polygon intersection, and the results mapped as appropriate (figure 13).

Irrigation was assumed the same throughout designated irrigated areas, because field-by-field irrigation records are not available.



Source: Pat Daly, Franklin Conservation District, 2000.

Figure 12: Irrigated areas within the Columbia Basin Irrigation Project area.

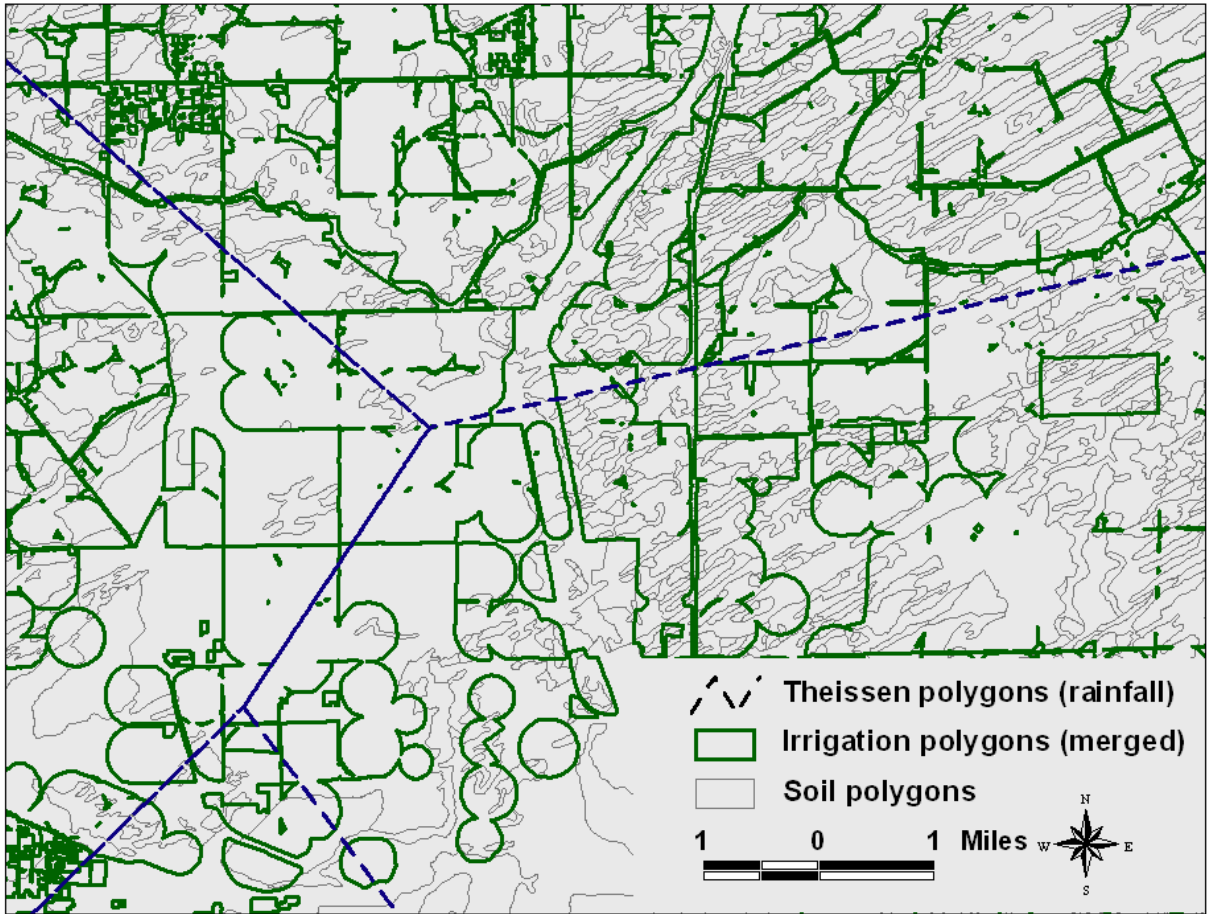


Figure 13: Rainfall, irrigation, and soil polygon overlay for model input, output, and map.

Recharge

Recharge is the net amount of water that reaches groundwater. Sources of recharge for the CBIP in the overburden aquifer include rainwater, irrigation, and leakage from surface water. The term “overburden” refers to the earth materials above the basalt flows. Transpiration of water by plants and evaporation reduce recharge (evapotranspiration). The PRZM model takes into account rainfall, irrigation, and evapotranspiration.

The runoff curve number gives an estimation of how much water runs off versus how much percolates into the ground. The PRZM model makes use of three runoff curve numbers: One for fallow ground, one for ground with a crop on it, and one for ground with crop residue on it. Runoff changes as the ground is fallow, the crop grows, and after the crop is harvested and the ground is covered with crop residue. The curve numbers used in this project were derived from the PATRIOT model, which assigns curve numbers based on the soil hydrologic group.

Vadose Zone

The vadose zone is the most difficult data to collect and represent of all the data sets in the project. This is because, unlike the soil data, there is neither a pre-existing database of vadose zone properties, nor polygons that represent a map of the vadose zone.

Surficial geology could be used as a guide to geologic settings. For example, if the surficial geology is a gravel bar produced by the catastrophic glacial Lake Missoula floods, then it is very likely the vadose zone, at least to some depth, will be gravelly. Other environments in the project area include sand, loess, lacustrine, bedrock, alluvium, some landslide deposits, and older sedimentary deposits, such as the Ringold Formation.

However, you cannot ascribe a depth to which the geologic facies applies, nor can you map buried geologic facies without either boring logs and stratigraphic sections or a geophysical study. In other words, if a gravel bar was only a few feet thick, and it overlies a lacustrine deposit, the surficial geology alone will not help you characterize the vadose zone below the gravel deposit. The subsurface is difficult to handle, because there often is a high degree of heterogeneity in the subsurface.

Boring logs, well logs, and site studies could be used to provide a databank of vadose zone characteristics at specific sites throughout the area, especially where these are generated by facilities regulated by Ecology for cleanup sites and permitted discharge sites. In addition, the work done at Hanford is useful, because Hanford is across the river from the study area in a similar geologic environment to the study area (Reidel, 1998).

The detail to which the vadose zone is described is limited by the amount of data available (well and boring logs) and the personnel to describe the extent of vadose zone materials based on the boring logs and other information.

Depth to Water

Depth to water is needed to define the thickness of the vadose zone. If the thickness and other vadose zone characteristics were known, the model could give useful information, and to be able to explore where the model results indicate a mass loading to groundwater that is above the criteria.

Currently, available depth to water information is from the USGS Ground Water Information System database, which contains depth to water at the time of well construction. The problems associated with this data set include discerning whether the well is completed in one or multiple aquifers, whether it is completed in an unconfined shallow aquifer, the different dates water levels were recorded, the likely change in water table elevation over time, and assigning the areal extent for ranges of depths to water.

A very generalized depth to water map for the area using the USGS Ground Water Information System data was generated, so that the areas with the potential for shallow groundwater

resources at risk can be identified. Figure 14 shows shallow groundwater resources based on well depth by section (township and range). The section is mapped to the shallowest well depth in the section. This map is not a comprehensive well inventory for the area, and so groundwater extent may not be fully described by existing well records in the database. However, it does present one way of displaying information about shallow groundwater resources that need protection.

Further mapping of groundwater resources would improve the resolution of this information. For example, groundwater levels can be measured periodically and a map such as the one in Figure 15 produced. Figure 15 is an illustration from a USGS study (Drost, 1996) that shows where groundwater was 20 feet or shallower in the Pasco Basin in 1986.

Vulnerability assessment would be improved if information about depth to water was improved, since this is a primary parameter in evaluating settings for susceptibility. Knowing depth to water and where people use shallow unconfined water is valuable for defining resources at risk and assessing the potential risk of pollution from agricultural chemical use. In addition, tracking depth to water over time would allow an analysis of changes in the water levels over time, as well as keeping track of groundwater movement.

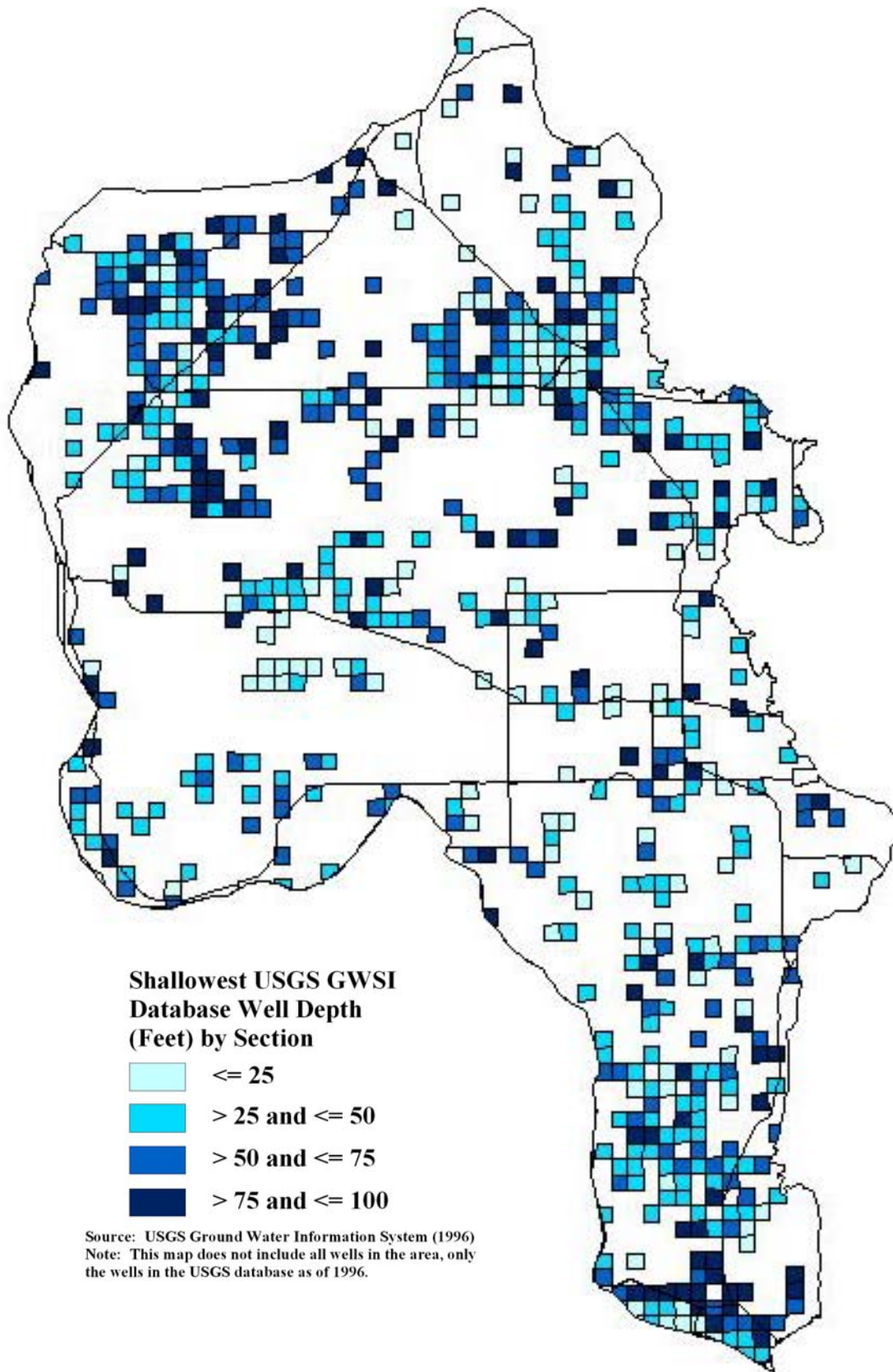


Figure 14: Shallowest Well Depths in each section (township and range).

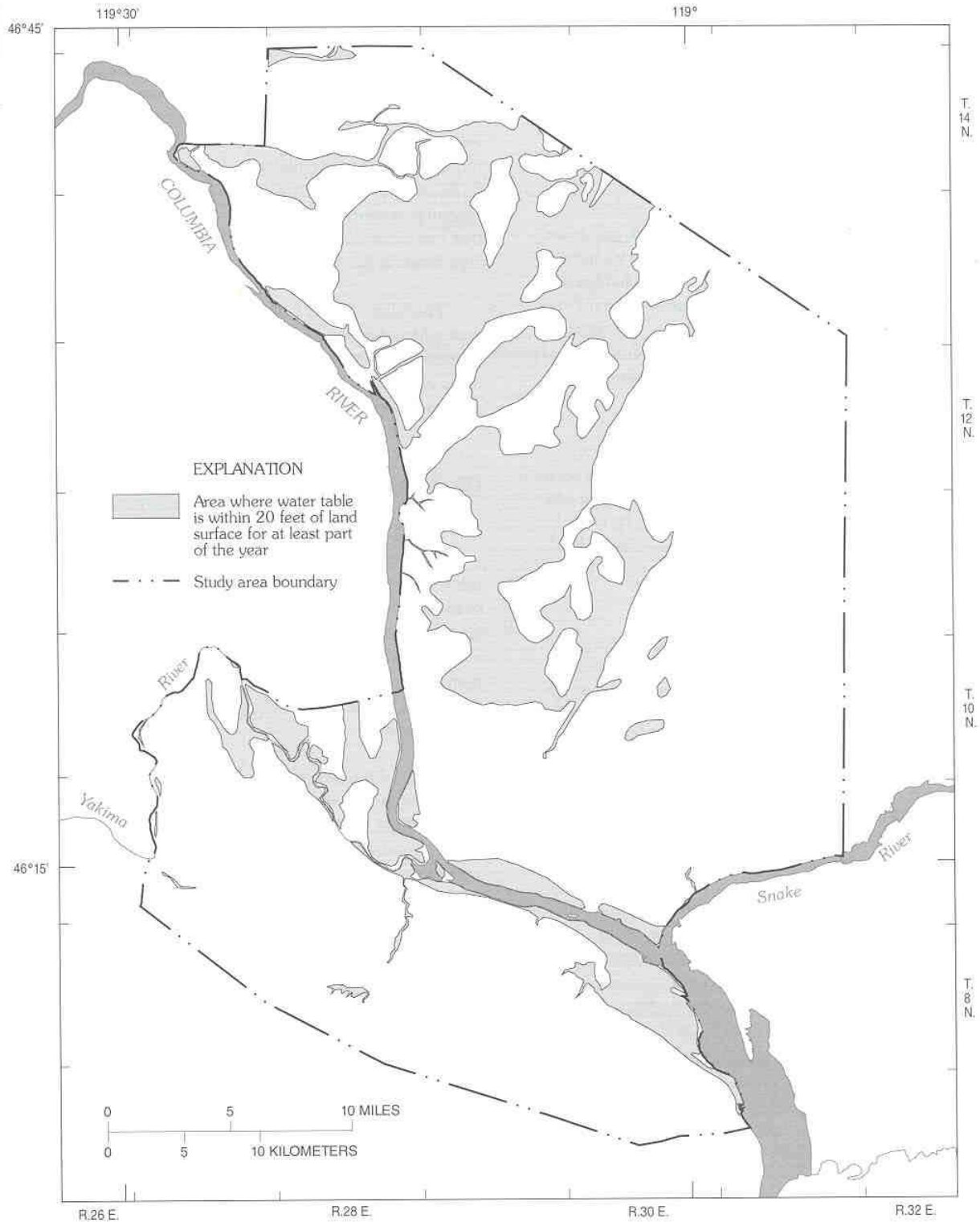


Figure 40.--Occurrence of shallow ground water in the study area as of 1986.

Figure 15: Shallow ground water in the Pasco Basin as of 1986 (Drost, 1997).

Monte Carlo

Soil properties within a specific soil unit vary within statistically definable ranges. This is reflected in the NRCS county soil survey data by reporting the high and low values of soil properties, such as percent clay, for example. In order to reflect this variability in the PRZM2 modeling, the Monte Carlo capabilities of the model were used. Using Monte Carlo means running the model a number of times while varying the property of interest. In this project, we are running PRZM2 over a ten-year time period 250 times, varying field capacity and organic matter.

Field capacity is a measure of how much water the soil holds after draining. The main use of field capacity in agriculture is to determine when and how much to irrigate. PRZM calculates field capacity using an equation that includes the percent sand, clay, and organic matter, as well as the bulk density (PRZM3 manual). Field capacity in the PRZM model is used to regulate when to turn irrigation on or off. Field capacity affects the amount of water that travels through the soil column. Organic matter affects the amount of chemical that travels through the soil profile because a chemical such as atrazine sorbs to organic matter.

The Monte Carlo routine uses statistical information to choose the values that will be used as inputs. The standard deviation, the maximum value, the minimum value, and the type of distribution curve guide the selection of the values selected for the 250 model runs.

Model Outputs

The Monte Carlo output reports the total core flux, which is the total cumulative pesticide mass that has reached the bottom of the modeled soil core by the end of ten years for the 250 model runs. The more sensitive a soil is to leaching atrazine, the more atrazine will have reached the bottom of the modeled soil core after ten years. This is the basis for comparing relative susceptibility between soils.

The 250 results are used to derive the probability that a certain mass loading would be exceeded, given the conditions modeled, as in: "There is a 90% probability that 2 kg/ha would not be exceeded for this soil under these modeled conditions." Conversely, there would be a 10% probability that 2 kg/ha would be exceeded, using this example. Both a probability curve (see figures 16, 17) and the reported pesticide mass loading at various probabilities are generated. The pesticide mass loading at the 90% probability of non-exceedence was mapped for this project.

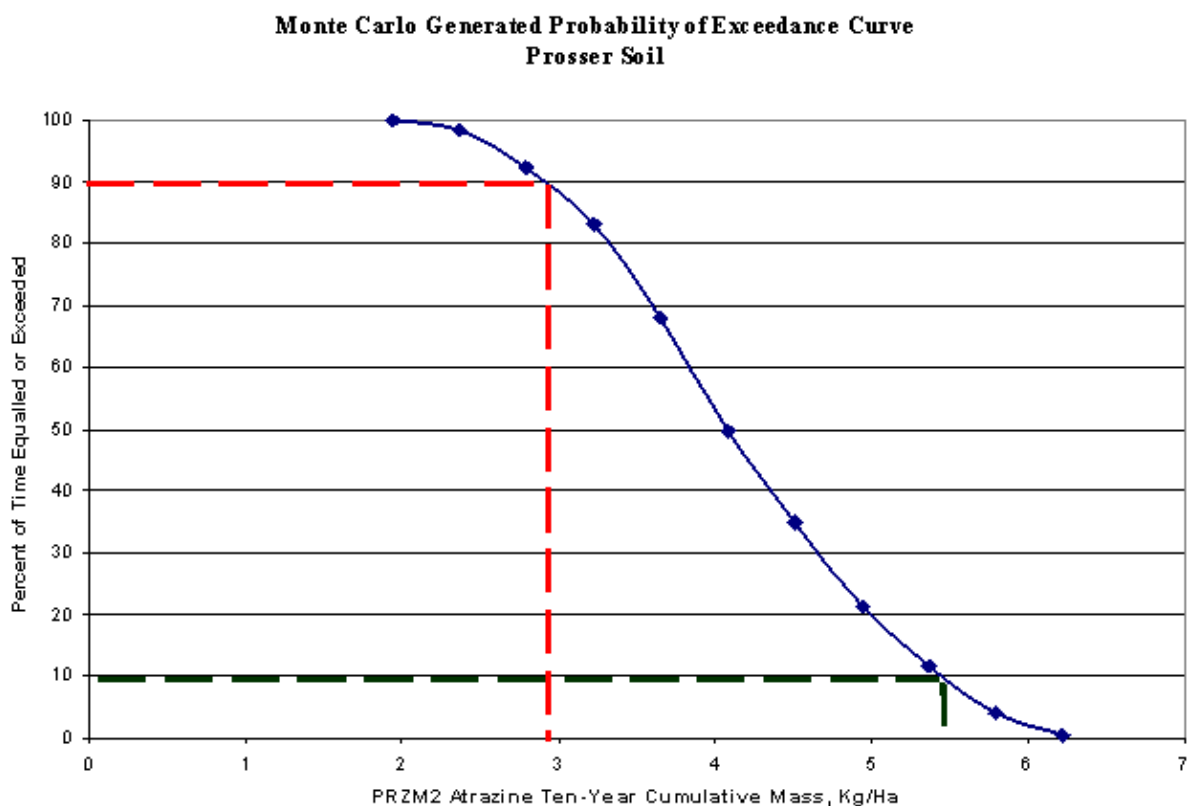


Figure 16: Probability of Exceedance Curve for a Prosser Soil.

In figure 16, the dashed lines on the graph indicate that there is a 90 percent chance of equaling or exceeding 2.9 Kg/Ha. There is a 10 percent chance of equaling or exceeding 5.39 Kg/Ha. This is based on the ten-year cumulative amount of atrazine as modeled using PRZM2, using the Monte Carlo routine to account for variability in field capacity and organic matter.

**Monte Carlo Generated Probability of Non-Exceedance Curve
Prosser Soil**

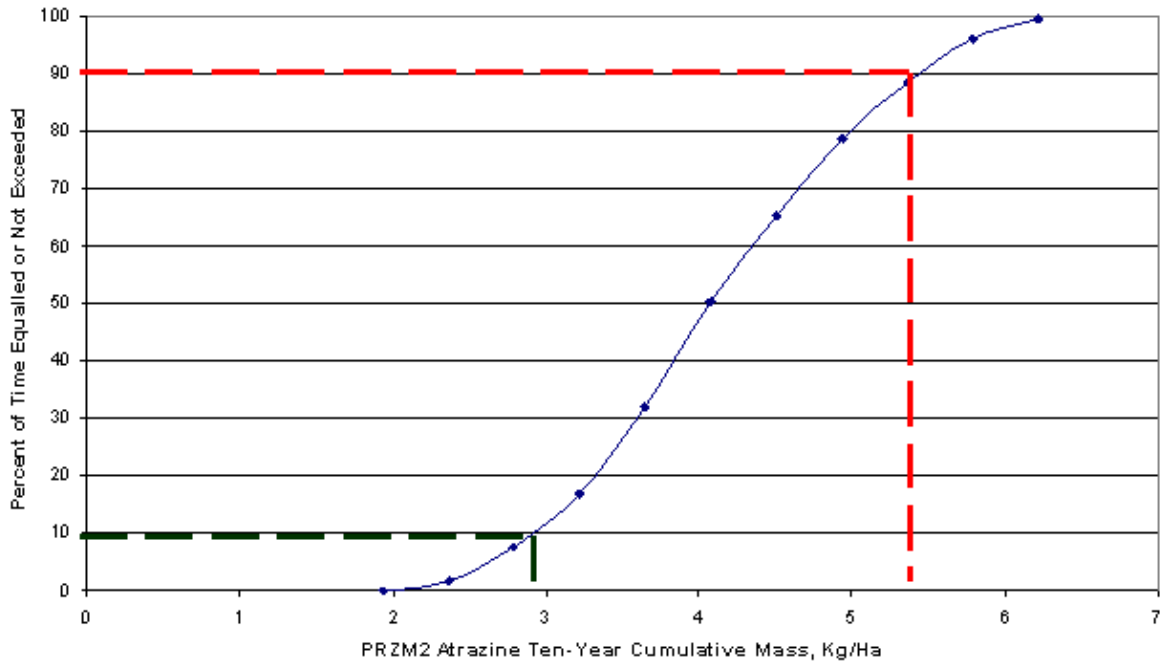


Figure 17: Probability of Non-Exceedance Curve for a Prosser Soil.

In figure 17, the dashed lines on the graph indicate that there is a 90 percent chance of equaling or NOT exceeding 5.39 Kg/Ha. There is a 10 percent chance of NOT exceeding 2.9 Kg/Ha. This graph is just the inverse of the probability of exceedence curve. This 90th percentile value for non-exceedence was used for all cases to compare susceptibility to atrazine migration to the bottom of the soil core, and to map the results.

The standard PRZM2 output includes a time series for the mass loading at the bottom of the soil core (figure 18). Other outputs that can be obtained include the mass pesticide in runoff, the mass pesticide eroded with sediment (if it is modeled by appropriate input), the amount of recharge and runoff, and other parameters, depending on user choice. Up to two daughter products from pesticide degradation can also be modeled.

Example Time Series of Atrazine Mass Flux over a Ten-Year Time Period

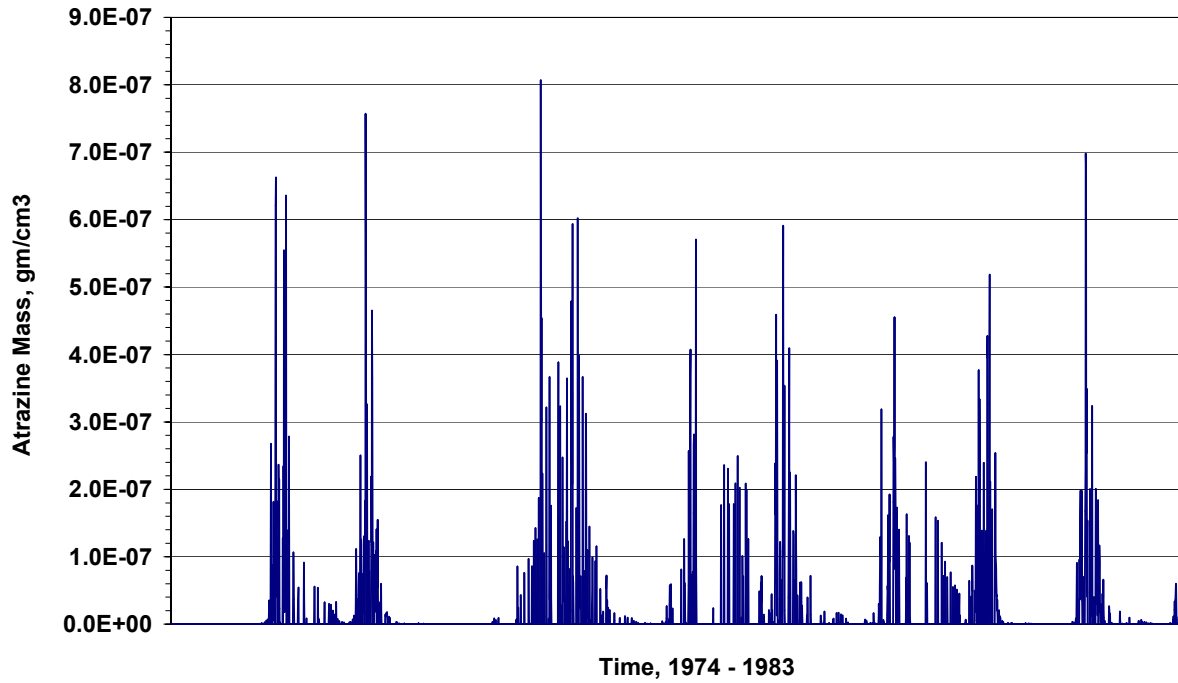


Figure 18: Time Series of PRZM2 Atrazine Mass Flux at the Bottom of the Soil Core for the Prosser Soil.

PRZM Modeling Results

The PRZM2 model ran successfully for almost all the scenarios. Exceptions are gravel pits, river wash, rubble, badlands, and a couple of soil types with exceptional conditions. Figure 19 compares how well atrazine travels through various soil types, if all the soils received the same amount of water and atrazine and corn was grown. Figure 20 compares how well atrazine travels through various soil types, if all the soils received the same amount of water and atrazine and corn was grown, and also takes into account local rainfall and irrigation estimates.

These two maps are possible because we have county soil surveys and meteorological station data. We can estimate irrigation because we have an irrigation map provided by Franklin Conservation District.

In order to estimate which areas of the Columbia Basin Irrigation Project area are most likely at risk from actual atrazine use, we would have to have accurate atrazine use information. Accurate crop maps and records would result in a better assessment. Short of atrazine use and crop maps and records, which are not available at the level of detail needed for modeling and mapping, we were able to produce the soil susceptibility (figure 19) and soils plus recharge susceptibility

(figure 20) maps. If the atrazine use areas were known, then areas of concern could be narrowed considerably to only where atrazine has been used.

The maps shown in figures 19 and 20 use the 90th percent probability of non-exceedence from the Monte Carlo routine for the modeled soil core. The previous section explains the model outputs in detail. The categories for mapping the modeling results were generated by using ArcView's natural breaks algorithm. The following description is from the ArcView on-line help documentation:

Natural Breaks

This is the default classification method in ArcView. This method identifies breakpoints between classes using a statistical formula (Jenks optimization). This method is rather complex, but basically the Jenks method minimizes the sum of the variance within each of the classes. Natural Breaks finds groupings and patterns inherent in your data.

For figure 20, irrigation was either applied or not applied in accordance with a map of irrigated lands. The irrigation routines depend on the individual soil characteristics and the weather. Field capacity controls how much a soil can hold. The model tracks when the water in the soil drops to a certain fraction of the field capacity based on such parameters as soil drainage, rainfall, and evapotranspiration. Rainfall was adjusted to reflect local monthly averages. The model was run using a hypothetical atrazine application rate of 1 pound per acre (1.12 Kg/Ha), applied once a year on corn in the model for all scenarios.

The Theissen method of assigning polygons to rainfall stations is coarse and not really very satisfactory. You can see the linear effect of changes in the results in figure 20, which is an artifact of using the Theissen method. In the future, isohyets or another method should be used to assign areas to rainfall stations.

Areas of higher or lower susceptibility can be clearly seen on the maps. Comparing the variable recharge susceptibility map to the constant recharge map shows that irrigation in this semi-arid climate is a prime factor in the susceptibility of atrazine migration below the soil core.

The similarities between the individual soil property maps and the PRZM modeling results map are easy to see in figure 21. Model/map results follow the same physical patterns as maps of the individual soil properties. Individual soil property maps can be used to make quick guesses about an area. But the model is needed to account for the various soil properties, rainfall, irrigation practices, time, and other inputs that cannot be gauged simply from individual soil property maps.

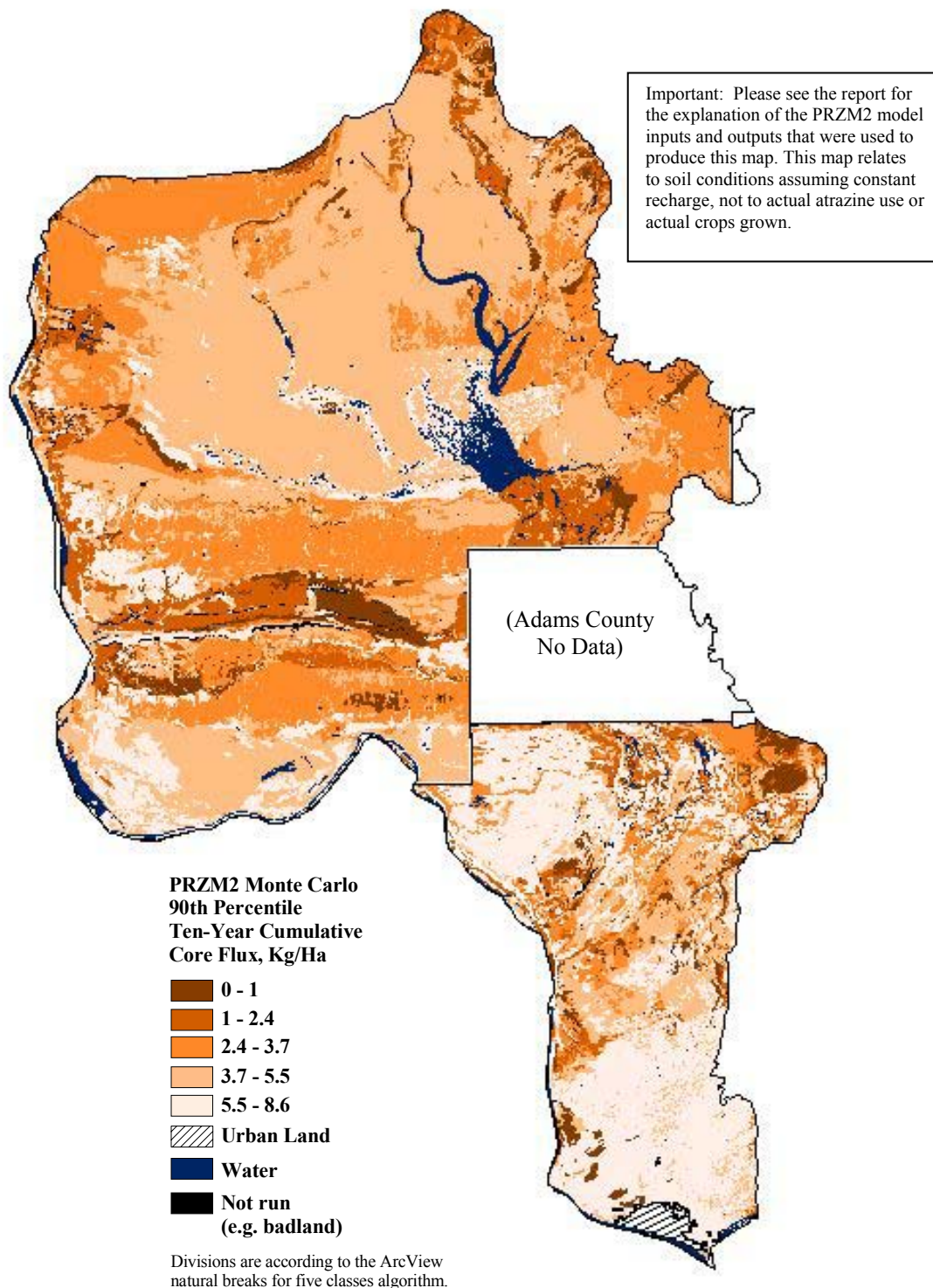


Figure 19: Comparison of how well soils transmit atrazine down through the soil layers, based solely on soil properties (crop, recharge, application rate were kept the same throughout), Columbia Basin Irrigation Project Area, Grant and Franklin Counties.

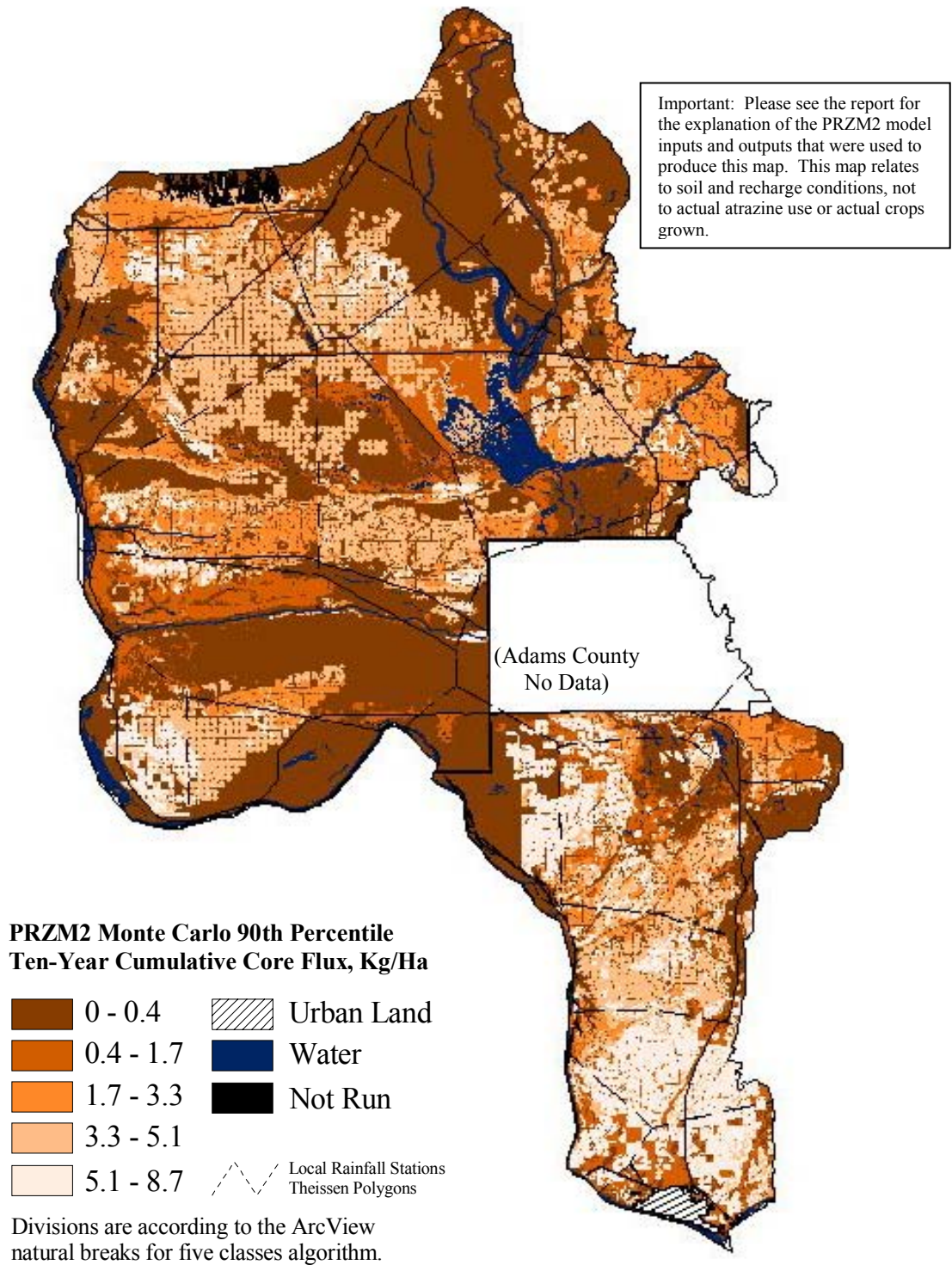


Figure 20: Comparison of how well soils transmit atrazine down through the soil layers, based solely on soil properties and estimated local irrigation and rainfall (atrazine application rate and crop were kept the same throughout), Columbia Basin Irrigation Project Area, Grant and Franklin Counties.

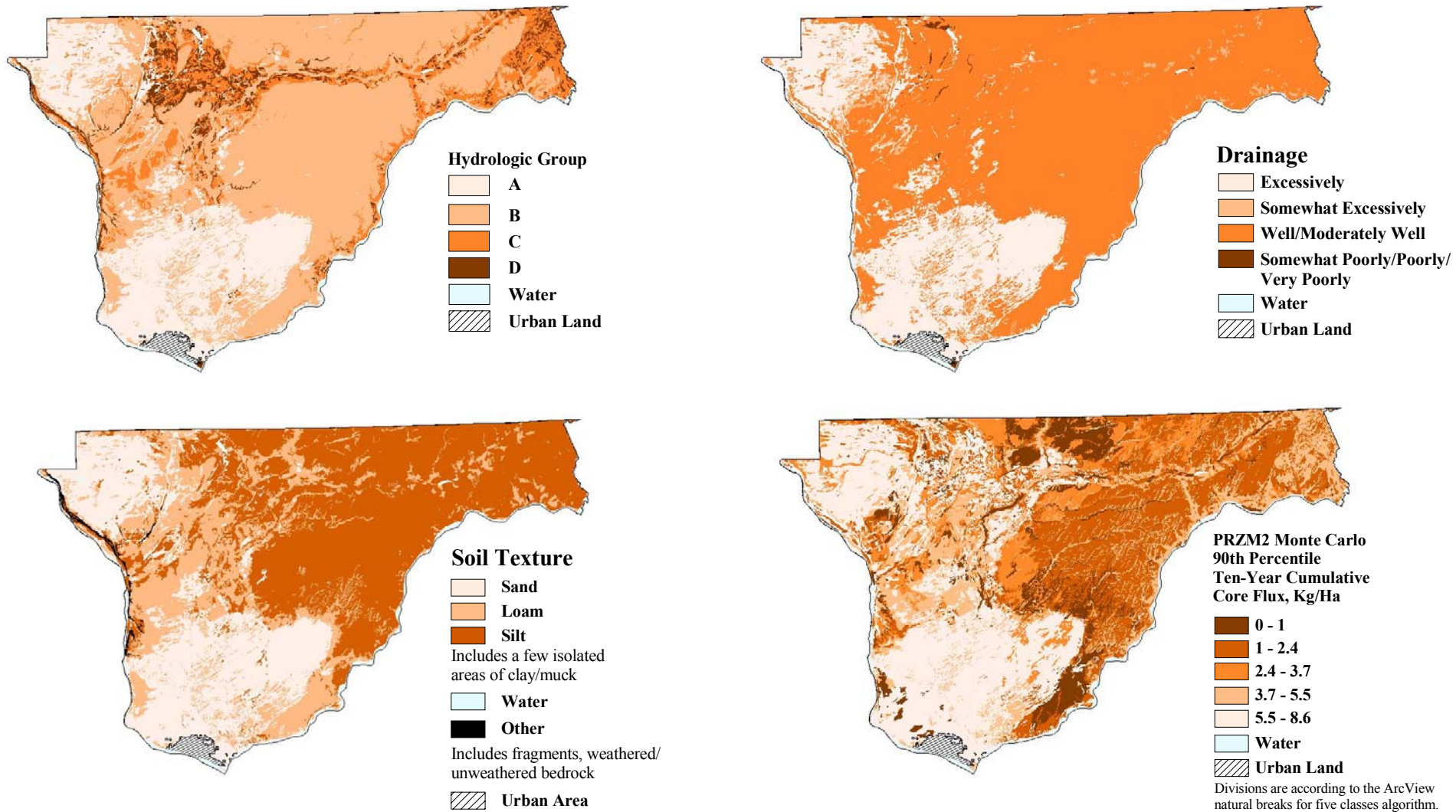


Figure 21: Comparison of Soil Properties with Model Results for Franklin County

VADOFT Trials

VADOFT, the vadose zone model, was run for two sites for which suitable detailed vadose zone data is available. One is located in the Pasco Basin, and the other is located near the Winchester Wasteway in the Quincy Basin. Figure 22 shows the location of these two sites.

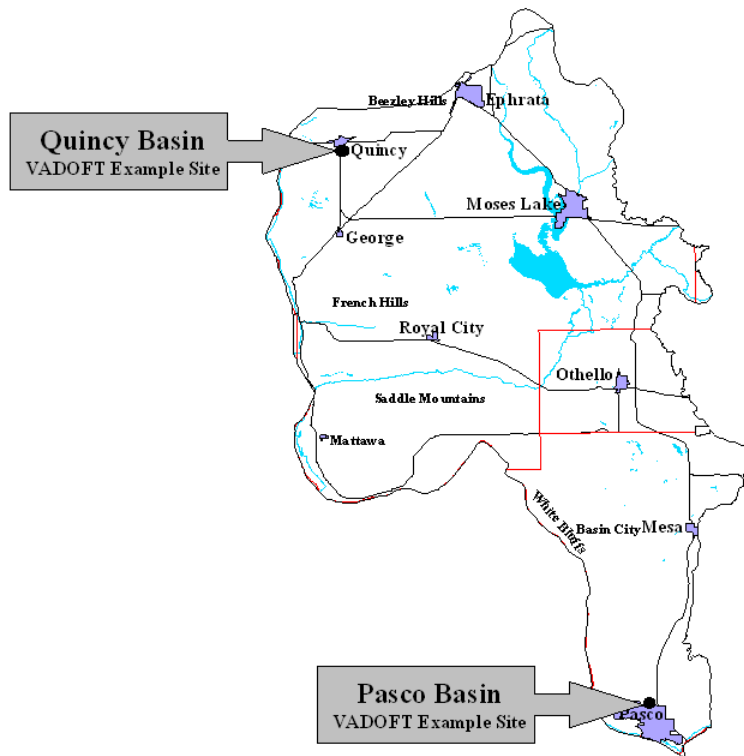


Figure 22: Location of PRZM VADOFT sites

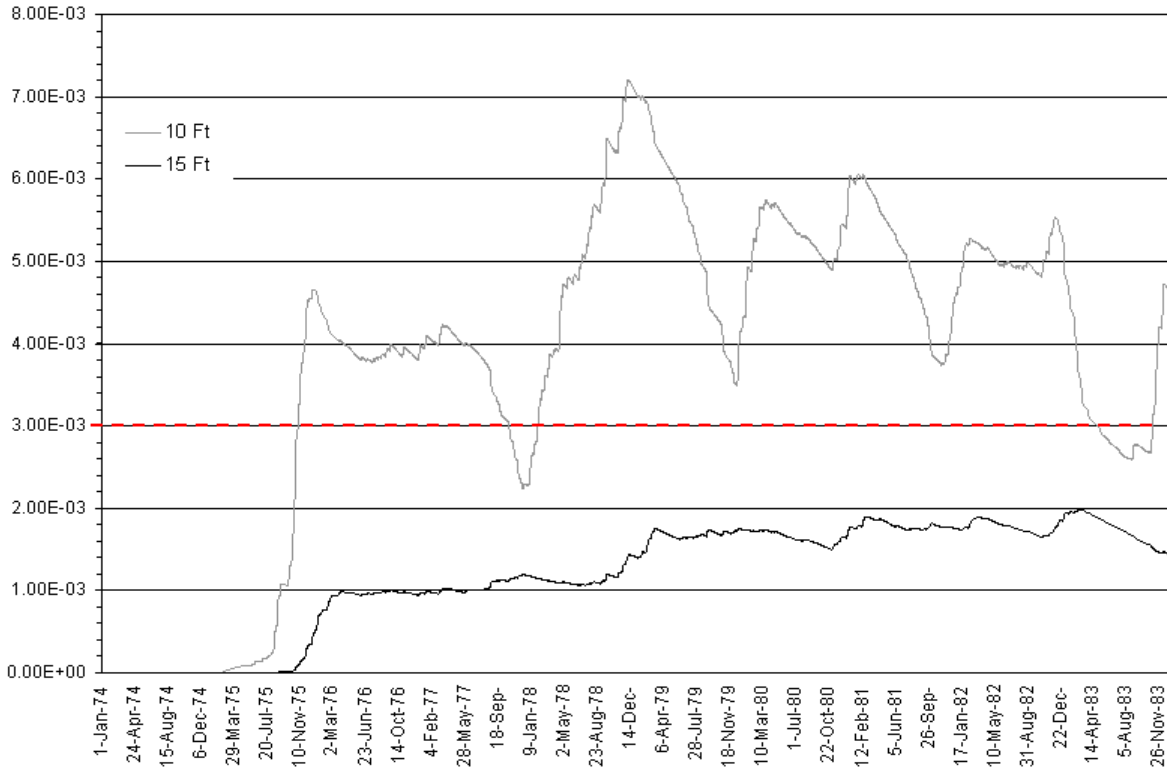
Figures 23 and 24 show the attenuation of atrazine resulting from running the PRZM3/VADOFT model to successive depths, given the soil properties and vadose materials at these sites with the same application rate used in the PRZM runs – one pound per acre. The EPA Maximum Contaminant Level (MCL) for atrazine in drinking water is shown by a red dashed line at 3 parts per billion.

In figure 23, the modeled concentration for the Hezel soil type over the given vadose materials is above the limit most of the time at ten feet, but does not exceed the limit at 15 feet. In figure 24, the modeled concentration for the Warden soil exceeds the limit only during a relatively short time at ten feet, and does not exceed the limit at 15 feet.

The depths where concentrations are likely to cause a problem can be compared to the depth to the water table, to get an idea where shallow groundwater resources are at risk from use of a pesticide under various conditions.

There are obvious limitations to this approach, including obtaining sufficient definition of vadose zone properties on a regional scale to be confident in the result, the fact that water levels change over time, and the fact that atrazine loading has not been tracked sufficiently to be able to actually *predict* where atrazine is most likely to appear, given various conditions. However, scenarios can be run to determine the most likely outcomes given initial conditions using this method.

Quincy Basin, Hezel Soil Over Silt Loam Vadose Layer
Modeled Atrazine Concentration, mg/L



Quincy Basin, Warden Soil Over Silt Loam Vadose Layer
Modeled Atrazine Concentration, mg/L

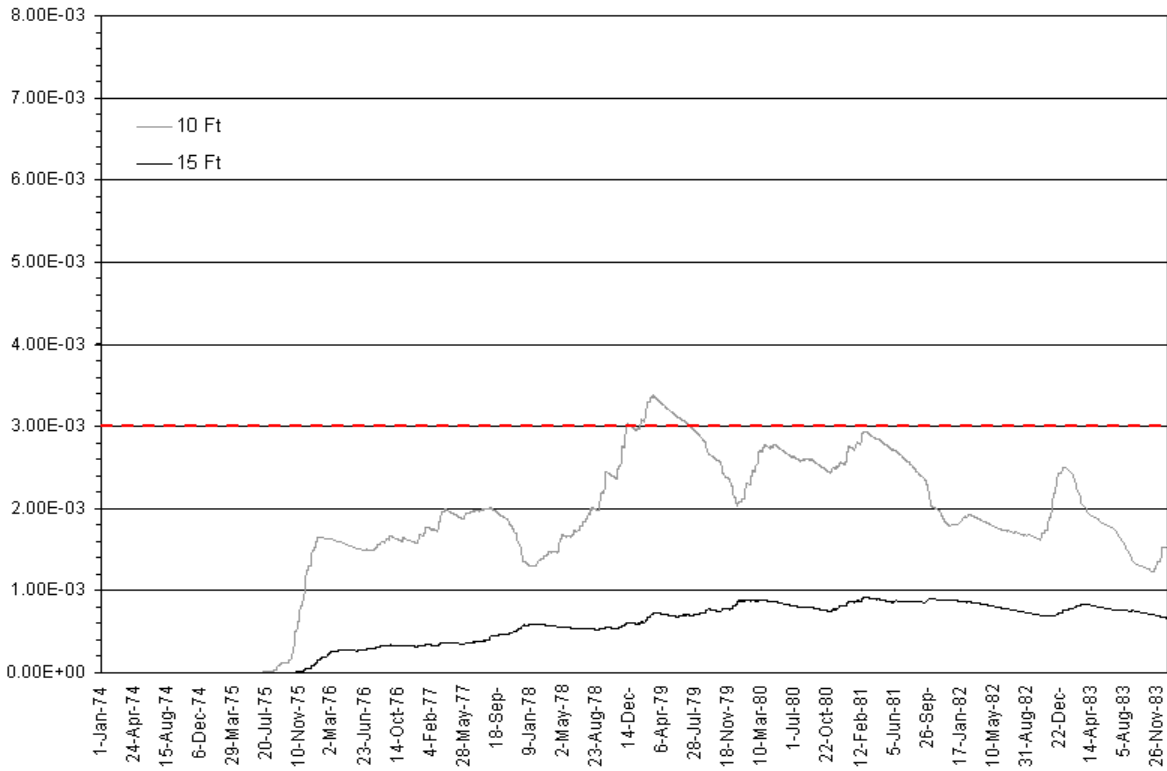
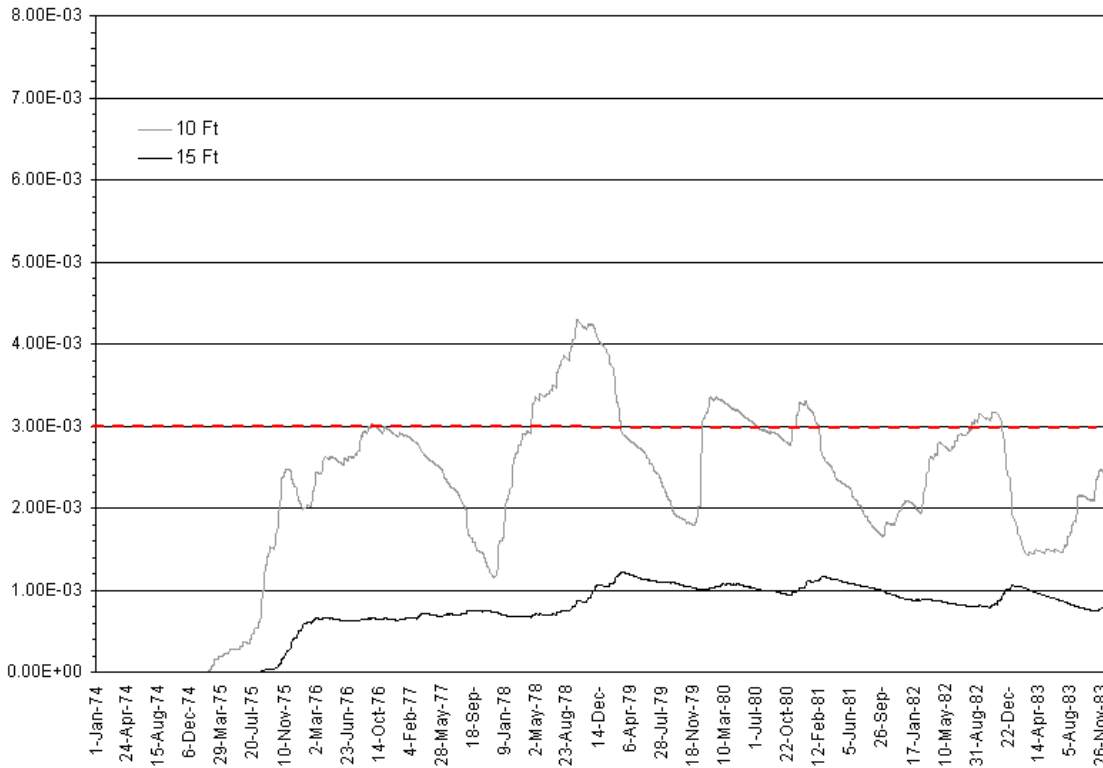


Figure 23: Example VADOF model results for the Hezel and Warden Soils in the Quincy Basin.

Quincy Basin, Quincy Soil Over Silt Loam Vadose Layer
Modeled Atrazine Concentration, mg/L



Pasco Basin, Quincy Soil Over Loamy Sand Vadose Layer
Modeled Atrazine Concentration, mg/L

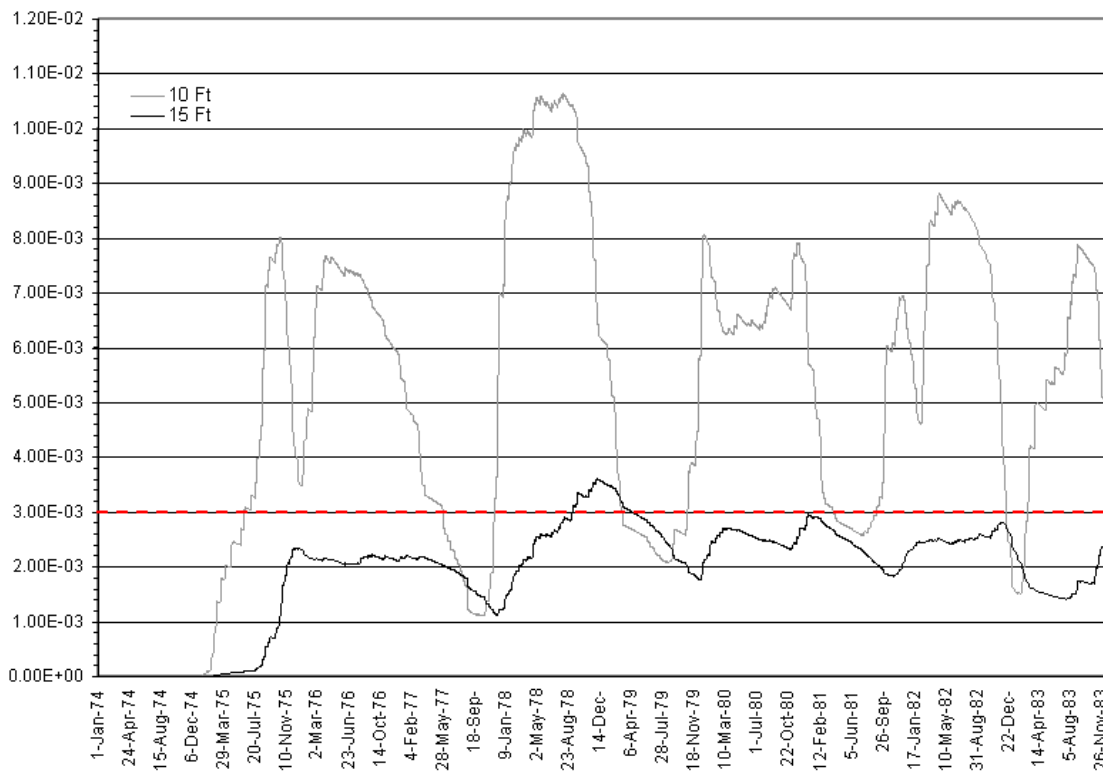


Figure 24: Example VADOFT model results for two Quincy Soils in the Quincy and Pasco Basins.

Methods

The PRZM2 model was run on six UNIX servers at night over a period of several weeks. This was necessary because a Monte Carlo run takes approximately 1 to 1.5 hours to complete, and there were almost 3000 runs. The same task in Standard Mode takes a day or two to a few days at most. Figure 25, the same base map for the area completed in Standard Mode, was produced for comparison, to determine if acceptable results could be had by using the less computer-intensive method. The Monte Carlo module was used to account for field variability of recharge (field capacity) and organic matter.

The Monte Carlo routine requires the standard deviation, maximum, minimum, average, and distribution type. The triangular distribution fits the soil data inputs well, requiring just the minimum, maximum, and average, and not the standard deviation. However, test runs showed that incorrect combinations of inputs causing run failure could be generated using the triangular distribution. Therefore, the normal distribution was used. This is the distribution type used by PATRIOT. The Monte Carlo routine requires using the normal distribution.

The maximum and minimum values for organic carbon content were obtained from the soil database maximum and minimum values for organic matter divided by a conversion factor of 1.724 (PRZM manual). The maximum and minimum values for field capacity were generated by adding/subtracting .07 from the average field capacity computed using the Brakensiek and Rawls method. The value of .07 approximates the standard deviation for a number of soil types (see PRZM manual, Table 5-25), and does not generate inappropriate negative values for field capacity minimum boundaries for use in the Monte Carlo routine. PATRIOT uses a standard deviation for field capacity of 0.1. The standard deviation for organic carbon of 1.0 was taken from the PATRIOT model Monte Carlo inputs. These standard deviations are based on a national statistical analysis of 1989 NRI soils data nationwide done by EPA during the development of PATRIOT.

A batch program was written for the project in UNIX so that the model could continually run overnight. The outputs were stored in folders that correspond to the irrigation on or off condition, and the meteorological station ID. The output was captured by using the UNIX grep utility to obtain the results for the 90th percentile from the Monte Carlo output files. The grep command is used to search for text against a pattern and return the results. The resultant text file was imported into an Access database. Additional programming support would simplify and automate this process.

Input was derived either directly or calculated from a database of NRCS county soil survey soil properties. The PRZM2 manual was used as a guide for the calculations. A Visual Basic program, which created the input files from the Access database tables of the input values, was written by Frank Voss, USGS.

The local meteorological station data was derived by adjusting the NOAA Class A Yakima meteorological station record by monthly averages on a daily basis. That is, if a local station only had 90% rainfall compared to the Yakima station average for January, the rainfall for each

day in January for the local station was calculated to be 90% of the Yakima station's daily values. Frank Voss wrote a Visual Basic program to accomplish this task. The reason this method was used was to have a similar period of record for all of the areas that reflected overall local averages.

The following were excluded from modeling: Endicott and Scoon soils have an indurated layer with insufficient input data to model within their soil profile, although the upper layers of the Scoon soils can be run. Arents (disturbed soil) and Saltese (muck) did not have sufficient input data to model. Gravel pits, riverwash, and rubble land were excluded from the final modeling round (where local recharge and irrigation were accounted for).

The results from PRZM2 modeling to the bottom of the soil core were mapped using the ArcInfo GIS. One map was derived from modeling that used one meteorological record for the entire area and one irrigation pattern (irrigation on during the cropping period), which reflects the intrinsic susceptibility of the soil properties. These results could be directly mapped to the soil polygons.

The other map was derived from modeling that used local meteorological records and irrigation applied or not applied, as appropriate, together with the soil properties. These results were mapped to polygons that are the intersection of the Theissen assigned to meteorological stations, the irrigation polygons, and the soil polygons. This map reflects the variability of soil properties and estimated recharge due to rainfall and irrigation.

The categories for the maps were derived from the ArcView algorithm for selecting natural breaks for five classes. The soil property maps were developed in the same manner. The objective is to allow this algorithm to help reveal natural patterns in the soil properties, as well as in the modeling results.

An examination of potential VADOFT inputs based on surficial geology was completed as a preliminary step for running VADOFT with PRZM2 at selected sites. The input for the vadose zone was derived from tables in the PRZM manual and information from two sites, one in the Quincy Basin, and one in the Pasco Basin. The well logs from these sites were used to define vadose zone layers and lithology. The PRZM model coupled with VADOFT was run at successive depths at each site to study the attenuation of atrazine with depth.

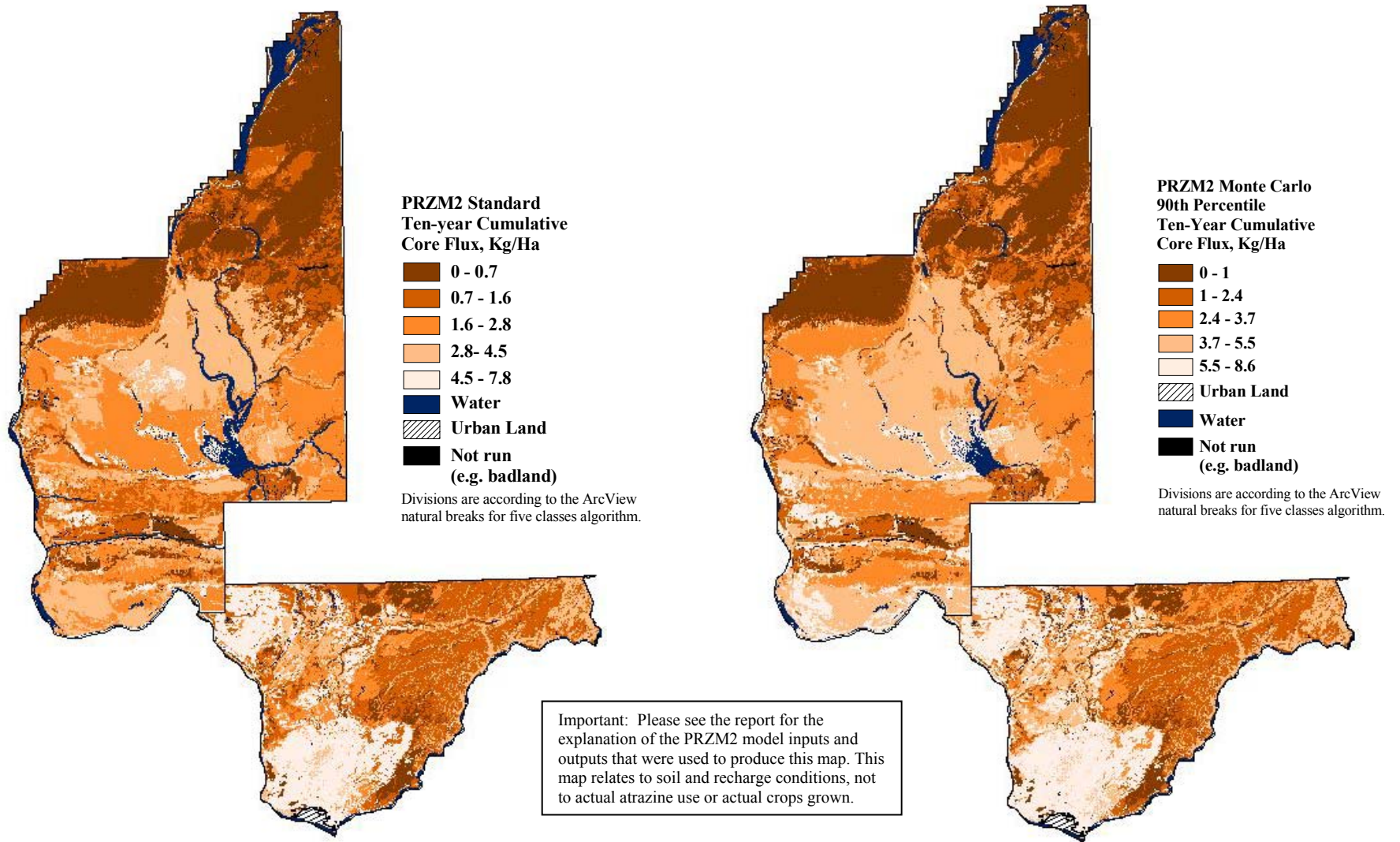


Figure 25: Comparison of Standard single runs (left) with Monte Carlo runs (right).

Assumptions and Limitations

The assumptions and limitations of the model and the way it is used in this project impact the results and the map of the results. Careful review of the assumptions and limitations helps to determine whether the model gives useful information that is not misleading.

Evaluating whether or not you get a reasonable result using estimates and approximations is done by comparing model results with field results. We had hoped to compare PRZM results with a logistic regression study of the USGS NAWQA atrazine detects in wells in the study area, but were unsuccessful because of the limited information on atrazine use. Elsewhere, PRZM has been tested against field data in New York and Wisconsin, Florida, and Georgia, and was found to be a useful tool for evaluating groundwater threats from pesticide use (Carsel et al, 1999). PRZM results were also compared to a study in the Midwest (Burkart et al, 1999) and found to be useful there for regional modeling.

The assumptions and limitations are of two types. One type of limit is the model's capability to calculate processes that match the real world. Models simply do not completely match the real world - instead, they approximate processes mathematically. PRZM approximates the amount of water and the amount of chemical that passes through the soil profile over time by representing the soil profile as a series of compartments.

While making use of the strengths of the model and the way it is being used here, it is very important to be aware of the definite limitations to the model and the way it is being used in this project.

Here are some ideas to keep in mind:

This method is useful as a comparative, rather than a predictive tool, at the regional scale, with the inputs available to us. Before we could actually begin to try to predict the actual fate of substances in the subsurface, we would need to know a lot more about the history of pesticide application – what chemicals were used, where they were used, how much, how often, and when they were applied. We would also need to know a lot more about the ground below the soil profile to the water table, as well as the depth to water.

The results reflect the soil characteristics at the surface. The information for the subsurface below the soil profile is limited.

There is a difference between what would really occur in the natural system and what the model says will occur, because models do not replicate reality, they give us information about the system. The inputs to the model are estimates, averages, and measurements. Each of these ways of describing physical reality has uncertainties associated with it. Statistical analyses and sensitivity tests help show how far the results would be affected under different circumstances.

The results of this pilot investigation apply to **atrazine**. Other chemicals, with different properties and reactions in the subsurface, would produce different modeling results and the maps of the results could change significantly. PRZM3 does have the capability of modeling for nitrogen compounds in the subsurface, however, the method would have to be applied carefully for nitrates and then evaluated.

The following are some of the major assumptions used in this project:

A single crop type – corn – was used for the entire area, because we did not have a crop history or map to work with. The model results differentiate relative susceptibility based on soil characteristics, but does not factor in the various crops grown in the area over time.

The on/off method of applying irrigation when soil moisture drops below half the field capacity does not represent the actual irrigation amounts used in the area. It approximates irrigation by assuming if the soil dries out to a certain level, irrigation would be applied, and irrigation would stop when field capacity is reached.

In some areas, tile drains divert the top of the water table to surface water runoff (wasteways), and therefore change the amount of percolation to groundwater from that which would occur without the tile drains. For this project we did not model the effect of tile drains.

Atrazine was applied at the same rate across the entire area at one pound per acre, the label rate. We do not have maps and information about atrazine use, except at the county or zip code level. Such information would help limit areas of concern to actual areas where atrazine is used.

The ground was assumed for modeling purposes to be fallow, followed by a corn crop during the growing season, followed by land covered with crop residue. This is relevant to modeling the amount of water that runs off versus infiltrates. Actual land conditions in the area may vary from this assumption.

PRZM's erosion, volatilization, and detailed biodegradation routines were not used. The erosion routine calculates the amount of pesticide that would be attached to eroded soil particles. Volatilization for atrazine is low and could be ignored for the purposes of this project. PRZM can account for biodegradation in a detailed manner, or by using a degradation rate that uses a lumped first-order constant. The detailed biodegradation requires detailed site information, so for this project, we used the degradation rate.

PRZM

The following limitations intrinsic to the PRZM2 model are from the PRZM2 manual (Carsel et al, 1994):

Hydrologic and hydraulic computations are performed on a daily time step, because associated data is commonly available on a daily basis, such as daily rainfall. The actual effects of hydrologic or hydraulic processes, however, can be significant on a smaller time step. Erosion, for example, depends on the peak runoff rate, which depends somewhat on the duration of the rainfall event.

PRZM2 simulates only advective, downward movement of water and does not account for diffusive movement due to soil water gradients, such as gradients produced by evapotranspiration. Evapotranspiration is modeled, but the potential for upward movement of soil water in response to the change in soil water gradients produced by evapotranspiration is not.

Using PRZM2 in standard mode (not using the Monte Carlo routine) may produce slower breakthrough times than a stochastic approach that accounts for field variability of soil properties. This limitation is addressed by the ability to use the Monte Carlo routine to simulate field variability and report the results in terms of probability of occurrence.

PRZM2 underestimates leaching compared to PRZM3 because PRZM3 uses an improved extraction model for run-off. See the PRZM3 manual for details.

VADOFT

The following limitations intrinsic to the VADOFT code in the PRZM2 model are from the PRZM2 manual (Carsel et al, 1994):

The flow model assumes that the flow of the fluid phase is one-dimensional, isothermal, and governed by Darcy's law and that the fluid is slightly compressible and homogeneous.

Hysteresis effects as they apply to relative permeability versus water saturation and water saturation versus capillary pressure head are assumed to be negligible.

The solute transport model assumes that advection and dispersion are one-dimensional and that fluid properties are independent of contaminant concentrations.

The code handles only single-phase flow (water) and ignores the presence of a second phase (air).

The code does not take into account sorption nonlinearity or kinetic sorption effects that, in some instances, can be important.

The code considers only single-porosity (granular) soil media. It does not simulate flow or transport in fractured porous media or structured soils.

Scale and Accuracy

Any time a real feature on the ground is represented by a symbol or line on a map, there is a certain amount of inaccuracy. Whether or not the inaccuracy disturbs the use of the map depends on the scale. For example, if you have a line three feet off of where it should be, on a statewide scale it isn't possibly noticeable at all on the map. But if you are depending on that line to represent a wall in your house on a blue print, it makes a significant difference.

The lines that represent the map of soils are meant to be used at a scale of 1:24,000. The irrigation polygons were digitized from orthophotos, and therefore should be used at the same scale.

The rainfall station areas were assigned using the Thiessen polygon method, which is based strictly on a geometrical means of drawing polygons around a set of points. This, however, is a very coarse way of assigning an area to a rainfall station. It would be much better to have polygons that represent the area where the rainfall is approximately that of the rainfall station. Using the isohyetal method for assigning areas to rainfall stations could improve estimates.

The model inputs also have a certain amount of uncertainty associated with them. This project has relied on the PRZM3 manual (Carsel, 1999) for input guidance. Thorough analysis of this sort has been completed by the model developers on various sets of data, and the reader is referred to the PRZM3 manual for further information. It is beyond the scope of this project to run a thorough statistical uncertainty analysis on the project inputs independently, although this sort of analysis would provide valuable information.

Other Regional Scale Pesticide Modeling Studies Similar to the Present Effort

NRCS and USGS staff (Burkart, 1999) ran the PRZM2 model for 12 Midwestern states. They ran PRZM2 on a 30-year basis using NRCS soils data. They also ran the PRZM2 model for seven sites where they had site-specific soils, crop, and atrazine use data for a period of one to six years. They concluded:

Simulations using the **MUUF*** data for soil parameters were sufficiently similar to observed atrazine detection frequencies to allow the credible use of regional soils data for simulating leaching with PRZM-2 in a variety of Midwest soil and hydrologic conditions. This is encouraging for regional modeling efforts because soil parameters are among the most critical for operating PRZM-2 and many other leaching models.

***Map Unit Use File**, a database interface that accesses the NRCS soils data in the **Map Unit Interpretation Record** data.

In the Burkart study (Burkart, 1999), the hydrogeologic settings include glacial till, loess, and alluvial settings, making it especially useful for comparison to the present effort.

PRZM3 is accepted by EPA for use in making regulatory decisions for pesticide registration under FIFRA (Federal Insecticide, Fungus, and Rodenticide Act). In addition, the European Union accepts PRZM3 for regulatory submittals. Both the EPA and the European Union have undertaken extensive evaluations of models that can be used to assess environmental risks from pesticides (USEPA, 1995; Boesten, 1995).

USGS Evaluation

The USGS tested using logistic regression to provide a statistical analysis of the probability of atrazine detects based on conditions such as soil characteristics, well depths, rainfall, surficial geology, and irrigation. The logistic regression analysis also requires atrazine use information. The strategy was originally to relate atrazine use to crop information provided by irrigation block, and to supplement that with crop and pesticide information aggregated by zip code from the National Agricultural Statistics Service. The USGS tested the use of both these sources for the logistic regression analysis and found that this information is not specific enough. The areas these sources refer to are too large to specifically relate atrazine use to atrazine detected at wells. Specific information about crops and pesticide use at the farm level that could be used in the analysis is not released due to confidentiality requirements.

The lack of specific information on atrazine use has necessitated an alternate strategy in order to use the USGS NAWQA information to evaluate PRZM2 model results. The USGS has completed a review and evaluation comparing model results to observations and data obtained during the National Water Quality Assessment (NAWQA) study, which will be published in a separate report.

Conclusions

On passage of the final Pesticide Management Plan rule, atrazine, simazine, alachlor, and metolachlor could not be sold, unless a state has an EPA approved Pesticide Management Plan. The purpose of this project was to evaluate the feasibility of using PRZM to provide the vulnerability assessment required by the Pesticide Management Plan.

The methodology presented in this report is most useful for revealing patterns in the landscape at the land surface that are relevant to pesticide migration potential on a regional scale. The results can be used to guide decisions about where to focus pesticide management efforts.

The model results are useful for assessing soil characteristics that result in a higher pollution potential, and the model can be used to run “what-if” scenarios. It must be kept in mind that the model IS NOT the ground. There is uncertainty in the results, because the inputs are measured and estimated. Nonetheless, we gain insight and information about the soil profile and the associated landscapes through using the model.

Vadose zone modeling is problematic at this point in technological development. Depth to water and better understanding and mapping of the subsurface is needed to even attempt to evaluate the effect of the vadose zone on contaminant fate and transport on a regional basis. What we could do with the vadose zone modeling capability of PRZM is to run scenarios for a range of conditions that typify certain hydrogeologic settings. Such results would need to be evaluated using field studies and professional analysis.

Chemical use information and depth to water is extremely pertinent to assessing susceptibility, and were not developed well enough to use effectively in this project. Gathering this information and keeping it current are expensive activities. The model could be used to point to where this information would be most critical.

Further Recommendations

- Use resources in areas that are known or highly likely to have problems. This should be based on ground water monitoring, where available. PRZM modeling trials and associated information can be used to support the preliminary delineation of initial priority planning areas, and can point to areas where monitoring would be desirable.
- Understand the risk to people from possible pesticide contamination. Know where people are dependent on shallow ground water resources in areas where pesticide use is concentrated.
- Define surface water at risk from groundwater contributions of pesticides where needed to protect aquatic species. Do this in conjunction with defining where surface water is at risk from pesticides in runoff.

- Continue to organize information for irrigated areas, crops, chemical use, depth to water, soil data, and meteorological data for other areas of the state of Washington. Apply the modeling technique where useful.
- Reduce source loading and manage chemical use and handling to prevent ground water contamination.



Photo 15: Leaving the Columbia Basin Project.

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Appendix A – Grant County Constant Recharge PRZM2 Model Results by Soil Name

Soil ID	Soil Name	90 th Percentile
0250011	Adkins	2.12
0250021	Adkins	3.96
0250031	Adkins	3.96
0250041	Adkins	3.96
0250051	Adkins	3.96
0250061	Adkins	4.94
0250071	Adkins	4.94
0250081	Adkins	4.94
0250091	Adkins	4.94
0250101	Ahtanum	1.82E-10
0250111	Anders	1.32
0250192	Anders	1.32
0250121	Aquents	0.00
0251911	Arents	---
0250131	Badge	4.01E-01
0250141	Badland	---
0250151	Bagdad	1.05E-01
0250161	Bagdad	1.05E-01
0250171	Bagdad	1.05E-01
0250132	Bakeoven	2.08E-01
0250181	Bakeoven	2.08E-01
0250191	Bakeoven	2.08E-01
0250201	Bakeoven	2.08E-01
0250211	Bakeoven	2.08E-01
0250221	Bakeoven	2.08E-01
0250231	Bakeoven	2.08E-01
0251122	Bakeoven	2.08E-01
0251432	Bakeoven	2.08E-01
0250241	Benco	1.31
0250251	Benco	1.63
0250261	Burbank	6.48
0250271	Burbank	6.48
0250281	Burbank	3.88
0250291	Burbank	3.88
0250301	Burbank	3.88
0250311	Burke	3.17
0250321	Burke	3.17
0251903	Cashmere	6.67E-01
0250331	Chard	1.72E-01
0250341	Cleman	1.56
0250202	Condon	1.04E-01
0250351	Condon	1.04E-01
0251921	Dam	---

Soil ID	Soil Name	90 th Percentile
0250361	Ekrub	7.79
0250371	Ellisforde	2.56E-01
0250381	Ellisforde	2.56E-01
0251902	Ellisforde	7.10E-01
0250172	Endicott	---
0250391	Entiat	5.21E-02
0250401	Ephrata	3.43
0250411	Ephrata	3.43
0250421	Ephrata	3.43
0250431	Ephrata	3.48
0250441	Ephrata	3.48
0250451	Ephrata	3.48
0250461	Ephrata	3.48
0250792	Ephrata	3.48
0250471	Esquatzel	2.76
0250481	Farrell	2.06
0250491	Farrell	2.06
0250501	Finley	4.06
0250511	Finley	4.06
0250521	Finley	3.70
0250531	Finley	4.05
0251622	Finley	4.03
0250541	Hermiston	8.30E-05
0250551	Hezel	6.60
0250561	Kennewick	2.60
0250571	Kennewick	2.60
0250581	Kennewick	3.02
0250591	Kennewick	3.02
0250601	Kennewick	3.02
0250611	Kennewick	3.02
0250621	Kennewick	3.00
0250631	Kennewick	3.00
0250641	Kennewick	3.00
0250651	Kennewick	3.00
0250661	Kiona	6.01
0250671	Kiona	5.57
0251442	Kiona	5.48
0250681	Kittitas	3.13E-11
0250691	Koehler	6.57
0250212	Licksillet	1.72
0250701	Licksillet	1.72
0251892	Licksillet	1.72
0250711	Magallon	2.28

Soil ID	Soil Name	90 th Percentile
0250721	Magallon	2.28
0250452	Malaga	4.65
0250462	Malaga	4.65
0250731	Malaga	4.64
0250741	Malaga	4.64
0250751	Malaga	4.65
0250761	Malaga	4.65
0250771	Malaga	4.65
0250781	Malaga	4.65
0250791	Malaga	4.65
0251931	M-W	---
0250801	Neppel	4.30
0250811	Neppel	4.30
0250821	Neppel	4.33
0250831	Neppel	4.33
0250841	Neppel	4.33
0250851	Novark	3.84
0250861	Outlook	1.90E-02
0250871	Pedigo	5.01E-08
0250881	Pits	---
0250891	Prosser	5.39
0250901	Prosser	5.39
0250911	Prosser	5.39
0250921	Prosser	5.39
0250931	Prosser	5.39
0250941	Prosser	5.39
0250951	Prosser	5.39
0251452	Prosser	5.39
0250961	Quincy	3.89
0250971	Quincy	3.89
0250981	Quincy	3.94
0250991	Quincy	3.94
0251762	Quincy	3.89
0251901	Quincy	2.87
0251001	Quinton	4.92E-01
0251011	Ralls	1.32E-01
0251021	Ralls	1.32E-01
0251031	Ralls	1.52E-01
0251893	Ralls	1.32E-01
0251041	Renslow	2.98E-01
0251051	Renslow	2.98E-01
0251052	Renslow	2.98E-01
0251061	Renslow	2.98E-01

Soil ID	Soil Name	90 th Percentile
0251071	Renslow	2.98E-01
0251081	Renslow	5.18E-01
0251091	Ritzville	2.13
0251101	Ritzville	2.13
0251102	Ritzville	2.13
0250392	Rock Outcrop	---
0250672	Rock Outcrop	---
0251202	Rock Outcrop	---
0251433	Rock Outcrop	---
0250222	Roloff	1.89E-01
0251111	Roloff	1.89E-01
0251121	Roloff	1.89E-01
0251131	Royal	2.59
0251141	Royal	2.59
0251151	Royal	2.66
0251161	Royal	2.66
0251171	Royal	2.66
0251181	Royal	2.73
0251191	Royal	2.73
0251201	Rubbleland	---
0251211	Sagehill	5.53
0251221	Sagehill	5.53
0251231	Sagehill	5.53
0251241	Sagehill	5.53
0251251	Sagemoor	3.03
0251261	Sagemoor	3.03
0251271	Sagemoor	3.03
0251281	Sagemoor	3.03
0251291	Saltese	---
0251002	Schawana	1.36
0251301	Schawana	1.64
0251311	Schawana	1.75
0251312	Schawana	1.64
0251321	Scoon	3.17
0251331	Scoon	3.17
0251341	Scoon	3.33
0251351	Scoon	3.17
0251352	Scoon	---
0251361	Shano	3.55
0251371	Shano	3.55
0251381	Shano	3.55
0251391	Shano	3.55
0251401	Shano	3.55

Soil ID	Soil Name	90 th Percentile
0250942	Starbuck	4.25E-01
0250952	Starbuck	8.31E-01
0251411	Starbuck	4.28E-01
0251421	Starbuck	2.34E-01
0251431	Starbuck	1.77
0251441	Starbuck	1.40
0251451	Starbuck	8.33E-01
0251461	Strat	1.28
0251471	Strat	2.64
0251481	Strat	2.61
0251491	Strat	1.69
0251492	Stratford	2.11
0251501	Stratford	2.16
0250522	Taunton	3.44
0250532	Taunton	3.44
0251511	Taunton	3.83
0251521	Taunton	3.86
0251531	Taunton	3.86
0251541	Taunton	3.86
0251551	Taunton	3.86
0251561	Taunton	3.44
0251571	Taunton	3.44
0251581	Taunton	3.44
0251591	Taunton	3.44
0251601	Taunton	3.44
0251611	Taunton	3.46
0251621	Taunton	3.44
0251631	Timentwa	1.58E-02
0251641	Timmerman	5.00
0251651	Timmerman	5.21
0251661	Timmerman	5.21
0251671	Timmerman	5.21
0251681	Timmerman	5.32
0251691	Timmerman	5.32
0251701	Torrifluents	7.38
0250142	Torriorthents	3.80
0250232	Touhey	1.70E-01
0251711	Touhey	1.43E-01
0251721	Umapine	1.25
0251731	Wahluke	8.10E-01
0251741	Wahluke	8.10E-01
0251751	Wanser	6.63
0251761	Wanser	8.60

Soil ID	Soil Name	90 th Percentile
0251771	Warden	3.12
0251781	Warden	3.12
0251791	Warden	3.12
0251801	Warden	3.12
0251811	Wiehl	3.59
0251821	Wiehl	3.59
0251831	Wiehl	3.59
0251841	Wiehl	3.59
0251072	Willis	3.69E-01
0251082	Willis	3.69E-01
0251851	Willis	3.69E-01
0251861	Winchester	4.45
0250213	Zen	3.15E-02
0251871	Zen	3.15E-02
0251881	Zen	3.15E-02
0251891	Zen	3.15E-02

Appendix B – Grant County Variable Recharge PRZM2 Model Results by Soil Name

MET Rainfall Polygons & Station Numbers

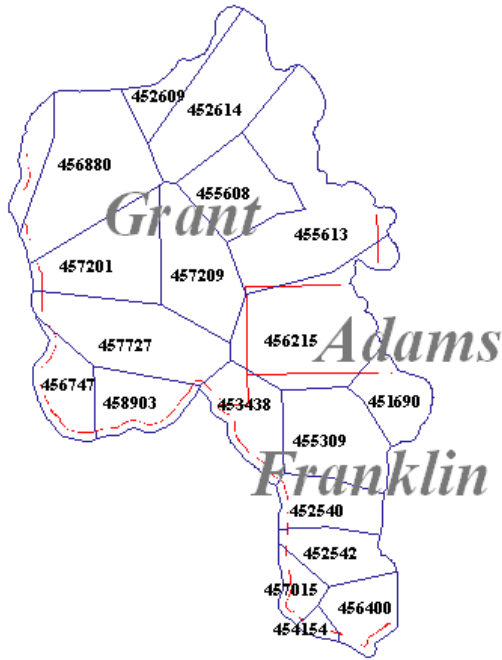


Table Column Headings Key

<i>Field</i>	<i>Description</i>
Soil ID	Soil ID number concatenated from the NRCS Map Unit ID & Sequence Number
Soil Name	NRCS soil name
IRR	Whether irrigated (irr) or not (dry)
MET	Local rainfall station number, see inset, left
90th Percentile	90 th percentile from PRZM Monte Carlo runs

Soil ID	Soil Name	IRR	MET	90th Percentile
0250021	Adkins	dry	455613	3.75E-05
0250031	Adkins	dry	455613	3.75E-05
0250041	Adkins	dry	455613	3.75E-05
0250051	Adkins	dry	455613	3.75E-05
0250061	Adkins	dry	455613	4.76E-02
0250071	Adkins	dry	455613	4.76E-02
0250081	Adkins	dry	455613	4.76E-02
0250091	Adkins	dry	455613	4.76E-02
0250061	Adkins	dry	456215	6.29E-02
0250061	Adkins	dry	456747	2.29E-02
0250011	Adkins	dry	456880	1.68E-05
0250021	Adkins	dry	456880	2.34E-05
0250031	Adkins	dry	456880	2.34E-05
0250041	Adkins	dry	456880	2.34E-05
0250051	Adkins	dry	456880	2.34E-05
0250061	Adkins	dry	456880	4.01E-02
0250071	Adkins	dry	456880	4.01E-02
0250081	Adkins	dry	456880	4.01E-02
0250091	Adkins	dry	456880	4.01E-02
0250011	Adkins	dry	457201	3.07E-12
0250021	Adkins	dry	457201	1.60E-14
0250031	Adkins	dry	457201	1.60E-14

Soil ID	Soil Name	IRR	MET	90th Percentile
0250041	Adkins	dry	457201	1.60E-14
0250051	Adkins	dry	457201	1.60E-14
0250061	Adkins	dry	457201	7.24E-06
0250071	Adkins	dry	457201	7.24E-06
0250081	Adkins	dry	457201	7.24E-06
0250091	Adkins	dry	457201	7.24E-06
0250011	Adkins	dry	457209	5.03E-03
0250021	Adkins	dry	457209	1.24E-02
0250031	Adkins	dry	457209	1.24E-02
0250041	Adkins	dry	457209	1.24E-02
0250051	Adkins	dry	457209	1.24E-02
0250061	Adkins	dry	457209	1.06E-01
0250071	Adkins	dry	457209	1.06E-01
0250081	Adkins	dry	457209	1.06E-01
0250091	Adkins	dry	457209	1.06E-01
0250011	Adkins	dry	457727	6.74E-04
0250021	Adkins	dry	457727	1.51E-03
0250031	Adkins	dry	457727	1.51E-03
0250041	Adkins	dry	457727	1.51E-03
0250051	Adkins	dry	457727	1.51E-03
0250061	Adkins	dry	457727	9.60E-02
0250071	Adkins	dry	457727	9.60E-02

Soil ID	Soil Name	IRR	MET	90th Percentile
0250081	Adkins	dry	457727	9.60E-02
0250051	Adkins	dry	458579	7.76E-05
0250061	Adkins	dry	458579	4.53E-02
0250071	Adkins	dry	458579	4.53E-02
0250021	Adkins	dry	458903	5.84E-09
0250021	Adkins	irr	455613	3.71
0250031	Adkins	irr	455613	3.71
0250041	Adkins	irr	455613	3.71
0250051	Adkins	irr	455613	3.71
0250061	Adkins	irr	455613	4.76
0250071	Adkins	irr	455613	4.76
0250081	Adkins	irr	455613	4.76
0250091	Adkins	irr	455613	4.76
0250061	Adkins	irr	456215	4.86
0250021	Adkins	irr	456880	3.77
0250031	Adkins	irr	456880	3.77
0250041	Adkins	irr	456880	3.77
0250051	Adkins	irr	456880	3.77
0250061	Adkins	irr	456880	4.80
0250071	Adkins	irr	456880	4.80
0250081	Adkins	irr	456880	4.80
0250091	Adkins	irr	456880	4.80
0250011	Adkins	irr	457201	1.62
0250021	Adkins	irr	457201	3.37
0250031	Adkins	irr	457201	3.37
0250041	Adkins	irr	457201	3.37
0250051	Adkins	irr	457201	3.37
0250061	Adkins	irr	457201	4.47
0250071	Adkins	irr	457201	4.47
0250081	Adkins	irr	457201	4.47
0250021	Adkins	irr	457209	4.47
0250031	Adkins	irr	457209	4.47
0250041	Adkins	irr	457209	4.47
0250051	Adkins	irr	457209	4.47
0250061	Adkins	irr	457209	5.35
0250071	Adkins	irr	457209	5.35
0250081	Adkins	irr	457209	5.35
0250091	Adkins	irr	457209	5.35
0250011	Adkins	irr	457727	2.03
0250071	Adkins	irr	457727	4.87
0250051	Adkins	irr	458579	3.86
0250061	Adkins	irr	458579	4.86
0250071	Adkins	irr	458579	4.86

Soil ID	Soil Name	IRR	MET	90th Percentile
0250021	Adkins	irr	458903	3.65
0250121	Aquents	dry	452609	0.00
0250121	Aquents	dry	455608	0.00
0250121	Aquents	dry	455613	0.00
0250121	Aquents	dry	456215	0.00
0250121	Aquents	dry	456880	0.00
0250121	Aquents	dry	457201	0.00
0250121	Aquents	dry	457209	0.00
0250121	Aquents	dry	457727	0.00
0250121	Aquents	irr	452609	0.00
0250121	Aquents	irr	455608	0.00
0250121	Aquents	irr	455613	0.00
0250121	Aquents	irr	456880	0.00
0250121	Aquents	irr	457201	0.00
0250121	Aquents	irr	457209	0.00
0250121	Aquents	irr	457727	0.00
0251911	Arents	dry	455613	---
0250141	Badland	dry	453438	---
0250141	Badland	dry	456747	---
0250141	Badland	dry	457727	---
0250141	Badland	irr	456747	---
0250141	Badland	irr	457727	---
0250171	Bagdad	dry	456747	8.31E-17
0250181	Bakeoven	dry	452609	1.52E-01
0250211	Bakeoven	dry	452609	1.52E-01
0250221	Bakeoven	dry	452609	1.52E-01
0251122	Bakeoven	dry	452609	1.30E-01
0251432	Bakeoven	dry	452609	1.30E-01
0250181	Bakeoven	dry	452614	1.13E-01
0250181	Bakeoven	dry	452614	1.40E-01
0250211	Bakeoven	dry	452614	1.13E-01
0250211	Bakeoven	dry	452614	1.40E-01
0250221	Bakeoven	dry	452614	1.13E-01
0250221	Bakeoven	dry	452614	1.40E-01
0251122	Bakeoven	dry	452614	1.13E-01
0251432	Bakeoven	dry	452614	1.13E-01
0250181	Bakeoven	dry	455613	1.58E-01
0250211	Bakeoven	dry	455613	1.58E-01
0251432	Bakeoven	dry	455613	1.32E-01
0251432	Bakeoven	dry	456215	1.53E-01
0250181	Bakeoven	dry	456747	1.24E-01
0251432	Bakeoven	dry	456747	9.90E-02
0250181	Bakeoven	dry	456880	1.58E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0250181	Bakeoven	dry	456880	1.30E-01
0250211	Bakeoven	dry	456880	1.30E-01
0251432	Bakeoven	dry	456880	1.30E-01
0250181	Bakeoven	dry	457201	1.21E-02
0251432	Bakeoven	dry	457201	4.88E-03
0250181	Bakeoven	dry	457209	1.04E-01
0250221	Bakeoven	dry	457209	1.04E-01
0251432	Bakeoven	dry	457209	9.94E-02
0250181	Bakeoven	dry	457727	2.01E-01
0250181	Bakeoven	dry	457727	1.76E-01
0251432	Bakeoven	dry	457727	1.76E-01
0250181	Bakeoven	dry	458579	1.54E-01
0250181	Bakeoven	dry	458579	1.32E-01
0250211	Bakeoven	dry	458579	1.32E-01
0250211	Bakeoven	dry	458579	1.54E-01
0251432	Bakeoven	dry	458579	1.32E-01
0250221	Bakeoven	irr	452609	1.30E-01
0251432	Bakeoven	irr	452609	1.30E-01
0250221	Bakeoven	irr	452614	1.13E-01
0251122	Bakeoven	irr	452614	1.13E-01
0251432	Bakeoven	irr	452614	1.13E-01
0250211	Bakeoven	irr	455613	1.32E-01
0251432	Bakeoven	irr	455613	1.32E-01
0251432	Bakeoven	irr	456215	1.53E-01
0251432	Bakeoven	irr	456880	1.30E-01
0250181	Bakeoven	irr	457201	4.88E-03
0251432	Bakeoven	irr	457201	4.88E-03
0250181	Bakeoven	irr	457209	9.94E-02
0250221	Bakeoven	irr	457209	9.94E-02
0251432	Bakeoven	irr	457209	9.94E-02
0250181	Bakeoven	irr	457727	1.76E-01
0251432	Bakeoven	irr	457727	1.76E-01
0250181	Bakeoven	irr	458579	1.32E-01
0250211	Bakeoven	irr	458579	1.32E-01
0251432	Bakeoven	irr	458579	1.32E-01
0250261	Burbank	dry	452609	3.04E-01
0250261	Burbank	dry	452614	2.27E-01
0250281	Burbank	dry	452614	2.64E-02
0250291	Burbank	dry	452614	2.64E-02
0250301	Burbank	dry	452614	2.64E-02
0250261	Burbank	dry	453438	1.01E-01
0250281	Burbank	dry	453438	9.43E-03
0250261	Burbank	dry	455608	9.04E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0250271	Burbank	dry	455608	9.04E-01
0250281	Burbank	dry	455608	2.45E-01
0250291	Burbank	dry	455608	2.45E-01
0250261	Burbank	dry	455613	3.80E-01
0250271	Burbank	dry	455613	3.80E-01
0250281	Burbank	dry	455613	6.37E-02
0250291	Burbank	dry	455613	6.37E-02
0250301	Burbank	dry	455613	6.37E-02
0250261	Burbank	dry	456215	3.97E-01
0250291	Burbank	dry	456215	6.78E-02
0250261	Burbank	dry	456747	2.09E-01
0250271	Burbank	dry	456747	2.09E-01
0250281	Burbank	dry	456747	2.35E-02
0250291	Burbank	dry	456747	2.35E-02
0250301	Burbank	dry	456747	2.35E-02
0250261	Burbank	dry	456880	3.28E-01
0250271	Burbank	dry	456880	3.28E-01
0250281	Burbank	dry	456880	4.65E-02
0250291	Burbank	dry	456880	4.65E-02
0250261	Burbank	dry	457201	7.44E-03
0250271	Burbank	dry	457201	7.44E-03
0250281	Burbank	dry	457201	4.62E-03
0250291	Burbank	dry	457201	4.62E-03
0250261	Burbank	dry	457209	2.55E-01
0250271	Burbank	dry	457209	2.55E-01
0250281	Burbank	dry	457209	7.95E-02
0250261	Burbank	dry	457727	4.95E-01
0250271	Burbank	dry	457727	4.95E-01
0250281	Burbank	dry	457727	8.03E-02
0250291	Burbank	dry	457727	8.03E-02
0250301	Burbank	dry	457727	8.03E-02
0250261	Burbank	dry	458579	2.95E-01
0250271	Burbank	dry	458579	2.95E-01
0250281	Burbank	dry	458579	3.85E-02
0250291	Burbank	dry	458579	3.85E-02
0250261	Burbank	dry	458903	7.66E-02
0250271	Burbank	dry	458903	7.66E-02
0250281	Burbank	dry	458903	5.25E-03
0250291	Burbank	dry	458903	5.25E-03
0250301	Burbank	dry	458903	5.25E-03
0250261	Burbank	irr	452609	6.27
0250261	Burbank	irr	452614	6.18
0250291	Burbank	irr	452614	3.72

Soil ID	Soil Name	IRR	MET	90th Percentile
0250261	Burbank	irr	455608	6.69
0250281	Burbank	irr	455608	4.10
0250261	Burbank	irr	455613	6.18
0250271	Burbank	irr	455613	6.18
0250291	Burbank	irr	455613	3.70
0250261	Burbank	irr	456215	6.29
0250261	Burbank	irr	456747	6.15
0250271	Burbank	irr	456747	6.15
0250281	Burbank	irr	456747	3.64
0250291	Burbank	irr	456747	3.64
0250301	Burbank	irr	456747	3.64
0250261	Burbank	irr	456880	6.22
0250271	Burbank	irr	456880	6.22
0250291	Burbank	irr	456880	3.72
0250261	Burbank	irr	457201	5.85
0250271	Burbank	irr	457201	5.85
0250281	Burbank	irr	457201	3.43
0250261	Burbank	irr	457209	6.74
0250261	Burbank	irr	457727	6.44
0250271	Burbank	irr	457727	6.44
0250291	Burbank	irr	457727	3.80
0250291	Burbank	irr	458579	3.79
0250261	Burbank	irr	458903	6.06
0250271	Burbank	irr	458903	6.06
0250281	Burbank	irr	458903	3.60
0250291	Burbank	irr	458903	3.60
0250311	Burke	dry	455613	1.37E-04
0250321	Burke	dry	455613	1.37E-04
0250311	Burke	dry	456215	8.51E-04
0250321	Burke	dry	456215	8.51E-04
0250321	Burke	dry	457201	0.00
0250311	Burke	dry	457209	2.09E-02
0250321	Burke	dry	457209	2.09E-02
0250311	Burke	dry	457727	5.90E-03
0250321	Burke	dry	457727	5.90E-03
0250311	Burke	irr	455613	2.83
0250321	Burke	irr	455613	2.83
0250311	Burke	irr	456215	2.94
0250321	Burke	irr	456215	2.94
0250321	Burke	irr	457201	2.36
0250311	Burke	irr	457209	3.51
0250321	Burke	irr	457209	3.51
0250341	Cleman	dry	452609	5.40E-14

Soil ID	Soil Name	IRR	MET	90th Percentile
0250341	Cleman	dry	452614	1.08E-14
0250341	Cleman	dry	453438	1.81E-17
0250341	Cleman	dry	455608	6.26E-06
0250341	Cleman	dry	455613	3.41E-14
0250341	Cleman	irr	452609	1.38
0250341	Cleman	irr	452614	1.34
0250341	Cleman	irr	455608	1.82
0250341	Cleman	irr	455613	1.27
0251921	Dam	dry	456747	---
0251921	Dam	dry	457727	---
0250361	Ekrub	dry	455608	4.06
0250361	Ekrub	dry	455613	3.85
0250361	Ekrub	dry	456747	2.79
0250361	Ekrub	dry	456880	3.71
0250361	Ekrub	dry	457201	2.24
0250361	Ekrub	dry	457209	8.01E-01
0250361	Ekrub	dry	457727	4.07
0250361	Ekrub	dry	458579	3.47
0250361	Ekrub	irr	455608	7.93
0250361	Ekrub	irr	455613	7.66
0250361	Ekrub	irr	456747	7.66
0250361	Ekrub	irr	456880	7.71
0250361	Ekrub	irr	457201	7.47
0250361	Ekrub	irr	457209	7.86
0250361	Ekrub	irr	457727	7.72
0250371	Ellisforde	dry	452609	2.69E-16
0250371	Ellisforde	dry	452614	1.83E-16
0250371	Ellisforde	irr	452614	1.63E-01
0250401	Ephrata	dry	452609	1.26E-03
0250411	Ephrata	dry	452609	1.26E-03
0250421	Ephrata	dry	452609	1.26E-03
0250431	Ephrata	dry	452609	1.97E-04
0250451	Ephrata	dry	452609	1.97E-04
0250461	Ephrata	dry	452609	1.97E-04
0250401	Ephrata	dry	452614	8.94E-04
0250411	Ephrata	dry	452614	8.94E-04
0250421	Ephrata	dry	452614	8.94E-04
0250431	Ephrata	dry	452614	9.63E-05
0250441	Ephrata	dry	452614	9.63E-05
0250451	Ephrata	dry	452614	9.63E-05
0250401	Ephrata	dry	455608	1.02E-01
0250411	Ephrata	dry	455608	1.02E-01
0250421	Ephrata	dry	455608	1.02E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0250431	Ephrata	dry	455608	6.42E-02
0250441	Ephrata	dry	455608	6.42E-02
0250451	Ephrata	dry	455608	6.42E-02
0250461	Ephrata	dry	455608	6.42E-02
0250401	Ephrata	dry	455613	1.11E-03
0250411	Ephrata	dry	455613	1.11E-03
0250421	Ephrata	dry	455613	1.11E-03
0250431	Ephrata	dry	455613	1.99E-04
0250441	Ephrata	dry	455613	1.99E-04
0250451	Ephrata	dry	455613	1.99E-04
0250461	Ephrata	dry	455613	1.99E-04
0250401	Ephrata	dry	456215	2.88E-03
0250411	Ephrata	dry	456215	2.88E-03
0250421	Ephrata	dry	456215	2.88E-03
0250431	Ephrata	dry	456215	7.23E-04
0250461	Ephrata	dry	456215	7.23E-04
0250401	Ephrata	dry	456747	4.55E-04
0250411	Ephrata	dry	456747	4.55E-04
0250421	Ephrata	dry	456747	4.55E-04
0250431	Ephrata	dry	456747	2.75E-05
0250441	Ephrata	dry	456747	2.75E-05
0250451	Ephrata	dry	456747	2.75E-05
0250461	Ephrata	dry	456747	2.75E-05
0250401	Ephrata	dry	456880	9.33E-04
0250411	Ephrata	dry	456880	9.33E-04
0250421	Ephrata	dry	456880	9.33E-04
0250431	Ephrata	dry	456880	1.47E-04
0250441	Ephrata	dry	456880	1.47E-04
0250451	Ephrata	dry	456880	1.47E-04
0250461	Ephrata	dry	456880	1.47E-04
0250401	Ephrata	dry	457201	1.80E-10
0250411	Ephrata	dry	457201	1.80E-10
0250421	Ephrata	dry	457201	1.80E-10
0250401	Ephrata	dry	457209	2.66E-02
0250411	Ephrata	dry	457209	2.66E-02
0250431	Ephrata	dry	457209	1.60E-02
0250441	Ephrata	dry	457209	1.60E-02
0250451	Ephrata	dry	457209	1.60E-02
0250461	Ephrata	dry	457209	1.60E-02
0250401	Ephrata	dry	457727	8.97E-03
0250411	Ephrata	dry	457727	8.97E-03
0250411	Ephrata	dry	458579	1.84E-03
0250421	Ephrata	dry	458579	1.84E-03

Soil ID	Soil Name	IRR	MET	90th Percentile
0250461	Ephrata	dry	458579	2.91E-04
0250401	Ephrata	dry	458903	2.55E-06
0250411	Ephrata	dry	458903	2.55E-06
0250401	Ephrata	irr	452609	3.33
0250411	Ephrata	irr	452609	3.33
0250421	Ephrata	irr	452609	3.33
0250431	Ephrata	irr	452609	3.34
0250441	Ephrata	irr	452609	3.34
0250451	Ephrata	irr	452609	3.34
0250461	Ephrata	irr	452609	3.34
0250401	Ephrata	irr	452614	3.29
0250411	Ephrata	irr	452614	3.29
0250431	Ephrata	irr	452614	3.27
0250441	Ephrata	irr	452614	3.27
0250451	Ephrata	irr	452614	3.27
0250461	Ephrata	irr	452614	3.27
0250401	Ephrata	irr	455608	3.73
0250411	Ephrata	irr	455608	3.73
0250421	Ephrata	irr	455608	3.73
0250431	Ephrata	irr	455608	3.72
0250441	Ephrata	irr	455608	3.72
0250451	Ephrata	irr	455608	3.72
0250461	Ephrata	irr	455608	3.72
0250401	Ephrata	irr	455613	3.24
0250411	Ephrata	irr	455613	3.24
0250421	Ephrata	irr	455613	3.24
0250431	Ephrata	irr	455613	3.21
0250441	Ephrata	irr	455613	3.21
0250451	Ephrata	irr	455613	3.21
0250461	Ephrata	irr	455613	3.21
0250401	Ephrata	irr	456215	3.36
0250411	Ephrata	irr	456215	3.36
0250421	Ephrata	irr	456215	3.36
0250431	Ephrata	irr	456215	3.31
0250451	Ephrata	irr	456215	3.31
0250461	Ephrata	irr	456215	3.31
0250401	Ephrata	irr	456747	3.31
0250411	Ephrata	irr	456747	3.31
0250431	Ephrata	irr	456747	3.28
0250441	Ephrata	irr	456747	3.28
0250451	Ephrata	irr	456747	3.28
0250461	Ephrata	irr	456747	3.28
0250401	Ephrata	irr	456880	3.28

Soil ID	Soil Name	IRR	MET	90th Percentile
0250411	Ephrata	irr	456880	3.28
0250431	Ephrata	irr	456880	3.24
0250441	Ephrata	irr	456880	3.24
0250451	Ephrata	irr	456880	3.24
0250461	Ephrata	irr	456880	3.24
0250401	Ephrata	irr	457201	2.92
0250411	Ephrata	irr	457201	2.92
0250421	Ephrata	irr	457201	2.92
0250461	Ephrata	irr	457201	2.89
0250401	Ephrata	irr	457209	3.99
0250411	Ephrata	irr	457209	3.99
0250431	Ephrata	irr	457209	3.91
0250441	Ephrata	irr	457209	3.91
0250451	Ephrata	irr	457209	3.91
0250461	Ephrata	irr	457209	3.91
0250411	Ephrata	irr	457727	3.35
0250421	Ephrata	irr	457727	3.35
0250411	Ephrata	irr	458579	3.35
0250421	Ephrata	irr	458579	3.35
0250461	Ephrata	irr	458579	3.32
0250401	Ephrata	irr	458903	3.17
0250411	Ephrata	irr	458903	3.17
0250471	Esquatzel	dry	452609	1.76E-09
0250471	Esquatzel	dry	452614	1.07E-09
0250471	Esquatzel	dry	455608	4.42E-03
0250471	Esquatzel	dry	455613	1.55E-09
0250471	Esquatzel	dry	456215	2.80E-08
0250471	Esquatzel	dry	456880	7.65E-10
0250471	Esquatzel	dry	457727	1.56E-06
0250471	Esquatzel	dry	458579	5.46E-09
0250471	Esquatzel	dry	458903	2.01E-15
0250471	Esquatzel	irr	452609	2.58
0250471	Esquatzel	irr	452614	2.56
0250471	Esquatzel	irr	455608	3.00
0250471	Esquatzel	irr	455613	2.46
0250471	Esquatzel	irr	456215	2.54
0250471	Esquatzel	irr	456880	2.50
0250471	Esquatzel	irr	457727	2.68
0250471	Esquatzel	irr	458579	2.61
0250481	Farrell	dry	452609	7.29E-07
0250491	Farrell	dry	452609	7.29E-07
0250481	Farrell	dry	452614	3.43E-07
0250491	Farrell	dry	452614	3.43E-07

Soil ID	Soil Name	IRR	MET	90th Percentile
0250481	Farrell	irr	452614	1.87
0250491	Farrell	irr	452614	1.87
0250501	Finley	dry	452609	7.54E-04
0250531	Finley	dry	452609	4.86E-04
0251622	Finley	dry	452609	5.59E-04
0250501	Finley	dry	452614	4.10E-04
0250521	Finley	dry	453438	1.05E-05
0250511	Finley	dry	456215	2.42E-03
0250521	Finley	dry	456215	1.58E-03
0251622	Finley	dry	456215	2.02E-03
0251622	Finley	dry	456747	1.02E-04
0250501	Finley	dry	456880	6.64E-04
0250521	Finley	dry	456880	3.72E-04
0250531	Finley	dry	456880	3.96E-04
0251622	Finley	dry	456880	4.76E-04
0250501	Finley	dry	457727	9.86E-03
0250511	Finley	dry	457727	9.39E-03
0250521	Finley	dry	457727	5.80E-03
0250531	Finley	dry	457727	8.32E-03
0251622	Finley	dry	457727	8.22E-03
0250501	Finley	dry	458579	1.12E-03
0250521	Finley	dry	458903	4.14E-07
0251622	Finley	dry	458903	3.23E-07
0250501	Finley	irr	452609	3.88
0250531	Finley	irr	452609	3.87
0251622	Finley	irr	452609	3.82
0251622	Finley	irr	456747	3.80
0250501	Finley	irr	456880	3.80
0250521	Finley	irr	456880	3.47
0250531	Finley	irr	456880	3.79
0251622	Finley	irr	456880	3.82
0250501	Finley	irr	457727	3.91
0250521	Finley	irr	457727	3.57
0250531	Finley	irr	457727	3.91
0251622	Finley	irr	457727	3.96
0250501	Finley	irr	458579	3.89
0250521	Finley	irr	458903	3.39
0251622	Finley	irr	458903	3.65
0250541	Hermiston	dry	457209	1.10E-13
0250541	Hermiston	irr	457209	7.39E-04
0250551	Hezel	dry	452614	2.65E-01
0250551	Hezel	dry	453438	1.08E-01
0250551	Hezel	dry	455613	4.58E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0250551	Hezel	dry	456747	2.26E-01
0250551	Hezel	dry	456880	3.97E-01
0250551	Hezel	dry	457201	7.02E-03
0250551	Hezel	dry	457209	2.47E-01
0250551	Hezel	dry	457727	5.72E-01
0250551	Hezel	dry	458903	9.37E-02
0250551	Hezel	irr	452614	6.30
0250551	Hezel	irr	455613	6.28
0250551	Hezel	irr	456747	6.19
0250551	Hezel	irr	456880	6.30
0250551	Hezel	irr	457201	5.53
0250551	Hezel	irr	457209	6.72
0250551	Hezel	irr	457727	6.50
0250551	Hezel	irr	458903	6.03
0250611	Kennewick	dry	452609	1.54E-05
0250561	Kennewick	dry	453438	9.86E-06
0250581	Kennewick	dry	453438	7.58E-08
0250591	Kennewick	dry	453438	7.58E-08
0250601	Kennewick	dry	453438	7.58E-08
0250621	Kennewick	dry	453438	1.14E-10
0250631	Kennewick	dry	453438	1.14E-10
0250641	Kennewick	dry	453438	1.14E-10
0250561	Kennewick	dry	455613	8.28E-04
0250581	Kennewick	dry	455613	1.47E-05
0250591	Kennewick	dry	455613	1.47E-05
0250601	Kennewick	dry	455613	1.47E-05
0250611	Kennewick	dry	455613	1.47E-05
0250621	Kennewick	dry	455613	9.04E-08
0250631	Kennewick	dry	455613	9.04E-08
0250641	Kennewick	dry	455613	9.04E-08
0250651	Kennewick	dry	455613	9.04E-08
0250561	Kennewick	dry	456215	2.68E-03
0250581	Kennewick	dry	456215	8.05E-05
0250591	Kennewick	dry	456215	8.05E-05
0250601	Kennewick	dry	456215	8.05E-05
0250631	Kennewick	dry	456215	1.22E-06
0250641	Kennewick	dry	456215	1.22E-06
0250651	Kennewick	dry	456215	1.22E-06
0250561	Kennewick	dry	456747	7.93E-05
0250581	Kennewick	dry	456747	1.38E-06
0250591	Kennewick	dry	456747	1.38E-06
0250601	Kennewick	dry	456747	1.38E-06
0250621	Kennewick	dry	456747	8.57E-09

Soil ID	Soil Name	IRR	MET	90th Percentile
0250631	Kennewick	dry	456747	8.57E-09
0250561	Kennewick	dry	456880	6.67E-04
0250581	Kennewick	dry	456880	8.61E-06
0250591	Kennewick	dry	456880	8.61E-06
0250601	Kennewick	dry	456880	8.61E-06
0250621	Kennewick	dry	456880	5.30E-08
0250631	Kennewick	dry	456880	5.30E-08
0250641	Kennewick	dry	456880	5.30E-08
0250561	Kennewick	dry	457201	2.05E-11
0250571	Kennewick	dry	457201	2.05E-11
0250581	Kennewick	dry	457201	1.98E-17
0250591	Kennewick	dry	457201	1.98E-17
0250601	Kennewick	dry	457201	1.98E-17
0250611	Kennewick	dry	457201	1.98E-17
0250621	Kennewick	dry	457201	0.00
0250631	Kennewick	dry	457201	0.00
0250641	Kennewick	dry	457201	0.00
0250651	Kennewick	dry	457201	0.00
0250561	Kennewick	dry	457209	1.66E-02
0250571	Kennewick	dry	457209	1.66E-02
0250581	Kennewick	dry	457209	8.06E-03
0250591	Kennewick	dry	457209	8.06E-03
0250601	Kennewick	dry	457209	8.06E-03
0250611	Kennewick	dry	457209	8.06E-03
0250621	Kennewick	dry	457209	2.36E-03
0250631	Kennewick	dry	457209	2.36E-03
0250641	Kennewick	dry	457209	2.36E-03
0250651	Kennewick	dry	457209	2.36E-03
0250561	Kennewick	dry	457727	7.11E-03
0250571	Kennewick	dry	457727	7.11E-03
0250581	Kennewick	dry	457727	6.91E-04
0250591	Kennewick	dry	457727	6.91E-04
0250601	Kennewick	dry	457727	6.91E-04
0250611	Kennewick	dry	457727	6.91E-04
0250621	Kennewick	dry	457727	3.22E-05
0250631	Kennewick	dry	457727	3.22E-05
0250641	Kennewick	dry	457727	3.22E-05
0250651	Kennewick	dry	457727	3.22E-05
0250561	Kennewick	dry	458903	7.32E-07
0250581	Kennewick	dry	458903	1.10E-09
0250621	Kennewick	dry	458903	1.84E-13
0250631	Kennewick	dry	458903	1.84E-13
0250581	Kennewick	irr	452609	2.84

Soil ID	Soil Name	IRR	MET	90th Percentile
0250561	Kennewick	irr	455613	2.41
0250571	Kennewick	irr	455613	2.41
0250581	Kennewick	irr	455613	2.70
0250591	Kennewick	irr	455613	2.70
0250601	Kennewick	irr	455613	2.70
0250611	Kennewick	irr	455613	2.70
0250621	Kennewick	irr	455613	2.84
0250631	Kennewick	irr	455613	2.84
0250641	Kennewick	irr	455613	2.84
0250651	Kennewick	irr	455613	2.84
0250561	Kennewick	irr	456215	2.46
0250651	Kennewick	irr	456215	2.90
0250561	Kennewick	irr	456747	2.42
0250581	Kennewick	irr	456747	2.83
0250591	Kennewick	irr	456747	2.83
0250601	Kennewick	irr	456747	2.83
0250621	Kennewick	irr	456747	2.83
0250631	Kennewick	irr	456747	2.83
0250561	Kennewick	irr	456880	2.43
0250581	Kennewick	irr	456880	2.78
0250591	Kennewick	irr	456880	2.78
0250601	Kennewick	irr	456880	2.78
0250621	Kennewick	irr	456880	2.85
0250631	Kennewick	irr	456880	2.85
0250641	Kennewick	irr	456880	2.85
0250561	Kennewick	irr	457201	1.92
0250571	Kennewick	irr	457201	1.92
0250581	Kennewick	irr	457201	2.43
0250591	Kennewick	irr	457201	2.43
0250601	Kennewick	irr	457201	2.43
0250611	Kennewick	irr	457201	2.43
0250621	Kennewick	irr	457201	2.60
0250631	Kennewick	irr	457201	2.60
0250641	Kennewick	irr	457201	2.60
0250651	Kennewick	irr	457201	2.60
0250561	Kennewick	irr	457209	2.91
0250571	Kennewick	irr	457209	2.91
0250581	Kennewick	irr	457209	3.46
0250591	Kennewick	irr	457209	3.46
0250601	Kennewick	irr	457209	3.46
0250611	Kennewick	irr	457209	3.46
0250621	Kennewick	irr	457209	3.46
0250631	Kennewick	irr	457209	3.46

Soil ID	Soil Name	IRR	MET	90th Percentile
0250641	Kennewick	irr	457209	3.46
0250651	Kennewick	irr	457209	3.46
0250561	Kennewick	irr	457727	2.53
0250571	Kennewick	irr	457727	2.53
0250581	Kennewick	irr	457727	2.90
0250591	Kennewick	irr	457727	2.90
0250601	Kennewick	irr	457727	2.90
0250621	Kennewick	irr	457727	3.00
0250631	Kennewick	irr	457727	3.00
0250641	Kennewick	irr	457727	3.00
0250651	Kennewick	irr	457727	3.00
0250561	Kennewick	irr	458903	2.28
0250581	Kennewick	irr	458903	2.70
0250621	Kennewick	irr	458903	2.84
0250631	Kennewick	irr	458903	2.84
0250641	Kennewick	irr	458903	2.84
0250671	Kiona	dry	452609	1.49E-04
0251442	Kiona	dry	452609	4.44E-06
0250671	Kiona	dry	452614	6.35E-05
0250661	Kiona	dry	456215	1.71E-04
0251442	Kiona	dry	456215	4.63E-05
0250661	Kiona	dry	456747	2.15E-06
0251442	Kiona	dry	456880	2.78E-06
0250661	Kiona	dry	457201	1.34E-16
0250661	Kiona	dry	457209	2.29E-02
0250661	Kiona	dry	457727	2.22E-03
0250671	Kiona	dry	457727	5.97E-03
0251442	Kiona	dry	457727	7.78E-04
0250661	Kiona	dry	458579	4.62E-05
0250671	Kiona	dry	458579	2.38E-04
0251442	Kiona	dry	458579	1.04E-05
0250671	Kiona	irr	452614	5.36
0250661	Kiona	irr	456215	5.85
0250661	Kiona	irr	456747	5.66
0250661	Kiona	irr	457201	5.17
0250661	Kiona	irr	457209	6.36
0250661	Kiona	irr	457727	5.93
0250661	Kiona	irr	458579	5.80
0250671	Kiona	irr	458579	5.33
0251442	Kiona	irr	458579	5.30
0250681	Kittitas	dry	452614	0.00
0250681	Kittitas	dry	455608	1.22E-18
0250681	Kittitas	dry	455613	0.00

Soil ID	Soil Name	IRR	MET	90th Percentile
0250681	Kittitas	dry	456215	0.00
0250681	Kittitas	dry	456880	0.00
0250681	Kittitas	dry	457209	3.11E-21
0250681	Kittitas	dry	457727	0.00
0250681	Kittitas	irr	452614	2.79E-14
0250681	Kittitas	irr	455608	6.25E-09
0250681	Kittitas	irr	455613	3.44E-14
0250681	Kittitas	irr	456880	2.20E-14
0250681	Kittitas	irr	457209	8.21E-10
0250681	Kittitas	irr	457727	4.52E-12
0250691	Koehler	dry	453438	3.21E-01
0250691	Koehler	dry	455613	6.48E-01
0250691	Koehler	dry	456747	4.27E-01
0250691	Koehler	dry	456880	5.91E-01
0250691	Koehler	dry	457201	7.97E-02
0250691	Koehler	dry	457209	2.91E-01
0250691	Koehler	dry	457727	7.17E-01
0250691	Koehler	dry	458903	2.80E-01
0250691	Koehler	irr	455613	6.45
0250691	Koehler	irr	456747	6.35
0250691	Koehler	irr	456880	6.45
0250691	Koehler	irr	457201	6.07
0250691	Koehler	irr	457209	6.68
0250691	Koehler	irr	457727	6.52
0250691	Koehler	irr	458903	6.27
0250701	Licksillet	dry	452609	9.33E-02
0251892	Licksillet	dry	452609	9.33E-02
0250701	Licksillet	dry	452614	8.56E-02
0251892	Licksillet	dry	452614	8.56E-02
0250701	Licksillet	dry	456880	9.48E-02
0251892	Licksillet	dry	456880	6.96E-02
0250701	Licksillet	dry	457727	1.50E-01
0250701	Licksillet	dry	458579	9.84E-02
0250711	Magallon	dry	452609	2.84E-04
0250721	Magallon	dry	452609	2.84E-04
0250711	Magallon	dry	452614	1.64E-04
0250721	Magallon	dry	452614	1.64E-04
0250711	Magallon	irr	452614	2.16
0250721	Magallon	irr	452614	2.16
0250731	Malaga	dry	452609	2.24E-04
0250741	Malaga	dry	452609	2.24E-04
0250751	Malaga	dry	452609	4.82E-04
0250771	Malaga	dry	452609	4.82E-04

Soil ID	Soil Name	IRR	MET	90th Percentile
0250781	Malaga	dry	452609	4.05E-04
0250791	Malaga	dry	452609	4.05E-04
0250731	Malaga	dry	452614	1.42E-04
0250741	Malaga	dry	452614	1.42E-04
0250751	Malaga	dry	452614	2.79E-04
0250761	Malaga	dry	452614	2.79E-04
0250771	Malaga	dry	452614	2.79E-04
0250781	Malaga	dry	452614	2.31E-04
0250791	Malaga	dry	452614	2.31E-04
0250751	Malaga	dry	453438	6.39E-06
0250731	Malaga	dry	455608	1.51E-01
0250741	Malaga	dry	455608	1.51E-01
0250751	Malaga	dry	455608	1.83E-01
0250761	Malaga	dry	455608	1.83E-01
0250771	Malaga	dry	455608	1.83E-01
0250781	Malaga	dry	455608	1.75E-01
0250791	Malaga	dry	455608	1.75E-01
0250731	Malaga	dry	455613	2.32E-04
0250741	Malaga	dry	455613	2.32E-04
0250751	Malaga	dry	455613	5.17E-04
0250761	Malaga	dry	455613	5.17E-04
0250771	Malaga	dry	455613	5.17E-04
0250781	Malaga	dry	455613	4.25E-04
0250791	Malaga	dry	455613	4.25E-04
0250751	Malaga	dry	456215	2.27E-03
0250771	Malaga	dry	456215	2.27E-03
0250781	Malaga	dry	456215	1.94E-03
0250731	Malaga	dry	456747	4.76E-05
0250751	Malaga	dry	456747	1.13E-04
0250771	Malaga	dry	456747	1.13E-04
0250781	Malaga	dry	456747	9.71E-05
0250731	Malaga	dry	456880	1.69E-04
0250741	Malaga	dry	456880	1.69E-04
0250751	Malaga	dry	456880	3.53E-04
0250761	Malaga	dry	456880	3.53E-04
0250771	Malaga	dry	456880	3.53E-04
0250781	Malaga	dry	456880	2.99E-04
0250731	Malaga	dry	457209	3.20E-02
0250741	Malaga	dry	457209	3.20E-02
0250751	Malaga	dry	457209	3.95E-02
0250771	Malaga	dry	457209	3.95E-02
0250781	Malaga	dry	457209	3.78E-02
0250731	Malaga	dry	457727	7.97E-03

Soil ID	Soil Name	IRR	MET	90th Percentile
0250781	Malaga	dry	457727	1.21E-02
0250731	Malaga	dry	458579	3.97E-04
0250741	Malaga	dry	458579	3.97E-04
0250751	Malaga	dry	458579	8.43E-04
0250771	Malaga	dry	458579	8.43E-04
0250781	Malaga	dry	458579	7.01E-04
0250731	Malaga	dry	458903	2.07E-08
0250741	Malaga	dry	458903	2.07E-08
0250751	Malaga	dry	458903	1.14E-07
0250771	Malaga	dry	458903	1.14E-07
0250731	Malaga	irr	452609	4.48
0250741	Malaga	irr	452609	4.48
0250751	Malaga	irr	452609	4.43
0250771	Malaga	irr	452609	4.43
0250781	Malaga	irr	452609	4.44
0250791	Malaga	irr	452609	4.44
0250731	Malaga	irr	452614	4.45
0250741	Malaga	irr	452614	4.45
0250751	Malaga	irr	452614	4.44
0250761	Malaga	irr	452614	4.44
0250771	Malaga	irr	452614	4.44
0250781	Malaga	irr	452614	4.44
0250791	Malaga	irr	452614	4.44
0250731	Malaga	irr	455608	4.89
0250741	Malaga	irr	455608	4.89
0250751	Malaga	irr	455608	4.96
0250761	Malaga	irr	455608	4.96
0250771	Malaga	irr	455608	4.96
0250781	Malaga	irr	455608	4.93
0250791	Malaga	irr	455608	4.93
0250731	Malaga	irr	455613	4.37
0250741	Malaga	irr	455613	4.37
0250751	Malaga	irr	455613	4.40
0250761	Malaga	irr	455613	4.40
0250771	Malaga	irr	455613	4.40
0250781	Malaga	irr	455613	4.38
0250791	Malaga	irr	455613	4.38
0250751	Malaga	irr	456215	4.45
0250771	Malaga	irr	456215	4.45
0250781	Malaga	irr	456215	4.43
0250731	Malaga	irr	456747	4.37
0250751	Malaga	irr	456747	4.43
0250771	Malaga	irr	456747	4.43

Soil ID	Soil Name	IRR	MET	90th Percentile
0250781	Malaga	irr	456747	4.42
0250731	Malaga	irr	456880	4.39
0250741	Malaga	irr	456880	4.39
0250751	Malaga	irr	456880	4.42
0250761	Malaga	irr	456880	4.42
0250771	Malaga	irr	456880	4.42
0250781	Malaga	irr	456880	4.38
0250731	Malaga	irr	457209	4.99
0250741	Malaga	irr	457209	4.99
0250751	Malaga	irr	457209	5.04
0250771	Malaga	irr	457209	5.04
0250781	Malaga	irr	457209	5.01
0250731	Malaga	irr	457727	4.54
0250781	Malaga	irr	457727	4.56
0250731	Malaga	irr	458579	4.47
0250771	Malaga	irr	458579	4.48
0250731	Malaga	irr	458903	4.26
0251931	M-W	dry	452609	---
0251931	M-W	dry	456880	---
0251931	M-W	irr	452609	---
0251931	M-W	irr	456880	---
0250821	Neppel	dry	452614	2.83E-06
0250801	Neppel	dry	455608	8.01E-02
0250831	Neppel	dry	455608	6.07E-02
0250841	Neppel	dry	455608	6.07E-02
0250801	Neppel	dry	455613	2.93E-05
0250811	Neppel	dry	455613	2.93E-05
0250821	Neppel	dry	455613	5.66E-06
0250831	Neppel	dry	455613	5.66E-06
0250841	Neppel	dry	455613	5.66E-06
0250821	Neppel	dry	456215	4.47E-05
0250831	Neppel	dry	456215	4.47E-05
0250841	Neppel	dry	456215	4.47E-05
0250801	Neppel	dry	456880	1.88E-05
0250811	Neppel	dry	456880	1.88E-05
0250821	Neppel	dry	456880	3.47E-06
0250831	Neppel	dry	456880	3.47E-06
0250841	Neppel	dry	456880	3.47E-06
0250831	Neppel	dry	457209	8.49E-03
0250821	Neppel	dry	457727	5.72E-04
0250831	Neppel	dry	457727	5.72E-04
0250841	Neppel	dry	457727	5.72E-04
0250811	Neppel	dry	458579	4.97E-05

Soil ID	Soil Name	IRR	MET	90th Percentile
0250821	Neppel	dry	458579	1.43E-05
0250831	Neppel	dry	458579	1.43E-05
0250841	Neppel	dry	458579	1.43E-05
0250821	Neppel	dry	458903	1.95E-10
0250801	Neppel	irr	455608	4.60
0250831	Neppel	irr	455608	4.64
0250841	Neppel	irr	455608	4.64
0250801	Neppel	irr	455613	4.04
0250811	Neppel	irr	455613	4.04
0250821	Neppel	irr	455613	4.07
0250831	Neppel	irr	455613	4.07
0250841	Neppel	irr	455613	4.07
0250821	Neppel	irr	456215	4.17
0250831	Neppel	irr	456215	4.17
0250841	Neppel	irr	456215	4.17
0250801	Neppel	irr	456880	4.09
0250811	Neppel	irr	456880	4.09
0250821	Neppel	irr	456880	4.10
0250831	Neppel	irr	456880	4.10
0250841	Neppel	irr	456880	4.10
0250831	Neppel	irr	457209	4.80
0250831	Neppel	irr	457727	4.24
0250841	Neppel	irr	457727	4.24
0250821	Neppel	irr	458579	4.18
0250831	Neppel	irr	458579	4.18
0250841	Neppel	irr	458579	4.18
0250851	Novark	dry	453438	3.66E-09
0250851	Novark	dry	455613	3.61E-06
0250851	Novark	dry	456215	2.43E-05
0250851	Novark	dry	456880	1.99E-06
0250851	Novark	dry	457727	4.08E-04
0250851	Novark	dry	458579	6.11E-06
0250851	Novark	dry	458903	2.67E-11
0250851	Novark	irr	455613	3.60
0250851	Novark	irr	456215	3.67
0250851	Novark	irr	456747	3.65
0250851	Novark	irr	456880	3.60
0250851	Novark	irr	458579	3.74
0250861	Outlook	dry	452609	7.19E-18
0250861	Outlook	dry	452614	9.19E-19
0250861	Outlook	dry	455613	2.72E-18
0250861	Outlook	dry	456215	5.75E-17
0250861	Outlook	dry	456880	1.24E-18

Soil ID	Soil Name	IRR	MET	90th Percentile
0250861	Outlook	irr	452609	6.67E-03
0250861	Outlook	irr	452614	5.41E-03
0250861	Outlook	irr	455613	5.12E-03
0250861	Outlook	irr	456215	8.70E-03
0250861	Outlook	irr	456880	5.95E-03
0250871	Pedigo	dry	452609	0.00
0250871	Pedigo	dry	456747	0.00
0250881	Pits	dry	452609	---
0250881	Pits	dry	452614	---
0250881	Pits	dry	453438	---
0250881	Pits	dry	455608	---
0250881	Pits	dry	455613	---
0250881	Pits	dry	456215	---
0250881	Pits	dry	456747	---
0250881	Pits	dry	456880	---
0250881	Pits	dry	457201	---
0250881	Pits	dry	457209	---
0250881	Pits	dry	457727	---
0250881	Pits	dry	458903	---
0250881	Pits	irr	452609	---
0250881	Pits	irr	452614	---
0250881	Pits	irr	455608	---
0250881	Pits	irr	455613	---
0250881	Pits	irr	456747	---
0250881	Pits	irr	456880	---
0250881	Pits	irr	457201	---
0250881	Pits	irr	457209	---
0250881	Pits	irr	457727	---
0250881	Pits	irr	458903	---
0250901	Prosser	dry	452609	1.63E-01
0250931	Prosser	dry	452609	1.63E-01
0250941	Prosser	dry	452609	1.63E-01
0250951	Prosser	dry	452609	1.63E-01
0251452	Prosser	dry	452609	1.63E-01
0250891	Prosser	dry	452614	1.44E-01
0250911	Prosser	dry	452614	1.44E-01
0250941	Prosser	dry	452614	1.44E-01
0251452	Prosser	dry	452614	1.44E-01
0250891	Prosser	dry	455608	5.34E-01
0250941	Prosser	dry	455608	5.34E-01
0251452	Prosser	dry	455608	5.34E-01
0250891	Prosser	dry	455613	1.71E-01
0250901	Prosser	dry	455613	1.71E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0250911	Prosser	dry	455613	1.71E-01
0250921	Prosser	dry	455613	1.71E-01
0250931	Prosser	dry	455613	1.71E-01
0250941	Prosser	dry	455613	1.71E-01
0250951	Prosser	dry	455613	1.71E-01
0251452	Prosser	dry	455613	1.71E-01
0250891	Prosser	dry	456215	2.12E-01
0250901	Prosser	dry	456215	2.12E-01
0250911	Prosser	dry	456215	2.12E-01
0250921	Prosser	dry	456215	2.12E-01
0250931	Prosser	dry	456215	2.12E-01
0250941	Prosser	dry	456215	2.12E-01
0250951	Prosser	dry	456215	2.12E-01
0251452	Prosser	dry	456215	2.12E-01
0250911	Prosser	dry	456747	1.20E-01
0250891	Prosser	dry	456880	1.64E-01
0250901	Prosser	dry	456880	1.64E-01
0250911	Prosser	dry	456880	1.64E-01
0250921	Prosser	dry	456880	1.64E-01
0250931	Prosser	dry	456880	1.64E-01
0250941	Prosser	dry	456880	1.64E-01
0250951	Prosser	dry	456880	1.64E-01
0251452	Prosser	dry	456880	1.64E-01
0250891	Prosser	dry	457201	7.75E-06
0250901	Prosser	dry	457201	7.75E-06
0250911	Prosser	dry	457201	7.75E-06
0250921	Prosser	dry	457201	7.75E-06
0250931	Prosser	dry	457201	7.75E-06
0250941	Prosser	dry	457201	7.75E-06
0251452	Prosser	dry	457201	7.75E-06
0250891	Prosser	dry	457209	1.88E-01
0250901	Prosser	dry	457209	1.88E-01
0250911	Prosser	dry	457209	1.88E-01
0250921	Prosser	dry	457209	1.88E-01
0250941	Prosser	dry	457209	1.88E-01
0251452	Prosser	dry	457209	1.88E-01
0250891	Prosser	dry	457727	2.80E-01
0250901	Prosser	dry	457727	2.80E-01
0250911	Prosser	dry	457727	2.80E-01
0250921	Prosser	dry	457727	2.80E-01
0250931	Prosser	dry	457727	2.80E-01
0250941	Prosser	dry	457727	2.80E-01
0250951	Prosser	dry	457727	2.80E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0251452	Prosser	dry	457727	2.80E-01
0250901	Prosser	dry	458579	1.69E-01
0250911	Prosser	dry	458579	1.69E-01
0250921	Prosser	dry	458579	1.69E-01
0250931	Prosser	dry	458579	1.69E-01
0250941	Prosser	dry	458579	1.69E-01
0250951	Prosser	dry	458579	1.69E-01
0251452	Prosser	dry	458579	1.69E-01
0250901	Prosser	irr	452609	5.36
0250931	Prosser	irr	452609	5.36
0250941	Prosser	irr	452609	5.36
0250951	Prosser	irr	452609	5.36
0251452	Prosser	irr	452609	5.36
0250911	Prosser	irr	452614	5.33
0250941	Prosser	irr	452614	5.33
0251452	Prosser	irr	452614	5.33
0250941	Prosser	irr	455608	5.54
0251452	Prosser	irr	455608	5.54
0250891	Prosser	irr	455613	5.31
0250901	Prosser	irr	455613	5.31
0250911	Prosser	irr	455613	5.31
0250921	Prosser	irr	455613	5.31
0250941	Prosser	irr	455613	5.31
0251452	Prosser	irr	455613	5.31
0250891	Prosser	irr	456215	5.36
0250901	Prosser	irr	456215	5.36
0250911	Prosser	irr	456215	5.36
0250921	Prosser	irr	456215	5.36
0250931	Prosser	irr	456215	5.36
0250941	Prosser	irr	456215	5.36
0250891	Prosser	irr	456880	5.32
0250901	Prosser	irr	456880	5.32
0250911	Prosser	irr	456880	5.32
0250931	Prosser	irr	456880	5.32
0250941	Prosser	irr	456880	5.32
0250951	Prosser	irr	456880	5.32
0251452	Prosser	irr	456880	5.32
0250891	Prosser	irr	457201	4.98
0250901	Prosser	irr	457201	4.98
0250911	Prosser	irr	457201	4.98
0250921	Prosser	irr	457201	4.98
0250931	Prosser	irr	457201	4.98
0250941	Prosser	irr	457201	4.98

Soil ID	Soil Name	IRR	MET	90th Percentile
0251452	Prosser	irr	457201	4.98
0250891	Prosser	irr	457209	5.67
0250901	Prosser	irr	457209	5.67
0250911	Prosser	irr	457209	5.67
0250921	Prosser	irr	457209	5.67
0250941	Prosser	irr	457209	5.67
0251452	Prosser	irr	457209	5.67
0250891	Prosser	irr	457727	5.37
0250901	Prosser	irr	457727	5.37
0250921	Prosser	irr	457727	5.37
0250941	Prosser	irr	457727	5.37
0251452	Prosser	irr	457727	5.37
0250891	Prosser	irr	458579	5.39
0250901	Prosser	irr	458579	5.39
0250911	Prosser	irr	458579	5.39
0250921	Prosser	irr	458579	5.39
0250941	Prosser	irr	458579	5.39
0250951	Prosser	irr	458579	5.39
0251452	Prosser	irr	458579	5.39
0250971	Quincy	dry	452609	2.10E-01
0250981	Quincy	dry	452609	1.03E-01
0250991	Quincy	dry	452609	1.03E-01
0250971	Quincy	dry	452614	1.67E-01
0250981	Quincy	dry	452614	7.79E-02
0250991	Quincy	dry	452614	7.79E-02
0250961	Quincy	dry	453438	9.97E-02
0250971	Quincy	dry	453438	9.97E-02
0250981	Quincy	dry	453438	4.37E-02
0251762	Quincy	dry	453438	9.97E-02
0250961	Quincy	dry	455608	4.81E-01
0250971	Quincy	dry	455608	4.81E-01
0250981	Quincy	dry	455608	3.45E-01
0250991	Quincy	dry	455608	3.45E-01
0251762	Quincy	dry	455608	4.81E-01
0250961	Quincy	dry	455613	2.70E-01
0250971	Quincy	dry	455613	2.70E-01
0250981	Quincy	dry	455613	1.34E-01
0250991	Quincy	dry	455613	1.34E-01
0251762	Quincy	dry	455613	2.70E-01
0250971	Quincy	dry	456215	2.71E-01
0250981	Quincy	dry	456215	1.37E-01
0250991	Quincy	dry	456215	1.37E-01
0251762	Quincy	dry	456215	2.71E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0250961	Quincy	dry	456747	1.55E-01
0250971	Quincy	dry	456747	1.55E-01
0250981	Quincy	dry	456747	6.96E-02
0250991	Quincy	dry	456747	6.96E-02
0250961	Quincy	dry	456880	2.31E-01
0250971	Quincy	dry	456880	2.31E-01
0250981	Quincy	dry	456880	1.05E-01
0250991	Quincy	dry	456880	1.05E-01
0251762	Quincy	dry	456880	2.31E-01
0250961	Quincy	dry	457201	1.18E-01
0250971	Quincy	dry	457201	1.18E-01
0250981	Quincy	dry	457201	3.43E-02
0250991	Quincy	dry	457201	3.43E-02
0251762	Quincy	dry	457201	1.18E-01
0250961	Quincy	dry	457209	1.44E-01
0250971	Quincy	dry	457209	1.44E-01
0250981	Quincy	dry	457209	1.23E-01
0250991	Quincy	dry	457209	1.23E-01
0251762	Quincy	dry	457209	1.44E-01
0250961	Quincy	dry	457727	2.74E-01
0250971	Quincy	dry	457727	2.74E-01
0250981	Quincy	dry	457727	1.52E-01
0250991	Quincy	dry	457727	1.52E-01
0251762	Quincy	dry	457727	2.74E-01
0250971	Quincy	dry	458579	1.94E-01
0250981	Quincy	dry	458579	1.01E-01
0250991	Quincy	dry	458579	1.01E-01
0251901	Quincy	dry	458579	4.53E-02
0250961	Quincy	dry	458903	9.64E-02
0250971	Quincy	dry	458903	9.64E-02
0250981	Quincy	dry	458903	3.35E-02
0250991	Quincy	dry	458903	3.35E-02
0251762	Quincy	dry	458903	9.64E-02
0250981	Quincy	irr	452609	3.84
0250971	Quincy	irr	452614	3.79
0250981	Quincy	irr	452614	3.82
0250991	Quincy	irr	452614	3.82
0250961	Quincy	irr	455608	4.10
0250971	Quincy	irr	455608	4.10
0250981	Quincy	irr	455608	4.17
0250991	Quincy	irr	455608	4.17
0251762	Quincy	irr	455608	4.10
0250961	Quincy	irr	455613	3.77

Soil ID	Soil Name	IRR	MET	90th Percentile
0250971	Quincy	irr	455613	3.77
0250981	Quincy	irr	455613	3.80
0250991	Quincy	irr	455613	3.80
0250971	Quincy	irr	456215	3.81
0250981	Quincy	irr	456215	3.85
0250991	Quincy	irr	456215	3.85
0250961	Quincy	irr	456747	3.77
0250971	Quincy	irr	456747	3.77
0250981	Quincy	irr	456747	3.85
0250971	Quincy	irr	456880	3.79
0250981	Quincy	irr	456880	3.81
0250991	Quincy	irr	456880	3.81
0251762	Quincy	irr	456880	3.79
0250961	Quincy	irr	457201	3.59
0250971	Quincy	irr	457201	3.59
0250981	Quincy	irr	457201	3.65
0250991	Quincy	irr	457201	3.65
0251762	Quincy	irr	457201	3.59
0250961	Quincy	irr	457209	4.34
0250971	Quincy	irr	457209	4.34
0250981	Quincy	irr	457209	4.39
0250991	Quincy	irr	457209	4.39
0251762	Quincy	irr	457209	4.34
0250971	Quincy	irr	457727	3.84
0250981	Quincy	irr	457727	3.91
0251762	Quincy	irr	457727	3.84
0250981	Quincy	irr	458579	3.90
0250991	Quincy	irr	458579	3.90
0250961	Quincy	irr	458903	3.73
0250971	Quincy	irr	458903	3.73
0250981	Quincy	irr	458903	3.77
0251001	Quinton	dry	456747	4.38E-03
0251001	Quinton	dry	457727	1.61E-02
0251001	Quinton	irr	456747	3.88E-01
0251001	Quinton	irr	457727	4.63E-01
0251011	Ralls	dry	452609	7.46E-18
0251021	Ralls	dry	452609	7.46E-18
0251031	Ralls	dry	452609	5.09E-17
0251893	Ralls	dry	452609	7.46E-18
0251011	Ralls	dry	452614	2.01E-18
0251021	Ralls	dry	452614	2.01E-18
0251893	Ralls	dry	452614	2.01E-18
0251011	Ralls	dry	456880	9.96E-19

Soil ID	Soil Name	IRR	MET	90th Percentile
0251021	Ralls	dry	456880	9.96E-19
0251031	Ralls	dry	456880	9.60E-18
0251893	Ralls	dry	456880	9.96E-19
0251021	Ralls	dry	458579	1.91E-17
0251031	Ralls	dry	458579	1.19E-16
0251031	Ralls	irr	458579	1.31E-01
0251041	Renslow	dry	452609	4.05E-20
0251051	Renslow	dry	452609	4.05E-20
0251052	Renslow	dry	452609	4.05E-20
0251041	Renslow	dry	452614	4.88E-20
0251051	Renslow	dry	452614	4.88E-20
0251071	Renslow	dry	452614	4.88E-20
0251051	Renslow	dry	456880	1.58E-20
0251052	Renslow	dry	456880	1.58E-20
0251041	Renslow	irr	452609	2.27E-01
0251051	Renslow	irr	452609	2.27E-01
0251051	Renslow	irr	456880	2.09E-01
0251101	Ritzville	dry	452614	4.45E-15
0251102	Ritzville	dry	452614	4.45E-15
0251101	Ritzville	irr	452614	1.92
0251111	Roloff	dry	452609	3.52E-06
0251121	Roloff	dry	452609	3.52E-06
0251111	Roloff	dry	452614	2.31E-06
0251121	Roloff	dry	452614	2.31E-06
0251111	Roloff	dry	457201	0.00
0251111	Roloff	irr	452614	1.46E-01
0251121	Roloff	irr	452614	1.46E-01
0251111	Roloff	irr	457201	8.30E-02
0251151	Royal	dry	452614	9.90E-04
0251161	Royal	dry	452614	9.90E-04
0251131	Royal	dry	453438	3.90E-04
0251151	Royal	dry	453438	1.57E-04
0251161	Royal	dry	453438	1.57E-04
0251171	Royal	dry	453438	1.57E-04
0251131	Royal	dry	455608	8.95E-02
0251151	Royal	dry	455608	7.62E-02
0251161	Royal	dry	455608	7.62E-02
0251131	Royal	dry	455613	3.71E-03
0251141	Royal	dry	455613	3.71E-03
0251151	Royal	dry	455613	2.17E-03
0251161	Royal	dry	455613	2.17E-03
0251171	Royal	dry	455613	2.17E-03
0251181	Royal	dry	455613	2.55E-03

Soil ID	Soil Name	IRR	MET	90th Percentile
0251191	Royal	dry	455613	2.55E-03
0251131	Royal	dry	456215	5.52E-03
0251151	Royal	dry	456215	3.15E-03
0251161	Royal	dry	456215	3.15E-03
0251131	Royal	dry	456747	1.32E-03
0251161	Royal	dry	456747	6.17E-04
0251171	Royal	dry	456747	6.17E-04
0251131	Royal	dry	456880	2.94E-03
0251151	Royal	dry	456880	1.51E-03
0251161	Royal	dry	456880	1.51E-03
0251181	Royal	dry	456880	2.05E-03
0251191	Royal	dry	456880	2.05E-03
0251131	Royal	dry	457201	5.30E-07
0251141	Royal	dry	457201	5.30E-07
0251151	Royal	dry	457201	1.02E-08
0251161	Royal	dry	457201	1.02E-08
0251171	Royal	dry	457201	1.02E-08
0251181	Royal	dry	457201	1.36E-08
0251191	Royal	dry	457201	1.36E-08
0251131	Royal	dry	457209	2.56E-02
0251141	Royal	dry	457209	2.56E-02
0251151	Royal	dry	457209	2.21E-02
0251161	Royal	dry	457209	2.21E-02
0251171	Royal	dry	457209	2.21E-02
0251181	Royal	dry	457209	3.27E-02
0251191	Royal	dry	457209	3.27E-02
0251131	Royal	dry	457727	1.11E-02
0251151	Royal	dry	457727	8.42E-03
0251161	Royal	dry	457727	8.42E-03
0251171	Royal	dry	457727	8.42E-03
0251181	Royal	dry	457727	1.10E-02
0251191	Royal	dry	457727	1.10E-02
0251131	Royal	dry	458579	3.43E-03
0251161	Royal	dry	458579	2.04E-03
0251171	Royal	dry	458579	2.04E-03
0251131	Royal	dry	458903	8.03E-05
0251151	Royal	dry	458903	2.37E-05
0251161	Royal	dry	458903	2.37E-05
0251131	Royal	irr	452609	2.44
0251151	Royal	irr	452614	2.49
0251131	Royal	irr	455608	2.87
0251151	Royal	irr	455608	2.87
0251161	Royal	irr	455608	2.87

Soil ID	Soil Name	IRR	MET	90th Percentile
0251131	Royal	irr	455613	2.38
0251141	Royal	irr	455613	2.38
0251151	Royal	irr	455613	2.45
0251161	Royal	irr	455613	2.45
0251171	Royal	irr	455613	2.45
0251181	Royal	irr	455613	2.62
0251191	Royal	irr	455613	2.62
0251131	Royal	irr	456215	2.43
0251141	Royal	irr	456215	2.43
0251151	Royal	irr	456215	2.51
0251161	Royal	irr	456215	2.51
0251131	Royal	irr	456747	2.45
0251151	Royal	irr	456747	2.46
0251161	Royal	irr	456747	2.46
0251171	Royal	irr	456747	2.46
0251131	Royal	irr	456880	2.40
0251151	Royal	irr	456880	2.47
0251161	Royal	irr	456880	2.47
0251181	Royal	irr	456880	2.60
0251191	Royal	irr	456880	2.60
0251131	Royal	irr	457201	2.09
0251141	Royal	irr	457201	2.09
0251151	Royal	irr	457201	2.21
0251161	Royal	irr	457201	2.21
0251171	Royal	irr	457201	2.21
0251181	Royal	irr	457201	2.39
0251191	Royal	irr	457201	2.39
0251131	Royal	irr	457209	3.07
0251141	Royal	irr	457209	3.07
0251151	Royal	irr	457209	3.18
0251161	Royal	irr	457209	3.18
0251171	Royal	irr	457209	3.18
0251181	Royal	irr	457209	3.32
0251191	Royal	irr	457209	3.32
0251131	Royal	irr	457727	2.48
0251151	Royal	irr	457727	2.60
0251161	Royal	irr	457727	2.60
0251171	Royal	irr	457727	2.60
0251181	Royal	irr	457727	2.66
0251191	Royal	irr	457727	2.66
0251161	Royal	irr	458579	2.61
0251131	Royal	irr	458903	2.35
0251151	Royal	irr	458903	2.44

Soil ID	Soil Name	IRR	MET	90th Percentile
0251161	Royal	irr	458903	2.44
0251201	Rubbleland	dry	452614	---
0251201	Rubbleland	dry	452614	---
0251201	Rubbleland	dry	455613	---
0251201	Rubbleland	dry	456747	---
0251201	Rubbleland	dry	456880	---
0251201	Rubbleland	dry	457201	---
0251201	Rubbleland	dry	457209	---
0251201	Rubbleland	dry	457727	---
0251201	Rubbleland	dry	457727	---
0251201	Rubbleland	dry	458579	---
0251201	Rubbleland	irr	452614	---
0251201	Rubbleland	irr	452614	---
0251201	Rubbleland	irr	456880	---
0251201	Rubbleland	irr	456880	---
0251201	Rubbleland	irr	457201	---
0251201	Rubbleland	irr	457209	---
0251201	Rubbleland	irr	457727	---
0251201	Rubbleland	irr	457727	---
0251201	Rubbleland	irr	458579	---
0251201	Rubbleland	irr	458579	---
0251211	Sagehill	dry	452609	3.60E-03
0251221	Sagehill	dry	452609	3.60E-03
0251211	Sagehill	dry	452614	1.73E-03
0251221	Sagehill	dry	453438	8.23E-05
0251211	Sagehill	dry	455613	3.54E-03
0251221	Sagehill	dry	455613	3.54E-03
0251231	Sagehill	dry	455613	3.54E-03
0251241	Sagehill	dry	455613	3.54E-03
0251211	Sagehill	dry	456215	1.17E-02
0251221	Sagehill	dry	456215	1.17E-02
0251231	Sagehill	dry	456215	1.17E-02
0251241	Sagehill	dry	456215	1.17E-02
0251211	Sagehill	dry	456880	2.90E-03
0251221	Sagehill	dry	456880	2.90E-03
0251231	Sagehill	dry	456880	2.90E-03
0251211	Sagehill	dry	457201	1.16E-12
0251221	Sagehill	dry	457201	1.16E-12
0251231	Sagehill	dry	457201	1.16E-12
0251241	Sagehill	dry	457201	1.16E-12
0251211	Sagehill	dry	457209	9.21E-02
0251221	Sagehill	dry	457209	9.21E-02
0251231	Sagehill	dry	457209	9.21E-02

Soil ID	Soil Name	IRR	MET	90th Percentile
0251241	Sagehill	dry	457209	9.21E-02
0251211	Sagehill	dry	457727	3.58E-02
0251221	Sagehill	dry	457727	3.58E-02
0251231	Sagehill	dry	457727	3.58E-02
0251241	Sagehill	dry	457727	3.58E-02
0251211	Sagehill	dry	458579	4.70E-03
0251221	Sagehill	dry	458579	4.70E-03
0251231	Sagehill	dry	458579	4.70E-03
0251241	Sagehill	dry	458579	4.70E-03
0251211	Sagehill	dry	458903	2.61E-06
0251221	Sagehill	dry	458903	2.61E-06
0251211	Sagehill	irr	452609	5.40
0251221	Sagehill	irr	452609	5.40
0251211	Sagehill	irr	452614	5.38
0251211	Sagehill	irr	455613	5.30
0251221	Sagehill	irr	455613	5.30
0251231	Sagehill	irr	455613	5.30
0251241	Sagehill	irr	455613	5.30
0251211	Sagehill	irr	456215	5.40
0251221	Sagehill	irr	456215	5.40
0251231	Sagehill	irr	456215	5.40
0251241	Sagehill	irr	456215	5.40
0251211	Sagehill	irr	456880	5.34
0251221	Sagehill	irr	456880	5.34
0251211	Sagehill	irr	457201	4.69
0251221	Sagehill	irr	457201	4.69
0251231	Sagehill	irr	457201	4.69
0251241	Sagehill	irr	457201	4.69
0251211	Sagehill	irr	457209	6.05
0251221	Sagehill	irr	457209	6.05
0251231	Sagehill	irr	457209	6.05
0251241	Sagehill	irr	457209	6.05
0251211	Sagehill	irr	457727	5.50
0251221	Sagehill	irr	457727	5.50
0251231	Sagehill	irr	457727	5.50
0251211	Sagehill	irr	458579	5.39
0251221	Sagehill	irr	458579	5.39
0251231	Sagehill	irr	458579	5.39
0251211	Sagehill	irr	458903	5.13
0251221	Sagehill	irr	458903	5.13
0251281	Sagemoor	dry	455608	2.71E-02
0251251	Sagemoor	dry	455613	3.32E-07
0251261	Sagemoor	dry	455613	3.32E-07

Soil ID	Soil Name	IRR	MET	90th Percentile
0251271	Sagemoor	dry	455613	3.32E-07
0251281	Sagemoor	dry	455613	3.32E-07
0251251	Sagemoor	dry	456215	4.72E-06
0251261	Sagemoor	dry	456215	4.72E-06
0251281	Sagemoor	dry	456215	4.72E-06
0251251	Sagemoor	dry	456880	2.64E-07
0251251	Sagemoor	irr	455613	2.79
0251261	Sagemoor	irr	455613	2.79
0251271	Sagemoor	irr	455613	2.79
0251281	Sagemoor	irr	455613	2.79
0251251	Sagemoor	irr	456215	2.86
0251261	Sagemoor	irr	456215	2.86
0251271	Sagemoor	irr	456215	2.86
0251281	Sagemoor	irr	456215	2.86
0251251	Sagemoor	irr	456880	2.81
0251291	Saltese	dry	452614	---
0251311	Schawana	dry	452614	1.17
0251312	Schawana	dry	452614	1.08
0251311	Schawana	dry	455613	1.47
0251312	Schawana	dry	455613	1.51
0251311	Schawana	dry	456215	1.55
0251312	Schawana	dry	456215	1.43
0251002	Schawana	dry	456747	8.29E-01
0251301	Schawana	dry	456747	9.51E-01
0251311	Schawana	dry	456747	1.03
0251312	Schawana	dry	456747	1.03
0251301	Schawana	dry	456880	1.28
0251311	Schawana	dry	456880	1.38
0251312	Schawana	dry	456880	1.38
0251301	Schawana	dry	457201	4.99E-01
0251311	Schawana	dry	457201	5.58E-01
0251312	Schawana	dry	457201	6.51E-01
0251311	Schawana	dry	457209	4.49E-01
0251312	Schawana	dry	457209	5.12E-01
0251002	Schawana	dry	457727	1.28
0251301	Schawana	dry	457727	1.42
0251311	Schawana	dry	457727	1.53
0251312	Schawana	dry	457727	1.54
0251311	Schawana	dry	458579	1.26
0251312	Schawana	dry	458579	1.27
0251311	Schawana	irr	452614	1.24
0251312	Schawana	irr	452614	1.15
0251311	Schawana	irr	455613	1.61

Soil ID	Soil Name	IRR	MET	90th Percentile
0251312	Schawana	irr	455613	1.51
0251002	Schawana	irr	456747	8.29E-01
0251301	Schawana	irr	456747	1.03
0251311	Schawana	irr	456747	1.10
0251312	Schawana	irr	456747	1.03
0251311	Schawana	irr	457201	7.17E-01
0251312	Schawana	irr	457201	6.51E-01
0251301	Schawana	irr	457727	1.54
0251311	Schawana	irr	457727	1.64
0251312	Schawana	irr	457727	1.54
0251311	Schawana	irr	458579	1.35
0251321	Scoon	dry	452609	---
0251331	Scoon	dry	452609	---
0251341	Scoon	dry	452609	---
0251321	Scoon	dry	452614	---
0251321	Scoon	dry	455608	---
0251331	Scoon	dry	455608	---
0251321	Scoon	dry	455613	---
0251331	Scoon	dry	455613	---
0251351	Scoon	dry	455613	---
0251321	Scoon	dry	456215	---
0251331	Scoon	dry	456215	---
0251321	Scoon	dry	456747	---
0251331	Scoon	dry	456747	---
0251321	Scoon	dry	456880	---
0251331	Scoon	dry	456880	---
0251341	Scoon	dry	456880	---
0251351	Scoon	dry	456880	---
0251321	Scoon	dry	457201	---
0251331	Scoon	dry	457201	---
0251351	Scoon	dry	457201	---
0251321	Scoon	dry	457209	---
0251331	Scoon	dry	457209	---
0251351	Scoon	dry	457209	---
0251321	Scoon	dry	457727	---
0251331	Scoon	dry	457727	---
0251341	Scoon	dry	457727	---
0251351	Scoon	dry	457727	---
0251321	Scoon	dry	458579	---
0251331	Scoon	dry	458579	---
0251351	Scoon	dry	458579	---
0251321	Scoon	dry	458903	---
0251331	Scoon	dry	458903	---

Soil ID	Soil Name	IRR	MET	90th Percentile
0251321	Scoon	irr	452609	---
0251331	Scoon	irr	452609	---
0251341	Scoon	irr	452609	---
0251321	Scoon	irr	452614	---
0251321	Scoon	irr	455608	---
0251331	Scoon	irr	455608	---
0251321	Scoon	irr	455613	---
0251331	Scoon	irr	455613	---
0251351	Scoon	irr	455613	---
0251321	Scoon	irr	456215	---
0251331	Scoon	irr	456215	---
0251321	Scoon	irr	456747	---
0251331	Scoon	irr	456747	---
0251321	Scoon	irr	456880	---
0251331	Scoon	irr	456880	---
0251341	Scoon	irr	456880	---
0251351	Scoon	irr	456880	---
0251321	Scoon	irr	457201	---
0251331	Scoon	irr	457201	---
0251351	Scoon	irr	457201	---
0251321	Scoon	irr	457209	---
0251331	Scoon	irr	457209	---
0251351	Scoon	irr	457209	---
0251321	Scoon	irr	457727	---
0251331	Scoon	irr	457727	---
0251341	Scoon	irr	457727	---
0251351	Scoon	irr	457727	---
0251321	Scoon	irr	458579	---
0251331	Scoon	irr	458579	---
0251351	Scoon	irr	458579	---
0251321	Scoon	irr	458903	---
0251331	Scoon	irr	458903	---
0251361	Shano	dry	455613	1.46E-07
0251371	Shano	dry	455613	1.46E-07
0251381	Shano	dry	455613	1.46E-07
0251391	Shano	dry	455613	1.46E-07
0251401	Shano	dry	455613	1.46E-07
0251361	Shano	dry	456215	2.01E-06
0251371	Shano	dry	456215	2.01E-06
0251381	Shano	dry	456215	2.01E-06
0251391	Shano	dry	456215	2.01E-06
0251401	Shano	dry	456215	2.01E-06
0251361	Shano	dry	456880	9.03E-08

Soil ID	Soil Name	IRR	MET	90th Percentile
0251371	Shano	dry	456880	9.03E-08
0251381	Shano	dry	456880	9.03E-08
0251391	Shano	dry	456880	9.03E-08
0251361	Shano	dry	457201	2.44E-23
0251371	Shano	dry	457201	2.44E-23
0251381	Shano	dry	457201	2.44E-23
0251391	Shano	dry	457201	2.44E-23
0251381	Shano	dry	457209	4.18E-03
0251391	Shano	dry	457209	4.18E-03
0251401	Shano	dry	457209	4.18E-03
0251371	Shano	dry	457727	7.76E-05
0251381	Shano	dry	457727	7.76E-05
0251391	Shano	dry	457727	7.76E-05
0251401	Shano	dry	457727	7.76E-05
0251361	Shano	dry	458579	4.94E-07
0251371	Shano	dry	458579	4.94E-07
0251381	Shano	dry	458579	4.94E-07
0251391	Shano	dry	458579	4.94E-07
0251401	Shano	dry	458579	4.94E-07
0251361	Shano	irr	455613	3.27
0251371	Shano	irr	455613	3.27
0251381	Shano	irr	455613	3.27
0251391	Shano	irr	455613	3.27
0251401	Shano	irr	455613	3.27
0251361	Shano	irr	456215	3.40
0251371	Shano	irr	456215	3.40
0251381	Shano	irr	456215	3.40
0251391	Shano	irr	456215	3.40
0251401	Shano	irr	456215	3.40
0251361	Shano	irr	456880	3.36
0251371	Shano	irr	456880	3.36
0251381	Shano	irr	456880	3.36
0251391	Shano	irr	456880	3.36
0251371	Shano	irr	457201	2.93
0251381	Shano	irr	457201	2.93
0251391	Shano	irr	457201	2.93
0251381	Shano	irr	457209	3.98
0251391	Shano	irr	457209	3.98
0251401	Shano	irr	457209	3.98
0251361	Shano	irr	458579	3.43
0251371	Shano	irr	458579	3.43
0251381	Shano	irr	458579	3.43
0251391	Shano	irr	458579	3.43

Soil ID	Soil Name	IRR	MET	90th Percentile
0251401	Shano	irr	458579	3.43
0251411	Starbuck	dry	452609	8.20E-02
0251421	Starbuck	dry	452609	2.28E-02
0251431	Starbuck	dry	452609	1.26E-01
0251441	Starbuck	dry	452609	8.51E-02
0251451	Starbuck	dry	452609	3.46E-02
0251421	Starbuck	dry	452614	2.01E-02
0251431	Starbuck	dry	452614	1.14E-01
0251451	Starbuck	dry	452614	3.09E-02
0251411	Starbuck	dry	455608	2.25E-01
0251451	Starbuck	dry	455608	1.70E-01
0251411	Starbuck	dry	455613	8.37E-02
0251421	Starbuck	dry	455613	2.13E-02
0251431	Starbuck	dry	455613	1.32E-01
0251451	Starbuck	dry	455613	3.48E-02
0251411	Starbuck	dry	456215	9.71E-02
0251421	Starbuck	dry	456215	3.08E-02
0251431	Starbuck	dry	456215	1.61E-01
0251441	Starbuck	dry	456215	1.11E-01
0251451	Starbuck	dry	456215	4.77E-02
0251431	Starbuck	dry	456747	9.71E-02
0251411	Starbuck	dry	456880	8.19E-02
0251421	Starbuck	dry	456880	2.17E-02
0251431	Starbuck	dry	456880	1.29E-01
0251441	Starbuck	dry	456880	8.38E-02
0251451	Starbuck	dry	456880	3.49E-02
0251411	Starbuck	dry	457201	7.02E-04
0251421	Starbuck	dry	457201	9.04E-08
0251431	Starbuck	dry	457201	8.71E-05
0251451	Starbuck	dry	457201	6.00E-06
0251411	Starbuck	dry	457209	8.31E-02
0251421	Starbuck	dry	457209	4.70E-02
0251431	Starbuck	dry	457209	1.39E-01
0251451	Starbuck	dry	457209	4.89E-02
0251411	Starbuck	dry	457727	1.26E-01
0251421	Starbuck	dry	457727	4.95E-02
0251431	Starbuck	dry	457727	2.14E-01
0251441	Starbuck	dry	457727	1.59E-01
0251451	Starbuck	dry	457727	7.30E-02
0251411	Starbuck	dry	458579	8.63E-02
0251421	Starbuck	dry	458579	2.58E-02
0251431	Starbuck	dry	458579	1.32E-01
0251441	Starbuck	dry	458579	9.14E-02

Soil ID	Soil Name	IRR	MET	90th Percentile
0251451	Starbuck	dry	458579	3.84E-02
0251411	Starbuck	irr	452609	3.16E-01
0251421	Starbuck	irr	452609	1.21E-01
0251431	Starbuck	irr	452609	1.11
0251451	Starbuck	irr	452609	4.73E-01
0251421	Starbuck	irr	452614	1.13E-01
0251431	Starbuck	irr	452614	1.12
0251451	Starbuck	irr	452614	4.78E-01
0251411	Starbuck	irr	455608	5.23E-01
0251451	Starbuck	irr	455608	9.99E-01
0251411	Starbuck	irr	455613	3.45E-01
0251421	Starbuck	irr	455613	1.23E-01
0251431	Starbuck	irr	455613	1.11
0251451	Starbuck	irr	455613	4.92E-01
0251411	Starbuck	irr	456215	3.54E-01
0251421	Starbuck	irr	456215	1.51E-01
0251431	Starbuck	irr	456215	1.28
0251451	Starbuck	irr	456215	5.84E-01
0251411	Starbuck	irr	456880	3.46E-01
0251421	Starbuck	irr	456880	1.30E-01
0251431	Starbuck	irr	456880	1.17
0251451	Starbuck	irr	456880	5.07E-01
0251411	Starbuck	irr	457201	5.13E-02
0251421	Starbuck	irr	457201	4.85E-05
0251431	Starbuck	irr	457201	5.44E-03
0251451	Starbuck	irr	457201	8.71E-04
0251411	Starbuck	irr	457209	3.75E-01
0251421	Starbuck	irr	457209	2.11E-01
0251431	Starbuck	irr	457209	1.62
0251451	Starbuck	irr	457209	7.89E-01
0251411	Starbuck	irr	457727	4.06E-01
0251431	Starbuck	irr	457727	1.62
0251451	Starbuck	irr	457727	7.49E-01
0251411	Starbuck	irr	458579	3.21E-01
0251421	Starbuck	irr	458579	1.31E-01
0251431	Starbuck	irr	458579	1.14
0251441	Starbuck	irr	458579	8.18E-01
0251451	Starbuck	irr	458579	5.22E-01
0251461	Strat	dry	452609	1.23E-16
0251471	Strat	dry	452609	1.81E-05
0251481	Strat	dry	452609	6.64E-05
0251491	Strat	dry	452609	6.61E-07
0251461	Strat	dry	452614	3.39E-17

Soil ID	Soil Name	IRR	MET	90th Percentile
0251471	Strat	dry	452614	8.75E-06
0251481	Strat	dry	452614	3.41E-05
0251491	Strat	dry	452614	2.84E-07
0251461	Strat	irr	452609	1.10
0251471	Strat	irr	452609	2.55
0251481	Strat	irr	452609	2.47
0251491	Strat	irr	452609	1.52
0251461	Strat	irr	452614	1.08
0251471	Strat	irr	452614	2.49
0251481	Strat	irr	452614	2.44
0251491	Strat	irr	452614	1.47
0251492	Stratford	dry	452609	5.86E-08
0251501	Stratford	dry	452609	4.08E-09
0251492	Stratford	dry	452614	2.96E-08
0251501	Stratford	dry	452614	1.65E-09
0251501	Stratford	dry	456880	1.59E-09
0251492	Stratford	irr	452609	2.00
0251501	Stratford	irr	452609	2.01
0251492	Stratford	irr	452614	2.00
0251501	Stratford	irr	452614	1.97
0251571	Taunton	dry	452609	2.19E-02
0251591	Taunton	dry	452609	2.19E-02
0251601	Taunton	dry	452609	2.19E-02
0251611	Taunton	dry	452609	2.02E-02
0251621	Taunton	dry	452609	2.19E-02
0251571	Taunton	dry	452614	1.88E-02
0251521	Taunton	dry	455608	2.76E-01
0251531	Taunton	dry	455608	2.76E-01
0251511	Taunton	dry	455613	1.67E-01
0251521	Taunton	dry	455613	7.15E-02
0251531	Taunton	dry	455613	7.15E-02
0251541	Taunton	dry	455613	7.15E-02
0251551	Taunton	dry	455613	7.15E-02
0251561	Taunton	dry	455613	2.06E-02
0251571	Taunton	dry	455613	2.06E-02
0251581	Taunton	dry	455613	2.06E-02
0251591	Taunton	dry	455613	2.06E-02
0251601	Taunton	dry	455613	2.06E-02
0251511	Taunton	dry	456215	1.87E-01
0251521	Taunton	dry	456215	8.78E-02
0251531	Taunton	dry	456215	8.78E-02
0251541	Taunton	dry	456215	8.78E-02
0251561	Taunton	dry	456215	3.28E-02

Soil ID	Soil Name	IRR	MET	90th Percentile
0251571	Taunton	dry	456215	3.28E-02
0251581	Taunton	dry	456215	3.28E-02
0251591	Taunton	dry	456215	3.28E-02
0251601	Taunton	dry	456215	3.28E-02
0251611	Taunton	dry	456215	3.21E-02
0251621	Taunton	dry	456215	3.28E-02
0251511	Taunton	dry	456747	1.10E-01
0251531	Taunton	dry	456747	4.71E-02
0251541	Taunton	dry	456747	4.71E-02
0251571	Taunton	dry	456747	1.45E-02
0251581	Taunton	dry	456747	1.45E-02
0251611	Taunton	dry	456747	1.19E-02
0251621	Taunton	dry	456747	1.45E-02
0251511	Taunton	dry	456880	1.51E-01
0251521	Taunton	dry	456880	6.62E-02
0251531	Taunton	dry	456880	6.62E-02
0251541	Taunton	dry	456880	6.62E-02
0251551	Taunton	dry	456880	6.62E-02
0251561	Taunton	dry	456880	2.02E-02
0251571	Taunton	dry	456880	2.02E-02
0251581	Taunton	dry	456880	2.02E-02
0251591	Taunton	dry	456880	2.02E-02
0251601	Taunton	dry	456880	2.02E-02
0251611	Taunton	dry	456880	1.95E-02
0251621	Taunton	dry	456880	2.02E-02
0251511	Taunton	dry	457201	1.97E-02
0251521	Taunton	dry	457201	1.84E-05
0251531	Taunton	dry	457201	1.84E-05
0251541	Taunton	dry	457201	1.84E-05
0251551	Taunton	dry	457201	1.84E-05
0251561	Taunton	dry	457201	1.49E-08
0251571	Taunton	dry	457201	1.49E-08
0251591	Taunton	dry	457201	1.49E-08
0251601	Taunton	dry	457201	1.49E-08
0251511	Taunton	dry	457209	1.35E-01
0251521	Taunton	dry	457209	1.04E-01
0251531	Taunton	dry	457209	1.04E-01
0251541	Taunton	dry	457209	1.04E-01
0251551	Taunton	dry	457209	1.04E-01
0251561	Taunton	dry	457209	6.92E-02
0251571	Taunton	dry	457209	6.92E-02
0251581	Taunton	dry	457209	6.92E-02
0251591	Taunton	dry	457209	6.92E-02

Soil ID	Soil Name	IRR	MET	90th Percentile
0251601	Taunton	dry	457209	6.92E-02
0251511	Taunton	dry	457727	2.19E-01
0251521	Taunton	dry	457727	1.21E-01
0251531	Taunton	dry	457727	1.21E-01
0251541	Taunton	dry	457727	1.21E-01
0251551	Taunton	dry	457727	1.21E-01
0251571	Taunton	dry	457727	5.78E-02
0251581	Taunton	dry	457727	5.78E-02
0251591	Taunton	dry	457727	5.78E-02
0251601	Taunton	dry	457727	5.78E-02
0251611	Taunton	dry	457727	5.92E-02
0251621	Taunton	dry	457727	5.78E-02
0251531	Taunton	dry	458579	7.09E-02
0251541	Taunton	dry	458579	7.09E-02
0251561	Taunton	dry	458579	2.59E-02
0251571	Taunton	dry	458579	2.59E-02
0251581	Taunton	dry	458579	2.59E-02
0251591	Taunton	dry	458579	2.59E-02
0251601	Taunton	dry	458579	2.59E-02
0251531	Taunton	dry	458903	1.43E-02
0251571	Taunton	dry	458903	1.52E-03
0251581	Taunton	dry	458903	1.52E-03
0251621	Taunton	dry	458903	1.52E-03
0251571	Taunton	irr	452609	3.37
0251611	Taunton	irr	452609	3.39
0251621	Taunton	irr	452609	3.37
0251561	Taunton	irr	452614	3.42
0251521	Taunton	irr	455608	3.95
0251531	Taunton	irr	455608	3.95
0251511	Taunton	irr	455613	3.68
0251521	Taunton	irr	455613	3.72
0251531	Taunton	irr	455613	3.72
0251541	Taunton	irr	455613	3.72
0251551	Taunton	irr	455613	3.72
0251561	Taunton	irr	455613	3.33
0251571	Taunton	irr	455613	3.33
0251581	Taunton	irr	455613	3.33
0251591	Taunton	irr	455613	3.33
0251601	Taunton	irr	455613	3.33
0251511	Taunton	irr	456215	3.76
0251531	Taunton	irr	456215	3.79
0251541	Taunton	irr	456215	3.79
0251561	Taunton	irr	456215	3.36

Soil ID	Soil Name	IRR	MET	90th Percentile
0251571	Taunton	irr	456215	3.36
0251601	Taunton	irr	456215	3.36
0251511	Taunton	irr	456747	3.67
0251531	Taunton	irr	456747	3.73
0251541	Taunton	irr	456747	3.73
0251571	Taunton	irr	456747	3.38
0251581	Taunton	irr	456747	3.38
0251611	Taunton	irr	456747	3.27
0251621	Taunton	irr	456747	3.38
0251511	Taunton	irr	456880	3.72
0251521	Taunton	irr	456880	3.74
0251531	Taunton	irr	456880	3.74
0251541	Taunton	irr	456880	3.74
0251561	Taunton	irr	456880	3.36
0251571	Taunton	irr	456880	3.36
0251581	Taunton	irr	456880	3.36
0251591	Taunton	irr	456880	3.36
0251601	Taunton	irr	456880	3.36
0251611	Taunton	irr	456880	3.30
0251621	Taunton	irr	456880	3.36
0251511	Taunton	irr	457201	3.43
0251521	Taunton	irr	457201	3.43
0251531	Taunton	irr	457201	3.43
0251541	Taunton	irr	457201	3.43
0251551	Taunton	irr	457201	3.43
0251561	Taunton	irr	457201	3.04
0251571	Taunton	irr	457201	3.04
0251581	Taunton	irr	457201	3.04
0251511	Taunton	irr	457209	4.16
0251521	Taunton	irr	457209	4.22
0251531	Taunton	irr	457209	4.22
0251541	Taunton	irr	457209	4.22
0251551	Taunton	irr	457209	4.22
0251561	Taunton	irr	457209	3.85
0251571	Taunton	irr	457209	3.85
0251581	Taunton	irr	457209	3.85
0251591	Taunton	irr	457209	3.85
0251601	Taunton	irr	457209	3.85
0251511	Taunton	irr	457727	3.77
0251521	Taunton	irr	457727	3.84
0251531	Taunton	irr	457727	3.84
0251541	Taunton	irr	457727	3.84
0251571	Taunton	irr	457727	3.41

Soil ID	Soil Name	IRR	MET	90th Percentile
0251581	Taunton	irr	457727	3.41
0251601	Taunton	irr	457727	3.41
0251611	Taunton	irr	457727	3.39
0251621	Taunton	irr	457727	3.41
0251531	Taunton	irr	458579	3.86
0251561	Taunton	irr	458579	3.40
0251571	Taunton	irr	458579	3.40
0251581	Taunton	irr	458579	3.40
0251591	Taunton	irr	458579	3.40
0251601	Taunton	irr	458579	3.40
0251531	Taunton	irr	458903	3.70
0251571	Taunton	irr	458903	3.32
0251581	Taunton	irr	458903	3.32
0251621	Taunton	irr	458903	3.32
0251641	Timmerman	dry	452614	4.15E-02
0251651	Timmerman	dry	452614	2.82E-02
0251661	Timmerman	dry	452614	2.82E-02
0251671	Timmerman	dry	452614	2.82E-02
0251681	Timmerman	dry	452614	4.27E-02
0251691	Timmerman	dry	452614	4.27E-02
0251641	Timmerman	dry	455608	3.33E-01
0251651	Timmerman	dry	455608	2.64E-01
0251661	Timmerman	dry	455608	2.64E-01
0251671	Timmerman	dry	455608	2.64E-01
0251681	Timmerman	dry	455608	3.15E-01
0251691	Timmerman	dry	455608	3.15E-01
0251641	Timmerman	dry	455613	8.59E-02
0251651	Timmerman	dry	455613	3.91E-02
0251661	Timmerman	dry	455613	3.91E-02
0251671	Timmerman	dry	455613	3.91E-02
0251681	Timmerman	dry	455613	7.06E-02
0251691	Timmerman	dry	455613	7.06E-02
0251641	Timmerman	dry	456215	9.86E-02
0251651	Timmerman	dry	456215	5.05E-02
0251661	Timmerman	dry	456215	5.05E-02
0251671	Timmerman	dry	456215	5.05E-02
0251641	Timmerman	dry	456747	3.48E-02
0251671	Timmerman	dry	456747	2.28E-02
0251641	Timmerman	dry	456880	6.38E-02
0251651	Timmerman	dry	456880	3.33E-02
0251661	Timmerman	dry	456880	3.33E-02
0251671	Timmerman	dry	456880	3.33E-02
0251681	Timmerman	dry	456880	5.57E-02

Soil ID	Soil Name	IRR	MET	90th Percentile
0251691	Timmerman	dry	456880	5.57E-02
0251641	Timmerman	dry	457209	1.31E-01
0251651	Timmerman	dry	457209	1.14E-01
0251661	Timmerman	dry	457209	1.14E-01
0251681	Timmerman	dry	457209	1.39E-01
0251691	Timmerman	dry	457209	1.39E-01
0251641	Timmerman	dry	457727	1.20E-01
0251651	Timmerman	dry	457727	7.60E-02
0251641	Timmerman	dry	458579	6.13E-02
0251651	Timmerman	dry	458579	3.97E-02
0251661	Timmerman	dry	458579	3.97E-02
0251671	Timmerman	dry	458579	3.97E-02
0251641	Timmerman	dry	458903	9.19E-03
0251651	Timmerman	dry	458903	2.74E-03
0251671	Timmerman	dry	458903	2.74E-03
0251681	Timmerman	dry	458903	9.33E-03
0251691	Timmerman	dry	458903	9.33E-03
0251661	Timmerman	irr	452609	5.11
0251691	Timmerman	irr	452609	5.31
0251641	Timmerman	irr	452614	4.89
0251651	Timmerman	irr	452614	5.12
0251661	Timmerman	irr	452614	5.12
0251671	Timmerman	irr	452614	5.12
0251681	Timmerman	irr	452614	5.24
0251691	Timmerman	irr	452614	5.24
0251641	Timmerman	irr	455608	5.24
0251651	Timmerman	irr	455608	5.41
0251661	Timmerman	irr	455608	5.41
0251671	Timmerman	irr	455608	5.41
0251681	Timmerman	irr	455608	5.53
0251691	Timmerman	irr	455608	5.53
0251641	Timmerman	irr	455613	4.84
0251651	Timmerman	irr	455613	5.04
0251661	Timmerman	irr	455613	5.04
0251671	Timmerman	irr	455613	5.04
0251681	Timmerman	irr	455613	5.21
0251691	Timmerman	irr	455613	5.21
0251641	Timmerman	irr	456215	4.90
0251651	Timmerman	irr	456215	5.13
0251661	Timmerman	irr	456215	5.13
0251671	Timmerman	irr	456215	5.13
0251641	Timmerman	irr	456747	4.87
0251671	Timmerman	irr	456747	5.08

Soil ID	Soil Name	IRR	MET	90th Percentile
0251641	Timmerman	irr	456880	4.88
0251651	Timmerman	irr	456880	5.07
0251661	Timmerman	irr	456880	5.07
0251671	Timmerman	irr	456880	5.07
0251681	Timmerman	irr	456880	5.24
0251691	Timmerman	irr	456880	5.24
0251641	Timmerman	irr	457209	5.41
0251651	Timmerman	irr	457209	5.60
0251661	Timmerman	irr	457209	5.60
0251681	Timmerman	irr	457209	5.85
0251691	Timmerman	irr	457209	5.85
0251641	Timmerman	irr	457727	4.94
0251661	Timmerman	irr	457727	5.18
0251661	Timmerman	irr	458579	5.15
0251671	Timmerman	irr	458579	5.15
0251641	Timmerman	irr	458903	4.86
0251651	Timmerman	irr	458903	4.96
0251661	Timmerman	irr	458903	4.96
0251671	Timmerman	irr	458903	4.96
0251681	Timmerman	irr	458903	5.15
0251691	Timmerman	irr	458903	5.15
0251701	Torrifluvents	dry	453438	9.41E-04
0251701	Torrifluvents	dry	456747	5.52E-03
0251701	Torrifluvents	dry	457727	1.98E-01
0251701	Torrifluvents	dry	458579	3.33E-02
0251701	Torrifluvents	dry	458903	6.22E-05
0251721	Umapine	dry	452614	2.26E-10
0251721	Umapine	dry	455608	2.20E-03
0251721	Umapine	dry	455613	1.66E-10
0251721	Umapine	dry	456215	6.58E-09
0251721	Umapine	dry	457209	8.13E-05
0251721	Umapine	dry	457727	3.26E-07
0251721	Umapine	irr	452614	1.13
0251721	Umapine	irr	455608	1.50
0251721	Umapine	irr	455613	1.03
0251721	Umapine	irr	456215	1.11
0251721	Umapine	irr	457209	1.70
0251721	Umapine	irr	457727	1.22
0251731	Wahluke	dry	453438	2.61E-13
0251741	Wahluke	dry	453438	2.61E-13
0251741	Wahluke	dry	456215	4.24E-09
0251731	Wahluke	dry	456880	1.46E-10
0251741	Wahluke	dry	456880	1.46E-10

Soil ID	Soil Name	IRR	MET	90th Percentile
0251731	Wahluke	dry	457201	0.00
0251731	Wahluke	dry	457727	1.80E-07
0251741	Wahluke	dry	457727	1.80E-07
0251731	Wahluke	irr	456880	6.46E-01
0251741	Wahluke	irr	456880	6.46E-01
0251731	Wahluke	irr	457201	3.40E-01
0251731	Wahluke	irr	457209	1.11
0251731	Wahluke	irr	457727	7.50E-01
0251761	Wanser	dry	453438	1.51
0251761	Wanser	dry	455608	3.41
0251751	Wanser	dry	455613	7.55E-01
0251761	Wanser	dry	455613	2.52
0251751	Wanser	dry	456215	8.11E-01
0251761	Wanser	dry	456215	2.84
0251761	Wanser	dry	456880	2.44
0251761	Wanser	dry	457201	9.51E-01
0251751	Wanser	dry	457209	3.84E-01
0251761	Wanser	dry	457209	6.54E-01
0251751	Wanser	dry	457727	8.14E-01
0251761	Wanser	dry	457727	2.83
0251761	Wanser	dry	458903	1.50
0251761	Wanser	irr	455608	8.73
0251751	Wanser	irr	455613	6.47
0251751	Wanser	irr	456215	6.59
0251761	Wanser	irr	456880	8.50
0251761	Wanser	irr	457201	8.04
0251751	Wanser	irr	457209	6.89
0251761	Wanser	irr	457209	8.59
0251751	Wanser	irr	457727	6.57
0251761	Wanser	irr	457727	8.56
0251771	Warden	dry	452609	5.51E-09
0251781	Warden	dry	452609	5.51E-09
0251771	Warden	dry	455613	4.66E-09
0251781	Warden	dry	455613	4.66E-09
0251791	Warden	dry	455613	4.66E-09
0251801	Warden	dry	455613	4.66E-09
0251771	Warden	dry	456215	8.14E-08
0251781	Warden	dry	456215	8.14E-08
0251791	Warden	dry	456215	8.14E-08
0251771	Warden	dry	456880	2.28E-09
0251781	Warden	dry	456880	2.28E-09
0251791	Warden	dry	456880	2.28E-09
0251771	Warden	dry	457201	6.27E-23

Soil ID	Soil Name	IRR	MET	90th Percentile
0251781	Warden	dry	457201	6.27E-23
0251791	Warden	dry	457201	6.27E-23
0251771	Warden	dry	458579	1.43E-08
0251781	Warden	dry	458579	1.43E-08
0251791	Warden	dry	458579	1.43E-08
0251771	Warden	irr	452609	2.95
0251781	Warden	irr	452609	2.95
0251771	Warden	irr	455613	2.84
0251781	Warden	irr	455613	2.84
0251791	Warden	irr	455613	2.84
0251801	Warden	irr	455613	2.84
0251771	Warden	irr	456215	2.98
0251781	Warden	irr	456215	2.98
0251791	Warden	irr	456215	2.98
0251771	Warden	irr	456880	2.90
0251781	Warden	irr	456880	2.90
0251791	Warden	irr	456880	2.90
0251771	Warden	irr	457201	2.42
0251781	Warden	irr	457201	2.42
0251791	Warden	irr	457201	2.42
0251771	Warden	irr	458579	2.92
0251781	Warden	irr	458579	2.92
0251791	Warden	irr	458579	2.92
0251821	Wiehl	dry	453438	2.40E-02
0251831	Wiehl	dry	453438	2.40E-02
0251841	Wiehl	dry	453438	2.40E-02
0251821	Wiehl	dry	455608	2.40E-01
0251841	Wiehl	dry	455608	2.40E-01
0251811	Wiehl	dry	455613	5.88E-02
0251821	Wiehl	dry	455613	5.88E-02
0251831	Wiehl	dry	455613	5.88E-02
0251841	Wiehl	dry	455613	5.88E-02
0251821	Wiehl	dry	456215	7.31E-02
0251831	Wiehl	dry	456215	7.31E-02
0251841	Wiehl	dry	456215	7.31E-02
0251841	Wiehl	dry	456747	3.67E-02
0251821	Wiehl	dry	456880	5.52E-02
0251831	Wiehl	dry	456880	5.52E-02
0251841	Wiehl	dry	456880	5.52E-02
0251811	Wiehl	dry	457201	2.22E-05
0251821	Wiehl	dry	457201	2.22E-05
0251831	Wiehl	dry	457201	2.22E-05
0251811	Wiehl	dry	457209	9.02E-02

Soil ID	Soil Name	IRR	MET	90th Percentile
0251821	Wiehl	dry	457209	9.02E-02
0251831	Wiehl	dry	457209	9.02E-02
0251841	Wiehl	dry	457209	9.02E-02
0251811	Wiehl	dry	457727	1.03E-01
0251821	Wiehl	dry	457727	1.03E-01
0251831	Wiehl	dry	457727	1.03E-01
0251841	Wiehl	dry	457727	1.03E-01
0251841	Wiehl	dry	458579	6.09E-02
0251811	Wiehl	dry	458903	1.23E-02
0251821	Wiehl	dry	458903	1.23E-02
0251831	Wiehl	dry	458903	1.23E-02
0251841	Wiehl	dry	458903	1.23E-02
0251821	Wiehl	irr	455608	3.72
0251841	Wiehl	irr	455608	3.72
0251811	Wiehl	irr	455613	3.54
0251821	Wiehl	irr	455613	3.54
0251831	Wiehl	irr	455613	3.54
0251841	Wiehl	irr	455613	3.54
0251821	Wiehl	irr	456215	3.55
0251831	Wiehl	irr	456215	3.55
0251841	Wiehl	irr	456215	3.55
0251821	Wiehl	irr	456880	3.53
0251831	Wiehl	irr	456880	3.53
0251841	Wiehl	irr	456880	3.53
0251811	Wiehl	irr	457201	3.31
0251821	Wiehl	irr	457201	3.31
0251831	Wiehl	irr	457201	3.31
0251811	Wiehl	irr	457209	4.02
0251821	Wiehl	irr	457209	4.02
0251831	Wiehl	irr	457209	4.02
0251841	Wiehl	irr	457209	4.02
0251841	Wiehl	irr	458579	3.58
0251811	Wiehl	irr	458903	3.50
0251851	Willis	dry	452609	2.91E-05
0251851	Willis	dry	452614	2.05E-05
0251861	Winchester	dry	452614	1.87E-01
0251861	Winchester	dry	455608	5.13E-01
0251861	Winchester	dry	455613	3.04E-01
0251861	Winchester	dry	456747	1.76E-01
0251861	Winchester	dry	456880	2.58E-01
0251861	Winchester	dry	457201	1.38E-01
0251861	Winchester	dry	457209	1.77E-01
0251861	Winchester	dry	457727	3.07E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0251861	Winchester	dry	458579	2.18E-01
0251861	Winchester	dry	458903	1.06E-01
0251861	Winchester	irr	452614	4.31
0251861	Winchester	irr	455608	4.62
0251861	Winchester	irr	455613	4.30
0251861	Winchester	irr	456747	4.22
0251861	Winchester	irr	456880	4.29
0251861	Winchester	irr	457209	4.73
0251861	Winchester	irr	457727	4.37
0251861	Winchester	irr	458579	4.34
0251861	Winchester	irr	458903	4.23
0251871	Zen	dry	452609	1.77E-08
0251881	Zen	dry	452609	1.77E-08
0251891	Zen	dry	452609	1.77E-08
0251871	Zen	dry	452614	1.09E-08
0251881	Zen	dry	452614	1.09E-08
0251891	Zen	dry	452614	1.09E-08
0251881	Zen	dry	456880	1.21E-08
0251891	Zen	dry	456880	1.21E-08
0251871	Zen	dry	458579	3.23E-08
0251881	Zen	dry	458579	3.23E-08
0251891	Zen	dry	458579	3.23E-08
0251871	Zen	irr	452609	1.63E-02
0251881	Zen	irr	452609	1.63E-02
0251891	Zen	irr	452609	1.63E-02
0251891	Zen	irr	458579	1.78E-02

Appendix C – Franklin County Constant Recharge PRZM2 Model Results by Soil Name

Soil ID	Soil Name	90 th Percentile
02111	Alderdale	6.70
02121	Aquents	5.46
02131	Badland	---
021522	Bakeoven	4.59E-01
021522	Bakeoven	4.59E-01
021262	Burbank	6.74
02141	Burbank	6.74
02151	Burbank	6.74
02161	Burbank	6.03
02171	Burke	1.31
02181	Burke	1.31
02191	Burke	4.54
021101	Chedehap	5.63
021111	Chedehap	5.63
021121	Chedehap	5.63
021131	Cleman	4.24E-01
021962	Dune Land	9.23
021141	Eltopia	4.04
021151	Eltopia	4.04
021161	Ephrata	4.80
021171	Esquatzel	5.65E-02
021181	Farrell	2.43
021191	Farrell	2.43
021201	Farrell	2.43
021211	Farrell	2.43
021221	Farrell	2.43
021533	Farrell	2.43
0211683	Finley	5.60
021231	Finley	4.14
021241	Finley	5.60
021251	Finley	5.60
021261	Finley	5.60
021271	Finley	5.60
021652	Finley	5.60
02122	Halaquepts	3.48E-01
021281	Halaquepts	1.15
0211002	Hezel	6.60
021291	Hezel	6.60
021301	Hezel	6.60
021311	Hezel	6.60
021321	Hezel	6.60
021972	Hezel	6.60
021982	Hezel	6.60
021992	Hezel	6.20

Soil ID	Soil Name	90 th Percentile
021331	Kahlotus	9.60E-01
021341	Kahlotus	9.60E-01
021351	Kahlotus	9.60E-01
021361	Kahlotus	9.60E-01
021371	Kahlotus	9.60E-01
021381	Kahlotus	9.60E-01
021391	Kahlotus	9.60E-01
021401	Kahlotus	9.60E-01
021411	Kahlotus	9.60E-01
021421	Kahlotus	9.60E-01
0211422	Kennewick	1.54
0211432	Kennewick	3.76
0211632	Kennewick	3.76
0211642	Kennewick	3.76
021392	Kennewick	3.76
021402	Kennewick	3.76
021431	Kennewick	3.76
021441	Kennewick	3.76
021451	Kennewick	3.76
021461	Kennewick	3.76
021471	Kennewick	3.76
021481	Kiona	3.03
021491	Kiona	3.03
021501	Koehler	6.69
021511	Koehler	6.57
0211232	Lickskillet	1.22E-01
021521	Lickskillet	1.22E-01
021521	Lickskillet	1.22E-01
021531	Magallon	3.03
021541	Magallon	3.03
021551	Malaga	5.50
0211182	Nansene	1.90E-09
021561	Nansene	1.90E-09
021272	Neppel	4.30
021571	Neppel	5.33
021581	Neppel	5.33
021591	Neppel	5.33
021601	Neppel	4.30
021611	Neppel	4.30
021621	Neppel	4.30
021631	Neppel	4.30
021641	Neppel	4.30
021651	Neppel	4.30
021661	Novark	4.05

Soil ID	Soil Name	90 th Percentile
021671	Ottmar	3.12
021681	Ottmar	3.12
021691	Ottmar	3.12
021701	Ottmar	1.36
021711	Ottmar	1.36
021721	Ottmar	1.36
021731	Ottmar	1.54E-02
021741	Ottmar	1.54E-02
021751	Ottmar	3.12
021761	Pits, Gravel	---
0211672	Prosser	6.12
0211682	Prosser	3.95
0211692	Prosser	5.92
0211702	Prosser	6.12
021482	Prosser	5.92
021771	Prosser	6.12
021781	Prosser	6.12
021791	Prosser	6.12
021801	Prosser	5.92
021811	Prosser	5.92
021821	Prosser	5.92
021831	Prosser	5.92
021841	Prosser	6.12
0211001	Quincy	6.77
0211011	Quincy	6.77
0211021	Quincy	6.77
0211031	Quincy	2.61
021851	Quincy	2.61
021861	Quincy	2.61
021871	Quincy	2.61
021881	Quincy	3.87
021891	Quincy	6.77
021901	Quincy	6.77
021911	Quincy	6.77
021921	Quincy	6.58
021931	Quincy	6.58
021941	Quincy	6.58
021951	Quincy	7.25
021952	Quincy	5.24
021961	Quincy	2.61
021971	Quincy	6.77
021981	Quincy	6.77
021991	Quincy	2.61
0211012	Quinton	6.44

Soil ID	Soil Name	90 th Percentile
0211041	Rinquin	6.26
0211051	Ritzcal	4.43
0211061	Ritzcal	4.43
0211942	Ritzcal	4.43
0211052	Ritzville	2.00
0211062	Ritzville	2.00
0211071	Ritzville	2.00
0211081	Ritzville	2.00
0211091	Ritzville	2.00
0211101	Ritzville	2.00
0211111	Ritzville	2.00
0211121	Ritzville	2.00
0211131	Ritzville	1.73
0211141	Ritzville	1.73
0211151	Ritzville	1.73
0211161	Ritzville	1.88E-01
0211171	Ritzville	1.73
0211181	Ritzville	2.00
021562	Ritzville	2.00
0211191	Riverwash	---
0211242	Rock Outcrop	---
0211252	Rock Outcrop	---
0211713	Rock Outcrop	---
021492	Rock Outcrop	---
021833	Rock Outcrop	---
021843	Rock Outcrop	---
0211201	Roloff	4.41
0211211	Roloff	4.41
0211221	Roloff	4.41
0211231	Roloff	4.41
0211241	Roloff	4.41
0211251	Roloff	4.41
0211712	Roloff	4.41
0211261	Royal	4.75
0211271	Royal	4.75
0211281	Royal	5.93
0211291	Royal	5.93
0211301	Royal	5.93
0211311	Royal	5.95
0211321	Royal	5.93
0211253	Rubble Land	1.53E-01
0211331	Sagehill	3.92
0211341	Sagehill	3.92
0211351	Sagehill	3.92

Soil ID	Soil Name	90 th Percentile
0211361	Sagehill	3.92
0211371	Sagehill	3.92
0211381	Sagehill	5.91
0211391	Sagehill	5.91
0211401	Sagehill	1.02
0211411	Sagehill	1.02
0211421	Sagehill	1.02
0211431	Sagehill	3.92
0211441	Sagemoor	5.20
0211451	Sagemoor	5.20
0211461	Sagemoor	5.20
0211471	Schlomer	4.94
0211481	Schlomer	4.94
0211491	Schlomer	4.94
0211501	Schlomer	4.94
0211511	Schlomer	4.94
0212152	Schlomer	4.94
021752	Schlomer	4.94
0211433	Shano	2.98
0211521	Shano	2.98
0211531	Shano	2.98
0211541	Shano	2.98
0211551	Shano	2.98
0211561	Shano	2.98
0211571	Shano	2.98
0211581	Shano	7.02E-01
0211591	Shano	7.02E-01
0211601	Shano	7.02E-01
0211611	Shano	7.02E-01
0211621	Shano	7.02E-01
0211631	Shano	2.98
0211641	Shano	2.98
0211651	Starbuck	7.95E-01
0211661	Starbuck	1.52
0211671	Starbuck	7.95E-01
0211681	Starbuck	3.37
0211691	Starbuck	1.52
0211701	Starbuck	7.95E-01
0211711	Starbuck	1.52
021263	Starbuck	1.52
021483	Starbuck	1.52
021832	Starbuck	1.52
021842	Starbuck	7.95E-01
0211721	Stratford	1.57

Soil ID	Soil Name	90 th Percentile
0211731	Stratford	1.57
0211741	Stratford	1.57
0211751	Stratford	3.32E-01
0211761	Stratford	3.62E-01
021412	Stratford	8.87E-01
021422	Stratford	8.87E-01
021532	Stratford	8.87E-01
0211771	Tauncal	4.33E-01
0211781	Tauncal	4.33E-01
0211791	Tauncal	4.33E-01
0211801	Tauncal	4.33E-01
0211811	Taunton	3.58
0211821	Taunton	3.58
0211022	Timmerman	6.13
0211322	Timmerman	6.13
0211831	Timmerman	6.13
0211841	Timmerman	6.13
0211851	Timmerman	6.13
0211862	Torripsamments	4.69
0211861	Urban Land	---
0211871	Wacota	2.85
0211881	Wacota	2.85
0211891	Wacota	2.85
0211901	Wacota	2.85
0211911	Wacota	2.85
0211921	Wacota	2.85
0211931	Wacota	4.73
0211941	Wacota	2.85
0211032	Wanser	7.66
0211003	Warden	2.74
0211951	Warden	2.30
0211961	Warden	2.30
0211971	Warden	2.30
0211981	Warden	2.30
0211991	Warden	2.30
0212001	Warden	2.30
0212011	Warden	2.58
0212021	Warden	2.58
0212031	Warden	2.58
0212041	Warden	2.58
0212051	Warden	2.58
0212061	Warden	2.58
0212071	Warden	2.10
0212081	Warden	2.10

Soil ID	Soil Name	90th Percentile
0212091	Warden	2.10
0212101	Wiehl	6.09
0212111	Wiehl	3.59
0212121	Wiehl	3.59
0212131	Wiehl	3.48E-01
0212141	Wiehl	3.48E-01
0212151	Wiehl	3.48E-01
0212161	Willis	3.00E-01
0212171	Winchester	1.02
0212181	Winchester	1.02
021542	Winchester	1.02
0212191	Xeric Torriorthents	3.18
02132	Xeric Torriorthents	3.18

**Appendix D – Franklin County Variable Recharge PRZM2 Model
Results by Soil Name**

MET Rainfall Polygons & Station Numbers

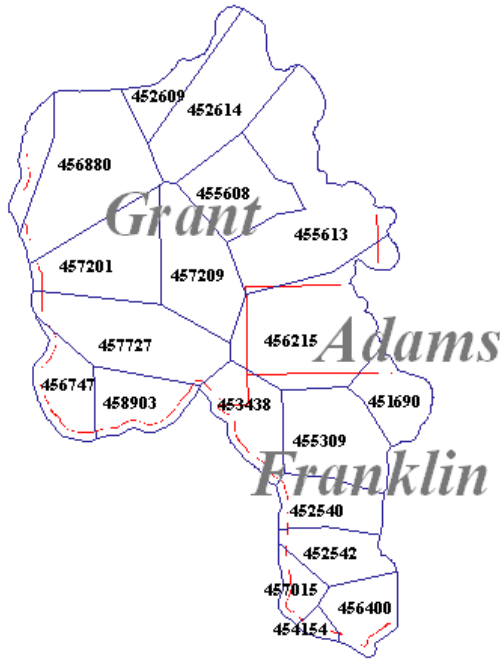


Table Column Headings Key

<i>Field</i>	<i>Description</i>
Soil ID	Soil ID number concatenated from the NRCS Map Unit ID & Sequence Number
Soil Name	NRCS soil name
IRR	Irrigated/Dry (not irrigated)
MET	Local rainfall station number, see inset, left
90th Percentile	90 th percentile from PRZM Monte Carlo runs

Soil ID	Soil Name	IRR	MET	90 th Percentile
02111	Alderdale	dry	455309	8.41E-02
02111	Alderdale	dry	456215	2.91E-01
02111	Alderdale	dry	456400	6.25E-02
02111	Alderdale	irr	451690	6.68
02111	Alderdale	irr	455309	6.77
02111	Alderdale	irr	456215	6.66
02111	Alderdale	irr	456400	6.46
02121	Aquents	dry	451690	7.89E-01
02121	Aquents	dry	452540	6.92E-01
02121	Aquents	dry	453438	2.38E-01
02121	Aquents	dry	455309	4.43E-01
02121	Aquents	dry	456215	8.48E-01
02121	Aquents	dry	456400	4.07E-01
02121	Aquents	irr	451690	5.31
02121	Aquents	irr	452540	5.16
02121	Aquents	irr	455309	5.23
02121	Aquents	irr	456215	5.30
02131	Badland	dry	452540	---
02131	Badland	dry	452542	---
02131	Badland	dry	453438	---
02131	Badland	dry	455309	---

Soil ID	Soil Name	IRR	MET	90 th Percentile
02131	Badland	dry	457015	---
02131	Badland	irr	452540	---
02131	Badland	irr	452542	---
02131	Badland	irr	453438	---
02131	Badland	irr	455309	---
02131	Badland	irr	457015	---
021262	Burbank	dry	451690	5.70E-01
02151	Burbank	dry	451690	5.70E-01
02161	Burbank	dry	451690	2.65E-01
02141	Burbank	dry	452540	4.27E-01
02151	Burbank	dry	452540	4.27E-01
02161	Burbank	dry	452540	1.92E-01
02141	Burbank	dry	452542	6.91E-01
02151	Burbank	dry	452542	6.91E-01
02141	Burbank	dry	453438	9.85E-02
02141	Burbank	dry	454154	3.73E-01
021262	Burbank	dry	455309	2.69E-01
02141	Burbank	dry	455309	2.69E-01
02151	Burbank	dry	455309	2.69E-01
02161	Burbank	dry	455309	9.23E-02
02141	Burbank	dry	456215	5.33E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
02141	Burbank	dry	456400	1.97E-01
02151	Burbank	dry	456400	1.97E-01
02161	Burbank	dry	456400	5.71E-02
02141	Burbank	dry	457015	2.42E-01
02151	Burbank	dry	457015	2.42E-01
02161	Burbank	dry	457015	8.49E-02
021262	Burbank	irr	451690	6.60
02141	Burbank	irr	451690	6.60
02151	Burbank	irr	451690	6.60
02161	Burbank	irr	451690	5.94
02141	Burbank	irr	452540	6.57
02151	Burbank	irr	452540	6.57
02161	Burbank	irr	452540	5.87
02141	Burbank	irr	452542	6.61
02151	Burbank	irr	452542	6.61
02141	Burbank	irr	454154	6.49
021262	Burbank	irr	455309	6.74
02141	Burbank	irr	455309	6.74
02151	Burbank	irr	455309	6.74
02161	Burbank	irr	455309	6.12
02141	Burbank	irr	456215	6.57
02141	Burbank	irr	456400	6.48
02151	Burbank	irr	456400	6.48
02161	Burbank	irr	456400	5.86
02141	Burbank	irr	457015	6.39
02151	Burbank	irr	457015	6.39
02161	Burbank	irr	457015	5.84
02171	Burke	dry	451690	4.45E-03
02181	Burke	dry	451690	4.45E-03
02171	Burke	dry	452540	2.73E-03
02171	Burke	dry	452542	6.66E-03
02181	Burke	dry	452542	6.66E-03
02171	Burke	dry	455309	6.05E-04
02181	Burke	dry	455309	6.05E-04
02191	Burke	dry	455309	1.92E-02
02191	Burke	dry	456215	6.86E-02
02171	Burke	irr	451690	1.26
02181	Burke	irr	451690	1.26
02191	Burke	irr	451690	4.48
02171	Burke	irr	452540	1.22
02171	Burke	irr	452542	1.25
02181	Burke	irr	452542	1.25

Soil ID	Soil Name	IRR	MET	90th Percentile
02171	Burke	irr	455309	1.46
02181	Burke	irr	455309	1.46
02191	Burke	irr	456215	4.46
021101	Chedehap	dry	451690	2.59E-02
021111	Chedehap	dry	451690	2.59E-02
021121	Chedehap	dry	451690	2.59E-02
021111	Chedehap	dry	452540	1.08E-02
021101	Chedehap	dry	453438	1.44E-04
021111	Chedehap	dry	453438	1.44E-04
021121	Chedehap	dry	453438	1.44E-04
021111	Chedehap	dry	455309	1.07E-03
021101	Chedehap	dry	457015	1.11E-03
021111	Chedehap	dry	457015	1.11E-03
021101	Chedehap	irr	451690	5.55
021121	Chedehap	irr	451690	5.55
021111	Chedehap	irr	452540	5.47
021101	Chedehap	irr	453438	5.26
021111	Chedehap	irr	455309	5.72
021101	Chedehap	irr	457015	5.26
021111	Chedehap	irr	457015	5.26
021131	Cleman	dry	451690	2.05E-06
021131	Cleman	dry	452540	5.75E-07
021131	Cleman	dry	453438	2.03E-09
021131	Cleman	dry	455309	1.48E-08
021131	Cleman	dry	456400	8.18E-09
021131	Cleman	irr	451690	3.65E-01
021131	Cleman	irr	452540	3.69E-01
021131	Cleman	irr	455309	4.67E-01
021131	Cleman	irr	456400	3.33E-01
021962	Dune Land	dry	451690	5.19
021962	Dune Land	dry	453438	8.96
021962	Dune Land	dry	455309	4.61
021962	Dune Land	dry	456215	5.70
021962	Dune Land	dry	456400	5.22
021962	Dune Land	dry	457015	4.81
021962	Dune Land	irr	451690	9.15
021962	Dune Land	irr	455309	9.22
021962	Dune Land	irr	456215	9.09
021962	Dune Land	irr	456400	9.05
021962	Dune Land	irr	457015	9.02
021141	Eltopia	dry	452540	2.09E-05
021141	Eltopia	dry	455309	1.59E-07

Soil ID	Soil Name	IRR	MET	90th Percentile
021151	Eltopia	dry	455309	1.59E-07
021141	Eltopia	irr	451690	3.86
021141	Eltopia	irr	452540	3.72
021141	Eltopia	irr	455309	3.98
021151	Eltopia	irr	455309	3.98
021161	Ephrata	dry	456215	7.02E-03
021161	Ephrata	irr	456215	4.57
021171	Esquatzel	dry	451690	1.95E-10
021171	Esquatzel	dry	452540	2.09E-11
021171	Esquatzel	dry	453438	1.15E-16
021171	Esquatzel	dry	455309	7.89E-15
021171	Esquatzel	dry	456215	1.08E-11
021171	Esquatzel	irr	451690	4.19E-02
021171	Esquatzel	irr	452540	4.13E-02
021171	Esquatzel	irr	455309	5.49E-02
021171	Esquatzel	irr	456215	3.90E-02
021211	Farrell	dry	451690	5.77E-06
021181	Farrell	irr	451690	2.37
021211	Farrell	irr	451690	2.37
021221	Farrell	irr	451690	2.37
021211	Farrell	irr	456215	2.28
0211683	Finley	dry	451690	9.21E-03
021231	Finley	dry	451690	6.54E-04
021261	Finley	dry	451690	9.21E-03
021271	Finley	dry	451690	9.21E-03
021652	Finley	dry	451690	9.21E-03
0211683	Finley	dry	452540	2.32E-03
021231	Finley	dry	452540	1.75E-04
021241	Finley	dry	452540	2.32E-03
021251	Finley	dry	452540	2.32E-03
021271	Finley	dry	452540	2.32E-03
021652	Finley	dry	452540	2.32E-03
021231	Finley	dry	452542	2.10E-03
021271	Finley	dry	452542	2.38E-02
021231	Finley	dry	453438	2.13E-07
021241	Finley	dry	453438	3.03E-06
021251	Finley	dry	453438	3.03E-06
021231	Finley	dry	454154	5.41E-05
0211683	Finley	dry	455309	7.12E-05
021231	Finley	dry	455309	3.40E-06
021241	Finley	dry	455309	7.12E-05
021251	Finley	dry	455309	7.12E-05

Soil ID	Soil Name	IRR	MET	90th Percentile
021261	Finley	dry	455309	7.12E-05
021271	Finley	dry	455309	7.12E-05
021652	Finley	dry	455309	7.12E-05
0211683	Finley	dry	456215	2.44E-03
021241	Finley	dry	456215	2.44E-03
021251	Finley	dry	456215	2.44E-03
021231	Finley	dry	456400	1.32E-06
021231	Finley	dry	457015	3.91E-06
021241	Finley	dry	457015	7.56E-05
021251	Finley	dry	457015	7.56E-05
0211683	Finley	irr	451690	5.52
021261	Finley	irr	451690	5.52
021271	Finley	irr	451690	5.52
021652	Finley	irr	451690	5.52
0211683	Finley	irr	452540	5.40
021231	Finley	irr	452540	3.99
021241	Finley	irr	452540	5.40
021251	Finley	irr	452540	5.40
021271	Finley	irr	452540	5.40
021652	Finley	irr	452540	5.40
021231	Finley	irr	452542	4.05
021271	Finley	irr	452542	5.53
021241	Finley	irr	453438	5.24
0211683	Finley	irr	455309	5.68
021231	Finley	irr	455309	4.28
021241	Finley	irr	455309	5.68
021251	Finley	irr	455309	5.68
021261	Finley	irr	455309	5.68
021271	Finley	irr	455309	5.68
021652	Finley	irr	455309	5.68
0211683	Finley	irr	456215	5.47
021241	Finley	irr	456215	5.47
021251	Finley	irr	456215	5.47
021652	Finley	irr	456215	5.47
021231	Finley	irr	456400	3.96
021231	Finley	irr	457015	3.96
021241	Finley	irr	457015	5.31
021251	Finley	irr	457015	5.31
02122	Halaquepts	dry	451690	5.24E-08
021281	Halaquepts	dry	451690	3.70E-12
02122	Halaquepts	dry	452540	7.81E-09
021281	Halaquepts	dry	452540	2.18E-13

Soil ID	Soil Name	IRR	MET	90th Percentile
021281	Halaquepts	dry	452542	5.57E-11
02122	Halaquepts	dry	453438	2.88E-01
02122	Halaquepts	dry	455309	2.18E-11
021281	Halaquepts	dry	455309	1.42E-16
02122	Halaquepts	dry	456215	6.49E-09
021281	Halaquepts	dry	456215	1.73E-13
02122	Halaquepts	dry	456400	2.89E-12
02122	Halaquepts	irr	451690	3.17E-01
021281	Halaquepts	irr	451690	1.04
021281	Halaquepts	irr	452540	1.05
021281	Halaquepts	irr	452542	1.07
02122	Halaquepts	irr	455309	3.69E-01
021281	Halaquepts	irr	455309	1.19
02122	Halaquepts	irr	456215	3.02E-01
021281	Halaquepts	irr	456215	1.01
021281	Halaquepts	irr	457015	9.96E-01
021291	Hezel	dry	451690	6.32E-01
021972	Hezel	dry	451690	6.32E-01
021291	Hezel	dry	452540	4.85E-01
021301	Hezel	dry	452540	4.85E-01
021321	Hezel	dry	452540	9.43E-01
021972	Hezel	dry	452540	4.85E-01
021291	Hezel	dry	452542	7.54E-01
021972	Hezel	dry	452542	7.54E-01
0211002	Hezel	dry	453438	6.22
021291	Hezel	dry	453438	1.04E-01
021311	Hezel	dry	453438	1.04E-01
021972	Hezel	dry	453438	6.22
021291	Hezel	dry	454154	4.19E-01
0211002	Hezel	dry	455309	3.38E-01
021291	Hezel	dry	455309	3.38E-01
021311	Hezel	dry	455309	3.38E-01
021321	Hezel	dry	455309	8.19E-01
021972	Hezel	dry	455309	3.38E-01
021982	Hezel	dry	455309	3.38E-01
0211002	Hezel	dry	456215	5.97E-01
021291	Hezel	dry	456215	5.97E-01
021972	Hezel	dry	456215	5.97E-01
021291	Hezel	dry	456400	2.32E-01
021301	Hezel	dry	456400	2.32E-01
021972	Hezel	dry	456400	2.32E-01
021291	Hezel	dry	457015	2.44E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
021972	Hezel	dry	457015	2.44E-01
021291	Hezel	irr	451690	6.47
021301	Hezel	irr	451690	6.47
021311	Hezel	irr	451690	6.47
021321	Hezel	irr	451690	6.45
021972	Hezel	irr	451690	6.47
021291	Hezel	irr	452540	6.38
021301	Hezel	irr	452540	6.38
021321	Hezel	irr	452540	6.35
021972	Hezel	irr	452540	6.38
021291	Hezel	irr	452542	6.43
021972	Hezel	irr	452542	6.43
0211002	Hezel	irr	453438	6.22
021291	Hezel	irr	453438	6.22
021311	Hezel	irr	453438	6.22
021972	Hezel	irr	453438	6.22
021291	Hezel	irr	454154	6.41
0211002	Hezel	irr	455309	6.52
021291	Hezel	irr	455309	6.52
021311	Hezel	irr	455309	6.52
021321	Hezel	irr	455309	6.51
021972	Hezel	irr	455309	6.52
0211002	Hezel	irr	456215	6.38
021291	Hezel	irr	456215	6.38
021972	Hezel	irr	456215	6.38
021291	Hezel	irr	456400	6.30
021301	Hezel	irr	456400	6.30
021972	Hezel	irr	456400	6.30
021291	Hezel	irr	457015	6.29
021972	Hezel	irr	457015	6.29
021341	Kahlotus	irr	451690	8.87E-01
021361	Kahlotus	irr	451690	8.87E-01
021371	Kahlotus	irr	451690	8.87E-01
021401	Kahlotus	irr	451690	8.87E-01
021411	Kahlotus	irr	451690	8.87E-01
021421	Kahlotus	irr	451690	8.87E-01
021351	Kahlotus	irr	455309	1.03
0211422	Kennewick	dry	451690	4.88E-03
0211432	Kennewick	dry	451690	2.36E-05
0211632	Kennewick	dry	451690	2.36E-05
021431	Kennewick	dry	451690	2.36E-05
021451	Kennewick	dry	451690	2.36E-05

Soil ID	Soil Name	IRR	MET	90th Percentile
021461	Kennewick	dry	451690	2.36E-05
021471	Kennewick	dry	451690	2.36E-05
0211642	Kennewick	dry	452540	3.07E-06
021431	Kennewick	dry	452540	3.07E-06
021451	Kennewick	dry	452540	3.07E-06
021441	Kennewick	dry	452542	1.34E-04
021451	Kennewick	dry	452542	1.34E-04
021431	Kennewick	dry	453438	3.06E-10
021441	Kennewick	dry	453438	3.06E-10
0211422	Kennewick	dry	455309	3.60E-04
0211432	Kennewick	dry	455309	1.71E-08
021431	Kennewick	dry	455309	1.71E-08
021441	Kennewick	dry	455309	1.71E-08
021451	Kennewick	dry	455309	1.71E-08
0211422	Kennewick	dry	456215	2.65E-03
0211432	Kennewick	dry	456215	3.17E-06
021441	Kennewick	dry	456215	3.17E-06
021431	Kennewick	dry	456400	3.16E-09
021441	Kennewick	dry	456400	3.16E-09
021451	Kennewick	dry	456400	3.16E-09
021461	Kennewick	dry	456400	3.16E-09
021471	Kennewick	dry	456400	3.16E-09
021461	Kennewick	dry	457015	2.44E-08
0211422	Kennewick	irr	451690	1.45
0211432	Kennewick	irr	451690	3.65
021431	Kennewick	irr	451690	3.65
021441	Kennewick	irr	451690	3.65
021451	Kennewick	irr	451690	3.65
021461	Kennewick	irr	451690	3.65
021471	Kennewick	irr	451690	3.65
0211642	Kennewick	irr	452540	3.65
021431	Kennewick	irr	452540	3.65
021441	Kennewick	irr	452540	3.65
021451	Kennewick	irr	452540	3.65
021441	Kennewick	irr	452542	3.63
021451	Kennewick	irr	452542	3.63
0211422	Kennewick	irr	453438	1.38
021431	Kennewick	irr	453438	3.54
021441	Kennewick	irr	453438	3.54
0211422	Kennewick	irr	455309	1.63
021431	Kennewick	irr	455309	3.83
021441	Kennewick	irr	455309	3.83

Soil ID	Soil Name	IRR	MET	90th Percentile
021451	Kennewick	irr	455309	3.83
0211422	Kennewick	irr	456215	1.40
0211432	Kennewick	irr	456215	3.60
021441	Kennewick	irr	456215	3.60
021431	Kennewick	irr	456400	3.54
021441	Kennewick	irr	456400	3.54
021451	Kennewick	irr	456400	3.54
021461	Kennewick	irr	456400	3.54
021471	Kennewick	irr	456400	3.54
021461	Kennewick	irr	457015	3.48
021481	Kiona	dry	451690	1.49E-05
021491	Kiona	dry	451690	1.49E-05
021481	Kiona	dry	455309	1.83E-08
021491	Kiona	dry	455309	1.83E-08
021481	Kiona	dry	456215	2.58E-06
021491	Kiona	dry	456215	2.58E-06
021481	Kiona	irr	451690	2.94
021491	Kiona	irr	451690	2.94
021481	Kiona	irr	455309	3.08
021491	Kiona	irr	455309	3.08
021481	Kiona	irr	456215	2.85
021491	Kiona	irr	456215	2.85
021501	Koehler	dry	452540	9.08E-01
021501	Koehler	dry	452542	1.13
021501	Koehler	dry	453438	5.41E-01
021511	Koehler	dry	453438	3.21E-01
021501	Koehler	dry	455309	7.66E-01
021501	Koehler	dry	456215	1.08
021501	Koehler	dry	456400	7.42E-01
021501	Koehler	irr	451690	6.63
021511	Koehler	irr	451690	6.50
021501	Koehler	irr	452540	6.61
021501	Koehler	irr	452542	6.65
021511	Koehler	irr	452542	6.53
021501	Koehler	irr	453438	6.52
021501	Koehler	irr	455309	6.76
021501	Koehler	irr	456215	6.66
021501	Koehler	irr	456400	6.59
021531	Magallon	irr	451690	2.98
021541	Magallon	irr	451690	2.98
021551	Malaga	dry	453438	3.26E-05
021551	Malaga	irr	451690	5.44

Soil ID	Soil Name	IRR	MET	90th Percentile
021561	Nansene	irr	451690	7.93E-10
021272	Neppel	dry	451690	1.45E-04
021571	Neppel	dry	451690	2.51E-03
021581	Neppel	dry	451690	2.51E-03
021591	Neppel	dry	451690	2.51E-03
021601	Neppel	dry	451690	1.45E-04
021611	Neppel	dry	451690	1.45E-04
021621	Neppel	dry	451690	1.45E-04
021631	Neppel	dry	451690	1.45E-04
021641	Neppel	dry	451690	1.45E-04
021651	Neppel	dry	451690	1.45E-04
021272	Neppel	dry	452540	3.40E-05
021581	Neppel	dry	452540	7.06E-04
021591	Neppel	dry	452540	7.06E-04
021601	Neppel	dry	452540	3.40E-05
021611	Neppel	dry	452540	3.40E-05
021621	Neppel	dry	452540	3.40E-05
021651	Neppel	dry	452540	3.40E-05
021272	Neppel	dry	452542	5.33E-04
021571	Neppel	dry	452542	6.96E-03
021611	Neppel	dry	452542	5.33E-04
021621	Neppel	dry	452542	5.33E-04
021581	Neppel	dry	453438	1.29E-06
021601	Neppel	dry	454154	9.33E-06
021611	Neppel	dry	454154	9.33E-06
021272	Neppel	dry	455309	4.24E-07
021571	Neppel	dry	455309	2.02E-05
021581	Neppel	dry	455309	2.02E-05
021601	Neppel	dry	455309	4.24E-07
021611	Neppel	dry	455309	4.24E-07
021621	Neppel	dry	455309	4.24E-07
021631	Neppel	dry	455309	4.24E-07
021641	Neppel	dry	455309	4.24E-07
021651	Neppel	dry	455309	4.24E-07
021571	Neppel	dry	456215	7.89E-04
021581	Neppel	dry	456215	7.89E-04
021601	Neppel	dry	456215	3.04E-05
021611	Neppel	dry	456215	3.04E-05
021631	Neppel	dry	456215	3.04E-05
021621	Neppel	dry	456400	1.01E-07
021571	Neppel	dry	457015	2.05E-05
021591	Neppel	dry	457015	2.05E-05

Soil ID	Soil Name	IRR	MET	90th Percentile
021601	Neppel	dry	457015	4.80E-07
021272	Neppel	irr	451690	4.23
021571	Neppel	irr	451690	5.28
021581	Neppel	irr	451690	5.28
021591	Neppel	irr	451690	5.28
021601	Neppel	irr	451690	4.23
021611	Neppel	irr	451690	4.23
021621	Neppel	irr	451690	4.23
021631	Neppel	irr	451690	4.23
021641	Neppel	irr	451690	4.23
021651	Neppel	irr	451690	4.23
021581	Neppel	irr	452540	5.13
021591	Neppel	irr	452540	5.13
021601	Neppel	irr	452540	4.17
021611	Neppel	irr	452540	4.17
021621	Neppel	irr	452540	4.17
021651	Neppel	irr	452540	4.17
021272	Neppel	irr	452542	4.23
021571	Neppel	irr	452542	5.34
021611	Neppel	irr	452542	4.23
021621	Neppel	irr	452542	4.23
021601	Neppel	irr	454154	4.06
021611	Neppel	irr	454154	4.06
021272	Neppel	irr	455309	4.41
021571	Neppel	irr	455309	5.44
021581	Neppel	irr	455309	5.44
021601	Neppel	irr	455309	4.41
021611	Neppel	irr	455309	4.41
021621	Neppel	irr	455309	4.41
021631	Neppel	irr	455309	4.41
021641	Neppel	irr	455309	4.41
021651	Neppel	irr	455309	4.41
021571	Neppel	irr	456215	5.17
021581	Neppel	irr	456215	5.17
021601	Neppel	irr	456215	4.13
021611	Neppel	irr	456215	4.13
021631	Neppel	irr	456215	4.13
021651	Neppel	irr	456215	4.13
021611	Neppel	irr	456400	4.07
021621	Neppel	irr	456400	4.07
021571	Neppel	irr	457015	5.03
021591	Neppel	irr	457015	5.03

Soil ID	Soil Name	IRR	MET	90th Percentile
021601	Neppel	irr	457015	4.06
021661	Novark	dry	451690	2.02E-03
021661	Novark	dry	452540	6.07E-04
021661	Novark	dry	452542	4.63E-03
021661	Novark	dry	454154	2.40E-04
021661	Novark	dry	455309	1.71E-05
021661	Novark	dry	456400	2.77E-06
021661	Novark	dry	457015	2.97E-05
021661	Novark	irr	451690	3.95
021661	Novark	irr	452540	3.89
021661	Novark	irr	452542	3.93
021661	Novark	irr	454154	3.85
021661	Novark	irr	455309	4.14
021661	Novark	irr	456400	3.80
021661	Novark	irr	457015	3.78
021671	Ottmar	dry	451690	1.06E-07
021681	Ottmar	dry	451690	1.06E-07
021691	Ottmar	dry	451690	1.06E-07
021701	Ottmar	dry	451690	7.21E-15
021731	Ottmar	dry	451690	9.18E-19
021751	Ottmar	dry	451690	1.06E-07
021671	Ottmar	dry	452540	1.65E-08
021681	Ottmar	dry	452540	1.65E-08
021691	Ottmar	dry	452540	1.65E-08
021701	Ottmar	dry	452540	6.68E-16
021711	Ottmar	dry	452540	6.68E-16
021721	Ottmar	dry	452540	6.68E-16
021731	Ottmar	dry	452540	1.02E-19
021741	Ottmar	dry	452540	1.02E-19
021751	Ottmar	dry	452540	1.65E-08
021681	Ottmar	dry	452542	6.65E-07
021691	Ottmar	dry	452542	6.65E-07
021711	Ottmar	dry	452542	9.23E-14
021721	Ottmar	dry	452542	9.23E-14
021681	Ottmar	dry	453438	2.55E-12
021691	Ottmar	dry	453438	2.55E-12
021701	Ottmar	dry	453438	3.52E-21
021711	Ottmar	dry	453438	3.52E-21
021721	Ottmar	dry	453438	3.52E-21
021731	Ottmar	dry	453438	1.40E-25
021751	Ottmar	dry	453438	2.55E-12
021671	Ottmar	dry	455309	1.13E-10

Soil ID	Soil Name	IRR	MET	90th Percentile
021681	Ottmar	dry	455309	1.13E-10
021691	Ottmar	dry	455309	1.13E-10
021701	Ottmar	dry	455309	1.03E-19
021751	Ottmar	dry	455309	1.13E-10
021681	Ottmar	dry	456215	1.55E-08
021751	Ottmar	dry	456215	1.55E-08
021691	Ottmar	dry	457015	9.26E-11
021671	Ottmar	irr	451690	2.99
021681	Ottmar	irr	451690	2.99
021691	Ottmar	irr	451690	2.99
021701	Ottmar	irr	451690	1.04
021711	Ottmar	irr	451690	1.04
021721	Ottmar	irr	451690	1.04
021731	Ottmar	irr	451690	7.10E-03
021741	Ottmar	irr	451690	7.10E-03
021751	Ottmar	irr	451690	2.99
021671	Ottmar	irr	452540	2.91
021681	Ottmar	irr	452540	2.91
021691	Ottmar	irr	452540	2.91
021701	Ottmar	irr	452540	8.49E-01
021711	Ottmar	irr	452540	8.49E-01
021721	Ottmar	irr	452540	8.49E-01
021731	Ottmar	irr	452540	6.86E-03
021741	Ottmar	irr	452540	6.86E-03
021751	Ottmar	irr	452540	2.91
021681	Ottmar	irr	452542	3.03
021691	Ottmar	irr	452542	3.03
021711	Ottmar	irr	452542	1.14
021721	Ottmar	irr	452542	1.14
021681	Ottmar	irr	453438	2.88
021691	Ottmar	irr	453438	2.88
021721	Ottmar	irr	453438	7.04E-01
021731	Ottmar	irr	453438	4.58E-03
021751	Ottmar	irr	453438	2.88
021671	Ottmar	irr	455309	3.21
021681	Ottmar	irr	455309	3.21
021691	Ottmar	irr	455309	3.21
021701	Ottmar	irr	455309	1.19
021751	Ottmar	irr	455309	3.21
021681	Ottmar	irr	456215	2.92
021751	Ottmar	irr	456215	2.92
021691	Ottmar	irr	457015	2.81

Soil ID	Soil Name	IRR	MET	90th Percentile
021721	Ottmar	irr	458579	8.49E-01
021731	Ottmar	irr	458579	6.86E-03
021741	Ottmar	irr	458579	6.86E-03
021751	Ottmar	irr	458579	2.91
021761	Pits, Gravel	dry	451690	---
021761	Pits, Gravel	dry	452540	---
021761	Pits, Gravel	dry	455309	---
021761	Pits, Gravel	dry	456400	---
021761	Pits, Gravel	dry	457015	---
021761	Pits, Gravel	irr	452540	---
021761	Pits, Gravel	irr	455309	---
021761	Pits, Gravel	irr	456400	---
021761	Pits, Gravel	irr	457015	---
0211682	Prosser	dry	451690	7.24E-02
0211692	Prosser	dry	451690	1.65E-01
021482	Prosser	dry	451690	1.65E-01
021771	Prosser	dry	451690	5.27E-01
021801	Prosser	dry	451690	1.65E-01
021811	Prosser	dry	451690	1.65E-01
021821	Prosser	dry	451690	1.65E-01
021831	Prosser	dry	451690	1.65E-01
0211682	Prosser	dry	452540	5.24E-02
0211692	Prosser	dry	452540	1.17E-01
021801	Prosser	dry	452540	1.17E-01
021811	Prosser	dry	452540	1.17E-01
021821	Prosser	dry	452540	1.17E-01
021831	Prosser	dry	452540	1.17E-01
021821	Prosser	dry	452542	2.15E-01
021831	Prosser	dry	452542	2.15E-01
0211672	Prosser	dry	455309	2.46E-01
0211682	Prosser	dry	455309	1.83E-02
0211692	Prosser	dry	455309	3.92E-02
0211702	Prosser	dry	455309	2.46E-01
021482	Prosser	dry	455309	3.92E-02
021771	Prosser	dry	455309	2.46E-01
021781	Prosser	dry	455309	2.46E-01
021791	Prosser	dry	455309	2.46E-01
021801	Prosser	dry	455309	3.92E-02
021811	Prosser	dry	455309	3.92E-02
021821	Prosser	dry	455309	3.92E-02
021831	Prosser	dry	455309	3.92E-02
021841	Prosser	dry	455309	2.46E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0211682	Prosser	dry	456215	5.48E-02
0211692	Prosser	dry	456215	1.25E-01
0211702	Prosser	dry	456215	4.61E-01
021482	Prosser	dry	456215	1.25E-01
021771	Prosser	dry	456215	4.61E-01
021781	Prosser	dry	456215	4.61E-01
021791	Prosser	dry	456215	4.61E-01
021801	Prosser	dry	456215	1.25E-01
021811	Prosser	dry	456215	1.25E-01
021821	Prosser	dry	456215	1.25E-01
021831	Prosser	dry	456215	1.25E-01
021841	Prosser	dry	456215	4.61E-01
021811	Prosser	dry	456400	2.99E-02
0211682	Prosser	irr	451690	3.97
0211692	Prosser	irr	451690	5.81
021482	Prosser	irr	451690	5.81
021771	Prosser	irr	451690	6.07
021781	Prosser	irr	451690	6.07
021791	Prosser	irr	451690	6.07
021801	Prosser	irr	451690	5.81
021811	Prosser	irr	451690	5.81
021821	Prosser	irr	451690	5.81
021831	Prosser	irr	451690	5.81
021841	Prosser	irr	451690	6.07
0211682	Prosser	irr	452540	3.93
0211692	Prosser	irr	452540	5.78
021801	Prosser	irr	452540	5.78
021811	Prosser	irr	452540	5.78
021821	Prosser	irr	452540	5.78
021831	Prosser	irr	452540	5.78
021821	Prosser	irr	452542	5.85
021831	Prosser	irr	452542	5.85
0211672	Prosser	irr	455309	6.22
0211682	Prosser	irr	455309	4.17
0211692	Prosser	irr	455309	5.98
0211702	Prosser	irr	455309	6.22
021482	Prosser	irr	455309	5.98
021771	Prosser	irr	455309	6.22
021781	Prosser	irr	455309	6.22
021801	Prosser	irr	455309	5.98
021811	Prosser	irr	455309	5.98
021821	Prosser	irr	455309	5.98

Soil ID	Soil Name	IRR	MET	90th Percentile
021831	Prosser	irr	455309	5.98
021841	Prosser	irr	455309	6.22
0211682	Prosser	irr	456215	3.88
0211692	Prosser	irr	456215	5.76
0211702	Prosser	irr	456215	6.03
021482	Prosser	irr	456215	5.76
021771	Prosser	irr	456215	6.03
021781	Prosser	irr	456215	6.03
021791	Prosser	irr	456215	6.03
021811	Prosser	irr	456215	5.76
021821	Prosser	irr	456215	5.76
021831	Prosser	irr	456215	5.76
021841	Prosser	irr	456215	6.03
021811	Prosser	irr	456400	5.74
021891	Quincy	dry	451690	8.60E-01
021901	Quincy	dry	451690	8.60E-01
021911	Quincy	dry	451690	8.60E-01
021961	Quincy	dry	451690	1.40E-01
021971	Quincy	dry	451690	8.60E-01
0211011	Quincy	dry	452540	7.12E-01
0211031	Quincy	dry	452540	1.05E-01
021891	Quincy	dry	452540	7.12E-01
021901	Quincy	dry	452540	7.12E-01
021911	Quincy	dry	452540	7.12E-01
021921	Quincy	dry	452540	4.14E-01
021931	Quincy	dry	452540	4.14E-01
021941	Quincy	dry	452540	4.14E-01
021951	Quincy	dry	452540	8.26E-01
021952	Quincy	dry	452540	1.78E-01
021971	Quincy	dry	452540	7.12E-01
0211011	Quincy	dry	452542	9.73E-01
0211031	Quincy	dry	452542	1.71E-01
021891	Quincy	dry	452542	9.73E-01
021901	Quincy	dry	452542	9.73E-01
021921	Quincy	dry	452542	6.24E-01
021971	Quincy	dry	452542	9.73E-01
0211001	Quincy	dry	453438	3.92E-01
0211031	Quincy	dry	453438	3.27E-02
021851	Quincy	dry	453438	3.27E-02
021891	Quincy	dry	453438	3.92E-01
021901	Quincy	dry	453438	3.92E-01
021911	Quincy	dry	453438	3.92E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
021921	Quincy	dry	453438	1.74E-01
021931	Quincy	dry	453438	1.74E-01
021951	Quincy	dry	453438	4.77E-01
021952	Quincy	dry	453438	5.20
021961	Quincy	dry	453438	3.27E-02
021971	Quincy	dry	453438	3.92E-01
021981	Quincy	dry	453438	3.92E-01
0211021	Quincy	dry	454154	6.71E-01
021891	Quincy	dry	454154	6.71E-01
021901	Quincy	dry	454154	6.71E-01
0211001	Quincy	dry	455309	6.11E-01
0211011	Quincy	dry	455309	6.11E-01
0211031	Quincy	dry	455309	7.43E-02
021851	Quincy	dry	455309	7.43E-02
021891	Quincy	dry	455309	6.11E-01
021901	Quincy	dry	455309	6.11E-01
021911	Quincy	dry	455309	6.11E-01
021921	Quincy	dry	455309	3.16E-01
021931	Quincy	dry	455309	3.16E-01
021941	Quincy	dry	455309	3.16E-01
021951	Quincy	dry	455309	7.37E-01
021952	Quincy	dry	455309	1.35E-01
021961	Quincy	dry	455309	7.43E-02
021971	Quincy	dry	455309	6.11E-01
021981	Quincy	dry	455309	6.11E-01
0211001	Quincy	dry	456215	8.63E-01
0211011	Quincy	dry	456215	8.63E-01
021891	Quincy	dry	456215	8.63E-01
021901	Quincy	dry	456215	8.63E-01
021911	Quincy	dry	456215	8.63E-01
021921	Quincy	dry	456215	4.97E-01
021951	Quincy	dry	456215	9.62E-01
021952	Quincy	dry	456215	2.11E-01
021961	Quincy	dry	456215	1.25E-01
021971	Quincy	dry	456215	8.63E-01
0211011	Quincy	dry	456400	5.67E-01
0211031	Quincy	dry	456400	5.66E-02
021891	Quincy	dry	456400	5.67E-01
021901	Quincy	dry	456400	5.67E-01
021921	Quincy	dry	456400	2.71E-01
021931	Quincy	dry	456400	2.71E-01
021941	Quincy	dry	456400	2.71E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
021961	Quincy	dry	456400	5.66E-02
021971	Quincy	dry	456400	5.67E-01
0211021	Quincy	dry	457015	5.72E-01
021891	Quincy	dry	457015	5.72E-01
021901	Quincy	dry	457015	5.72E-01
021921	Quincy	dry	457015	2.90E-01
021941	Quincy	dry	457015	2.90E-01
021961	Quincy	dry	457015	7.00E-02
021971	Quincy	dry	457015	5.72E-01
0211001	Quincy	irr	451690	6.72
0211011	Quincy	irr	451690	6.72
0211021	Quincy	irr	451690	6.72
0211031	Quincy	irr	451690	2.56
021851	Quincy	irr	451690	2.56
021861	Quincy	irr	451690	2.56
021871	Quincy	irr	451690	2.56
021881	Quincy	irr	451690	3.82
021891	Quincy	irr	451690	6.72
021901	Quincy	irr	451690	6.72
021911	Quincy	irr	451690	6.72
021921	Quincy	irr	451690	6.53
021931	Quincy	irr	451690	6.53
021941	Quincy	irr	451690	6.53
021951	Quincy	irr	451690	7.23
021961	Quincy	irr	451690	2.56
021971	Quincy	irr	451690	6.72
021981	Quincy	irr	451690	6.72
021991	Quincy	irr	451690	2.56
0211011	Quincy	irr	452540	6.70
0211031	Quincy	irr	452540	2.60
021891	Quincy	irr	452540	6.70
021901	Quincy	irr	452540	6.70
021911	Quincy	irr	452540	6.70
021921	Quincy	irr	452540	6.44
021931	Quincy	irr	452540	6.44
021941	Quincy	irr	452540	6.44
021951	Quincy	irr	452540	7.19
021952	Quincy	irr	452540	5.19
021971	Quincy	irr	452540	6.70
0211011	Quincy	irr	452542	6.72
0211031	Quincy	irr	452542	2.58
021891	Quincy	irr	452542	6.72

Soil ID	Soil Name	IRR	MET	90th Percentile
021901	Quincy	irr	452542	6.72
021921	Quincy	irr	452542	6.53
021951	Quincy	irr	452542	7.23
021971	Quincy	irr	452542	6.72
0211001	Quincy	irr	453438	6.60
0211031	Quincy	irr	453438	2.57
021851	Quincy	irr	453438	2.57
021891	Quincy	irr	453438	6.60
021901	Quincy	irr	453438	6.60
021911	Quincy	irr	453438	6.60
021921	Quincy	irr	453438	6.34
021931	Quincy	irr	453438	6.34
021941	Quincy	irr	453438	6.34
021951	Quincy	irr	453438	7.08
021952	Quincy	irr	453438	5.20
021971	Quincy	irr	453438	6.60
021981	Quincy	irr	453438	6.60
0211021	Quincy	irr	454154	6.64
021891	Quincy	irr	454154	6.64
021901	Quincy	irr	454154	6.64
0211001	Quincy	irr	455309	6.91
0211011	Quincy	irr	455309	6.91
0211031	Quincy	irr	455309	2.97
021851	Quincy	irr	455309	2.97
021891	Quincy	irr	455309	6.91
021901	Quincy	irr	455309	6.91
021911	Quincy	irr	455309	6.91
021921	Quincy	irr	455309	6.64
021931	Quincy	irr	455309	6.64
021941	Quincy	irr	455309	6.64
021951	Quincy	irr	455309	7.34
021952	Quincy	irr	455309	5.46
021961	Quincy	irr	455309	2.97
021971	Quincy	irr	455309	6.91
021981	Quincy	irr	455309	6.91
0211001	Quincy	irr	456215	6.74
0211011	Quincy	irr	456215	6.74
0211031	Quincy	irr	456215	2.55
021891	Quincy	irr	456215	6.74
021901	Quincy	irr	456215	6.74
021911	Quincy	irr	456215	6.74
021921	Quincy	irr	456215	6.52

Soil ID	Soil Name	IRR	MET	90th Percentile
021931	Quincy	irr	456215	6.52
021951	Quincy	irr	456215	7.20
021952	Quincy	irr	456215	5.20
021961	Quincy	irr	456215	2.55
021971	Quincy	irr	456215	6.74
0211011	Quincy	irr	456400	6.70
0211031	Quincy	irr	456400	2.62
021891	Quincy	irr	456400	6.70
021901	Quincy	irr	456400	6.70
021921	Quincy	irr	456400	6.41
021931	Quincy	irr	456400	6.41
021951	Quincy	irr	456400	7.16
021961	Quincy	irr	456400	2.62
021971	Quincy	irr	456400	6.70
0211021	Quincy	irr	457015	6.60
021891	Quincy	irr	457015	6.60
021901	Quincy	irr	457015	6.60
021921	Quincy	irr	457015	6.36
021941	Quincy	irr	457015	6.36
021961	Quincy	irr	457015	2.53
021971	Quincy	irr	457015	6.60
0211012	Quinton	dry	452540	8.21E-01
0211012	Quinton	dry	452542	9.90E-01
0211012	Quinton	dry	455309	7.57E-01
0211012	Quinton	dry	456215	9.27E-01
0211012	Quinton	dry	456400	7.07E-01
0211012	Quinton	irr	452540	6.39
0211012	Quinton	irr	452542	6.39
0211012	Quinton	irr	455309	6.56
0211012	Quinton	irr	456215	6.42
0211012	Quinton	irr	456400	6.38
0211041	Rinquin	dry	452540	9.55E-01
0211041	Rinquin	dry	453438	6.82E-01
0211041	Rinquin	dry	455309	8.86E-01
0211041	Rinquin	dry	456215	1.12
0211041	Rinquin	irr	451690	6.13
0211041	Rinquin	irr	452540	6.13
0211041	Rinquin	irr	453438	6.12
0211041	Rinquin	irr	455309	6.32
0211041	Rinquin	irr	456215	6.14
0211051	Ritzcal	irr	451690	4.28
0211071	Ritzville	irr	451690	1.88

Soil ID	Soil Name	IRR	MET	90th Percentile
0211101	Ritzville	irr	451690	1.88
0211111	Ritzville	irr	451690	1.88
0211121	Ritzville	irr	451690	1.88
0211131	Ritzville	irr	451690	1.60
0211141	Ritzville	irr	451690	1.60
0211151	Ritzville	irr	451690	1.60
0211161	Ritzville	irr	451690	1.60
0211171	Ritzville	irr	451690	1.60
0211181	Ritzville	irr	451690	1.88
0211191	Riverwash	dry	452540	---
0211191	Riverwash	dry	452542	---
0211191	Riverwash	dry	453438	---
0211191	Riverwash	dry	457015	---
0211201	Roloff	irr	451690	4.32
0211211	Roloff	irr	451690	4.32
0211221	Roloff	irr	451690	4.32
0211231	Roloff	irr	451690	4.32
0211241	Roloff	irr	451690	4.32
0211251	Roloff	irr	451690	4.32
0211261	Royal	dry	451690	5.96E-02
0211271	Royal	dry	451690	5.96E-02
0211281	Royal	dry	451690	1.58E-01
0211291	Royal	dry	451690	1.58E-01
0211301	Royal	dry	451690	1.58E-01
0211321	Royal	dry	451690	1.58E-01
0211261	Royal	dry	452540	4.08E-02
0211271	Royal	dry	452540	4.08E-02
0211281	Royal	dry	452540	1.13E-01
0211291	Royal	dry	452540	1.13E-01
0211301	Royal	dry	452540	1.13E-01
0211321	Royal	dry	452540	1.13E-01
0211261	Royal	dry	452542	8.65E-02
0211271	Royal	dry	452542	8.65E-02
0211281	Royal	dry	452542	1.99E-01
0211291	Royal	dry	452542	1.99E-01
0211301	Royal	dry	452542	1.99E-01
0211321	Royal	dry	452542	1.99E-01
0211261	Royal	dry	453438	3.80E-03
0211271	Royal	dry	453438	3.80E-03
0211281	Royal	dry	453438	9.74E-03
0211291	Royal	dry	453438	9.74E-03
0211301	Royal	dry	453438	9.74E-03

Soil ID	Soil Name	IRR	MET	90th Percentile
0211261	Royal	dry	455309	1.40E-02
0211271	Royal	dry	455309	1.40E-02
0211281	Royal	dry	455309	3.74E-02
0211291	Royal	dry	455309	3.74E-02
0211301	Royal	dry	455309	3.74E-02
0211271	Royal	dry	456215	4.31E-02
0211281	Royal	dry	456215	1.22E-01
0211291	Royal	dry	456215	1.22E-01
0211301	Royal	dry	456215	1.22E-01
0211311	Royal	dry	456215	6.70E-02
0211261	Royal	dry	456400	1.01E-02
0211271	Royal	dry	456400	1.01E-02
0211281	Royal	dry	456400	2.30E-02
0211291	Royal	dry	456400	2.30E-02
0211301	Royal	dry	456400	2.30E-02
0211261	Royal	dry	457015	1.55E-02
0211281	Royal	dry	457015	3.97E-02
0211291	Royal	dry	457015	3.97E-02
0211301	Royal	dry	457015	3.97E-02
0211261	Royal	irr	451690	4.68
0211271	Royal	irr	451690	4.68
0211281	Royal	irr	451690	5.90
0211291	Royal	irr	451690	5.90
0211301	Royal	irr	451690	5.90
0211311	Royal	irr	451690	5.88
0211321	Royal	irr	451690	5.90
0211261	Royal	irr	452540	4.61
0211271	Royal	irr	452540	4.61
0211281	Royal	irr	452540	5.81
0211291	Royal	irr	452540	5.81
0211301	Royal	irr	452540	5.81
0211321	Royal	irr	452540	5.81
0211261	Royal	irr	452542	4.68
0211271	Royal	irr	452542	4.68
0211281	Royal	irr	452542	5.88
0211291	Royal	irr	452542	5.88
0211301	Royal	irr	452542	5.88
0211321	Royal	irr	452542	5.88
0211261	Royal	irr	453438	4.51
0211271	Royal	irr	453438	4.51
0211291	Royal	irr	453438	5.69
0211301	Royal	irr	453438	5.69

Soil ID	Soil Name	IRR	MET	90th Percentile
0211321	Royal	irr	453438	5.69
0211261	Royal	irr	455309	4.89
0211271	Royal	irr	455309	4.89
0211281	Royal	irr	455309	6.05
0211291	Royal	irr	455309	6.05
0211301	Royal	irr	455309	6.05
0211261	Royal	irr	456215	4.61
0211271	Royal	irr	456215	4.61
0211281	Royal	irr	456215	5.80
0211291	Royal	irr	456215	5.80
0211301	Royal	irr	456215	5.80
0211311	Royal	irr	456215	5.80
0211261	Royal	irr	456400	4.57
0211271	Royal	irr	456400	4.57
0211281	Royal	irr	456400	5.71
0211291	Royal	irr	456400	5.71
0211301	Royal	irr	456400	5.71
0211261	Royal	irr	457015	4.53
0211281	Royal	irr	457015	5.71
0211291	Royal	irr	457015	5.71
0211301	Royal	irr	457015	5.71
0211331	Sagehill	dry	451690	4.25E-03
0211341	Sagehill	dry	451690	4.25E-03
0211351	Sagehill	dry	451690	4.25E-03
0211361	Sagehill	dry	451690	4.25E-03
0211371	Sagehill	dry	451690	4.25E-03
0211381	Sagehill	dry	451690	1.14E-01
0211401	Sagehill	dry	451690	1.10E-04
0211411	Sagehill	dry	451690	1.10E-04
0211421	Sagehill	dry	451690	1.10E-04
0211431	Sagehill	dry	451690	4.25E-03
0211331	Sagehill	dry	452540	1.64E-03
0211341	Sagehill	dry	452540	1.64E-03
0211351	Sagehill	dry	452540	1.64E-03
0211361	Sagehill	dry	452540	1.64E-03
0211371	Sagehill	dry	452540	1.64E-03
0211381	Sagehill	dry	452540	7.66E-02
0211391	Sagehill	dry	452540	7.66E-02
0211401	Sagehill	dry	452540	3.92E-05
0211411	Sagehill	dry	452540	3.92E-05
0211331	Sagehill	dry	452542	9.65E-03
0211341	Sagehill	dry	452542	9.65E-03

Soil ID	Soil Name	IRR	MET	90th Percentile
0211351	Sagehill	dry	452542	9.65E-03
0211361	Sagehill	dry	452542	9.65E-03
0211371	Sagehill	dry	452542	9.65E-03
0211331	Sagehill	dry	453438	1.15E-05
0211341	Sagehill	dry	453438	1.15E-05
0211351	Sagehill	dry	453438	1.15E-05
0211361	Sagehill	dry	453438	1.15E-05
0211371	Sagehill	dry	453438	1.15E-05
0211381	Sagehill	dry	453438	8.56E-03
0211401	Sagehill	dry	453438	4.06E-07
0211331	Sagehill	dry	455309	9.84E-05
0211341	Sagehill	dry	455309	9.84E-05
0211351	Sagehill	dry	455309	9.84E-05
0211361	Sagehill	dry	455309	9.84E-05
0211371	Sagehill	dry	455309	9.84E-05
0211391	Sagehill	dry	455309	2.57E-02
0211401	Sagehill	dry	455309	1.90E-06
0211411	Sagehill	dry	455309	1.90E-06
0211421	Sagehill	dry	455309	1.90E-06
0211331	Sagehill	dry	456215	1.75E-03
0211341	Sagehill	dry	456215	1.75E-03
0211351	Sagehill	dry	456215	1.75E-03
0211361	Sagehill	dry	456215	1.75E-03
0211371	Sagehill	dry	456215	1.75E-03
0211381	Sagehill	dry	456215	8.50E-02
0211391	Sagehill	dry	456215	8.50E-02
0211401	Sagehill	dry	456215	3.77E-05
0211421	Sagehill	dry	456215	3.77E-05
0211431	Sagehill	dry	456215	1.75E-03
0211331	Sagehill	dry	456400	4.51E-05
0211341	Sagehill	dry	456400	4.51E-05
0211351	Sagehill	dry	456400	4.51E-05
0211361	Sagehill	dry	456400	4.51E-05
0211371	Sagehill	dry	456400	4.51E-05
0211331	Sagehill	dry	457015	1.13E-04
0211341	Sagehill	dry	457015	1.13E-04
0211351	Sagehill	dry	457015	1.13E-04
0211361	Sagehill	dry	457015	1.13E-04
0211371	Sagehill	dry	457015	1.13E-04
0211401	Sagehill	dry	457015	2.94E-06
0211331	Sagehill	irr	451690	3.82
0211341	Sagehill	irr	451690	3.82

Soil ID	Soil Name	IRR	MET	90th Percentile
0211351	Sagehill	irr	451690	3.82
0211361	Sagehill	irr	451690	3.82
0211371	Sagehill	irr	451690	3.82
0211381	Sagehill	irr	451690	5.86
0211391	Sagehill	irr	451690	5.86
0211401	Sagehill	irr	451690	9.79E-01
0211411	Sagehill	irr	451690	9.79E-01
0211421	Sagehill	irr	451690	9.79E-01
0211431	Sagehill	irr	451690	3.82
0211331	Sagehill	irr	452540	3.81
0211341	Sagehill	irr	452540	3.81
0211351	Sagehill	irr	452540	3.81
0211361	Sagehill	irr	452540	3.81
0211371	Sagehill	irr	452540	3.81
0211381	Sagehill	irr	452540	5.76
0211391	Sagehill	irr	452540	5.76
0211401	Sagehill	irr	452540	9.52E-01
0211411	Sagehill	irr	452540	9.52E-01
0211331	Sagehill	irr	452542	3.84
0211341	Sagehill	irr	452542	3.84
0211351	Sagehill	irr	452542	3.84
0211361	Sagehill	irr	452542	3.84
0211371	Sagehill	irr	452542	3.84
0211331	Sagehill	irr	453438	3.65
0211341	Sagehill	irr	453438	3.65
0211351	Sagehill	irr	453438	3.65
0211361	Sagehill	irr	453438	3.65
0211371	Sagehill	irr	453438	3.65
0211381	Sagehill	irr	453438	5.63
0211421	Sagehill	irr	453438	9.04E-01
0211331	Sagehill	irr	455309	4.02
0211341	Sagehill	irr	455309	4.02
0211351	Sagehill	irr	455309	4.02
0211361	Sagehill	irr	455309	4.02
0211371	Sagehill	irr	455309	4.02
0211391	Sagehill	irr	455309	6.05
0211401	Sagehill	irr	455309	1.13
0211411	Sagehill	irr	455309	1.13
0211421	Sagehill	irr	455309	1.13
0211331	Sagehill	irr	456215	3.74
0211341	Sagehill	irr	456215	3.74
0211351	Sagehill	irr	456215	3.74

Soil ID	Soil Name	IRR	MET	90th Percentile
0211361	Sagehill	irr	456215	3.74
0211371	Sagehill	irr	456215	3.74
0211381	Sagehill	irr	456215	5.80
0211391	Sagehill	irr	456215	5.80
0211401	Sagehill	irr	456215	9.68E-01
0211421	Sagehill	irr	456215	9.68E-01
0211431	Sagehill	irr	456215	3.74
0211331	Sagehill	irr	456400	3.70
0211341	Sagehill	irr	456400	3.70
0211351	Sagehill	irr	456400	3.70
0211361	Sagehill	irr	456400	3.70
0211371	Sagehill	irr	456400	3.70
0211331	Sagehill	irr	457015	3.61
0211341	Sagehill	irr	457015	3.61
0211351	Sagehill	irr	457015	3.61
0211361	Sagehill	irr	457015	3.61
0211371	Sagehill	irr	457015	3.61
0211401	Sagehill	irr	457015	8.89E-01
0211441	Sagemoor	dry	451690	1.44E-05
0211451	Sagemoor	dry	451690	1.44E-05
0211441	Sagemoor	dry	452540	1.94E-06
0211451	Sagemoor	dry	452540	1.94E-06
0211461	Sagemoor	dry	452540	1.94E-06
0211441	Sagemoor	dry	452542	8.33E-05
0211451	Sagemoor	dry	452542	8.33E-05
0211461	Sagemoor	dry	452542	8.33E-05
0211441	Sagemoor	dry	455309	6.33E-09
0211451	Sagemoor	dry	455309	6.33E-09
0211461	Sagemoor	dry	455309	6.33E-09
0211441	Sagemoor	dry	456215	1.45E-06
0211451	Sagemoor	dry	456215	1.45E-06
0211441	Sagemoor	dry	456400	6.71E-10
0211451	Sagemoor	dry	456400	6.71E-10
0211461	Sagemoor	dry	456400	6.71E-10
0211451	Sagemoor	dry	457015	1.30E-08
0211461	Sagemoor	dry	457015	1.30E-08
0211441	Sagemoor	irr	451690	5.07
0211451	Sagemoor	irr	451690	5.07
0211461	Sagemoor	irr	451690	5.07
0211441	Sagemoor	irr	452540	5.00
0211451	Sagemoor	irr	452540	5.00
0211461	Sagemoor	irr	452540	5.00

Soil ID	Soil Name	IRR	MET	90th Percentile
0211441	Sagemoor	irr	452542	5.11
0211451	Sagemoor	irr	452542	5.11
0211461	Sagemoor	irr	452542	5.11
0211441	Sagemoor	irr	455309	5.11
0211451	Sagemoor	irr	455309	5.11
0211461	Sagemoor	irr	455309	5.11
0211441	Sagemoor	irr	456215	4.98
0211451	Sagemoor	irr	456215	4.98
0211441	Sagemoor	irr	456400	4.86
0211451	Sagemoor	irr	456400	4.86
0211461	Sagemoor	irr	456400	4.86
0211441	Sagemoor	irr	457015	4.87
0211451	Sagemoor	irr	457015	4.87
0211461	Sagemoor	irr	457015	4.87
0211471	Schlomer	dry	451690	6.33E-03
0211481	Schlomer	dry	451690	6.33E-03
0211491	Schlomer	dry	451690	6.33E-03
0211501	Schlomer	dry	451690	6.33E-03
0211511	Schlomer	dry	451690	6.33E-03
0212152	Schlomer	dry	451690	6.33E-03
021752	Schlomer	dry	451690	6.33E-03
0211471	Schlomer	dry	452540	2.61E-03
0211481	Schlomer	dry	452540	2.61E-03
0211491	Schlomer	dry	452540	2.61E-03
0211511	Schlomer	dry	452540	2.61E-03
0212152	Schlomer	dry	452540	2.61E-03
021752	Schlomer	dry	452540	2.61E-03
0211481	Schlomer	dry	452542	1.32E-02
0211491	Schlomer	dry	452542	1.32E-02
0211511	Schlomer	dry	452542	1.32E-02
0212152	Schlomer	dry	452542	1.32E-02
0211471	Schlomer	dry	453438	2.91E-05
0211481	Schlomer	dry	453438	2.91E-05
0211491	Schlomer	dry	453438	2.91E-05
0211501	Schlomer	dry	453438	2.91E-05
0211511	Schlomer	dry	453438	2.91E-05
0212152	Schlomer	dry	453438	4.52
021752	Schlomer	dry	453438	4.52
0211471	Schlomer	dry	455309	1.40E-04
0211481	Schlomer	dry	455309	1.40E-04
0211491	Schlomer	dry	455309	1.40E-04
0211501	Schlomer	dry	455309	1.40E-04

Soil ID	Soil Name	IRR	MET	90th Percentile
0211511	Schlomer	dry	455309	1.40E-04
0212152	Schlomer	dry	455309	1.40E-04
021752	Schlomer	dry	455309	1.40E-04
0211481	Schlomer	dry	456215	2.73E-03
0211491	Schlomer	dry	456215	2.73E-03
0211501	Schlomer	dry	456215	2.73E-03
0211511	Schlomer	dry	456215	2.73E-03
0212152	Schlomer	dry	456215	2.73E-03
021752	Schlomer	dry	456215	2.73E-03
0211491	Schlomer	dry	457015	1.82E-04
0211511	Schlomer	dry	457015	1.82E-04
0211471	Schlomer	irr	451690	4.80
0211481	Schlomer	irr	451690	4.80
0211491	Schlomer	irr	451690	4.80
0211501	Schlomer	irr	451690	4.80
0211511	Schlomer	irr	451690	4.80
0212152	Schlomer	irr	451690	4.80
021752	Schlomer	irr	451690	4.80
0211471	Schlomer	irr	452540	4.69
0211481	Schlomer	irr	452540	4.69
0211491	Schlomer	irr	452540	4.69
0211511	Schlomer	irr	452540	4.69
0212152	Schlomer	irr	452540	4.69
021752	Schlomer	irr	452540	4.69
0211481	Schlomer	irr	452542	4.85
0211491	Schlomer	irr	452542	4.85
0211511	Schlomer	irr	452542	4.85
0212152	Schlomer	irr	452542	4.85
0211471	Schlomer	irr	453438	4.52
0211481	Schlomer	irr	453438	4.52
0211491	Schlomer	irr	453438	4.52
0211501	Schlomer	irr	453438	4.52
0211511	Schlomer	irr	453438	4.52
0211471	Schlomer	irr	455309	4.90
0211481	Schlomer	irr	455309	4.90
0211491	Schlomer	irr	455309	4.90
0211501	Schlomer	irr	455309	4.90
0211511	Schlomer	irr	455309	4.90
0212152	Schlomer	irr	455309	4.90
021752	Schlomer	irr	455309	4.90
0211481	Schlomer	irr	456215	4.71
0211491	Schlomer	irr	456215	4.71

Soil ID	Soil Name	IRR	MET	90th Percentile
0211501	Schlomer	irr	456215	4.71
0211511	Schlomer	irr	456215	4.71
0212152	Schlomer	irr	456215	4.71
021752	Schlomer	irr	456215	4.71
0211511	Schlomer	irr	457015	4.56
0211433	Shano	dry	451690	1.06E-06
0211521	Shano	dry	451690	1.06E-06
0211531	Shano	dry	451690	1.06E-06
0211541	Shano	dry	451690	1.06E-06
0211571	Shano	dry	451690	1.06E-06
0211581	Shano	dry	451690	2.18E-06
0211591	Shano	dry	451690	2.18E-06
0211601	Shano	dry	451690	2.18E-06
0211611	Shano	dry	451690	2.18E-06
0211621	Shano	dry	451690	2.18E-06
0211631	Shano	dry	451690	1.06E-06
0211641	Shano	dry	451690	1.06E-06
0211581	Shano	dry	452540	4.46E-07
0211591	Shano	dry	452540	4.46E-07
0211611	Shano	dry	452540	4.46E-07
0211621	Shano	dry	452540	4.46E-07
0211641	Shano	dry	452540	1.21E-07
0211521	Shano	dry	452542	7.18E-06
0211541	Shano	dry	452542	7.18E-06
0211601	Shano	dry	452542	7.97E-06
0211611	Shano	dry	452542	7.97E-06
0211621	Shano	dry	452542	7.97E-06
0211541	Shano	dry	453438	1.16E-11
0211551	Shano	dry	453438	1.16E-11
0211561	Shano	dry	453438	1.16E-11
0211571	Shano	dry	453438	1.16E-11
0211433	Shano	dry	455309	3.44E-10
0211521	Shano	dry	455309	3.44E-10
0211531	Shano	dry	455309	3.44E-10
0211541	Shano	dry	455309	3.44E-10
0211551	Shano	dry	455309	3.44E-10
0211561	Shano	dry	455309	3.44E-10
0211571	Shano	dry	455309	3.44E-10
0211621	Shano	dry	455309	2.58E-09
0211433	Shano	dry	456215	9.14E-08
0211551	Shano	dry	456215	9.14E-08
0211433	Shano	irr	451690	2.82

Soil ID	Soil Name	IRR	MET	90th Percentile
0211521	Shano	irr	451690	2.82
0211531	Shano	irr	451690	2.82
0211541	Shano	irr	451690	2.82
0211551	Shano	irr	451690	2.82
0211561	Shano	irr	451690	2.82
0211571	Shano	irr	451690	2.82
0211581	Shano	irr	451690	6.45E-01
0211591	Shano	irr	451690	6.45E-01
0211601	Shano	irr	451690	6.45E-01
0211611	Shano	irr	451690	6.45E-01
0211621	Shano	irr	451690	6.45E-01
0211641	Shano	irr	451690	2.82
0211581	Shano	irr	452540	6.33E-01
0211591	Shano	irr	452540	6.33E-01
0211611	Shano	irr	452540	6.33E-01
0211621	Shano	irr	452540	6.33E-01
0211641	Shano	irr	452540	2.79
0211521	Shano	irr	452542	2.87
0211531	Shano	irr	452542	2.87
0211541	Shano	irr	452542	2.87
0211601	Shano	irr	452542	6.88E-01
0211611	Shano	irr	452542	6.88E-01
0211621	Shano	irr	452542	6.88E-01
0211551	Shano	irr	453438	2.79
0211561	Shano	irr	453438	2.79
0211571	Shano	irr	453438	2.79
0211531	Shano	irr	455309	3.16
0211541	Shano	irr	455309	3.16
0211551	Shano	irr	455309	3.16
0211561	Shano	irr	455309	3.16
0211571	Shano	irr	455309	3.16
0211433	Shano	irr	456215	2.81
0211551	Shano	irr	456215	2.81
0211661	Starbuck	dry	451690	4.47E-02
0211681	Starbuck	dry	451690	6.35E-01
0211691	Starbuck	dry	451690	4.47E-02
021263	Starbuck	dry	451690	4.47E-02
021483	Starbuck	dry	451690	4.47E-02
021832	Starbuck	dry	451690	4.47E-02
0211661	Starbuck	dry	452540	3.73E-02
0211681	Starbuck	dry	452540	5.44E-01
0211691	Starbuck	dry	452540	3.73E-02

Soil ID	Soil Name	IRR	MET	90th Percentile
021832	Starbuck	dry	452540	3.73E-02
0211661	Starbuck	dry	452542	5.33E-02
021832	Starbuck	dry	452542	5.33E-02
0211651	Starbuck	dry	455309	7.03E-03
0211661	Starbuck	dry	455309	1.62E-02
0211671	Starbuck	dry	455309	7.03E-03
0211681	Starbuck	dry	455309	4.63E-01
0211691	Starbuck	dry	455309	1.62E-02
0211701	Starbuck	dry	455309	7.03E-03
021263	Starbuck	dry	455309	1.62E-02
021483	Starbuck	dry	455309	1.62E-02
021832	Starbuck	dry	455309	1.62E-02
021842	Starbuck	dry	455309	7.03E-03
0211651	Starbuck	dry	456215	1.72E-02
0211661	Starbuck	dry	456215	3.70E-02
0211681	Starbuck	dry	456215	6.18E-01
0211691	Starbuck	dry	456215	3.70E-02
0211701	Starbuck	dry	456215	1.72E-02
021483	Starbuck	dry	456215	3.70E-02
021832	Starbuck	dry	456215	3.70E-02
021842	Starbuck	dry	456215	1.72E-02
0211661	Starbuck	dry	456400	1.35E-02
0211651	Starbuck	irr	451690	7.38E-01
0211661	Starbuck	irr	451690	1.48
0211671	Starbuck	irr	451690	7.38E-01
0211681	Starbuck	irr	451690	3.35
0211691	Starbuck	irr	451690	1.48
0211701	Starbuck	irr	451690	7.38E-01
021263	Starbuck	irr	451690	1.48
021483	Starbuck	irr	451690	1.48
021832	Starbuck	irr	451690	1.48
0211661	Starbuck	irr	452540	1.47
0211681	Starbuck	irr	452540	3.10
0211691	Starbuck	irr	452540	1.47
021832	Starbuck	irr	452540	1.47
0211661	Starbuck	irr	452542	1.51
021832	Starbuck	irr	452542	1.51
0211651	Starbuck	irr	455309	8.65E-01
0211661	Starbuck	irr	455309	1.68
0211671	Starbuck	irr	455309	8.65E-01
0211681	Starbuck	irr	455309	2.94
0211691	Starbuck	irr	455309	1.68

Soil ID	Soil Name	IRR	MET	90th Percentile
0211701	Starbuck	irr	455309	8.65E-01
021263	Starbuck	irr	455309	1.68
021483	Starbuck	irr	455309	1.68
021832	Starbuck	irr	455309	1.68
021842	Starbuck	irr	455309	8.65E-01
0211651	Starbuck	irr	456215	7.43E-01
0211661	Starbuck	irr	456215	1.49
0211681	Starbuck	irr	456215	3.18
0211691	Starbuck	irr	456215	1.49
0211701	Starbuck	irr	456215	7.43E-01
021483	Starbuck	irr	456215	1.49
021832	Starbuck	irr	456215	1.49
021842	Starbuck	irr	456215	7.43E-01
0211661	Starbuck	irr	456400	1.49
0211721	Stratford	irr	451690	1.50
0211731	Stratford	irr	451690	1.50
0211741	Stratford	irr	451690	1.50
0211751	Stratford	irr	451690	2.87E-01
0211761	Stratford	irr	451690	3.22E-01
0211771	Taunical	dry	451690	4.04E-03
0211781	Taunical	dry	451690	4.04E-03
0211791	Taunical	dry	451690	4.04E-03
0211801	Taunical	dry	451690	4.04E-03
0211771	Taunical	dry	452540	2.75E-03
0211781	Taunical	dry	452540	2.75E-03
0211771	Taunical	dry	452542	6.63E-03
0211781	Taunical	dry	452542	6.63E-03
0211771	Taunical	dry	453438	2.74E-04
0211781	Taunical	dry	453438	2.74E-04
0211801	Taunical	dry	453438	2.74E-04
0211771	Taunical	dry	455309	6.59E-04
0211781	Taunical	dry	455309	6.59E-04
0211791	Taunical	dry	455309	6.59E-04
0211801	Taunical	dry	455309	6.59E-04
0211791	Taunical	dry	456215	2.78E-03
0211771	Taunical	irr	451690	3.84E-01
0211781	Taunical	irr	451690	3.84E-01
0211791	Taunical	irr	451690	3.84E-01
0211801	Taunical	irr	451690	3.84E-01
0211771	Taunical	irr	452540	3.66E-01
0211781	Taunical	irr	452540	3.66E-01
0211771	Taunical	irr	452542	4.08E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0211781	Taunical	irr	452542	4.08E-01
0211771	Taunical	irr	453438	3.40E-01
0211781	Taunical	irr	453438	3.40E-01
0211801	Taunical	irr	453438	3.40E-01
0211771	Taunical	irr	455309	4.63E-01
0211781	Taunical	irr	455309	4.63E-01
0211791	Taunical	irr	455309	4.63E-01
0211801	Taunical	irr	455309	4.63E-01
0211771	Taunical	irr	456215	3.69E-01
0211781	Taunical	irr	456215	3.69E-01
0211791	Taunical	irr	456215	3.69E-01
0211801	Taunical	irr	456215	3.69E-01
0211811	Taunton	dry	451690	2.54E-02
0211821	Taunton	dry	451690	2.54E-02
0211811	Taunton	dry	452540	1.50E-02
0211821	Taunton	dry	452540	1.50E-02
0211811	Taunton	dry	452542	3.93E-02
0211821	Taunton	dry	452542	3.93E-02
0211811	Taunton	dry	453438	1.16E-03
0211821	Taunton	dry	453438	1.16E-03
0211811	Taunton	dry	455309	3.01E-03
0211821	Taunton	dry	455309	3.01E-03
0211821	Taunton	dry	456215	1.56E-02
0211811	Taunton	irr	451690	3.51
0211821	Taunton	irr	451690	3.51
0211811	Taunton	irr	452540	3.48
0211821	Taunton	irr	452540	3.48
0211811	Taunton	irr	452542	3.53
0211821	Taunton	irr	452542	3.53
0211811	Taunton	irr	453438	3.38
0211821	Taunton	irr	453438	3.38
0211811	Taunton	irr	455309	3.72
0211821	Taunton	irr	455309	3.72
0211821	Taunton	irr	456215	3.50
0211821	Taunton	irr	456400	3.43
0211322	Timmerman	dry	451690	3.09E-01
0211831	Timmerman	dry	451690	3.09E-01
0211841	Timmerman	dry	451690	3.09E-01
0211851	Timmerman	dry	451690	3.09E-01
0211322	Timmerman	dry	452540	2.45E-01
0211831	Timmerman	dry	452540	2.45E-01
0211841	Timmerman	dry	452540	2.45E-01

Soil ID	Soil Name	IRR	MET	90th Percentile
0211851	Timmerman	dry	452540	2.45E-01
0211322	Timmerman	dry	452542	3.70E-01
0211831	Timmerman	dry	452542	3.70E-01
0211841	Timmerman	dry	452542	3.70E-01
0211851	Timmerman	dry	452542	3.70E-01
0211022	Timmerman	dry	454154	2.14E-01
0211831	Timmerman	dry	454154	2.14E-01
0211841	Timmerman	dry	454154	2.14E-01
0211851	Timmerman	dry	454154	2.14E-01
0211831	Timmerman	dry	455309	1.49E-01
0211841	Timmerman	dry	455309	1.49E-01
0211851	Timmerman	dry	455309	1.49E-01
0211831	Timmerman	dry	456400	1.22E-01
0211851	Timmerman	dry	456400	1.22E-01
0211022	Timmerman	dry	457015	1.44E-01
0211831	Timmerman	dry	457015	1.44E-01
0211841	Timmerman	dry	457015	1.44E-01
0211851	Timmerman	dry	457015	1.44E-01
0211322	Timmerman	irr	451690	6.04
0211831	Timmerman	irr	451690	6.04
0211841	Timmerman	irr	451690	6.04
0211851	Timmerman	irr	451690	6.04
0211322	Timmerman	irr	452540	5.97
0211831	Timmerman	irr	452540	5.97
0211841	Timmerman	irr	452540	5.97
0211851	Timmerman	irr	452540	5.97
0211322	Timmerman	irr	452542	6.05
0211831	Timmerman	irr	452542	6.05
0211841	Timmerman	irr	452542	6.05
0211851	Timmerman	irr	452542	6.05
0211322	Timmerman	irr	453438	5.84
0211022	Timmerman	irr	454154	5.96
0211831	Timmerman	irr	454154	5.96
0211841	Timmerman	irr	454154	5.96
0211851	Timmerman	irr	454154	5.96
0211831	Timmerman	irr	455309	6.15
0211841	Timmerman	irr	455309	6.15
0211851	Timmerman	irr	455309	6.15
0211831	Timmerman	irr	456400	5.93
0211841	Timmerman	irr	456400	5.93
0211851	Timmerman	irr	456400	5.93
0211022	Timmerman	irr	457015	5.90

Soil ID	Soil Name	IRR	MET	90th Percentile
0211831	Timmerman	irr	457015	5.90
0211841	Timmerman	irr	457015	5.90
0211851	Timmerman	irr	457015	5.90
0211862	Torrripsamments	dry	454154	1.29E-01
0211862	Torrripsamments	dry	456400	7.42E-02
0211862	Torrripsamments	irr	454154	4.54
0211862	Torrripsamments	irr	456400	4.53
0211861	Urban Land	dry	454154	---
0211861	Urban Land	dry	456400	---
0211861	Urban Land	irr	454154	---
0211861	Urban Land	irr	456400	---
0211931	Wacota	dry	451690	1.52E-05
0211881	Wacota	dry	455309	2.01E-14
0211871	Wacota	irr	451690	2.68
0211881	Wacota	irr	451690	2.68
0211891	Wacota	irr	451690	2.68
0211901	Wacota	irr	451690	2.68
0211911	Wacota	irr	451690	2.68
0211921	Wacota	irr	451690	2.68
0211931	Wacota	irr	451690	4.60
0211941	Wacota	irr	451690	2.68
0211032	Wanser	dry	452540	1.82
0211032	Wanser	dry	452542	2.15
0211032	Wanser	dry	453438	7.50
0211032	Wanser	dry	455309	1.58
0211032	Wanser	dry	456400	1.64
0211032	Wanser	irr	452540	7.61
0211032	Wanser	irr	453438	7.50
0211032	Wanser	irr	455309	7.62
0211951	Warden	dry	451690	4.63E-06
0211961	Warden	dry	451690	4.63E-06
0211971	Warden	dry	451690	4.63E-06
0211981	Warden	dry	451690	4.63E-06
0211991	Warden	dry	451690	4.63E-06
0212001	Warden	dry	451690	4.63E-06
0212011	Warden	dry	451690	4.01E-07
0212021	Warden	dry	451690	4.01E-07
0212031	Warden	dry	451690	4.01E-07
0212041	Warden	dry	451690	4.01E-07
0212051	Warden	dry	451690	4.01E-07
0212061	Warden	dry	451690	4.01E-07
0212071	Warden	dry	451690	1.51E-04

Soil ID	Soil Name	IRR	MET	90th Percentile
0212081	Warden	dry	451690	1.51E-04
0211951	Warden	dry	452540	8.67E-07
0211961	Warden	dry	452540	8.67E-07
0211971	Warden	dry	452540	8.67E-07
0211981	Warden	dry	452540	8.67E-07
0211991	Warden	dry	452540	8.67E-07
0212001	Warden	dry	452540	8.67E-07
0212011	Warden	dry	452540	4.34E-08
0212021	Warden	dry	452540	4.34E-08
0212031	Warden	dry	452540	4.34E-08
0212041	Warden	dry	452540	4.34E-08
0212051	Warden	dry	452540	4.34E-08
0212061	Warden	dry	452540	4.34E-08
0212071	Warden	dry	452540	5.05E-05
0212081	Warden	dry	452540	5.05E-05
0211951	Warden	dry	452542	2.71E-05
0211961	Warden	dry	452542	2.71E-05
0211971	Warden	dry	452542	2.71E-05
0211981	Warden	dry	452542	2.71E-05
0211991	Warden	dry	452542	2.71E-05
0212011	Warden	dry	452542	2.88E-06
0212021	Warden	dry	452542	2.88E-06
0212031	Warden	dry	452542	2.88E-06
0212041	Warden	dry	452542	2.88E-06
0212051	Warden	dry	452542	2.88E-06
0212061	Warden	dry	452542	2.88E-06
0212071	Warden	dry	452542	3.60E-04
0212081	Warden	dry	452542	3.60E-04
0212091	Warden	dry	452542	3.60E-04
0211003	Warden	dry	453438	6.19E-10
0211951	Warden	dry	453438	8.59E-11
0211961	Warden	dry	453438	8.59E-11
0211971	Warden	dry	453438	8.59E-11
0211981	Warden	dry	453438	8.59E-11
0212011	Warden	dry	453438	1.10E-12
0212021	Warden	dry	453438	1.10E-12
0212031	Warden	dry	453438	1.10E-12
0212041	Warden	dry	453438	1.10E-12
0212051	Warden	dry	453438	1.10E-12
0212061	Warden	dry	453438	1.10E-12
0211003	Warden	dry	455309	3.08E-08
0211951	Warden	dry	455309	6.19E-09

Soil ID	Soil Name	IRR	MET	90th Percentile
0211961	Warden	dry	455309	6.19E-09
0211971	Warden	dry	455309	6.19E-09
0211981	Warden	dry	455309	6.19E-09
0211991	Warden	dry	455309	6.19E-09
0212001	Warden	dry	455309	6.19E-09
0212011	Warden	dry	455309	6.72E-11
0212021	Warden	dry	455309	6.72E-11
0212031	Warden	dry	455309	6.72E-11
0212041	Warden	dry	455309	6.72E-11
0212051	Warden	dry	455309	6.72E-11
0212061	Warden	dry	455309	6.72E-11
0212071	Warden	dry	455309	1.35E-06
0211003	Warden	dry	456215	3.55E-06
0211951	Warden	dry	456215	8.59E-07
0211961	Warden	dry	456215	8.59E-07
0211971	Warden	dry	456215	8.59E-07
0211981	Warden	dry	456215	8.59E-07
0211991	Warden	dry	456215	8.59E-07
0212001	Warden	dry	456215	8.59E-07
0212011	Warden	dry	456215	2.97E-08
0212021	Warden	dry	456215	2.97E-08
0212031	Warden	dry	456215	2.97E-08
0212041	Warden	dry	456215	2.97E-08
0212051	Warden	dry	456215	2.97E-08
0212061	Warden	dry	456215	2.97E-08
0212071	Warden	dry	456215	4.75E-05
0212081	Warden	dry	456215	4.75E-05
0212091	Warden	dry	456215	4.75E-05
0211961	Warden	dry	456400	1.04E-09
0211971	Warden	dry	456400	1.04E-09
0211981	Warden	dry	456400	1.04E-09
0211991	Warden	dry	456400	1.04E-09
0212001	Warden	dry	456400	1.04E-09
0211951	Warden	dry	457015	5.14E-09
0211971	Warden	dry	457015	5.14E-09
0211981	Warden	dry	457015	5.14E-09
0211951	Warden	irr	451690	2.20
0211961	Warden	irr	451690	2.20
0211971	Warden	irr	451690	2.20
0211981	Warden	irr	451690	2.20
0211991	Warden	irr	451690	2.20
0212001	Warden	irr	451690	2.20

Soil ID	Soil Name	IRR	MET	90th Percentile
0212011	Warden	irr	451690	2.49
0212021	Warden	irr	451690	2.49
0212031	Warden	irr	451690	2.49
0212041	Warden	irr	451690	2.49
0212051	Warden	irr	451690	2.49
0212061	Warden	irr	451690	2.49
0212071	Warden	irr	451690	2.05
0212081	Warden	irr	451690	2.05
0211951	Warden	irr	452540	2.17
0211961	Warden	irr	452540	2.17
0211971	Warden	irr	452540	2.17
0211981	Warden	irr	452540	2.17
0211991	Warden	irr	452540	2.17
0212001	Warden	irr	452540	2.17
0212011	Warden	irr	452540	2.47
0212021	Warden	irr	452540	2.47
0212031	Warden	irr	452540	2.47
0212041	Warden	irr	452540	2.47
0212051	Warden	irr	452540	2.47
0212061	Warden	irr	452540	2.47
0212071	Warden	irr	452540	2.04
0212081	Warden	irr	452540	2.04
0211951	Warden	irr	452542	2.19
0211961	Warden	irr	452542	2.19
0211971	Warden	irr	452542	2.19
0211981	Warden	irr	452542	2.19
0211991	Warden	irr	452542	2.19
0212011	Warden	irr	452542	2.47
0212021	Warden	irr	452542	2.47
0212031	Warden	irr	452542	2.47
0212041	Warden	irr	452542	2.47
0212051	Warden	irr	452542	2.47
0212061	Warden	irr	452542	2.47
0212071	Warden	irr	452542	2.03
0212081	Warden	irr	452542	2.03
0212091	Warden	irr	452542	2.03
0211003	Warden	irr	453438	2.53
0211951	Warden	irr	453438	2.15
0211961	Warden	irr	453438	2.15
0211971	Warden	irr	453438	2.15
0211981	Warden	irr	453438	2.15
0211991	Warden	irr	453438	2.15

Soil ID	Soil Name	IRR	MET	90th Percentile
0212001	Warden	irr	453438	2.15
0212011	Warden	irr	453438	2.43
0212021	Warden	irr	453438	2.43
0212031	Warden	irr	453438	2.43
0212041	Warden	irr	453438	2.43
0212051	Warden	irr	453438	2.43
0212061	Warden	irr	453438	2.43
0211003	Warden	irr	455309	2.91
0211951	Warden	irr	455309	2.52
0211961	Warden	irr	455309	2.52
0211971	Warden	irr	455309	2.52
0211981	Warden	irr	455309	2.52
0211991	Warden	irr	455309	2.52
0212001	Warden	irr	455309	2.52
0212011	Warden	irr	455309	2.65
0212021	Warden	irr	455309	2.65
0212031	Warden	irr	455309	2.65
0212041	Warden	irr	455309	2.65
0212051	Warden	irr	455309	2.65
0212061	Warden	irr	455309	2.65
0212071	Warden	irr	455309	2.28
0211003	Warden	irr	456215	2.55
0211951	Warden	irr	456215	2.14
0211961	Warden	irr	456215	2.14
0211971	Warden	irr	456215	2.14
0211981	Warden	irr	456215	2.14
0211991	Warden	irr	456215	2.14
0212001	Warden	irr	456215	2.14
0212011	Warden	irr	456215	2.43
0212021	Warden	irr	456215	2.43
0212031	Warden	irr	456215	2.43
0212041	Warden	irr	456215	2.43
0212051	Warden	irr	456215	2.43
0212061	Warden	irr	456215	2.43
0212071	Warden	irr	456215	2.01
0212081	Warden	irr	456215	2.01
0212091	Warden	irr	456215	2.01
0211951	Warden	irr	456400	2.09
0211961	Warden	irr	456400	2.09
0211971	Warden	irr	456400	2.09
0211981	Warden	irr	456400	2.09
0211991	Warden	irr	456400	2.09

Soil ID	Soil Name	IRR	MET	90th Percentile
0211951	Warden	irr	457015	2.10
0211971	Warden	irr	457015	2.10
0211981	Warden	irr	457015	2.10
0212141	Wiehl	dry	451690	9.32E-04
0212151	Wiehl	dry	451690	9.32E-04
0212131	Wiehl	dry	452540	6.41E-04
0212141	Wiehl	dry	452540	6.41E-04
0212151	Wiehl	dry	452540	6.41E-04
0212131	Wiehl	dry	452542	1.69E-03
0212151	Wiehl	dry	452542	1.69E-03
0212111	Wiehl	dry	453438	2.40E-02
0212121	Wiehl	dry	453438	2.40E-02
0212151	Wiehl	dry	453438	4.21E-05
0212131	Wiehl	dry	455309	7.68E-05
0212141	Wiehl	dry	455309	7.68E-05
0212151	Wiehl	dry	455309	7.68E-05
0212101	Wiehl	dry	456215	3.78E-01
0212131	Wiehl	dry	456215	5.96E-04
0212141	Wiehl	dry	456215	5.96E-04
0212151	Wiehl	dry	456215	5.96E-04
0212141	Wiehl	irr	451690	3.04E-01
0212151	Wiehl	irr	451690	3.04E-01
0212131	Wiehl	irr	452540	2.92E-01
0212141	Wiehl	irr	452540	2.92E-01
0212151	Wiehl	irr	452540	2.92E-01
0212131	Wiehl	irr	452542	3.21E-01
0212151	Wiehl	irr	452542	3.21E-01
0212131	Wiehl	irr	455309	3.35E-01
0212141	Wiehl	irr	455309	3.35E-01
0212151	Wiehl	irr	455309	3.35E-01
0212101	Wiehl	irr	456215	6.02
0212131	Wiehl	irr	456215	2.85E-01
0212141	Wiehl	irr	456215	2.85E-01
0212151	Wiehl	irr	456215	2.85E-01
0212171	Winchester	dry	451690	1.31E-02
0212181	Winchester	dry	451690	1.31E-02
0212171	Winchester	dry	452542	1.96E-02
0212181	Winchester	dry	452542	1.96E-02
0212171	Winchester	dry	454154	6.63E-03
0212171	Winchester	dry	455309	5.25E-03
0212171	Winchester	dry	456400	3.32E-03
0212171	Winchester	dry	457015	3.80E-03

Soil ID	Soil Name	IRR	MET	90th Percentile
0212181	Winchester	irr	451690	9.76E-01
0212171	Winchester	irr	452542	9.80E-01
0212181	Winchester	irr	452542	9.80E-01
0212171	Winchester	irr	454154	9.35E-01
0212171	Winchester	irr	456400	9.62E-01
0212171	Winchester	irr	457015	8.81E-01
02132	Xeric Torriorthents	dry	452540	2.72E-07
0212191	Xeric Torriorthents	dry	452542	8.44E-06
02132	Xeric Torriorthents	dry	452542	8.44E-06
0212191	Xeric Torriorthents	dry	453438	3.46E-11
02132	Xeric Torriorthents	dry	453438	2.15
0212191	Xeric Torriorthents	dry	455309	2.18E-10
02132	Xeric Torriorthents	dry	455309	2.18E-10
0212191	Xeric Torriorthents	dry	457015	2.05E-09
02132	Xeric Torriorthents	dry	457015	2.05E-09
02132	Xeric Torriorthents	irr	452540	2.67
0212191	Xeric Torriorthents	irr	452542	2.94
02132	Xeric Torriorthents	irr	452542	2.94
0212191	Xeric Torriorthents	irr	453438	2.15
02132	Xeric Torriorthents	irr	453438	2.15
0212191	Xeric Torriorthents	irr	455309	2.77
02132	Xeric Torriorthents	irr	455309	2.77
0212191	Xeric Torriorthents	irr	457015	2.28
02132	Xeric Torriorthents	irr	457015	2.28

Appendix E - A Photo Tour of the Columbia Basin Irrigation Project



Photo 16: Giant ripple sand bar along the Columbia River at Crescent Bar.



**Photo 17: Looking north up Crater Draw, carved out by the floods (Amara, 1998).
Irrigation water return flow through the ground feeds the creek.**



Photo 18: Cobble deposits at the edge of the Rocky Ford Creek draw.



Photo 19: Flood deposited boulders, probably having been moved, at the edge of the Rocky Ford Creek draw.



Photo 20: Unirrigated rangeland near the junction of Hwy 17 and Hwy 282, SE of Ephrata.

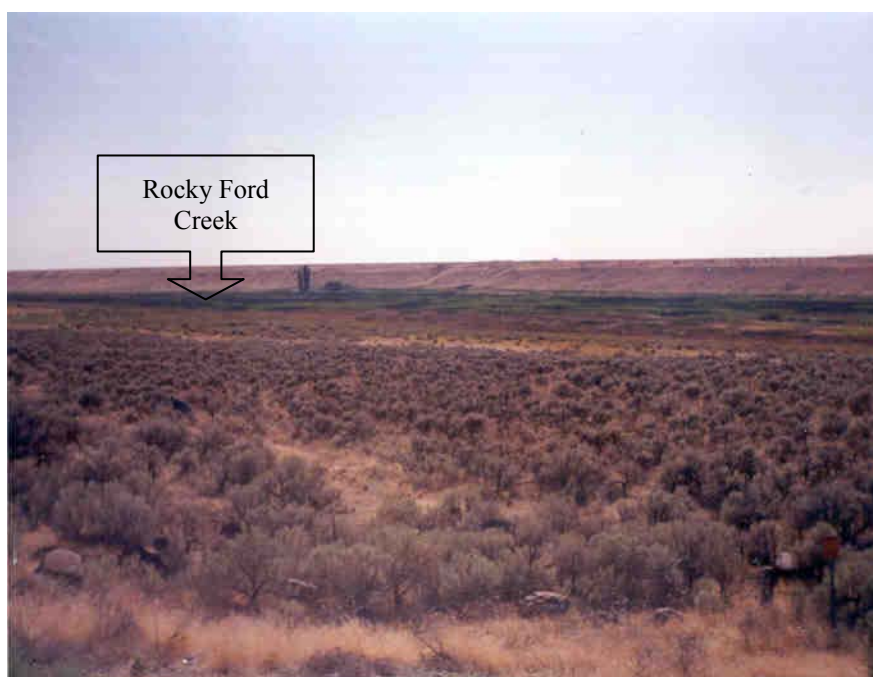


Photo 21: Unirrigated natural foliage (foreground) near Rocky Ford Creek (darker strip upper center of photo).



Photo 22: Moses Lake, looking south from Connely Park. Moses Lake was carved out by the floods (Amara, 1998). The ridge visible at the left in the photo is composed of flood deposits.



Photo 23: This photo is of a gravel pit located at the north side of Connely Park, where photo 22 was taken. The gravel was deposited by the floods.



Photo 24: In situ gravel at the gravel pit pictured in photo 23.



Photo 25: Gloyd Seeps, an irrigated-induced wetlands north of Moses Lake (Amara, 1998).



Photo 26: Basalt outcrop at Gloyd Seeps at same locale as photo 24.

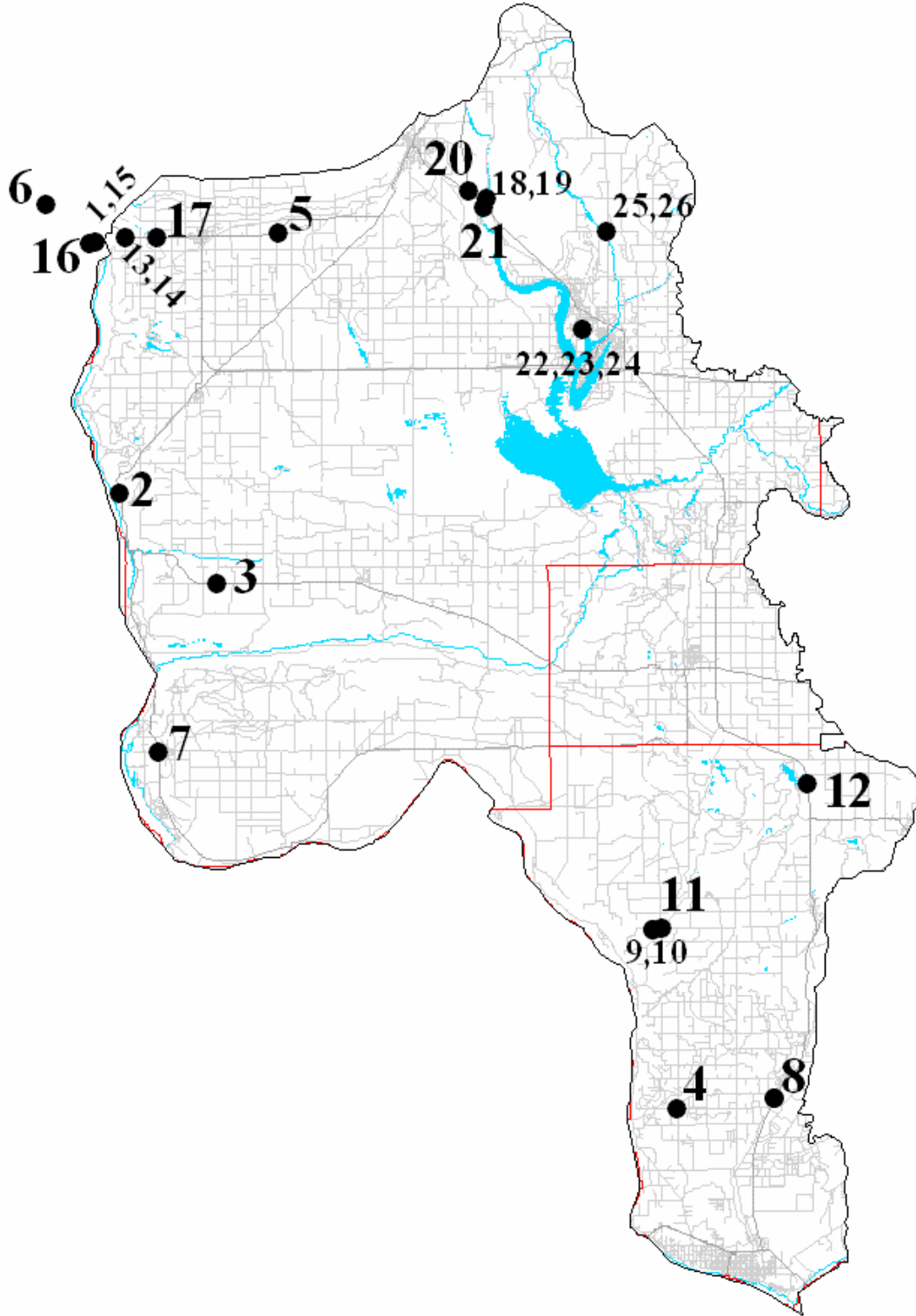


Figure 26: Map of approximate photo locations in the report and Appendix E.

Appendix F – Sample Input Files for PRZM2 and PRZM3/VADOFT

PRZM2 Sample Input File

Record	
1	PRZM2 RUN, SEGMENT NUMBER 1
2	HYDROLOGY Parameters
3	0.72 0.00 0 20.0 1 1
6	0
8	1
9	1 0.10 40. 85.0 1 77 67 77 0 0 0 0. 0.
10	10
11	30 574 1 974 16 974 1
11	30 575 1 975 16 975 1
11	30 576 1 976 16 976 1
11	30 577 1 977 16 977 1
11	30 578 1 978 16 978 1
11	30 579 1 979 16 979 1
11	30 580 1 980 16 980 1
11	30 581 1 981 16 981 1
11	30 582 1 982 16 982 1
11	30 583 1 983 16 983 1
12	PESTICIDE Parameters
13	10 1 0
14	ATRAZINE
15	4 674 0 2.0 1.12
15	4 675 0 2.0 1.12
15	4 676 0 2.0 1.12
15	4 677 0 2.0 1.12
15	4 678 0 2.0 1.12
15	4 679 0 2.0 1.12
15	4 680 0 2.0 1.12
15	4 681 0 2.0 1.12
15	4 682 0 2.0 1.12
15	4 683 0 2.0 1.12
16	1
18	0211001 QUINCY
19	152.4 0.0 0 0 1 0 0 2 0 0 0
25	0. 0. 0.
26	3 0.0 0.5 2.54
29	40.10E+03
32	2
33	1 10.16 1.575 0.1236 0. 0.
35	0.0116 0.0116 0.
36	2.00 0.1236 0.0503 0.435 0.
33	2 142.24 1.575 0.1097 0. 0.
35	0.0000 0.0000 0.
36	2.00 0.1097 0.0454 0.145 0.
39	0 0
41	WATR YEAR 1 PEST YEAR 1 CONC YEAR 1
42	4 YEAR
43	RFLX1 TSER
43	RUNF TSER
43	INFL TSER 12
43	COFX TSER

PRZM2 Monte Carlo Sample Input File

Monte Carlo Input File for 0211001 soil ID, QUINCY soil type

```
250      90.0
FIELD CAPACITY      1      1      0.1240      0.1      0.0540      0.1940      1.
FIELD CAPACITY      2      1      0.1100      0.1      0.0400      0.1800      1.
ORGANIC CARBON      1      1      0.4350      1      0.2900      0.5790      1.
ORGANIC CARBON      2      1      0.1450      1      0.0000      0.2900      1.
END
TOTAL CORE FLUX      2      1      CDF      WRITE      1
END
END
```

PRZM3 Sample Input File – Used with VADOFT Runs

```
*** Record 1
  przm67
*** Record 2
Hydrology Parameters
*** Record 3
  0.72  0.20      0  20.00      1      1
*** Record 6
  0
*** Record 8
  1
*** Record 9
  1  0.100  40.00  85.00      1  86  78  86  0.00  85.00
*** Record 10
  10
*** Record 11
  30 574  1 974  16 974      1
  30 575  1 975  16 975      1
  30 576  1 976  16 976      1
  30 577  1 977  16 977      1
  30 578  1 978  16 978      1
  30 579  1 979  16 979      1
  30 580  1 980  16 980      1
  30 581  1 981  16 981      1
  30 582  1 982  16 982      1
  30 583  1 983  16 983      1
*** Record 12
Atrazine
*** Record 13
  10      1      0      0
*** Record 15
ATRAZINE
*** Record 16
  4 674  0 8 2.00 1.120 1.00 0.00
  4 675  0 8 2.00 1.120 1.00 0.00
  4 676  0 8 2.00 1.120 1.00 0.00
  4 677  0 8 2.00 1.120 1.00 0.00
  4 678  0 8 2.00 1.120 1.00 0.00
  4 679  0 8 2.00 1.120 1.00 0.00
  4 680  0 8 2.00 1.120 1.00 0.00
  4 681  0 8 2.00 1.120 1.00 0.00
  4 682  0 8 2.00 1.120 1.00 0.00
  4 683  0 8 2.00 1.120 1.00 0.00
*** Record 17
  0.      0  0.000
*** Record 19
Soil Series:  Warden 0251771
*** Record 20
  152.40      0  0  1  0  0  2  0  0  0
*** Record 26
  0      0      0
*** Record 27
  3  0.00  0.50  2.54
*** Record 30
  4  100.00
*** Record 33
  3
*** Record 34
```

	1	15.240	1.225	0.308	0.000	0.000	0.000	0.000	0.000
***	Record 36								
		0.0116	0.0116	0.0					
***	Record 37								
		2.000	0.308	0.129	1.159	0.000	0.000	0.000	
***	Record 34								
	2	50.800	1.375	0.118	0.000	0.000	0.000	0.000	0.000
***	Record 36								
		0.0	0.0	0.0					
***	Record 37								
		2.000	0.118	0.108	0.145	0.000	0.000	0.000	
***	Record 34								
	3	86.360	1.425	0.213	0.000	0.000	0.000	0.000	0.000
***	Record 36								
		0.0	0.0	0.0					
***	Record 37								
		2.000	0.213	0.107	0.145	0.000	0.000	0.000	
***	Record 40								
	0								
***	Record 42								
	WATR	DAY	1	PEST	DAY	1	CONC	DAY	1
***	Record 45								
	4	DAY							
***	Record 46								
	RFLX1	TSER	0	0					
	RUNF1	TSER	0	0					
	INFL1	TSER	76	76					
	COFX1	TSER	0	0					

VADOFT Sample Input File

```

***** FLOW *****
*** Record 1
1 Chemical, 1 Material, Vadose Flow Simulation for Zone 1
*** Record 2
306 1 0 1 1 1 1 1 0 0
*** Record 3
20 2 1 0.01
*** Record 4
1 1 1 1 1 1 1 1
*** Record 5
0.0 1.0 1.0 1.0
*** Record 7
1 0.0 1.0
*** Record 9
1
*** Record 10
1 305 1 305.0
*** Record 11
0
*** Record 12
0 1 0 0 0 0 0 0
*** Record 13
10.8 0.35 0 0
*** Record 15
.15 -1 .02 1.41 0.29
*** Record 32
305
*** Record 33
DAY
***** TRANSPORT *****
*** Record 1
1 Chemical, 1 Material, Vadose Transport Simulation for Zone 1
*** Record 2
306 1 0 1 0 1 0 0 0 0
*** Record 4
0 1 1 1 1 1 1 0
*** Record 5
0.0 1.0 1.0 1.0
*** Record 7
1 0.0 1.0
*** Record 9
1
*** Record 10
1 305 1 305.0
*** Record 11
0
*** Record 12
1 1 0 0 0 0 0 0
*** Record 13
30.5 .383
*** Record 14
1.5 0
*** Record 21
1 0 1 0
*** Record 22
1 .001 0

```

*** Record 23
0 1
*** Record 32
305
*** Record 33
DAY