



Change Application Manual

(Updated 9/30/2020)

Important Information:

The purpose of this manual is to document policy and procedure for Department staff and the public when submitting, reviewing, processing, and making decisions about change applications. The goal of this manual is to provide a unified resource to promote consistency in change application processing by the Department. This manual is not a cookbook or replacement for the critical thinking that is an essential component of water right processing. This manual should serve as an aid in helping to consider unique water right applications in a consistent manner.

This manual reflects the operational procedures/policies and final legal decisions the Department is operating under during the processing of change applications. This manual is not intended to provide step by step guidance for accepting and processing change applications. For unique situations where additional guidance is needed, please contact the Central Office to ensure that proper methodology is being followed.

Permits and Changes have been reviewed and issued by the Department since inception of the Water Use Act in 1973. While criteria the Applicant must meet have remained the same, the level of analysis has changed throughout time and become considerably more in-depth in recent years due to statutory changes and legal determinations. Much of what is contained in this manual is simply a re-formatting and compilation of past efforts the Department has made at documenting processing procedures.

It is recommended that you do not print this manual because the manual is constantly being improved and revised. Additionally, various content throughout the manual is linked to resources for easy navigation and these links are lost when printing. Central Office will send out emails informing you of major updates or revisions.

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How to Use This Manual

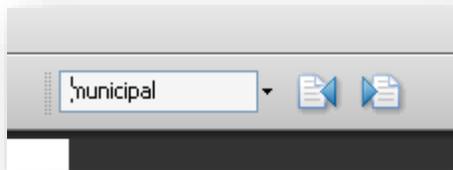
As described in the introduction, this manual is a one stop shop for information relating to how the Department should be processing change applications. That means that this manual is over 100 pages long and as such, the following are some tips which will help you to find the information you are looking for more quickly and effectively.

The Table of Contents in Clickable

All you have to do is click your mouse on an item in the table of contents and you will be taken to that area of the manual.

The Manual is Searchable

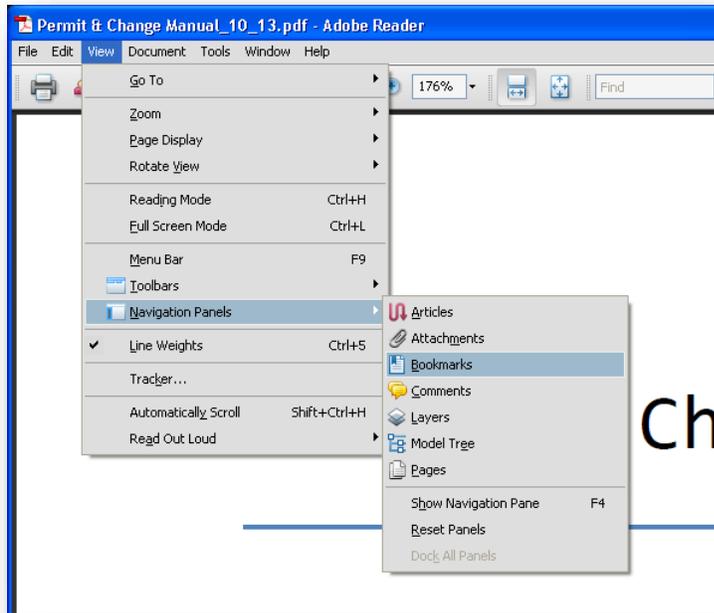
All you have to do is enter a search query in the area identified by the red circle below and then execute the query to find what you are searching for. For example, I entered “municipal” and was then able to cycle through all occurrences of the word (like) “municipal” in the manual by simply clicking the arrows as seen in the second image below.



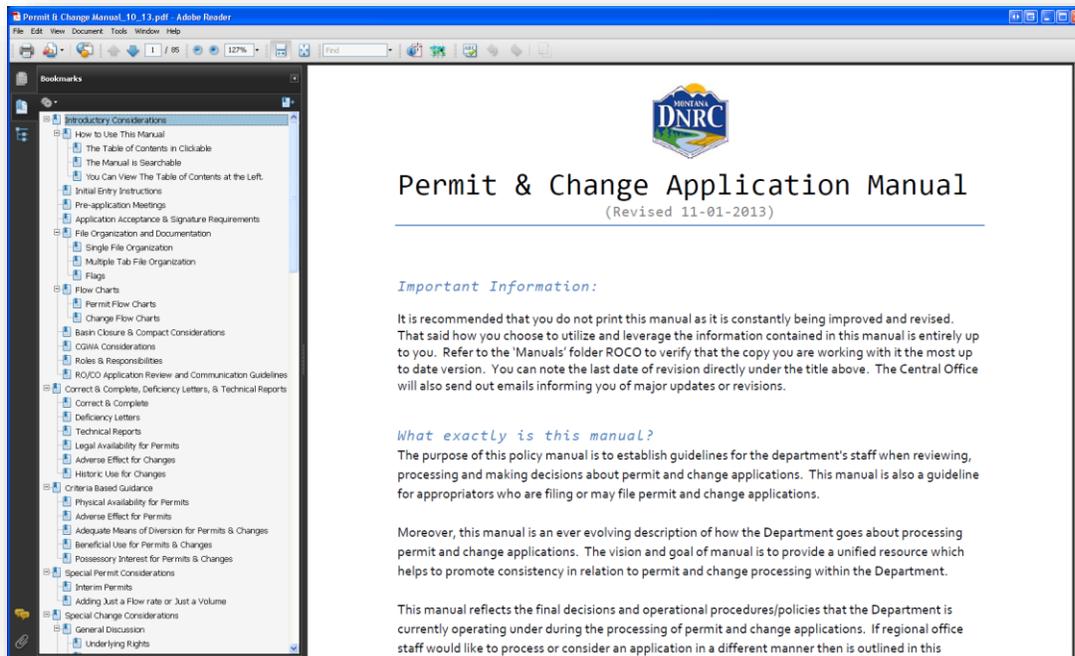
(Just click the arrows after your query to see where the word turns up)

You can view the table of contents at the left.

It might seem like a pain to click on the Table of Contents and then be deep into the manual with no 'tabs' or easy navigation available except by scrolling all the way back to the Table of Contents and clicking again. To avoid this issue, simply turn on Table of Contents at the left of your screen. To do this, click VIEW---NAVIGATION PANELS---BOOKMARKS as seen in the following image:



Now, no matter where you are in the manual you will have the ability to navigate within a bookmarked table of contents as seen in the image below:



Introductory Considerations

Application Processing Timelines & Flow Chart

The Department must maintain certain timelines when processing an application. These timelines are identified in statute (85-2-302, 85-2-307, MCA). Upon receipt of an application, the Department has 180 days to review the application and send a deficiency letter identifying any defects in the application. The Applicant has 120 days to respond and address all deficiencies identified in the deficiency letter. If the Department does not notify the applicant of any defects within 180 days, the application must be treated as a correct and complete application. A Correct & Complete letter will be sent to the Applicant along with a Technical Report and any other reports which will be used by the Department for analysis of criteria for issuance of the change authorization. Once the application is deemed correct and complete, the Department has 120 days to issue a decision in the form of a preliminary determination document (PD). Assuming a PD decision to authorize the proposed change, the application is prepared for and sent out to public notice. The notice period can be anywhere from 15-60 days, and the Department has concluded that the notice period will be 45 days unless the RO instructs otherwise for special circumstances. If no valid objections are received during public notice, the change authorization can be issued immediately with an adoption order. If valid objections are received, the hearings unit will handle the case.

If the PD decision is to deny (or grant with modifications), a draft PD is sent to the Applicant and the Applicant then has the option to request a meeting within 15 days. If a meeting is requested, the Applicant may request, in writing, up to 60 days to provide follow-up information that could lead to a PD to authorize the change. If additional time is requested to provide additional information, the Applicant must submit a waiver of timelines form with that request. This is necessary to give the Department adequate time to review the additional information and complete the PD, taking into account the new information. The waiver of timelines

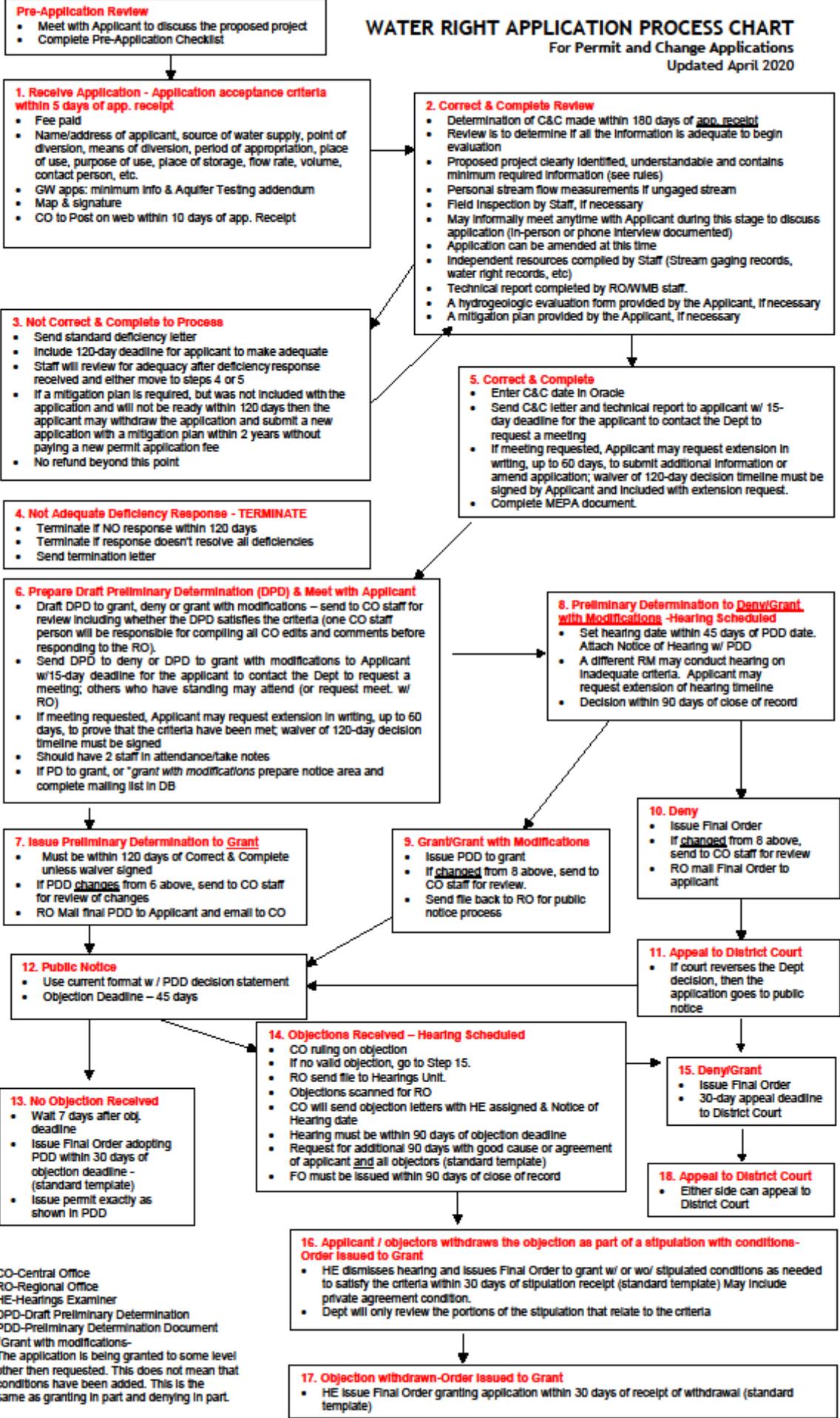
form must be signed by the Applicant or their Attorney if they are being represented by legal counsel. The Applicant may waive timelines at any point in the process following a correct and complete determination. An Applicant cannot waive any timelines prior to a Correct & Complete determination of the application. A waiver of timelines waives the 120-day statutory timeline for the Department to issue a decision on an application. If an Applicant waives timelines on an application, staff processing the application should make every effort to complete review and draft a decision document in a timely fashion. If the draft denial proceeds to a PD to deny, a hearing will be scheduled unless the Applicant chooses not to pursue the hearing.

The following flow chart outlines the steps in the change process.

WATER RIGHT APPLICATION PROCESS CHART

For Permit and Change Applications

Updated April 2020



Definitions

Definitions – Water right related definitions can be found either in [Mont Code Ann. 85-2-102](#) or the [Administrative Rules of Montana 36-12-101](#).

Affidavit / Unsworn Declaration

Affidavits and unsworn declarations may be used interchangeably when processing NA applications and notices. Note that affidavits are notarized but unsworn declarations are not. Instead of notarization, unsworn declarations must contain the following language: "I declare under penalty of perjury & under the laws of the State of Montana that the foregoing is true & correct." *Please note, if there is any concern that the person signing the document is not who it should be (i.e. the signature is a forgery!), you may require notarization.*

State Statute, Administrative Rule, and Department Policy

Applications are processed according to state statutes, administrative rules, case law, and Department policy (memorandums or standard practice guidance documents) intended to clarify processes established by statute, rule, and case law. Statute is the law and is the final authority on any water rights issues or questions. Administrative rules are established as guidance, designed to carry out the directives of statute when not explicitly defined. The process for creating and adopting Administrative Rule is defined in statute and rule carries the force and effect of law. Case Law is established through Final Orders issued through the Hearings Unit of the Department or through a determination made by a court. Department policy is adopted only in situations where Statute and Administrative Rule do not clearly define a process, or when Case Law modifies how the Department looks at something. Memos and standard practice guidance documents all fall under the category of Department policy.

Roles and Responsibilities

Regional Office (RO) Staff

- Responsible for Applicant communications. If an attorney is representing the Applicant, all communication on the application should be with the attorney unless the attorney has provided written consent otherwise. If the Applicant is represented by a consultant, the Applicant should be included on all communications (C.C. goes to the consultant).
- Responsible for ensuring applications are correct and complete and later determining if the information contained within the application meet the criteria. The RO staff is also responsible for making recommendations about approval or denial of change applications.
- RO staff is responsible for compiling a Technical Report that outlines what information is available and will be utilized to evaluate the criteria.
- RO staff and the RO manager as the decision maker will draft a Preliminary Determination which consists of findings of fact (based on the information presented in the Technical Report and other information gathered by the DNRC and submitted by the Applicant) that state whether there is a preponderance of evidence that supports findings that the criteria for issuance of a change have been

met. If the information gathered does not show by a preponderance of the evidence that the criteria for issuance have been met, RO staff may need to craft either a Draft Preliminary Determination to deny the application or a Draft Preliminary Determination to grant with modifications, based on the case specific circumstances.

Regional Office Manager

- Responsible for final approval or denial of authorizations.

Central Office (CO) Staff

- The CO staff is responsible for answering RO staff's questions relating to: processes, MCA, ARM, forms, addenda, policy, precedent, procedure, timelines, PDs, Oracle database entry. CO is the clearinghouse for all application policy and procedural questions.
- Responsible for quality control and consistency involving permit and change applications.
- CO staff manages mailing and publishing of public notices for applications and determines if application objections are correct and complete.
- CO is responsible for reviewing PDs and noting processing inconsistencies along with identifying concerns relating to policy, procedure, ARM, and MCA.
- CO also acts as a filter for the legal staff. If you have a "legal" question, make sure it either goes through the CO or that you involve the CO in your conversation with legal.
- Policy matters should be addressed with the Water Rights Bureau Chief and RO managers.

Water Management Bureau (WMB)

- WMB is responsible for answering RO staff's questions which relate to surface water measurements and calculations, aquifer testing requirements, evaluation of aquifer testing data. WMB also completes technical hydrological analysis and peer reviews of hydrologist specialists work as deemed necessary by WMB and regional managers.
- WMB models and drafts Return Flow Reports for certain change applications dealing with irrigation. At minimum, there must always be an analysis of the amount and location of return flows. Any questions on return flow analysis requirements should be sent to CO. Additionally, if necessary on a change, the WMB is responsible for compiling the Aquifer Test Report and Stream Depletion Report.

Hearings Unit

- If the application is denied or granted with modifications and the Applicant requests a hearing, the Hearings Unit will conduct the hearing and issue a final order on the matter (show cause hearing).
- The Hearings Unit will also conduct hearings on applications which receive valid objections during the public notice period (contested case hearing).

The Applicant

- Responsible to provide all necessary information for a correct and complete application within the statutory timelines.

What to Send to Whom

Office Contacts: Jenn Daly: Billings, Helena, Missoula

Nate Ward: Bozeman, Lewistown, Havre

Gabrielle Ostermayer: Kalispell, Glasgow

*While these are the initial contact persons, it is okay to contact other members of CO with specific questions or topics, or if the initial contact is unavailable.

Deficiency Letters: Do not need to be reviewed by CO staff; however, your normal office reviewer is always willing to be a second set of eyes if you'd like.

Technical Reports: Do not need to be reviewed by CO staff; however, your normal office reviewer is always willing to be a second set of eyes if you'd like. Offices are encouraged to send complicated Technical Reports in for review so the CO is involved earlier in the process.

EAs: Do not need to be reviewed by CO staff; however, your normal office reviewer is always willing to be a second set of eyes if you'd like. Go to the MEPA webpage on the DNRC intranet site and use the online submission form to get the EA posted to the web.

PDs: Send PDs to your CO contact person and CC the bureau chief, program manager, and other program specialist. Do not send PDs to hearings examiners.

Public Notice: Send a copy of the finalized PD in PDF format to Jamie Price along with a note that the public notice is ready to go. Be sure to CC your CO contact person.

RO/CO Application Review and Communication Guidelines

- Include Regional Managers in CO decisions that affect policy or process.
- RO and CO staff should be familiar with case law cited in decision documents.
- If case law changes or new case law is established, templates will be updated by legal or CO to incorporate the changes.
- Initiate discussion between RO and CO staff regarding when legal review is necessary. All draft denial PDs will need to be reviewed by legal.
- Decision making is the RO manager's responsibility.
- CO will review decision document drafts for consistency with regards to law, rule, and policy, and make suggestions for improvements as needed.
 - If the manager has questions about whether a PD review comment is a legal, policy, or consistency issue then they should discuss it with the CO.

Pre-application Meetings

Overview:

This meeting is an option offered to the Applicant with the incentive of a \$200 reduction in the filing fee for attendance. To qualify for the reduced fee, a signed copy of the Pre-Application Checklist must be returned to the DNRC with a completed application within 6 months of the date of the pre-application meeting. It is preferred that the meeting be in person however if this is not possible a conference call is acceptable. The

DNRC encourages attendance by the Applicant's attorney, consultant, and any other individual with a detailed knowledge of the proposed project.

It should be made clear that the Applicant does have to provide some burden of proof to qualify for the reduction in the fee. If the Applicant and/or his or her agents attend the meeting and offer an answer to each of the questions outlined on the Pre-Application Checklist, they will qualify for the fee reduction. The signature on the checklist attests to the fact that each item on the checklist was discussed and that the Applicant understands the options regarding each item discussed. If the ownership of the property involved changes hands, the pre-application meeting would remain valid as long as the project remains the same.

Make it clear that the DNRC is a neutral party and that we are here to educate and assist the Applicant. We need to remain fair and consistent in our dealings with the Applicant throughout the process and cannot appear as an advocate. If the answer to any question on the Pre-Application Checklist is no, document why the details were not required for this application or if the Applicant needs to provide additional information.

Use the questions on the pre-application form to guide your agenda. These questions are loosely designed to identify specific criteria that will have to be addressed to issue a change authorization. The Applicant needs to fully grasp all criteria applicable to their proposed project. While questions on the Pre-Application form are designed to guide discussion, they may not be adequate in situations which are complex. The Pre-Application meeting should be used to delve into the details of the proposal and explore areas of potential conflict or difficulties foreseen with completing the application materials or project as the Applicant is proposing. This will help the Applicant prepare themselves and put together a more comprehensive application and hopefully avoid difficulties in processing once the application is received. Make sure that the Applicant has possessory interest, or the written consent of the person/persons with possessory interest in the property where the water is to be put to beneficial use. You may want to discuss application processing steps and procedure. Make sure that the Applicant understands that "Correct & Complete" simply means that the information submitted conforms to the standard of substantial credible information and that all of the necessary parts of the form have been filled in with the required information. "Correct & Complete" does not infer that a change authorization will be issued.

It is likely that you will meet with the Applicant prior to the pre-application meeting. For purposes of clarification, this type of meeting will be referred to as a scoping meeting. When and if you have such a meeting, make it very clear that a scoping meeting does not take the place of the pre-application meeting. The pre-application meeting should be set far enough in advance to allow the Applicant to assemble the necessary maps, measurements, and documents to present a complete picture of the proposed project. If the Applicant is not prepared it is acceptable and encouraged to suggest that the Applicant may not be ready to submit an application; however, in the end it is the Applicant's choice.

It is highly recommended to set up a site visit, if needed, with Applicants to fully grasp and document the details of the proposed application. Work with your regional manager and the Applicant to ascertain when a field visit should take place.

[Pre-Application Meeting Data Entry:](#)

Following the pre-application meeting you will need to create a record of the event in the Oracle database. Listed below is essential information that must be entered into the database. All other tabs will be unavailable until the Applicant returns with a completed application. You must enter ALL of the required information before the database will allow you to save.

- Enter **Basin**
- Enter **Form Type** (6o6P)
- Enter **Date/Time Received**
- **Pre-Application Meeting Held** event and date added programmatically when leaving Date/Time Received text box
- Enter **Applicant Name** (begin date automatically populated, based on time/date received)
**SPECIAL NOTE: Applicants may be added and deleted on the 6o6P at any time, allowing for easy Applicant modification. Once the application is converted to a 6o6, this functionality is disabled. This should assist when there is a discrepancy between the "Applicant name" at time of pre-app and the true Applicant name when the application arrives.*
- Enter **Representatives**
- Enter **Representative's Begin Date**
- Enter **File Location** (date exists already, based on time/date received)
- Enter **Regional Office** Processing File

Database Entry

During initial entry, staff enters 6o6P application type, navigates to Date/Time Received text box, and adds date/time. When navigating out of Date/Time Received text box, a form trigger adds **Pre-Application Meeting Held** event with event Date/Time and Response Due date. Event Date/Time is copied from Date/Time Received date. Response Due date is calculated (Date/Time Received + 6 months). Navigation then continues to Applicant tab where Date/Time Received date is copied into begin date for each Applicant entered, this repeats for File Location entry. Tabs Water Rights, Notice List, Objections, Change Description, and Related Applications are disabled.

Once initial entry is complete, user saves entered data. Please note: After application 6o6P data are saved, when re-querying this type of application, Date/Time Received text box will not have a value.

Future Data Entry

When Applicant returns with the completed application, staff queries database for existing pre-application, updates the application type from a 6o6P to 6o6, and enters date/time received. Upon leaving Date/Time Received text box, navigation triggers add a **Form Received** event using the added date from Date/Time Received. Changing application type from 6o6P to 6o6 re-enables tabs Water Rights, Notice List, Objections, Change Description, and Related Applications. Application form will now behave as it has done in the past for all 6o6 application types.

6 Month Expiration

If 6 months and 1 day passes without the 6o6P being updated to a 6o6, a "Pre-Application Meeting Expired" event will be automatically added to the event list. If a pre-application meeting expires, do not reuse the application number. If a new pre-application meeting is held, it will be assigned a new application number. This is important as it lets us track for statistical analysis.

Application Initial Entry Instructions

Sage Grouse Habitat Considerations:

If you receive a form 606, 644, or 651, check the GIS layer to see if it is within a designated sage grouse area including Core Habitat, General Habitat, and Connectivity Areas. If it is not, accept the application and process it as you would normally. If the application does fall within a designated area, a letter from the Sage Grouse Habitat Conservation Program must be submitted with the application. If a letter is not submitted, the application must be rejected. Do not enter the application into the database. Return the application and refund the fee. If a letter is submitted with the application, then accept the application and process it as you would normally.

For any application that requires an EA to be completed, in the "Unique, Endangered, Fragile or Limited Environmental Resources" section of the EA state whether the proposed use is in a sage grouse area as designated by the Executive Order. If it is, then state that the Applicant consulted with the Sage Grouse Habitat Conservation Program and that the information regarding the consultation (i.e. the letter) is in the file.

[MCA 85-2-307](#) requires that the Department post all applications for a permit or change on the Department's website. The following guidance explains what must be initially entered for changes.

[Received permit and change applications are posted to the Department's website every Monday morning.](#)

The Central Office has an internal goal of posting received applications to the web within 10 days of application receipt.

There are clear requirements for acceptance of an application to change a water right described in ARM 36.12.1301. Statutory timelines begin the day an application is accepted, assigned a date received, and given an application number. So, it's very important that an application meets all of the requirements for acceptance before it is initially entered.

Change Application Initial Entry:

Posted change applications capture the information entered in the **Change Description Tab** in Oracle.

The **Change Description Tab** in Oracle should be populated with the following information during initial entry of a change application:

Past Use of Water Field:

1. County
2. Source
3. Purpose

Proposed Change Field:

1. Identify change elements:

Past use of water field example – *Richland County Conservation District Water Reservation from the Missouri River, Richland County.*

Proposed change field example: *The proposed change is to add additional Point of Diversion and Place of Use.*

It is also important to note that you do need to create a change version for the water rights to be changed in order to successfully complete initial entry on a change application. To create a change version, navigate to the water right number being changed and select the "Create New Version" button on the Create and Maintain Water Rights page. Use the drop down to select "Change Authorization." Once the change authorization version is created, you will need to tie the version to the change application. This can be done by clicking on the application tab, entering the change application number in the first blank, and saving.

Make sure all payment information is entered into the database upon initial entry. Payment entry instructions can be found on the ROCO drive in the Forms folder. The instructions are a Word document found below the individual form folders.

Initial Application Review

The initial application review is to determine what processing steps the application requires and to find any deficiencies in the application. If it helps in application review, you can make photocopies of the application materials and stamp those copies WORK COPY. This provides a copy of the application where notes and modifications can be written during the review process. Do not write on any of the original copies submitted.

These are the general steps of the Initial Review:

- Review all forms and addenda thoroughly.
- Determine if the application requires the review of a staff hydrologist.
- Use Administrative Rules and Statute that apply to the application to begin thinking about the application.
- If the application has some unique characteristic that falls outside of what you are familiar with, talk with co-workers, regional manager, CO staff, or other specialists at different ROs.
- Contact program management or legal staff to discuss applications that are unique or pose a complication.
- Do not send applications, or scanned copies of applications, to WMB until you are confident with the applications and can clearly communicate with WMB (orally or in writing) what they should be basing their calculations on and why.

Data Entry

- Fill in the Staff Processing Field under the Location tab in the database.
- Associate the water rights to the change application and identify the specialist that is working on the application. This allows the application status and staff contact to be viewed from the database while the application is being processed.

Staff Hydrologic Review

If a review by staff hydrologists is needed, send a scanned copy with all of the application materials in it to the appropriate staff hydrologist for review once the application is received and initial review completed. Please put scanned files in your respective office folder on ROCO. By a memo included in the file, describe why you are requesting a review by a staff hydrologist. Further explain any application details that you would like for WMB to consider in their calculations. It is up to RO staff to verify the completeness of applications prior to sending them to WMB.

Be certain to communicate any modifications to the application that takes place while the staff hydrologists are reviewing the application and after the hydrologic review. Minor changes may impact the determination from the hydrologist.

Applications for WMB reviews should be put in the Application Materials folder of the Hydro Docs folder on ROCO. Once a file is scanned and put in your respective office folder, please email the proper WMB staff to let them know that an application is ready for review.

Data Entry

- Under the Events Tab, add a Sent to Department Hydrogeologist event and the date sent.

Basin Closure & Compact Considerations

Administrative Rule Closures: In highly appropriated basins and sub-basins, the Department may close a basin by Administrative Rule (§ 85-2-319, MCA). In order to do so, the Department must receive a "PETITION FOR CLOSURE OF A HIGHLY APPROPRIATED BASIN", (Form 631). This form may be filed by the Department of Environmental Quality or by at least 25% or 10, whichever is less, of the users of the water in the source of supply within the basin or sub-basin for which the rules are requested. The petition must include facts showing that there is no unappropriated water, prior appropriators are being adversely affected, or that further use will interfere with planned uses or water reservations. Through the petition, the Applicant(s) may request a complete closure to all new appropriations or condition the closure to require specific provisions in order to appropriate any new water. Some closures provide exceptions for municipalities, nonconsumptive uses, domestic, stock storage during high spring flows, and groundwater. Within 60 days of receipt of the Petition for Basin Closure, the DNRC is required to respond indicating that the petition is denied, accepted, or that additional information is needed.

Legislative Closures: By law, the legislature can preclude permit applications in a chosen drainage basin. Six basins have been closed by legislative action.

Department Ordered Milk River Closure: The legislature has given DNRC the authority to order closures within the Milk River basin. There are two DNRC orders closing portions of the basin.

Supreme Court Closure: The entire area within the confines of the Flathead Reservation is closed to any new appropriations of water by mandate of the Montana Supreme Court.

Compact Closures: Since its inception, the Compact Commission has negotiated 17 compacts with six tribes and five federal agencies in Montana. Thirteen of these compacts have stipulations in them that close certain sources of water to new appropriations and regulate groundwater withdrawals.

Links:

Montana Basin Closures

- <http://dnrc.mt.gov/divisions/water/water-rights/montana-basin-closures>

§ 85-2-319, MCA 2013

- <http://leg.mt.gov/bills/mca/85/2/85-2-319.htm>

Controlled Groundwater Area (CGWA) Considerations

CGWAs have been created in response to issues with water quantity and water quality within a specific geography (§ 85-2-506, MCA). CGWAs historically were established via a final order. This has since changed and now they are established via rulemaking. Established CGWAs may limit or even restrict changes from occurring within the CGWA boundary. If a project is being proposed within a CGWA, make sure to check for any restrictions established in the CGWA Final Order or in Rule.

Links:

Controlled Groundwater Areas

- <http://dnrc.mt.gov/divisions/water/water-rights/controlled-ground-water-areas>

Controlled Groundwater Areas & Basin Closures by Regional Office

Every employee should become familiar with the various closures that exist within the geography served by their office. The following is a list of individual Basin Closures and Controlled Groundwater Areas broken down by Regional Office. Exceptions to each closure exist. These are discussed regionally and can also be found in "Montana's Basin Closures and Controlled Groundwater Areas" located under "References" on the New Appropriations Web Site.

Billings Regional Office

- Controlled Groundwater Area
 - Powder River Basin
 - Horse Creek
 - South Pine
 - Lockwood
- Administrative Rule Closure
 - Rock Creek
 - Musselshell River
- Compact Closure
 - Northern Cheyenne
 - Crow
 - Little Bighorn Battlefield
 - Big Horn Canyon National Recreation Area

Glasgow Regional Office

- Controlled Groundwater Area
 - South Pine
- Administrative Rule Closure
 - Musselshell River
- Milk River Closure
- Compact Closure
 - Fort Belknap
 - Black Coulee Wildlife Refuge
 - Charles M. Russel National Wildlife Refuge

Havre Regional Office

- Milk River Closure
- Legislative Closure
 - Teton Basin
 - Upper Missouri Basin
- Compact Closure
 - Glacier National Park
 - Fort Belknap
 - Black Coulee Wildlife Refuge
 - Chippewa Cree of the Rock Boy
 - Benton Lake Wildlife Refuge
 - Blackfeet

Lewistown Regional Office

- Administrative Rule Closure
 - Musselshell River
- Legislative Closure
 - Upper Missouri River Basin
- Compact Closure
 - Benton Lake Wildlife Refuge

Kalispell Regional Office

- Controlled Groundwater Area
 - BNSF Paradise Railyard
 - BNSF Somers Railyard
 - BNSF Somers Expansion
- Administrative Rule Closure
 - Walker Creek
 - Truman Creek
- Supreme Court Closure
 - Flathead Reservation
- Compact Closure
 - Glacier National Park

Missoula Regional Office

- Controlled Groundwater Area
 - Bitterroot Valley Sanitary Landfill
 - Hayes Creek Basin
 - Larson Creek
- Administrative Rule Closure
 - Sixmile Creek
 - Houle Creek
 - Grant Creek
 - Sharrott Creek
 - Willow Creek
- Supreme Court Closure
 - Flathead Reservation
- Legislative Closure
 - Upper Clark Fork Basin
 - Bitterroot Basin

Helena Regional Office

- Controlled Groundwater Area
 - Butte Alluvial and Bedrock Site
 - Old Butte Landfill/Clark Tailings
 - Warm Springs Ponds
 - East Valley (Helena)
- Administrative Rule Closure
 - Towhead Gulch
- Legislative Closure
 - Upper Missouri Basin
 - Upper Clark Fork Basin
 - Jefferson and Madison Basins
- Compact Closure
 - Big Hole Battlefield
 - Red Rock Lakes National Wildlife Refuge

Bozeman Regional Office

- Controlled Groundwater Area
 - USNPS Montana Compact Yellowstone
 - Bozeman Solvent Site
 - Idaho Pole Company Site
- Legislative Closure
 - Upper Missouri Basin
 - Jefferson & Madison Basins
- Compact Closure
 - Yellowstone National Park
 - Red Rock Lakes National Wildlife Refuge

Federal Reserved Water Rights

FOUR IMPORTANT BASIC POINTS

Water Rights are established by state law with the exception of Federal Reserved Water Rights.

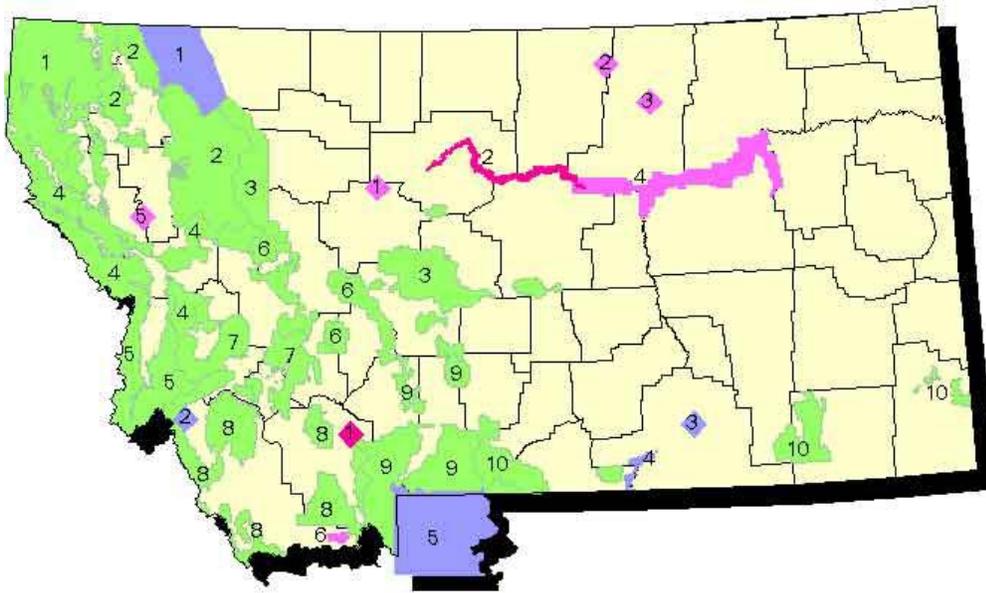
Federal Reserved Water Rights are rights appurtenant to Federal and Indian lands. They were recognized by the U.S. Supreme Court in *Winters v. United States* in 1908. Courts have held that there is an implied water right to satisfy the primary purposes of the reservation.

These rights are indefinite and wide ranging. For ease of administration and quantification, the State of Montana negotiates “compacts” with Federal Agencies and Indian Tribes; other states rely on the Attorney General to litigate Federal Reserved Water Rights.

A compact defines the limits of reserved water rights and in return the state of Montana formally recognizes some claimed rights and uses.

Federal Lands in Montana with Reserved Water Right Claims

Reserved water rights are claimed for these lands in Montana by the following federal agencies:



- [U.S. Forest Service, Department of Agriculture \(green\)](#)
- [National Park Service, Department of Interior \(purple\)](#)
- [Bureau of Land Management, Department of Interior \(red\)](#)
- [U.S. Fish and Wildlife Service, Department of Interior \(pink\)](#)

In Montana, federal reserved water rights have been claimed for seven [Indian reservations](#), for allotments for the Turtle Mountain Chippewa Tribe, and for [federal lands](#) within the state (national parks, national forests, national wildlife refuges, and federally designated wild and scenic rivers). A *water rights compact* is a contract or agreement between the State of Montana and a Federal Agency or tribe settling and enumerating these reserved claims. This settlement typically quantifies the amount of water claimed and may include logistic and operational parameters for the water in the claimed area.

Think of a compact as a negotiated settlement agreement. The Compact, or agreement, is between the tribe or agency and the State of Montana (acting as the owner of all unreserved state waters). The tribe or agency is alleging that they have water right claims inherent in their ownership or historical occupancy of certain lands. The compact settles these rights as though they had gone through the statewide adjudication process, a process from which they were statutorily exempt.

A federal reserved water right differs from the state appropriative water rights familiar to most members of the public. Under Montana water law, which incorporates the prior appropriation doctrine (first in time, first in right), the right to water depends on the priority of a person's claim. The water user is limited to appropriating only that amount that can be put to beneficial use at a specific time. If the state right is not used over a certain period of time, it can be lost by abandonment. Since the passage of the Montana Water Use Act in 1973, the state has been working on an adjudication process to finalize all water rights prior to that date in State Water Court. For those wishing to obtain post-1973 water rights, the law established a permitting system administered by the State Department of Natural Resources and Conservation (DNRC).

Federal reserved water rights were created when the United States Supreme Court made the *Winters v. United States* (206 U.S. 564 [1908]) decision about a Fort Belknap Indian Reservation water claim. In the *Winters* decision, the Supreme Court held that when Congress or the President sets aside land out of the public domain for a specific federal purpose, such as an Indian reservation, National Park, or a National Forest, a quantity of water is reserved which is necessary to fulfill that specific federal purpose. A federal reserved water right has a priority date as of the date the land was withdrawn, and the reservation was created. The rights cannot be lost through non-use.

Quantification, or the determination of the size of a federal reserved water right for the state adjudication process, requires the Montana Reserved Water Rights Compact Commission (RWRCC) to reach an understanding with the federal agency holding the water right about the purpose(s) for which the specific federal reserve was created. The parties must then come to agreement as to how much water is necessary to satisfy the purpose(s) of the reserve. The resulting agreement must be signed by the negotiating parties, the appropriate federal officials, pass through the Montana legislature, (and the U.S. Congress, in some cases) and go to the Water Court for incorporation into a final decree for the specific water basins involved.

Compacts by WRD Regional Office

Billings: Northern Cheyenne Indian Reservation, National Park Service, Crow Indian Reservation, USDA Fort Keogh Livestock and Range Research Station, USFS Compact

Bozeman: U.S. Bureau of Land Management (BLM), National Park Service, USFS Compact

Glasgow: U.S. Bureau of Land Management (BLM), Fort Peck Indian Reservation, Bowdoin National Wildlife Refuge, Charles M. Russell National Wildlife Refuge Upper Missouri River Breaks National Monument

Havre: Blackfeet Tribe Compact, Rocky Boys Indian Reservation, U.S. Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), National Park Service, Fort Belknap Indian Reservation, Charles M. Russell National Wildlife Refuge, USFS Compact

Lewistown: Charles M. Russell National Wildlife Refuge Upper Missouri River Breaks National Monument, USFS Compact

Helena: Red Rocks Lakes NWR, National Park Service, USDA Sheep Experiment Station, USFS Compact

Kalispell: National Bison Range Compact, National Park Service, USFS Compact

Lewistown: U.S. Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS) Upper Missouri River Breaks National Monument, USFS Compact

Missoula: USFS Compact

Blackfeet Tribe Compact 85-20-1501 MCA

After 20 years of negotiations, a compact settlement between the Blackfeet Tribe, the United States, and the Commission passed the legislature in 2009. The compact will provide water and economic development for the Blackfeet while protecting the rights of water users locally and downstream on the Milk River. The compact was introduced in Congress in 2010. The federal bill can be found on: [The Thomas Library of Congress website](#) by typing in the bill number S.434.

National Bison Range Compact 85-20-1601 MCA

A compact between the State and the U.S. Fish and Wildlife Service for the National Bison Range Wildlife Refuge was reached in 2009. The compact was ratified by the 2009 Montana Legislature and signed by the Governor. The Montana Water Court issued the Bison Range preliminary decree in September 2011 (Case # WC-2011-01).

Rocky Boys Indian Reservation 85-20-601 MCA

A water rights compact between the State and the Chippewa Cree Tribe of Rocky Boy's Indian Reservation was reached in early 1997. The compact was ratified by the 1997 Montana Legislature and was signed by Governor Marc Racicot in 1997. The compact was approved by the U.S. Congress in 1999. The Montana Water Court issued a final decree for the compact in June 2002 (Case # WC-2000-01).

U.S. Bureau of Land Management (BLM) 85-20-501 MCA

A water rights compact with the Bureau of Land Management for both the Upper Missouri Wild and Scenic River and Bear Trap Canyon Public Recreation Site on the Madison River was ratified by the Montana Legislature and was signed by the Governor in 1997. It does not require ratification by Congress. In May 2011, the Montana Water Court issued a final decree for the BLM-Montana Compact (Case # WC-2008-10).

U.S. Fish and Wildlife Service (USFWS) 85-20-701 MCA

In 1996, a water rights compact between the State and the USFWS was reached for both the Benton Lake and Black Coulee National Wildlife Refuges (NWR). The Compact was ratified by the 1997 Montana Legislature and was signed by Governor Marc Racicot. The compact has been approved by the Federal agencies. Ratification by Congress is not required. The Montana Water Court issued final decrees for the compact in October 2005 (Case # WC-2000-03 & WC-2002-04).

Red Rocks Lakes NWR 85-20-801 MCA

A water rights compact for Red Rocks Lakes NWR was ratified by the Montana Legislature and signed by the Governor in 1999. The compact has gone through the federal approval process and the Montana Water Court issued a final decree on this compact in August 2005 (Case # WC-2000-02). Ratification by Congress is not required.

Northern Cheyenne Indian Reservation 85-20-301 MCA

Negotiations between the Commission and the Northern Cheyenne Tribe were successfully concluded in 1991 and the compact approved by the Montana Legislature and signed by the Governor in that same year. The Northern Cheyenne Compact was ratified by Congress and signed into law in September 1992. The Montana Water Court issued a final decree for this compact in August 1995 (Case # WC-93-1).

National Park Service 85-20-401 MCA

A water rights compact with the National Park Service for Yellowstone and Glacier National Parks and the Big Hole Battlefield was finalized in 1993. The 1995 Legislature ratified a compact for the remaining two Park Service units: Little Bighorn Battlefield National Monument and Bighorn Canyon National Recreation Area, completing Park Service negotiations in Montana. The compact does not require congressional approval. The Montana Water Court issued a final decree for this compact in April 2005 (Case # WC-94-1)

Fort Peck Indian Reservation 85-20-201 MCA

Negotiations between the Commission and the Assiniboine and Sioux Tribes of the Ft. Peck Indian Reservation were successfully concluded in 1985. The compact was ratified by the 1985 Montana Legislature and signed by the Governor. The Fort Peck compact was approved by appropriate Federal agencies. Congressional approval has not been granted. The Montana Water Court issued a final decree for this compact in August 2001 (Case #WC-92-1).

Crow Indian Reservation 85-20-901 MCA

A compact between the Crow Tribe, the United States, and the State passed the Montana Legislature and was signed by the Governor in 1999. The compact was ratified by the United States Congress in November 2010. The settlement package was approved by the Crow Tribe in a referendum election in March 2011. The Montana Water Court issued a preliminary decree for this compact in January 2013 (Case No. WC-2012-06).

Fort Belknap Indian Reservation 85-20-1001 MCA

A compact between the State and the Gros Ventre and Assiniboine tribes of the Fort Belknap Indian Reservation was ratified by the 2001 Montana State Legislature and signed by Governor Judy Martz. Negotiations continue on a federal bill which must be approved by US Congress: a bill was introduced in Congress in 2011 but no action was taken.

USDA Fort Keogh Livestock and Range Research Station 85-20-1101 MCA

A water rights compact for USDA Fort Keogh Research Station was approved by the Montana Legislature and signed by the Governor in 2007. The compact settles the administrative, irrigation, stock and emergency fire suppression water rights for Fort Keogh near Miles City. It includes reserved rights to Fort Keogh's current irrigation use from the Yellowstone River and some future irrigation use, and it includes a small amount of current use from a tributary of the Tongue River. The compact was approved by Federal agencies in 2013. Water Court action is pending.

USDA Sheep Experiment Station 85-20-1201 MCA

A water rights compact for USDA Sheep Experiment Station was approved by the Montana Legislature and

signed by the Governor in 2007. The Compact settles the stock water, domestic, irrigation, storage, dust abatement, reclamation, research, emergency fire suppression and other water rights of a small portion of the Sheep Experiment Station located in Montana. The compact was approved by Federal agencies in 2013. Water Court action is pending.

Bowdoin National Wildlife Refuge 5-20-1301 MCA

This compact settles the reserved water rights for uses including administrative, wildlife habitat maintenance and enhancement, stock watering and other. The US FWS water rights are contingent on an MOU which must be attached to the compact as Appendix 3. The MOU includes provisions relating to the solution of the severe salinity problems on the Refuge. The MOU was approved by all Parties in April 2013. The compact awaits Federal agency approval and Water Court action is pending.

USDA Forest Service 85-20-1401 MCA

The water compact between the State of Montana and the U.S. Forest Service, which took more than 15 years to negotiate, was approved by the Montana Legislature and signed by the Governor in 2007, followed by Federal agency approval. The compact recognizes reserved water rights for the Forest Service for administrative and emergency firefighting, and for instream flows for the South Fork Flathead Wild and Scenic River. The compact uses state law to create state-based water rights for instream flow on the National Forest System lands. The Montana Water Court issued a final decree for this compact in October 2012 (Case # WC-2007-03).

Note – The US Forest Service Compact is unique in that it provides a process for the Forest Service to turn reserved water rights into state water reservations. Essentially, these are statements of claim for instream flow. The Forest Service Compact lists protected instream flows on approximately 85 rivers and streams in Montana. However, the task of enumerating flows on thousands of tributaries and other rivers exceeded the resources of either the Forest Service or the State, so the compact gives the Forest Service 30 years from the time of the Compact to identify additional instream rights.

These Forest Service unidentified rights are misleadingly called “reservations.” They are reservations in that they are the product of Forest Service reserved water rights. There is no correlation between Forest Service water right “reservations” and typical state-based reservations found in Mont. Code Ann. 85-2-316

U.S. Forest Service Lands in Montana with Reserved Water Right Claims:

- Kootenai National Forest
- Flathead National Forest
- Lewis and Clark National Forest
- Lolo National Forest
- Bitterroot National Forest
- Helena National Forest
- Deer Lodge National Forest
- Beaverhead National Forest

- Gallatin National Forest
- Custer National Forest

These claims are primarily instream flow claims which are listed by drainage at [MCA 85-20-1401](#). (TABLE 1)

Charles M. Russell National Wildlife Refuge

The United States and the State of Montana have agreed to the terms of a compact settling for all time the United States' federal reserved water rights claims for the Charles M. Russell National Wildlife Refuge (CMR). The final compact is the product of a year of settlement negotiations between the United States Department of Interior and the Montana Reserved Water Rights Compact Commission. The negotiated compact was ratified by the 2013 Montana Legislature and signed by the Governor. In the coming months, the compact will be signed by the Secretary of the Interior and submitted to the Montana Water Court for incorporation into a final decree. The ratified compact subordinates the United States' 1936 priority date to 2013, quantifies a federal reserved water right consisting of baseflows in sixty-nine streams draining onto the refuge, and implements limitations on larger on-stream impoundments on selected streams.

Upper Missouri River Breaks National Monument

The United States and the State of Montana have agreed to the terms of a compact settling for all time the United States' federal reserved water rights claims for the Upper Missouri River Breaks National Monument. The final compact is the product of a year of settlement negotiations between the United States Department of Interior and the Montana Reserved Water Rights Compact Commission. The negotiated compact was ratified by the 2013 Montana Legislature and signed by the Governor. In the coming months, the compact will be signed by the Secretary of the Interior and submitted to the Montana Water Court for incorporation into a final decree. The ratified compact subordinates the United States' 2001 priority date to June 1, 2012, quantifies a federal reserved water right of 160 cubic feet per second (CFS) and 5 CFS in the Judith River and Arrow Creek respectively, institutes an on-stream impoundment limitation, and requires ramping of large new diversions.

Chippewa Cree Tribe (Rocky Boy Reservation) Compact

A compact between the State and the Chippewa Cree tribe of the Rocky Boy's Indian Reservation was entered into by the State of Montana and the Chippewa Cree Tribe of the Rocky Boy's Indian Reservation and filed with the Secretary of State of the State of Montana on April 15, 1997 and signed by the United States on February 28, 2000. This compact settles any and all existing water rights claims of the Chippewa Cree Tribe in the State of Montana.

Confederated Salish & Kootenai Tribes Compact

This Compact is entered into by and among the Confederated Salish and Kootenai Tribes of the Flathead Reservation, the State of Montana, and the United States of America to settle all existing claims to water of or on behalf of the Confederated Salish and Kootenai Tribes within the State of Montana. This compact is currently waiting on federal authorization.

Montana Water Reservations

A water reservation is a certain quantity of water “set aside” for future use by a municipality, the members of a Conservation District, or another qualified state or federal agency. Water Reservations are provided for in Montana’s Water Act to preserve future use of water for Montanans ([85-2-316](#), MCA). They are not to be confused with federal “reserved water rights” which is a water right created when Congress or the president reserves land out of the public domain for federal entities or Indian Tribes. Appropriations withdrawn by reservation take the priority date of the date of the reservation, even if the water use and perfection occur much later. Reservations may be used to protect water for future withdrawal or to protect water for public use instream. Water reservation purposes are generally granted for municipal; irrigation; and instream flows for fish and wildlife and water quality. Water reservations can be developed within their authorized place of use (POU) without needing a change authorization. However, any development outside of the place of use authorized when the reservation was granted does require a change application be authorized before additional development can occur.

For information on water reservations see the [DNRC water reservations webpage](#).

Conservation District (CD) Changes

Conservation District changes are reviewed and processed differently than other changes. During the application process for the water reservations, the conservation districts identified and public noticed points of diversions and places of use for potential future irrigation projects to justify the requested flow rate and volume. Once the reservation was granted, individual producers were required to apply to the conservation districts and the water reservation is distributed to individual producers on a first come, first served basis. If the producer’s proposed project has a point of diversion (POD) and/or place of use different than those published in the original water reservation application, the Conservation District is required to file a change application (Form 6o6CD) with the Department to change the water reservation as required by [85-2-402](#), MCA. The change application identifies a new point of diversion and/or place of use for that portion of the water reservation being changed.

The Department is charged with maintaining water reservation records for the individual conservation districts. When the Conservation District grants a producer the use of a portion of the water reservation, the Department will enter the information into the database as a Conservation District Record. If a change application is required it will be made to the individual conservation record, not the water right for the entire water reservation. The original version and the change authorization version will look the same except for the remarks. The individual conservation district record will be in the name of the producer and the conservation district. The change application with the DNRC must be in the name of the conservation district only.

- The CD Advisor (Conservation and Resource Development Division [CARDD] employee, either Ann Kulczyk or Duane Claypool) will present a completed DNRC Change Application (Form 6o6CD) to the CD Board. The board will then approve and sign the change application as they are the “owner” of the water right (reservation) that is being changed. The District Administrator will submit the change application to the DNRC Regional Office. The DNRC regional staff will review and process the change. The change is to the Conservation District record that the Advisor entered into the database earlier in the process. The purpose of the change is to IDENTIFY a new Point of Diversion and/or Place of use in the Water Reservation that was originally awarded to the Conservation District. Since we are not

changing any of the original POD and/or POU's, the change authorization will look exactly like the underlying water right when issued except for the POU or POD. The change authorization will operate like any other change in that it will have a completion date requirement. The CD is responsible for submitting the Project Completion Notice or Application for Extension of Time. The Conservation District will receive the completion notice or extension request from the producer which is then the basis for the Project Completion Notice or Application for Extension of Time request they submit to the DNRC Water Resources. (The CARDD advisor does not do any of the database entry for Change Applications.)

Abstract Requirement for CD Change Applications

An abstract may not yet be available when the change application is submitted. The CD must include a copy of the final order for the water reservation and a copy of the Application for Reserved Water Use (Form 102). If available, they need to also include a copy of the Reserved Water Use Authorization (Form 103).

Historical use

As the change application is to change a water reservation for future irrigation development, there will be no historical use for the portion being changed. The Applicant needs to provide information about the water reservation, including a copy of the final order.

Possessory Interest

The CD does not have possessory interest in the place of use; however, the fact that the producer, who does have possessory interest, applied to use a portion of the CD's water reservation implies written consent. Below is an example of a finding of fact for the possessory interest criterion assessment.

The affidavit on the Application to Change a Water Right form was signed by Tony Barone, Conservation District chairman for the Richland County Conservation District. Submission of the Application for Reserved Water (Form 102) was signed by the producer, Rex Ralston, and implies written consent.

Public Notice

The standard public notice for CD Water Reservation changes is 15 days. The CD completes a public notice themselves prior to submitting the change application to the DNRC. The CD must provide a copy of the certificate of service and affidavit of publication with the tear sheet (proof of publishing) from their public notice.

Data Entry

The underlying Conservation District Record should already be entered into the database when the Department receives the change. If the underlying right cannot be found in the database, contact CARDD. CARDD maintains all data entry for CD records.

Typically, version 1 and version 2 will look the same except for the remarks. The CD determines the type of measurement and reporting that is required. The specific measurement requirement will be in a remark on the Conservation District Record (version 1). Enter the MD measurement remark and any associated remarks to the change authorization version (version 2).

MD Remark

THIS RIGHT IS SUBJECT TO THE TYPE OF WATER USE MEASURING DEVICE OR WATER USE ESTIMATION TECHNIQUE REQUIRED BY THE CONSERVATION DISTRICT. THE APPROPRIATOR SHALL KEEP WRITTEN RECORDS OF THE FLOW RATE AND VOLUME OF WATER USED. RECORDS SHALL BE SUBMITTED BY NOVEMBER 30 OF EACH YEAR AND UPON REQUEST AT OTHER TIMES DURING THE YEAR. FAILURE TO SUBMIT REPORTS MAY BE CAUSE FOR REVOCATION OF THE CHANGE. THE RECORDS MUST BE SENT TO THE WATER RESOURCES REGIONAL OFFICE. THE WATER USER SHALL MAINTAIN THE MEASURING DEVICE SO IT ALWAYS OPERATES PROPERLY AND MEASURES FLOW RATE AND VOLUME ACCURATELY.

Change Application Processing Considerations

General Discussion

An appropriator may apply to change the point of diversion, place of use, purpose of use, or place of storage of a water right (36.12.1901(1), ARM). Water rights include: statements of claim, rights exempt from adjudication, Powder River decreed rights, water right certificates, permits to appropriate water, and state water reservations. A changed water right maintains its original priority date.

An authorization to change the water right must be granted prior to making the change. If the change has already been made and an authorization to change has not been granted, it is an unlawful change. An application must be submitted, and an authorization granted, for the changed use of water to legally continue.

When a water user applies to change an existing water right, the parent right is subject to a review of historical use. A complete review must include an analysis of all the elements of the water right, including but not limited to the historical diverted flow rate, volume, and the nature and extent to which the water was historically appropriated and put to beneficial use (36.12.1902, ARM). An authorization to change cannot exceed the flow rate, diverted volume, or consumed volume originally appropriated.

Applications to change a water right which attempt to correct underlying errors in the water right will be rejected in most cases.

- An appropriator attempting to correct a statement of claim must follow current procedures of correcting their water right with the Water Court. Once the correction process has been initiated with the Water Court, the Department can take the corrected information into account on a change application. Without the corrective process being initiated with the Water Court, any attempt to file a change would otherwise encounter issues with historical use not reflecting the elements of the water right abstract.
- Incorrect new appropriation rights can only be corrected in situations in which the Department has made a clear error (clerical error) in entering information into the database, or where improvements in mapping technology have allowed us to be more precise with legal land description quarter sections.
 - If an error was made prior to the public notice, and thus included on the public notice abstract, then a correction cannot simply be done. We are bound by what was identified in the public notice. That is why it is so important to ensure that database entry is correct prior to sending

applications to public notice. If a correction is being done on a verified application, the correct information must have been supplied on the project completion notice and have been included on the initial authorization.

- If an error in the legal land descriptions is discovered due to better mapping capabilities and technology, we can draft a memo to include in the file that states what the error was, how it was discovered, and how it is being corrected. An abstract of the corrected water right should be included with the memo.

The Department may modify or revoke an authorization anytime during the authorization term if the appropriator is not meeting the terms and conditions of the authorization. This situation would likely come to the attention of the Department through a water use complaint.

Number of Rights on One Change

[ARM 36.12.1901\(7\)](#) states that:

Multiple water rights may be changed on one application if upon completion of a project, the diversion, place of use, purpose, and storage information will be exactly the same for each water right.

- Any combination of water right types may be changed on one application provided they are part of the same change project. For example, a Certificate of Water Right and Statement of Claim may be included on one application.
- A simple test is to imagine what the abstracts for the individual rights will look like (the entire abstract for each water right involved, not just a part of each abstract) as a result of the change. Are the purposes, places of use, points of diversion and storage information exactly the same for each abstract? If they are not, then multiple applications would be required.
- If you have questions regarding specific applications as they come in, contact the CO for guidance.

* A note about period of use: The period of use does not need to be the same on the rights being changed in order to be considered one project.

Associated and Supplemental Water Rights

Water rights are associated when they share the same diversion structure, means of conveyance, or the same place of storage. Any association between water rights proposed for change and water rights not involved in the change application must be explained.

Supplemental water rights exist when you have more than one water right providing water for the same purpose at the same place of use. Supplemental water rights may share the same source or be from different sources.

If a change involves overlapping rights from the same source, typically all the water rights are changed. Generally, there is an increased potential for adverse effect if all overlapping rights are not changed. For example, an appropriator with overlapping rights from the same source sells one of the rights and continues to irrigate the same acres. If the buyer moves the water right to a new place of use, there may be an additional

burden on the source. In this case, the Applicant or buyer shall provide evidence proving all overlapping rights were historically used. The Applicant will also need to provide evidence of how the proposed change will not create adverse effect to other water users.

Amount of Water Changed

The flow rate and volume to be changed must be identified. An appropriator may only change the maximum amount of water that was historically put to beneficial use and the proposed use (flow rate and volume) must be proven as necessary to accomplish the new beneficial use.

The flow rate and volume to be changed cannot exceed the amount of water historically used. Any increase in diverted flow rate or volume is a new appropriation, which requires a new water right.

When a Change Authorization is Not Required

An appropriator may make certain water right modifications without Department approval. The following are examples of modifications where Department approval is not necessary.

Short-term Lease for Road Construction

As described in §85-2-410, MCA:

(1) An appropriator may lease for a term not to exceed 90 days all or part of an appropriation right for road construction or dust abatement without the prior approval of the Department, subject to the requirements of this section. -

There are additional requirements and limitations to the short-term road construction lease described in MCA §85-2-410.

Emergency Fire Suppression

In accordance with §85-2-113(3), MCA and ARM §36.12.105

Secondary Diversion

A secondary diversion removes water from somewhere other than the original source. For example, a pump is a secondary diversion when located in a ditch, reservoir, or pit. In these examples, the initial diversion would be the headgate, the dam, or the groundwater pit. A secondary diversion location may be altered without Department approval.

Replacement Point of Diversion

The Notice of Replacement Point of Diversion form (Form 644) can be used when a surface water POD has been replaced. The form must be filed within 60 days of the completion of the replacement POD. If a deficient Notice of Replacement POD is received, the Department will send a deficiency letter that allows 30 days to respond. If the Applicant requests additional time, the Department may allow up to 6 months total time in which to respond to the deficiencies (85-2-402(18)(b)(iii)). If the Applicant is unable to finalize the necessary paperwork in that time, they will need to file a full 606 Change Application.

Means of Diversion

The means of diversion is the method used to divert water from the source. The most common means of diversion are dams, ditches, headgates, pipelines, pumps, and wells. An authorization is not necessary to modify the diversion means provided the actual location where water is diverted from the source and the diversion rate are not changed.

Means of Conveyance

The means of conveyance is the method used to convey water from the POD to the POU. Department approval is not required to alter the means of conveyance. For example, the location of ditches, main lines, or pipelines may be altered without Department approval.

Removing Acres

Department approval is not required to remove acres from irrigation. In any given year an appropriator may choose to irrigate less acres than listed on the water right. The owner may do this without any forms or notification to the department. A water right can be legally severed from real property via a deed or other recorded instrument. An authorization is necessary only when water is used on a new place of use. If the appropriator notifies the Department by filing a 642 form when a water right has been legally severed from real property, the Department's water right records may be updated without an authorization. The POU will not be updated, however the 642 will be noted in the database along with a remark stating the right has been severed from the POU.

Maintenance

An appropriator who repairs or replaces a diversion structure or reservoir in the same location as the existing structure is performing maintenance. Department approval is not necessary for maintenance provided the diversion location is not changed. Cleaning or repairing an infiltration gallery, headgate, ditch, or pit is considered maintenance.

Wells

If a new groundwater aquifer is not penetrated, a well deepened in the same casing is maintenance. Replacing a pump is maintenance provided the flow rate is not increased. Repairing or replacing a pipe or pressure tank is considered maintenance.

Method of Irrigation

The method of irrigation is how water is applied to a crop. Graded border, furrow, and contour ditch are all methods of flood irrigation. Pivot, handline or wheel line are all methods of sprinkler irrigation. Department approval is not necessary to alter the irrigation method provided it is within the same POU.

Municipal Systems and Purposes

The use and distribution of water by municipalities varies a great deal. For administrative reasons, the Department recognizes municipalities need broad discretion in the use of water. Rarely would a municipality be required to change the purpose of use. Municipal water encompasses a wide variety of uses such as domestic, commercial, fire protection, street cleaning, industrial, recreation, and selling water for use outside the city limits.

Department approval is not necessary to modify a municipal distribution system. Holding tanks intended to improve efficiency, water treatment plants, pumping stations, and water mains are all part of a municipal distribution system.

Department approval is not needed when a municipality modifies how it disposes of sewage effluent provided the effluent is not intended for further beneficial use.

Ditch Companies, Water Users Association and Irrigation Districts

Ditch companies, water users' associations, and irrigation districts have defined areas where water can be used. Department approval is not required to redistribute water within the place of use identified on their water right abstract. Irrigation Districts are required to expand their boundaries through a District Court process. Once they have gone through the District Court to change or expand their boundaries, they must file a change in place of use application with the Department to add the new place of use to their water right. Department approval is not required when these entities sell or renew water contracts.

Elements of a water Right That Can be Changed

Point of Diversion

Department approval is required to change the location where water is diverted from its source. Department approval is not necessary to change the means of diversion or a secondary diversion.

One application may be used to change numerous diversion points on numerous rights; see 36.12.1901(7), ARM, for more information on multiple water rights being included on one change application.

- If historical flow rates of points of diversion being changed differ, the flow rate of each individual point of diversion may not increase upon authorization of the change unless the Applicant has proven adequacy of diversion for the point of diversion. An example of this would be an 8-hour drawdown and yield test on a well.
- If the Applicant wants to increase flow rate at one of the points of diversion being changed, they will need to prove adequacy of diversion of the new flow rate and may also need to prove that the change in operation will not create adverse effect to an existing user. The change authorization should reflect the maximum flow rate being authorized for the water right. (Fill in the flow rate for each point of diversion being authorized on the POD tab in the water rights database).
- A fixed diversion may be changed to a transitory diversion. A transitory diversion is movable or portable anywhere along a stream between two defined points. Legal descriptions for a transitory diversion would typically describe the most upstream point and the most downstream point that water is diverted from, with a PD remark included that states the POD is transitory.

Replacing or Adding Points of Diversion

The existing point of diversion is being replaced when the new diversion is the only point where water will be withdrawn from the actual source. If a change is completed (perfected) and then an appropriator wants to go

back to using the original diversion, a new change authorization would be required to revert back to the original diversion.

A new diversion is considered additional when both the existing and new diversions divert water from the source. If the appropriator intends to use the existing diversion as an alternate diversion, a flow measuring device should be required at both the existing and new diversions.

A new diversion established for a split right is not an additional diversion. When a water right is divided or split, the result is two independent rights. For example, two people split a right which had one pump and the original owner will divert water with the old pump and the new owner will install a new pump. The new owner is establishing a new diversion for an independent water right.

Place of Use

Existing Place of Use

The existing place of use is where water is legally used and is reflected on the water right abstract. If a previous change has been authorized, the existing place of use must reflect the authorized information.

If a change involves divided or split rights, the existing place of use is the location where the Applicant's portion of water is used.

Proposed Place of Use

The proposed place of use is the place where water will be used when the change project is completed. Often, a change that involves a new purpose of use is also changing the place of use.

Additional Places of Use

The proposed place of use may be in addition to the existing place of use. However, an appropriator may not increase the flow rate and volume of water diverted from the source or the amount of water consumed by the crop.

Rotation of Irrigation

An appropriator who wishes to rotate crops between fields may add to the existing place of use. An appropriator may not increase the flow rate and volume of water diverted from the source or the amount of water consumed by the crop. The appropriator should be required to submit annual place of use records and comply with all conditions on the authorization.

Purpose of Use

The new purpose must be a beneficial use as described in [§85-2-102, MCA](#). An appropriator may change the purpose of use provided the existing water right limits are not exceeded.

Water is available for a new purpose only when water is removed from the existing purpose. For example, irrigation water may be changed to fill and maintain a fish pond only when water is removed from irrigation.

Nonconsumptive/Consumptive

A nonconsumptive water right causes no depletion of the source and minimum delay returning water to the source. A nonconsumptive water right causes little disruption in the stream or aquifer conditions. Therefore, water is available for other appropriators. Water diverted for a consumptive use is consumed from the source and unavailable for other appropriators.

Nonconsumptive rights may not be changed to consumptive rights. Increasing the amount of water consumed is a new appropriation which requires a new water right.

Evidence that shows the amount of water consumed by both the existing and new purpose for a change is required. The evidence might include evaporation and evapotranspiration amounts.

For the Definition of Nonconsumptive use refer to [§85-2-102\(19\), MCA](#).

Period of Use

The period of use and period of diversion are the same unless storage is involved. The period of diversion cannot be expanded. However, the period of use may be changed if storage is involved. For example, adding storage to an irrigation water right may allow the applicant to expand the period of use. However, water may only be diverted into the reservoir during the existing period of diversion for the water right being changed.

Flow Rate and Volume

The Applicant may change only the amount of water that can be beneficially used for the new purpose, which cannot exceed the historical use of the water right.

Place of Storage

An appropriator may change reservoir location, reservoir capacity, or add a reservoir to a water right provided other water users are not adversely affected and the change will not expand historical use. Adverse effect can occur when there is an increased diversion from the source or alteration in stream conditions. Consumptive volumes need to be accounted for and evaluated on the basis that no expansion of the water right will occur and other appropriators on the source of supply will not be adversely impacted if a change authorization is granted. A drainage device or way of allowing water to flow through the reservoir should be required on all new on-stream dams so that the diversion can be controlled in the event there is a water shortage on the source and the water right is out of priority.

A water right with multiple places of storage may be changed on one application. Multiple water rights with one proposed place of storage may also be changed on one application provided the rights are on the same source, immediate tributaries, or tributaries with a common source.

Water flowing through a reservoir is not necessarily stored water. For example, a small pond on a ditch used as a pumping pit is not considered a place of storage unless it exceeds 0.1 acre-feet of volume, ARM 36.12.113(6). In this case, an authorization for storage is not necessary.

Carry over Water

Appropriators are allowed to carry over stored water to the following year. Water carried over into the following year does not affect that year's appropriation.

When a reservoir is no longer usable, and a new reservoir will be constructed in a new location to replace it, the appropriator may file a replacement reservoir application. An application is considered a replacement reservoir application only when the new reservoir capacity does not exceed the existing reservoir capacity.

Elements of a Water Right that Cannot be Changed

Period of Diversion

The period of diversion is the range of dates from which water is diverted from the source. The period of diversion cannot be increased but could be decreased through a change. Any expanded period of diversion is a new appropriation, which requires a new water right.

Source of Water

An appropriator may change a diversion from the main stem of a stream to its tributaries, or from a tributary to the main stream. You cannot, however, move from one tributary to another tributary of a common main stem. When a diversion is moved from a tributary to a more reliable source, adverse effect and enlargement must be considered. The amount of water withdrawn at the new point of diversion must not exceed the amount withdrawn from the stream at the old point of diversion.

- An additional point of diversion on a tributary to the original source can be added to an existing right. However, the potential for adverse effect is great and should be considered closely, as should enlargement of the right.

Unless surface and groundwater are directly connected, a source change from surface water to groundwater or groundwater to surface water is not allowed. Directly connected means impacts from diversions are instantly measurable on the surface water source without any interval of time between diversion and impact. For example, a well that diverts water from a confined groundwater aquifer may not be changed to a location that would allow surface water to enter the well. See the [surface water to groundwater change](#) section in this manual for more information. If in question, please speak with the Water Management Bureau.

Sub-irrigation or Natural Overflow water rights

Changing water rights from natural sub-irrigation or natural overflows, where no man-made diversion existed, to an active diversion is not possible because the appropriator cannot control existing or future naturally occurring sub-irrigation.

While these types of rights are recognized as valid existing water rights for a beneficial use in the adjudication process, the nature of the water use imposes both legal and physical limitations to these types of water rights.

- Natural sub-irrigation has its diversion defined as the entire place of use and has no divisible or singular access point to the water. The rooting zone of the plants scattered across the place of use are the means of water withdrawal and capillary action of the roots are the natural means of conveyance of water to and through the plant as long as the natural conditions of the water table are conducive to this natural process. Natural has to be given its ordinary and plain meaning: present in or produced by nature, not artificial or man-made. Irrigation use means the controlled application of water to land to supply water requirements not satisfied by rainfall and relies on an artificial or man-made diversion. Only artificial forms of irrigation are administrable, and by extension, only artificial forms of irrigation can be fitted into the priority mechanism that has been the lynchpin of prior appropriation.
- Similarly, natural overflow relies on a surface water source overflowing its banks during a natural process. There is no way to quantify how often this occurs or any ability to control its occurrence. Water spreading irrigation systems also tend to rely on natural processes for applying water to a crop.

Types of Change Applications

Changes on an existing change authorization

When processing a change application which proposes to change an existing authorized change, it is vital that you consider how exactly you should analyze the historical use on the water rights being proposed for change.

If the historical use for existing change application has been defined once already when the original change application was processed by the Department, the Department has inherently qualified the historical use of the right in a legal decision document. If historical use was not quantified in the previous change, then it should be quantified in the current change.

It is the policy of the Department to consider historical use for changes on changes in the following manner:

- If the first change was completed after the Correct & Complete rules (2005) we are bound by the historical use determined for the first change and we have to use that information in our historical use analysis.
- Even with pre-2005 changes the Department has established the historical use of the right. Only in cases where there is an egregious error will the Department not utilize the historical use established in pre-2005 changes. It is not the role of the Department to reanalyze the historical use on these changes because we do it better/differently now or because it just seems like the historical use might be wrong. That said, the Department may now need to calculate a consumptive use based on the understanding of the pre-2005 system in order to make sure an enlargement is not occurring through the current change. Following are some examples/concepts to consider:
 - If the Applicant provides an affidavit claiming the historical use is different than was contemplated in a previous change, the Department will not reexamine the historical use unless the affidavit supplies substantial credible information showing the Department exactly how the

historical use differs from that which has already been contemplated. Either way, the Department does not seek out this information.

- If the Applicant provides substantial credible information that allows the Department to better qualify the historical use, that information can be utilized, and the historical use can be opened up.
- Generally speaking, it will be the Applicant that provides substantial credible information that alters how the Department considers historical use on existing changes.
- If for some reason in your general processing of the application you uncover what you consider to be an egregious error in contemplating the previous historical use, please communicate this information with the CO so that it can be decided how best to proceed given the situation-specific information at hand.

Changes on a perfected change

- For change applications which propose to change an existing authorized change for which a project completion notice has been filed, historical use will be reviewed as of the date of the filed completion notice.

Changes on an unperfected change

- If a change comes in on an unperfected change, the Department will use the historical use findings established in the first change. The Applicant could act as the trigger for re-evaluation of historical use (through providing substantial credible information to the Department), though if the Applicant does not initiate this action, the Department is bound by the historical use pertinent to the existing unperfected change.
- If there is a project completion notice filed for the first change, but it hasn't been processed yet, we would need to verify the first change and our historical use analysis would be based on what was verified.
- If a change is filed to completely replace an existing unperfected change, upon authorization of the second change, the Project Completion Notice due date of the initial change should be changed to match that of the second change. This is similar to what we do with a change on an unperfected permit. Ultimately the two Project Completion Notice due dates will match and we will verify the change(s) at the same time.

Changes on a partially completed change

- If a water right owner wants to abandon an existing change partway through the project completion period and there is evidence that a change has been partially completed (such as an extension which documents partial completion has been requested), a change will be required to revert the water right back to the pre-change conditions. Alternatively, they can wait until the project completion period expires and if they do not file a Project Completion Notice (Form 618) or Application for Extension of Time (Form 607), the change will expire by operation of law and may revert back to the most-recent version prior to the change being authorized. If there is evidence in the file that the change has been partially completed, the Department cannot just terminate the change authorization, and have the water right revert to the previous version.

These should be viewed on a case-by-case basis. In some cases, a change may be required and in other cases the water right may revert back to the most recent authorized version.

Changes that involve a split

If a water right has been divided or split, the divided parts are independent water rights. A person with a divided part of a right is an independent owner of record. The water rights are split based on an agreement between the buyer and seller. The DNRC doesn't make determinations of who gets what with a split; that determination is part of the deed or recorded document and the Divided Interest form.

Permits

Permits must be verified before they can be split. After the verification and the split are completed the individual rights can be changed independently.

Filed Claims

For a change application to a filed claim that has not been decreed yet and involves a split of ownership the following process applies:

1. Completely process the split first.
2. Begin processing the change application on the split portion to be changed.
3. Evaluate the historical use information of the right to be changed.

The historical use explanation may include information about both rights as they were before they were split, but for the purpose of that change only the historical use of the right being changed will be evaluated.

If the flow rate, volume, or place of use is being modified from the claimed elements as part of the historical use evaluation, then only the right involved in the change process should be modified if the change authorization is granted.

Decreed Claims

Only the Water Court can split a decreed claim. The Water Court's process is independent of our statutory timelines. Because of this, it is preferable to have the water right split prior to change application submittal. This makes processing the change application much easier since we do not have to guess at how the water court will divide the right up (flow rate, volume, irrigated acres, etc.), and will only review historical use on the portion of the split water right being changed. This is also the preferred method because the water court will have an opportunity to resolve any issues with the water right proposed for change prior to us receiving the application, thus reducing the chance of the Water Court finding something different than the DNRC review would find.

In cases where a decreed water right will be split after a change is authorized, historical use of the water right will be analyzed on the entire water right prior to the split. At a minimum, the other owner(s) of the water right should receive a copy of the Department's PD and public notice in situations where the Department is proposing to grant the change. In these types of situations, it is feasible that the Water Court could divide the

elements of the water right differently than how the change is attributed, potentially invalidating some or all of the changed water right elements.

Replacement Reservoirs

Level of Review

- A Department engineer should be consulted about the construction and operation of the proposed dam. A new dam hazard classification or an inspection is required for construction, repair, or removal of dams with a capacity of 50 AF or greater.
- All Administrative Rules and statutory criteria apply to these change applications.
- Historical use will be evaluated in the same manner as any other change.
- A flow measuring device and a mechanism to drain the reservoir may be required on replacement reservoirs if technically possible. Yearly measurements or evaporation reports, which show the extent of the historical water right, are also recommended as proof of historical use.
- A justification for why the reservoir needs to be replaced should be included in the application. This could include pictures and maps with a narrative about the operation of the reservoir.

*No Change is required if the dam is replaced as part of maintenance in the same location with the same structure, diversion works, and capacity.

Project Completion Notice

A project completion notice is required.

Filing Fee

The Applicant shall pay the correct filing fee according to the Fee Schedule for Water Use in Montana, Form 613, or ARM 36.12.103. Form 606 NIR may be used at a reduced filing fee for non-irrigation replacement reservoirs.

Replacement Well Application

If the replacement well is for a municipal well that does not exceed 450 GPM or any other well that does not exceed 35 GPM or 10 acre-feet per year, a Replacement Well Notice (Form 634) can be used. If use of the existing well is not discontinued, a Replacement Well Notice form cannot be used.

When a standard Change Application (Form 606) is Required for a replacement well

A standard Change Application form is only required for a replacement well for a municipal well that exceeds 450 GPM and for all other wells that exceed 35 GPM or 10 acre-feet per year. Even though this is the standard change application form, if the Applicant is only filing to replace an existing well, they qualify for a fee reduction.

- The replacement well must divert water from the same groundwater aquifer at an equal or lesser rate than the existing well.
- A replacement well application cannot change the purpose or place of use of an existing water right.
- Multiple replacement wells may be included on one application provided the wells serve one project and divert water from the same groundwater aquifer.

- If a stock water well is replaced and an adjoining stock tank is also moved to the new well location, the application is still considered a replacement well application, but the POU is also changed in this case.

Level of Review

- Historical use will be evaluated in the same manner as any other change.
- The standard Administrative Rules and statutory criteria apply to these change applications.
- A justification for why the well needs to be replaced should be included in the application.

Hydrologic Review

If the new well is significantly deeper or a significant distance away from the original well, a Department hydrogeologist should review the application to determine if the new well is diverting from a different groundwater source.

Filing Fee

The Applicant shall pay the correct filing fee according to the Fee Schedule for Water Use in Montana, Form 613, or ARM 36.12.103. Form 634 may be used for municipal wells that do not exceed 450 GPM, or for all other wells that do not exceed 35 GPM and 10 AF per year. Form 606 NIR may be used at a reduced filing fee for non-irrigation replacement wells.

Adding Stock Tanks to a Stock Direct from Source Water Right

There are conservation incentives to change water rights that allow stock to drink directly from a stream, lake, or river. The improved method uses stock tanks outside of the riparian area and away from the stream beds and banks to keep the stock from damaging those areas. A special change application form exists for adding stock tanks to an existing stock water right. The Form 606 Stock Tank change application may only be used for the following:

- A change to allow stock tanks to be added to a livestock direct from source right which does not increase the livestock use. The maximum allowable flow rate for this change will be 35 GPM.
- A change which adds additional stock tanks to an existing stock watering system and does not increase historical use.
- A change which moves stock tank locations on an existing stock watering system and does not increase historical use

Administrative Rules

For a change application that is only to add stock tanks to an existing stock water system, refer to [ARM, 36.12.1901\(13\)](#).

Flow Rate and Volume

The livestock direct from source rights do not identify a flow rate and the historical diversion flow rate was intermittent and difficult to determine. Changing the diversion from "Direct from Source" to a pump that diverts from the stream to stock tanks requires a flow rate to be added during the change.

As a general guideline, to meet the requirement of ARM 36.12.1901(13) (d) in this type of change, a flow rate can be added if the Applicant proves it maintains the source availability conditions similar to when the stock was drinking directly from it. Float valves on the tank or overflow that goes immediately back into the source

will be required as part of the diversionary control to not expand the historical water use or create adverse effect to existing water users on the source.

Stock Water System

Stock drinking directly from a creek is a stock water system. Therefore, the addition of stock tanks to an existing system qualifies for the discounted change application fee. The addition of tanks and pipelines for better stock water distribution also qualifies for the discounted change application fee.

Temporary Changes

When a short-term water need arises, or water supplies become limited, a temporary water reallocation may be necessary. An appropriator may maximize water use by temporarily changing the point of diversion, place of use, purpose of use, or place of storage. Some examples of temporary changes are water used for road construction, pipeline testing, or drilling for mineral exploration.

In addition to the change criteria, the Applicant shall follow the guidelines found in § 85-2-407, MCA. If a temporary application involves a purpose of use change to benefit a fishery by maintaining or enhancing instream flows, the criteria and guidelines described in §85-2-408, MCA must also be followed.

Even though another person may use the changed water right, the water right owner of record is always the temporary change Applicant (except in cases where FWP is leasing a right for temporary instream flow). A temporary change authorization is always issued to the water right owner of record. Only the water right owner's name will appear on the final authorization document.

Approval of a temporary authorization does not constitute abandonment or serve as evidence of abandonment.

Project Completion Notice

A project completion notice for change of a water right, Form 618, is required for ALL temporary changes. According to our Legal Department, there is nothing under § 85-2-407 or 408, that exempts an Applicant from not filing a project completion notice; and under § 85-2-402(9) it is required. If a temporary change is being renewed, only the initial temporary change requires a project completion notice.

Term and Renewal

A temporary change authorization may be approved for a period of up to 10 years initially. An authorization for a temporary change in appropriation right may be renewed by the Department for a period not to exceed 10 years. There is no limitation on the number of renewals the appropriator may seek. See [§ 85-2-407, MCA](#).

Expiration

The Department shall assign an expiration date for all temporary authorizations. Temporary authorizations expire at the end of their term, even when transferred to a new owner [§ 85-2-407\(6\)\(8\), MCA](#).

If a water right and temporary authorization are transferred with real property, the temporary authorization remains in effect until it expires or the Department approves another change authorization.

Application Forms

The Temporary Change Addendum must be completed and submitted with any change application requesting a temporary change.

Benefiting Fisheries

An appropriator may temporarily change a water right to benefit a fishery by maintaining or enhancing instream flows in accordance with [§MCA 85-2-408](#).

Change to a Permit

Completed Permit

A completed permit must be verified before a change application can be processed. The verification process is a separate procedure that must take place before the change application is processed.

In some cases, permits have been conditioned to require water measurement records to be maintained by the permit holder. These water measurement reports should be included in the change application as proof of the permits historical use.

Un-Perfected Permit

A permit does not need to be completed before a change application can be processed. The Applicant can apply to change the entire amount on the permit even though it hasn't been completed. The change authorization version would then be reduced with the permit if the entire amount is not put to a beneficial use by the end of the project completion period.

Note: The change and the permit project completion notice dates should match. If the Applicant identifies a completion period on the change that extends past the project completion period initially given for the permit, the permit project completion period should be extended to match that of the change. This should be done upon authorization of the change and the permit reissued with the new project completion date. An extension is not necessary to complete this process at the time of the change authorization issuance.

Hydrologic Review

A Department Hydrologist should be used to review any application where the **Credibility** or **Effectiveness** of the Applicant's proposal requires a technical analysis. Staff Hydrologists should be contacted by phone or email to discuss the appropriate level of review for any application in question.

Common reasons for hydrologic review are for change applications involving:

- Mitigation, where the geo-hydrologist will analyze a mitigation plan to determine if it effectively offsets stream depletions.

- Instream Flow, where the surface hydrologist will analyze the information submitted about return flows to a source to determine the credibility of the Applicant's consumptive use claims. The Department may provide information for this section as well but ultimately it is the Applicant's responsibility.
- The addition or modification of existing groundwater diversions, where the hydrologist will analyze the Applicant's pump tests or models for credibility.
- Changes in return flows for changes to irrigation water rights.

Verification Information

Verification should be done after the project completion notice is received, in accordance with the Verification / Certification Procedure manual.

Change to a Claim

Even if a claim has been adjudicated, historical use information must be provided with a preponderance of evidence in order to meet the criteria in [§85-2-402, MCA](#) and [ARM 36.12.1902](#).

- Adjudication and the eventual decree will apply only to the original claim and may affect the underlying right of a change authorization that was issued before the decree.
- Historical use information supplied by the Applicant may have the effect of reducing the claimed flow rate, volume, period of use, or place of use, even if the claim has been decreed.

Changes for Mitigation

Purpose

The purpose of a Mitigation Change is to change the purpose and place of use of an existing water right to offset the adverse effects to an identified reach of a surface water source that are predicted 1) from use of groundwater requested in a pending application for a beneficial water use permit, or 2) as a result of a proposed change to an existing water right.

For new permit applications, [§ 85-2-360, MCA](#) outlines the requirement for mitigation changes in closed basins. Mitigation changes may also be necessary outside of closed basins, such as the Middle and Lower Clark Fork River Basin when a proposed new groundwater appropriation impacts surface water in an over-appropriated stream. However, the Applicant is not required to comply with the express requirements §§ 85-2-360 through 85-2-364, MCA, outside of a basin closure.

There are circumstances that may require mitigation to offset potential adverse effects from a proposed change. Typically, the need to mitigate a change will arise in situations where water is already over-appropriated, and the timing and/or amount of historical depletions is expected to be altered. In some situations, an Applicant may be able to obtain written consent to an authorization, pursuant to § 85-2-402(19), MCA, to alleviate the need for mitigation. If a change proposal requires mitigation, the mitigation plan and water rights being used for mitigation must be processed in conjunction with the primary change application.

Amount

When net depletions to surface water are predicted based on modeling the impacts of a groundwater diversion, that amount is normally that volume of water consumed annually and not returned to any water source. The

amount of water requested to be changed in a mitigation change may be equal to or less than the amount of net depletion. Section 85-2-360(3), MCA, states,

the prediction of net depletion does not mean that an adverse effect on a prior appropriator will occur or if an adverse effect does occur that the entire amount of net depletion is the cause of the adverse effect. A determination of whether or not there is an adverse effect on a prior appropriator as the result of a new appropriation right is a determination that must be made by the Department based on the rate, location, and timing of the net depletion that causes the adverse effect relative to the historic beneficial use of the appropriation right that may be adversely affected.

Timing

Net depletions to surface water are predicted based on either modeling the volume diverted from a groundwater diversion or the change in timing and/or amount of depletions for a change proposal that requires mitigation. A monthly table of predicted net depletions to surface water is necessary to adequately review change conditions for adverse effect. Normally, net depletion increases with an increase in consumptive use, such as irrigation consumptive use during the growing season.

If the only depletions that will cause adverse effect occur during the irrigation season, an irrigation water right will likely be sufficient for mitigation. If there are year-round depletions that will cause adverse effect and the Applicant is proposing to mitigate with an irrigation water right, the Applicant will need to demonstrate that the irrigation water right can be used for mitigation in a way that will address adverse effects that occur outside of the irrigation season.

Typically, the greatest chance for adverse effect is during the irrigation season, and particularly after spring runoff has receded. An irrigation water right would provide mitigation water during this period.

Location

The reach of a surface water source that would be depleted is identified by modeling. The location of the mitigation water may not be the same as the depleted reach. If the mitigation is required by the Department to satisfy a basin closure, or existing downstream senior hydro-power water rights, but not to mitigate adverse effect to a specific water right, the mitigation water may be provided outside the depleted reach and still achieve its goal. Likewise, it may be suitable for mitigation water to be provided in the middle of a depleted reach if there are no water rights upstream of the mitigation delivery point within the depleted reach that could be adversely affected.

Outside of basin closures, the mitigation water does not have to be provided in the depleted reach unless that is the location of the adverse effect being mitigated. Changes for mitigation must have a stringent water measurement condition that will allow the Department to determine that the mitigation water is actually being provided in the amount deemed necessary to offset adverse effect.

Unique Process

Review Application – In mitigation changes, it is very important to be able to establish that the water right being changed was available and used for the period of time the Applicant proposes to use it for mitigation and that the historically consumed volume is equal to or greater than the volume proposed for mitigation. The Department cannot require nor authorize more water for mitigation than the depletion amount caused by the new appropriation or change authorization.

Relevant Statutes and Rules

[85-2-360, MCA. Ground water appropriation right in closed basins](#)

[85-2-361, MCA. Hydrogeologic Report-minimum requirements](#)

[85-2-362, MCA. Aquifer recharge or mitigation plans in closed basins -- minimum requirements](#)

[85-2-364, MCA. Department Permit Coordination -- Requirements for Aquifer Recharge Or Mitigation Plans](#)

Surface water to groundwater changes

The following information should be considered when contemplating a change from a surface water source to a groundwater source.

1. In order to grant a change from a surface water source to a groundwater source the Department must be able to show (though ultimately it is the Applicant's burden) that 100% of the water proposed to be appropriated is coming from the original surface water source. The water could come from either an upstream or downstream tributary of the original source but not from any other tributary that is not directly connected either upstream or downstream of the original source. ROs should work with WMB to look at these situations on a case by case basis and put forth the best science and assumptions the Department is capable of. If in the end the Department cannot show with a preponderance of the evidence (51%) that indeed 100% of the proposed groundwater appropriation is coming from the underlying surface water source, then the change application cannot be granted. As with all changes, other water rights on the source must be analyzed for adverse effect.
2. In order to grant a change from a surface water source to a groundwater source, the Department must be able to show (though ultimately it is the Applicant's burden) that there are zero depletions to the surface water source outside of the historical period of diversion of the surface water right.
3. Special consideration must be given to adverse effect and enlargement involved in these types of changes.
 - a. On tight sources or sources with a commissioner it must be shown that moving to a groundwater source does not create more access to water or create an enlargement of the surface water right. If there is any delay in depletions to the surface water between the proposed groundwater appropriation and the underlying surface water source, a plan to shut the groundwater source off in priority is not effective. The reason for this is that delayed impacts don't allow for senior water right users to receive their allotted flow rate immediately after call is made. Although the groundwater use can be shut down when a call is made, the impacts of the depletions can extend beyond the point that the pump is shut down. Although the impact to the groundwater user is the same, the impact to the senior water right holder through the delay in water availability is considered an adverse effect.
4. The Department does not accept plans in which call on the Applicant might be futile. You cannot generally call groundwater and so it must be shown by a preponderance of the evidence (51%) that call will be adhered to and that call would effectively alleviate the need for more water on the surface water source as necessitated by senior water rights on the surface water source.
5. If you need more clarification on how to consider the policy, please contact the CO program manager.

Changes involving Salvage Water

Salvage water is very complicated. The Applicant must be able to show a calculable amount of water savings. A physical change in the water delivery system must occur that salvages a calculable amount of water. The DNRC has not yet accepted a water savings by water management argument. If you talk to a potential Applicant or receive an application involving salvage water, talk to the Central Office about how to proceed.

Changes to Out-of-State Use

For any change which proposes to use water out-of-state, the appropriator must prove by clear and convincing evidence the applicable criteria from subsection (2) or (4) of 85-2-402, MCA are met. In addition to these criteria being proven by clear and convincing evidence, the appropriator must also prove by clear and convincing evidence the out of state criteria found under subsection (6) of 85-2-402, MCA.

Petition to Modify a Change Authorization (Form 651)

This process may be used for modification or removal of a condition or to reduce the flow rate or volume of water authorized by a change authorization. Keep in mind, this will reopen the process to analyze the criteria that is affected by the modification. A final decision will be made and noticed out to objectors from the original application and others at the Department's discretion. If denied, the decision is considered final and the Applicant cannot request a hearing.

Deficiency Letters, Correct & Complete, & Technical Reports

Review for Deficiencies

The deficiency letter is the document that outlines how the application does not meet the correct and complete standard set by ARM 36.12.1601.

Because of the importance of the deficiency letter, it is necessary to compare the application with the Administrative Rules line by line and identifying every instance where the application does not fully meet the Administrative Rules standard for correct and complete. It is vital to remember that it is totally possible and expected that there will be correct and complete applications which later lead to a decision to deny. The purpose of a deficiency letter IS NOT to ask questions that will lead the application to a decision to grant. The purpose is to identify rule-based deficiencies for which the application can be terminated if adequate response is not received. There are numerous opportunities to communicate concerns you have with their application in the context of whether the information will lead to a grant or a denial. The deficiency letter is not one of those times.

Relevant Statutes and Rules

[36.12.1501 PERMIT AND CHANGE APPLICATION DEFICIENCY LETTER AND TERMINATION](#)

[36.12.1601 WATER RIGHT PERMIT AND CHANGE - CORRECT AND COMPLETE DETERMINATION](#)

Deficiency Letters

Whenever an application cannot be deemed correct and complete due to a lack of information, a deficiency letter should be sent to the Applicant. Correct and complete simply means that all required information is present in a form that is substantial and credible. The deficiency letter should identify any shortcomings in the application that do not meet correct and complete standards required in ARM 36.12.1601. Each deficiency should be clearly identified in the deficiency letter with as much information needed to explain what the Applicant must provide or clarify for their application to be considered correct and complete. Each deficiency identified needs to include a citation of the administrative rule not met. Deficiency letters should have nothing to do with addressing statutory criteria. Deficiency letters are only related to the application elements required by ARM being substantially and credibly addressed. Only one deficiency letter should be sent, so it is important to thoroughly review an application for deficiencies. If the information returned in response to the deficiency letter is inadequate, the application shall be terminated. Please note, however, that you can contact the Applicant or consultant via phone or email and request clarifying information during processing of the application.

A deficiency letter must be written on the Department letterhead of the office where the application is being processed. It must be written in standard letter format that clearly identifies the date sent, the Applicant, and the application number. The bottom of the letter should identify the specialist preparing the letter with an address, phone number, and email where the specialist can be contacted. A template of a standard deficiency letter is available on the ROCO drive.

The requirements and timelines for deficiency letters are described in ARM 36.12.1501. A deficiency letter identifying all defects of the application must be sent within 180 days of receipt of the application. If the Department does not notify the applicant of any defects within 180 days, the application must be treated as a correct and complete application.

Note: When preparing the letter do not use an automatically updating date field. It may be necessary to review, re-print or to send the letter via email to someone else later. An automatic updating date field will cause confusion the next time the document is opened.

The deficiency letter must end with the approved important information text at the bottom of the letter that describes the statutory time requirements for response and consequences if those timelines are not met.

IMPORTANT INFORMATION: *If all of the requested information in the deficiency letter is postmarked and submitted to the Department within 30 days of the date of the deficiency letter or an extension of time of no more than 15 days, the priority date on a permit application will not be changed, or for change applications, the date received will not be changed. A request for extension of time must be submitted in writing. If all of the requested information in the deficiency letter is postmarked or submitted within 31 to 90 days of the date of the deficiency letter unless extended, the permit application priority date will be changed to the date when the Department receives all of the requested information, or for a change application, the date received will be changed. If all of the requested information in the deficiency letter is not postmarked or submitted within 90 days of the date of the deficiency letter, the permit or change application will be terminated and the application fee will not be refunded.*

***For all permit and change applications received on/after October 1, 2019, the deficiency response timeline statutorily changed to 120 days. For all deficiency letters sent for applications received on/after October 1, 2019, use the following language at the bottom of the deficiency letter:

IMPORTANT INFORMATION: If all of the requested information in the deficiency letter is not postmarked or submitted within 120 days of the date of the deficiency letter, the application will be terminated, and the fee will not be refunded.

Correct & Complete

Administrative Rules of Montana (ARM) [36.12.1601](#) addresses the “Correct & Complete” determination of permit and change applications.

- Once an application is received, the Department will review it to ensure that all information required per rule that is necessary to address the statutory criteria has been submitted. This is also known as a “Correct & Complete” determination. The Department cannot move forward on analysis of the application for statutory criteria until it has been deemed “Correct & Complete.”
- It is important to understand that providing information required for a “Correct & Complete” determination is not necessarily the same as proving the statutory criteria. The Department can only grant an application if the criteria for issuance of a change authorization are proven.

Application to Change an Existing Water Right (Forms 6o6-NIR and 6o6-IR)

A. An existing water right can have certain elements changed without losing their priority date. There are two change application forms, one for changes to irrigation rights (6o6-IR), and one for changes to non-irrigation rights (6o6-NIR). Elements which may be changed on an existing water right are:

- Point of Diversion
- Place of Use
- Purpose of Use
- Place of Storage

For **change authorization applications**, information required under the following Administrative Rules of Montana must be submitted and meet the standard of substantial credible information in order to receive a “Correct & Complete” determination:

- [36.12.110](#)- Legal land description standards
- [36.12.111](#)- Map standards
- [36.12.112](#)- Period of diversion and period of use standards
- [36.12.113](#)- Reservoir standards
- [36.12.114](#)- Source name standards

- [36.12.115](#)- Water Use standards
- [36.12.116](#)- Evaporation standards*
- [36.12.121](#)- Aquifer testing requirements**
- [36.12.1301](#)- Permit and change application acceptance
- [36.12.1401](#)- Permit and change application modification
- [36.12.1801](#)- Permit and change application beneficial use
- [36.12.1802](#)- Permit and change applications: possessory interest
- [36.12.1901](#)- Filing a change application
- [36.12.1902](#)- Change application: historical use*
- [36.12.1903](#)- Change application: adverse effect
- [36.12.1904](#)- Change application criterion: adequate diversion means and operation
- [36.12.2001](#)- Salvage water applications

*For change applications, the Department will calculate the historical consumptive volume of the water right(s) to be changed unless the Applicant provides additional consumptive use information on the Historical Water Use Addendum.

** Administrative Rule 36.12.1601, which addresses the “Correct and Complete” determination of an application, requires that Aquifer Testing requirements of 36.12.121 be met for changes. The Department’s determination of applying this set of rules is that 36.12.121 only applies to changes if a new groundwater POD is being proposed. If an Applicant is proposing to deviate from aquifer testing as required by 36.12.121, they will need to apply for a variance from the testing requirements, and the variance granted, in order to proceed to Correct & Complete. If no new groundwater POD is being proposed, then 36.12.121 is not applicable to the Correct and Complete determination of the application.

B. The Department will examine applications to determine if all required information under the above Administrative Rules (see section A.) pertinent to the application has been provided. If required information is missing, a deficiency letter will be sent to the Applicant identifying the missing information.

C. There may be additional addenda required to be submitted which will supplement the information requested on Form 6o6-NIR or 6o6-IR. The Department will not be able to make a “Correct & Complete” determination unless the additional addenda are completed with all required information.

Application addenda that may be required:

- **Change Application Form 6o6-NIR**
 - Change to Instream Flow Addendum
 - Change in Purpose Addendum
 - Change of Salvage Water Addendum
 - Temporary Change Addendum
 - Water Marketing Addendum
 - Place of Storage Addendum
 - Reasonable Use Addendum
- **Change Application Form 6o6-IR**
 - Change to Instream Flow Addendum
 - Change in Purpose Addendum

- Change of Salvage Water Addendum
- Temporary Change Addendum
- Historical Water Use Addendum
- Water Marketing Addendum
- Place of Storage Addendum
- Reasonable Use Addendum

D. Common deficiencies with change applications:

- Required addenda are missing or not completed with all requested information
- Supplemental explanations are not given when requested
- If a representative of the Applicant signs the application, they must provide documentation establishing their authority to sign the application
- When departing from DNRC standards for historical use, not enough information is provided to prove standards do not apply
- For temporary changes with the purpose of instream flow protection, a detailed streamflow measurement plan describing the point where and the manner in which streamflow will be measured is not provided with the application materials

“Correct & Complete” Letter

Once an application has been deemed “Correct & Complete,” a letter will be sent out informing the Applicant. A technical report will accompany the Correct & Complete letter. Once this occurs, the Department has 120 days in which to draft a preliminary determination document. If the Applicant would like to discuss any information presented within the Technical Report, they have 15 days from the date of the Correct & Complete letter to contact the DNRC and request a meeting. If the Technical Report findings are different than information presented with the application, the Department will proceed with the findings of the Technical Report and consider the application to be amended unless a meeting is requested within 15 days of the date of the Correct & Complete letter to resolve the differences. If the application is amended by the Technical Report and the Department proposes to grant the application, the Applicant will not be able to request a hearing on the differing amounts found by DNRC in the technical report. If a meeting is requested, be sure to document all individuals attending and the topics discussed. If the Applicant chooses not to dispute the Department’s findings at the meeting, be sure to document this as well. If the Applicant does dispute the Department’s findings, they can request up to 60 days of additional time to provide information to the Department for review. If additional time is requested to provide additional information, the Applicant must submit a waiver of timelines form with the written request for additional time. This is necessary to give the Department adequate time to review the additional information and complete the PD, taking into account the new information. The waiver of timelines form must be signed by the Applicant or their Attorney if they are being represented by legal counsel. The Applicant may waive timelines at any point in the process once an application has been deemed Correct & Complete. An Applicant cannot waive any timelines prior to a Correct & Complete determination of the application. A waiver of timelines waives the 120-day statutory timeline set for the Department in issuing a decision on a permit. If an Applicant waives timelines on an application, staff processing the application should make every effort to complete review and draft a decision document in a

timely fashion. If, upon review of this additional information, the Department's findings still do not agree with the Applicant, the Department will proceed with either a grant with modifications or decision to deny, depending on the specifics of the application. If no meeting is requested, begin the process of a Draft Preliminary Determination Decision which will grant, deny, or grant with modifications the water right changes requested in the application.

Technical Reports

Overview:

Technical Reports are always completed for changes. There are no special circumstances where you do not have to complete a Technical Report for change applications. Even stock tank changes require that a Technical Report be completed.

The Technical Report stems from the need for Applicants to have an opportunity to see what data the DNRC will be utilizing in our decisions PRIOR to our making a decision. The Technical Report (including the Stream Depletion Report, Return Flow Report (if applicable), and Aquifer Test Report (if applicable)) should only be sent to an Applicant at correct and complete. Don't forget that when the Department grants an application there is not a draft decision sent out, so the Technical Report is even more vital as it singularly establishes reference information for the Applicant to consider prior to the Department formulating a decision.

The Technical Report IS: The Technical Report details what information the Department will utilize in formulating a decision document at that point in time. Much of the information used will come from the Department but some information may be provided by the applicant. Criteria cannot be assessed in the technical report.

The Technical Report IS NOT: An analysis or discussion of whether the application meets the criteria. As such you should not highlight or make bold any elements of the Technical Report which, in your mind, might later cause the application not to be granted. There are numerous opportunities to communicate with the Applicant concerns you have with application in the context of whether the information will lead to a grant or a denial. The Technical Report is not one of those times.

The Details:

The following guidance should provide you with the tools and information necessary to create an effective Technical Report.

There are template Technical Report Word documents located on the ROCO drive which should be utilized when you begin crafting your Technical Reports. Example Technical Reports are located in that same location.

The Technical Report will address all the data and information the DNRC will use to assess criteria in the next step of the process. The Technical Report should in no way address whether the application meets statutory criteria. The Technical Report only addresses the elements and data on which the Department will be basing our analysis of the criteria.

The Technical Report will state exactly what data or method will be used by the Department to analyze criteria. The DNRC will not take that information to the next step and relate the data into the realm of criterion

analysis. When the Applicant receives the Technical Report at correct and complete, they can make the determination relating to what they need to do based on the information we provide them which shows what our criteria-related analysis will be based on.

The Technical Report is not and should not be considered a duplication of effort in relation to crafting a PD. The information contained in the Technical Report that the Department is relying on for decision making should be included in your PD as findings of fact. All you should have to do is copy the elements contained in Technical Report into the relevant criterion-related sections of the PD and add a sentence or two which explains what the DNRC is finding and if the information in that finding shows by a preponderance of the evidence that the specific criterion is being met. Anyone who reads the Technical Report should be able to reproduce the calculations made by the Department.

If the Department's calculations in the Technical Report are different than the what the Applicant has proposed, the application will proceed as a "grant" not a "grant in modified form" if the Applicant does not dispute the calculation in the technical report" and the criteria for issuance of a change authorization are met. This will also be treated like an amendment to the application. The correct and complete template letter has optional text to include this procedural clarification; be sure to include that language.

After the historical diverted flow rate, volume, and consumed volume are finalized, they should be entered into the historical use tab of the Create and Maintain Water Rights screen of the Oracle Database.

When does the Technical Report go out?

The Technical Report along with the Stream Depletion Report, Return Flow Analysis (if applicable), and Aquifer Test Report (if applicable) should only be sent to Applicants after an application has been deemed correct and complete. A second Technical Report or revised Technical Report can be sent if additional details are provided to the Department or corrections are made to the initial Technical Report which will influence what the Department reviews during the criteria analysis.

After the Technical Report is sent out at correct and complete, the Department may communicate with Applicants as needed. These communications can be done orally or in writing and are separate from the correct and complete letter (and determination) and the Technical Report.

Who is responsible for the creation of the Technical Report?

The Regional Office processing the application is responsible for drafting the Technical Report. It is the responsibility of the individual regional managers to understand what level of analysis and data compilation their staff is capable of. The Technical Report is not necessarily a one person show. It is imperative that lines of communication remain open between regional offices, the Central Office, and the Water Management Bureau (WMB should be contacted with requests for hydrological guidance). Remember, the Water Management Bureau does not process water right applications; they simply analyze certain technical aspects of applications, provide peer review and teaching to regional offices, and in general serve as guides in all hydrological matters. Regional office staff are responsible for initially reviewing applications to such a level that they can convey to the WMB any out of the ordinary numbers or considerations they would like them to look at and consider prior to completing their technical analysis.

The Central Office is available to answer your questions pertaining to what should and what should not be included in Technical Reports.

The Technical Report for Change Applications:

The technical report for change applications will contain information relating to:

- **Historical use**
 - **Irrigation Changes**
 - For each historical photo set, identify the maximum acres you find irrigated.
 - Identify the acres confirmed as irrigated in the WRS and/or WRS field notes if applicable.
 - Using the maximum historical acres irrigated and the historical consumptive use rules, calculate a consumptive volume for each of the rights to be changed. Remember to consider supplemental relationships and variables like strength of priority date and nature of the irrigation (full service?)
 - Identify the diverted volume for each water right proposed for change.
 - Always detail the method you engaged to arrive at the values you are presenting.
 - Identify unique information that was detailed via the 6o6HUA and was utilized in your calculations.
 - **Non-Irrigation Changes**
 - Identify any information gathered that might act as a tool in determining the historical use of the water rights proposed for change. This includes anything not provided on the forms or addenda that the DNRC will use in the decision-making process.
 - Always detail the method you engaged to arrive at the numbers you are presenting (diverted volume, consumptive use, etc.).
- **Adverse effect**
 - State new consumptive use figures and methodology used to arrive at the consumptive use volume related to the new use if necessary.
 - Compare the new consumptive use volume to the historical consumptive use volume. Do not infer as to whether there is an adverse effect or enlargement taking place, simply compare the two volumes.
 - Provide WMB figures and reference memos and appendices as necessary.
 - With regard to return flow on irrigation changes, summarize the findings of the return flow report generated by WMB (rate, timing, amount, and location).
 - Present a list of all water rights that will be considered in the context of adverse effect. This list can be included in the Technical Report or as an appendix to the Technical Report. Remember that junior users can be adversely affected in a change as well.
- **Adequacy of diversion works**
 - Include any information that is gathered or known outside of the information submitted with the application.
- **Beneficial use**
 - Include any information that is gathered or known outside of the information submitted with the application.
- **Possessory interest**
 - Include any information that is gathered or known outside of the information submitted with the application.
 - If there is any question as to if there is proper authority to represent the application (possibly lacking ownership of the entire POU), point out the information you discovered.

Criteria Based Guidance

Adverse Effect for Changes

Overview:

When an Applicant chooses to change their water right (purpose, place of use, point of diversion, place of storage), it must be shown that their proposed changes will not adversely affect any other water users. Since water users are entitled to maintenance of the source as it exists when the user comes on the source, Applicants wishing to change their water right must consider all other users on the source, including those with junior priority dates. The Applicant must always have a reasonable plan to prevent adverse effect during times of water shortage should the situation arise.

MCA: The following MCA provides the basis for why we analyze adverse effect criterion when changing water rights.

[§ 85-2-402 Changes in appropriation right](#)

ARM: The following ARM provides us with guidance as to how we must analyze adverse effect.

[36.12.1903: CHANGE APPLICATION – ADVERSE EFFECT](#)

Memos & Policies:

Policy: A list of water rights taken into consideration when evaluating adverse effect criterion should be generated and included in the application file. The legal demands list will suffice for this purpose unless for some reason additional water rights were reviewed for potential adverse effect. The list can be included in the technical report or as an appendix to the technical report.

[HB 99 Implementation & Guidance document](#)

[Technical Memorandum: Calculating Return Flow](#), dated April 18, 2019

- The purpose of this technical memorandum is to describe standard practices DNRC uses to calculate return flows to evaluate adverse effect criterion for certain changes of use under §85-2-402, MCA.

[Policy Memo-Return Flows](#), dated April 1, 2016

- This memo mainly pertains to instream flow changes but can also apply to irrigation changes where the POD is being changed to either downstream or above where return flows historically entered the source of supply. In certain situations, if some diverted volume is left instream, #3b is considered to be met. For example, if an appropriator proposes minor changes to the POU (not enough to change return flow location) but also converts to sprinkler from flood irrigation and reduces diversionary requirements, #3b is met. However, it is always best to consult with WMB to determine if a return flow analysis is necessary for individual situations. If the change application meets 1-3 of the Return Flow Policy Memo, a simple return flow analysis determining the location of historical return flows and the amount (volume) of historical return flows still needs to be completed, but the Department will not develop a monthly return flow analysis unless a valid objection is filed. If return flows return to multiple sources, consult with the WMB because a partial return flow report may need to be completed for flows that do not return to the source of supply.

- The 2016 policy memo specifies that the Department will not develop a detailed return flow analysis for change authorizations, without a valid objection, if: 1) return flows will enter back into the source where they have historically returned upstream of or at the location of the next downstream appropriator; or 2) water is left instream so historically diverted flows are available during the historic period of diversion either below the point of diversion or where return flows historically returned to the source.

[Policy Memo- Change in method of irrigation](#), dated December 2, 2015

- The 2015 policy memo specifies how DNRC reviews changes of use under §85-2-402, MCA that involve a change in method of irrigation.
- This memo is not applicable in situations where the Applicant is proposing to reallocate how they apply water for irrigation via a change. An example of this is when the Applicant is proposing to add acres via a change and spread water thinner. In these situations, the Applicant is telling us that they will no longer continue to apply water to their irrigated field(s) in the same manner in which they historically have, and therefore 4) of the policy memo does not apply.

*Neither of these memos excuse the Department from conducting a return flow analysis. Rather, it's the level of analysis necessary that is at issue. At a minimum, there must always be an analysis of the amount and location of return flows. Even if water is being left instream for any reason, there must be an analysis of location because the stream or reach that it is no longer being diverted from may not have been the receiving stream for all or some of the return flows.

Per rule, return flows are specific to the irrigation purpose. Change applications with historical use of an irrigation or lawn and garden purpose in which there is a proposed change in place of use need at minimum a return flow analysis which reviews the location of historical return flows and the amount (volume) of historical return flows.

- For changes in which the historical place of use is not being changed at all, a return flow analysis is not required.
- All PDs for change applications dealing with irrigation need to make a finding of fact for return flows, regardless of whether or not a full return flow analysis was completed. The depth to which return flows need to be addressed is dependent upon the details of the proposed change.

Forms & Addenda: The following forms and addenda are directly related to adverse effect.

- Form 606 Application to change an existing irrigation or non-irrigation water right: These forms cover the basics of adverse effect.

Process:

The adverse effect criterion and historical use assessment are somewhat related. ***The information below assumes the Applicant has substantiated their historical use.*** If they have not substantiated historical use, you cannot fully evaluate the adverse effect criterion. You can evaluate whether their plan seems reasonable and assess if changes in return flow, for example, would hurt another water user, but you cannot make a definitive ruling on the adverse effect criterion, in most cases, without knowing how much water the Applicant used in the past.

Briefly review the information the Applicant provided. Does it appear that they will be increasing their historical use? Does it appear that their plan to prevent adverse effect is sufficient? Keep this information in mind as you assemble the information you need and be aware that the Applicant's information will need to be revisited once you have completed the analysis on the information you are gathering. Keep in mind, it is not permissible for the Applicant to adversely affect any other water user, regardless of their priority date, as a result of the proposed change. Another thing to address is the most recent year the water was used. If the water was used in the last decade there is no concern with abandonment. If not, the Applicant should address how resuming its use will not adversely affect any of the other users on the source, particularly users that have come onto the source during the period of non-use.

Locate all water rights that may be affected by the proposed change. This includes, but is not limited to, water rights using the same POD or ditch, other water users downstream or down gradient from the Applicant, and anyone who may be dependent on current return flow. When evaluating usage of groundwater, be sure to locate other well/spring rights in the vicinity. While the Applicant is required to provide some of this information as part of their plan, feel free to ask WMB hydrologists for input on this topic. WMB should be able to indicate where the return flows are expected and a reasonable zone of influence for groundwater appropriations. On a related topic, if the use is changing, be sure that the consumptive use will not increase. WMB may also be able to help with this.

Briefly look at each water right that may be affected and consider the potential negative impacts the proposed change may create. What if the Applicant wishes to change the place of use to an area below where historical return flows re-entered the stream? If there is a user between where the historical return flows re-entered the stream and where they will now enter, will that cause an adverse effect?

Next, determine whether the proposed change will alter the historical diversion pattern, including the rate and timing of depletions? If so, will that cause an adverse effect to anyone? If a groundwater right is proposed for change, remember to not only consider other groundwater users but also users of the connected surface water source(s). Depending upon the proximity of the surface water source to the diversion and use of groundwater, as well as the magnitude of the change, surface water users may be affected.

Additionally, there could be an enforcement action on the source which could impact the adverse effect analysis for the proposed change. Offices should review the "Water Distribution Projects" page on the DNRC Adjudication website and the "Enforcement" page on the Water Court website to determine if any enforcement actions exist which could impact the Adverse Effect analysis. Sometimes enforcement actions include water commissioners and sometimes they do not. There may be an enforcement action on a source one year and not the next year. If you would like additional information on a specific enforcement action, please contact the Adjudication Bureau Chief. If you authorize a change on a source that has an enforcement project, please notify the Adjudication Bureau Chief.

Given all the information provided and the information you located and assessed, does their plan seem reasonable? Do you believe the proposed change will increase water availability? Do you believe the proposed change will create an adverse effect? Have they proven, in your mind, a preponderance of substantial credible evidence that no harm will come to another water user as a result of this change?

Specific Concepts and Q&A:

Do the rules for Aquifer Testing (MCA 36.12.121) have to be followed in a change application?

Aquifer tests are not required by rule for acceptance of change applications per 36.12.1301 but may be needed to analyze adverse effect in certain situations. Administrative Rule 36.12.1601, which addresses the "Correct and

Complete” determination of applications, requires that the aquifer testing requirements of 36.12.121 be met for changes. The Department’s determination of applying this set of rules is that 36.12.121 only applies to changes if a new groundwater POD is being proposed. If an Applicant is proposing to deviate from aquifer testing as required by 36.12.121, they will need to apply for a variance from the testing requirements, and the variance granted in order to proceed to Correct & Complete. If no new groundwater POD is being proposed, 36.12.121 is not applicable to the Correct and Complete determination of the application.

When processing an application to change a POD, would increased consumptive use based on changing application methodology from flood to sprinkler irrigation need to be addressed as an adverse effect?

Any change that comes in the door opens up all elements of the right to review. This includes looking at the historical consumptive use and carrying these findings through to the adverse effect analysis. Due to the Policy Memo – Change in Method of Irrigation dated December 2, 2015 (aka Efficiency Memo), we will only consider new sprinkler irrigated acres outside of the historical POU. Calculate the consumptive volume for the new acreage and compare to the retired acreage to determine any changes. We will not compare the consumptive volume for the flood irrigated acres to the sprinkler consumptive volume within the historical POU. It should be noted that there is no need to apply for a change if one changes from flood to sprinkler and the new sprinkler system falls entirely within the historical POU footprint.

How do you deal with carriage water with respect to adverse effect when there are multiple users on the ditch and one user wants to change their point of diversion?

Multiple western states have established case law addressing adverse effect for situations where someone on a multi-user ditch is proposing to no longer convey water down the ditch. This case law is consistent with Professor Dean Trelease’s assertion set out below that a change from a joint ditch which increases the burden of transmission on the other appropriators is not an adverse effect in a change proceeding.

*Dean Trelease also listed common types of harm which do not run afoul of the no-injury rule:

2. A change from a joint ditch to another ditch, which increases the burden of seepage and transmission losses on other appropriators who use the joint ditch.” (citing *Brighton Ditch Co. v. Englewood*, 124 Colo. 366, 371-373, 237 P.2d 116, 120 (1951). But see *Fort Lyon Canal Co. v. Catlin Canal Co.*, 642 P.2d 501, 505 (Colo. 1982)(ditch company bylaws imposed duty not to injure other ditch users).

*Reference: Robert E. Beck, 2 Waters and Water Rights § 14.04(c)(3) (1991 edition) regarding whether the loss of carriage water is considered an adverse effect in a change proceeding:

The Department’s position historically has been consistent with case law and Professor Trelease’s assertion that if two owners of two different water rights use the same ditch, either water right owner can remove their water from the ditch without having to leave carriage water in the ditch to prevent adverse effect to the remaining water right owner using that ditch.

- The exception to this is when the water rights in the ditch are all from the same parent water right (same filed appropriation or historically decreed right), in which case carriage water must be provided to prevent adverse effect to the remaining portions of the same original water right. This is what the DNRC’s 1990 Final Order on the Allred application holds. This decision was not appealed and set a precedent for how we must handle these situations.

- Allred draws a distinction between waters in a ditch that were appropriated separately and those that were derived from a single common appropriator, i.e., the original right was sold in parts with some water reserved or the land was sold in parts and the water appurtenant to the land went with each conveyance.
- In Allred, the proposal held that water rights filed separately and with no association to any of the other water rights in the ditch have no obligation to provide carriage water for the other water rights that utilize the same ditch systems. Individual water right owners, without a parent/child relationship, cannot successfully argue that the loss of carriage water is an adverse effect.
- In Allred, the senior water right that was split, and which uses the now shared ditch, was required to provide carriage water down ditch lengths. The determination was that carriage water had to be allowed for other parts of the original water right that have since been split off to convey their portion of the water through the ditch system.

What is the policy on adverse effect in relation to someone else having an inadequate diversion and with regard to people being able to reasonably exercise their right?

We don't have a directive on how to deal with these situations. Each case is fact specific as these situations are highly dynamic and dependent on a multitude of variables including things like: aquifer/well depth, drought cycles, local knowledge, and practices. With so much variability involved, it is difficult to nail down a specific approach with which to deal with these situations. That said, CO is always willing to talk about specific circumstances.

Historical Use for Changes

Overview:

When an Applicant chooses to change their water right (purpose, place of use, point of diversion, place of storage), they must first establish the actual, on-the-ground, past usage of the water right. For a Statement of Claim, the use must be established prior to July 1, 1973. If changing a New Appropriation water right, historical use should be established at the date of project completion. All elements must be discussed and proven to be accurate. The water right record itself, even on a decreed claim, cannot stand alone; historical use must be proven by a preponderance of the evidence. If a change comes in proposing to change an unperfected permit, the Applicant can change up to the amounts granted in the original permit without proving the perfection.

To ensure that an expansion to an existing water right does not occur through a change application, the DNRC must assess all elements of the existing right to determine the extent of the historical beneficial use. Once the historical use is known, it can be determined whether the proposed change is possible.

DNRC has the responsibility to limit existing rights to the extent of their historical beneficial use when a change application has been filed on that right. The appropriator holds no title or right to the excess volume of water used over and above the requirements of the beneficial use.

The Applicant bears the burden of substantiating their historical use, no matter how their water right was described in previous decrees or through adjudication. Any inaccuracies in water rights carried over from final decrees or through the adjudication process should be caught in the change process where the change Applicant must substantiate their historical use.

An application is not considered correct and complete if the evidence submitted to show the extent of the historical use does not “constitute probable believable facts sufficient to support a reasonable legal theory” (ARM 36.12.1901).

Important Note:

The information provided on the water right abstract is not enough to substantiate historical use, even if it is a decreed claim. The historical use analysis has long been held to a different standard and this has been confirmed through numerous court cases, including recently in the Supreme Court Opinion of Hohenlohe vs. DNRC, 2010. Another important fact to note is that the Applicant must provide substantial credible information regarding their historical use. The DNRC will weigh this information and decide if it shows by a preponderance of the evidence the historical use. The filing of a claim was considered prima facie and therefore, the process undertaken by DNRC when evaluating Change Applications is held to a different burden of proof. Please note that evaluation of the historical use is not “re-adjudicating” any claims.

MCA: The following MCA provides the basis for why we analyze historical use when changing water rights.
[§ 85-2-402 Changes in appropriation right](#)

ARM: The following ARM provides us with guidance as to how we must analyze historical use.
[36.12.1902: CHANGE APPLICATION – HISTORIC USE](#)

Memos & Policies:

- [Development of standardized methodologies to determine historical Diverted Volume](#), dated September 13, 2012
- [Technical Memorandum: Pond and Wetland Evaporation/Evapotranspiration](#), dated March 14, 2018
- [Assessment of new consumptive use and irrecoverable losses associated with change applications](#), dated April 15, 2013
- [Technical Memorandum: Distributing Conveyance Loss on Multiple User Ditches](#), dated February 14, 2020
- [Historic diverted volume determinations for changes to existing rights decreed with no volume](#), dated August 4, 2020

Forms & Addenda: The following forms & addenda are directly related to historical use.

- [Form 606 Application to change an existing irrigation or non-irrigation water right:](#) These forms address the bulk of the historical use information. The Applicant must document all elements of the water right including the consumptive and diverted volumes and the flow rate.
- [Form 606 Historical Water Use Addendum \(HUA\)](#) may also be needed. The 606 HUA will be needed if the Applicant does not want the Department to use the Consumptive Use Rules when calculating the

historical consumptive use of their irrigation water right. It can also be used to help substantiate historical diverted volume. Please note that if the Applicant submits a historical use addendum, you should contact WMB for guidance on how to proceed. If an Applicant submits the HUA, the Department will consider the information submitted and potentially adjust its analysis to account for the information submitted. If an Applicant is still not happy with the outcome after the Department adjusts the historical consumptive use analysis, then it is entirely on the Applicant to provide an explanation for the Department to consider.

Process:

First, review the type of water right. If it is a claim, even a late claim, then historical use must be established pre-adoption of the Montana Water Use Act. In some cases, the enforceable priority date may be after July 1, 1973, however, use should be established as of June 30, 1973 at the latest. The Applicant is entitled to the maximum amount put to beneficial use prior to July 1, 1973. For example, if the priority date is 1960 then the maximum amount used could be any time from 1960 through 1973. Certain uses of water were not required to be filed upon in the adjudication process. An owner may change those valid exempt claims, but historical use must be proven prior to July 1, 1973. If the priority date is after June 30, 1973, then the historical use must be defined as the time when the project completion notice was filed. For example, if the priority date is 1985 but the notice of completion was filed in 1990, then the historical use must be proven as of 1990.

If the water right being changed is a decreed claim that has been through a case with the Water Court, review any stipulations or reports filed by the staff at the Water Court.

Next, review all elements of the water right and see if the information provided substantiates the claim. It is possible that the historical use proven may actually be less than claimed. If the rights are irrigation water rights, review any available aerial photos to substantiate the acreage listed on the claim. The USGS Landsat Image Viewer or USGS Earth Explorer website can be very helpful for finding aerial imagery. Be sure the photos are for an appropriate time. For example, photos taken in 2005 cannot be used to substantiate any statements of claims. They may help you to confirm current practices but cannot be used in determining the historical use. *Note that the 1978-1979 USDA aerial photos may be used to help substantiate pre-1973 uses of water in combination with other information such as the Water Resource Survey. It is important to note that some of this series of photos were taken in the 1980's). If the water right is a claim, check out the Water Resources Survey (WRS) for substantiating information. Not only should you review the WRS maps but many times the field notes will prove to be especially helpful. In some cases, the claimed acreage may not show up on the photo but there will be notes regarding the current lack of usage and the reason behind that lack of usage. You may also be able to use aerial photos to confirm points of diversion and means of conveyance (i.e. can you see a ditch splitting off a stream?) In addition to substantiating the maximum historical use, the date of last use should also be addressed.

If supplemental rights are involved, the amount of water attributable to each water right must be identified. Some owners will have detailed usage history (i.e. know how much water was diverted under each water right at any given time) while others will not have those historical records. When specific records are not available, it is up to the Applicant to explain the supplemental nature of historical use for each right and the volumes attributable to each. Take into consideration the period of diversion and period of use of each water right as well. Some rights may be used earlier in the season while earlier priority date rights may be "saved" for later in the irrigation season when water is at a premium.

The maximum diverted flow rate must be proven. Water commissioner records (if available) are a reliable source for substantiating flow rates and allowing a diverted volume to be calculated. Another method for determining flow rate may center on ditch measurements—can the ditch hold the claimed flow rate? Can the

diverted volume figure be attained given the flow rate and period of use? What about the operation of the water right? For example, if the water right has a period of use of 06/01 through 08/31, but they stated that they did not divert water from July 1 through July 15 for haying, that must be taken into consideration. Available streamflow measurements may be provided by the Applicant to help substantiate historical period of use.

Unless the Applicant substantiates a diverted volume through use of the Historical Water Use Addendum, the diverted volume will be calculated using this formula:

Historical Diverted Volume = $(\text{Volume}_{\text{historic consumptive use}} / \text{On-farm efficiency}) + \text{Volume}_{\text{conveyance loss}}$

Consumed volume for irrigation will be determined using the consumptive use rules unless otherwise requested. For applications where the Applicant is using the consumptive use rules, the RO staff will calculate historical consumptive use. If additional information is provided and the consumptive use rules are not used (in whole or in part), the WMB-Hydrosiences staff may be used to help evaluate the information provided. Information should be forwarded along to them for calculation. When in doubt about any historical use calculations, the RO may contact WMB staff for guidance. WMB will have information regarding the possible variability of any historical use calculations—be sure to involve them any time unusual information is provided. IWR can be used to assess historical use (and is especially helpful if the irrigation system is close to ideal), just be certain you are aware of its limitations. Consult with WMB staff if any questions arise.

***For irrigation claims which have gone through any decree and were not decreed with a volume, the Department will assign historical diverted volume to the water right using the above calculation. For claims in undecreed basins (76L, 76LJ), the Department will assign historical diverted volume to the water right using the above method but not to exceed the volume listed on the claim form. If the historical diverted volume calculation identifies a volume greater than claimed (for undecreed basins only), an amendment to the claimed volume will be required in order for the Department to consider an amount greater than claimed. See the Historic diverted volume determinations for changes to existing rights decreed with no volume, dated August 4, 2020, memo for more information.**

Review all other elements of the water right using any information available to you. The Applicant may provide a substantial amount of the information for the evaluation of historical use, but it is your job to decide if the information provided meets the burden of "substantial credible." Review § 36.12.1902 (7-8) for a complete list of information to be validated and the resources available to you.

While most of the information above describes historical use review for irrigation water rights, the review for other types of water rights will be similar; however, other sources may be used. You may need to rely on the Applicant for more information when you are unable to use aerial photos, for example. If substantiating an exempt domestic right, you may need records to show when the house was built and occupied. If reviewing a stock claim, records regarding the sale or purchase of cattle would be helpful. Grazing records may be kept by owners; this may be a journal or something more formal. For mining water rights, records of sales or operating equipment purchases may be used.

Specific Elements to Consider as You Examine the Historical Use of a Water Right:

Please take into consideration the following aspects of a water right as you analyze it for historical use. These elements integrate with one another and when analyzed as a whole should provide you with the necessary information to outline historical use of a water right in a finding of fact.

Water Right

Is the priority date senior enough to irrigate throughout the entire growing season?

- ✓ Use regional office knowledge.
- ✓ Do water commissioners typically allocate water? If so, what is the typical priority date cut off line?
- ✓ Do "calls" typically happen on the source?
- ✓ Is it in a basin closure area?
- ✓ How contentious are water rights from the source?

Does the period of appropriation encompass the full growing season?

- ✓ Compare against the growing season periods set by USDA-NRCS.
- ✓ Does the period of appropriation extend beyond the growing season (where late season irrigation may occur to load up soil moisture for next growing season)?
- ✓ If the historical period of use does not cover the full irrigation season, the calculations for historical diverted and consumed volume shall be truncated to reflect the amounts attainable for the historical period of use. Example: High spring flow claim that has a period of use from April 15-July 15. The calculation of historical consumed volume should be completed using IWR consumption values for the period of use. For July, since the period of use is half of the month, the July IWR consumptive value would be divided in half to represent the partial month use.

Do historical decrees, Water Court documents, or previous administrative hearings or court cases present limitations to the water right or water use?

- ✓ Review historical decree. Some decrees specify limitations. For example:
 - Case No. 3117 – Meagher County Decree, FOF #7, states, "*That the flow of Elk Creek after June 20th in average years does not exceed 50 miner's inches, and it has always been insufficient to irrigate the lands irrigated by the Elk Creek No. 1 ditch and the Lower Elk Creek ditches*"the decree then goes on to describe the POU.
- ✓ Review Water Master reports.
- ✓ Review previous administrative change application proceedings on the water rights to be changed. For example, historical level of irrigation service has been defined for water rights from a particular source (e.g. insufficient flow in X Creek to meet full-service irrigation demand. Estimated level of service was 70%).

Are there supplemental water rights or state/federal contract water associated with the place of use?

- ✓ If no supplemental water rights or state/federal water is used to supplement the POU, then calculation of historical use will be concentrated on the single right.
- ✓ If there are supplemental water rights on the POU to be changed, then the reviewer must make a determination as to the level of water consumption for each water right.
- ✓ If state contract water or federal irrigation district water is released into the system on a yearly basis, and that water is used to supplement the POU to be changed, calculations for the privately held water rights will take this into account and findings are likely to show reduced diverted and consumed volumes attributed to the private rights.

Source

Are natural stream flows or groundwater supplies sufficient to meet diversion and conveyance requirements and irrigation demand throughout the period of appropriation at the historical diversion? Do stream flow records or groundwater data support the conclusion?

- ✓ Use regional office knowledge of the source (both SW and GW).
- ✓ Review gauging station records.
- ✓ Consult with hydrogeologist about aquifer characteristics.

Does storage (pre-1973 if a claim) provide a greater degree of water use, management and opportunity for control of irrigation operations, including increased access to water?

- ✓ Is storage involved?
- ✓ Consider the capacity of the storage project, not simply whether storage exists.
- ✓ Ask the water user about how he/she manages water from the reservoir to control and apply water to the POU.

Did the historically irrigated parcel benefit from sub-irrigation, tail water runoff, or other unaccounted for water sources?

Irrigated Acreage

Does a topographic map indicate the entire claimed place of use is irrigable?

- ✓ Pull the topo and analyze the POU. Don't make assumptions that simply because the POU lies downgradient of the ditch, the POU must be irrigable.

Does aerial photo analysis indicate uniform field application across the entire place of use?

- ✓ Use a series of aerials to make determination.
- ✓ Use a series of aerials to ensure the presence of irrigation (i.e. don't assume dark contrast from one photo is indicative of irrigation).
- ✓ Look for patterns of water use. Is the coverage uniform? Does coverage vary from year to year?

Aerial photo interpretation. Do the acres claimed appear irrigated at the time of the photo?

Water Resources Survey aerial?

Other pre-1973 aerials?

1975-1980 aerial?

Other post-1973 aerials?

- ✓ Use as many aerials as you have reasonably available to make the best decision.
- ✓ Assess for irrigation at the time the photo was taken, not simply whether infrastructure was in place. We're looking for actual irrigation.

Irrigation System & Field Conditions

Has irrigation generally occurred every year?

- ✓ Use any regional office knowledge.
- ✓ Review aerials.
- ✓ Communicate with the water user.

Are the diversion works capable of achieving the level of historical use purported in the application?

- ✓ Consider ditch/pump capacity. The Department requires some physical evidence or detailed written description of the diversion works.
- ✓ May want to consider the condition of the system (i.e. If diversion works are in such disrepair, and suspicion of 60 years of non-use or mature trees growing in the ditches)

Does the conveyance system have a high efficiency rate? Consideration should be given to pumps, pipelines, lined ditches, etc.

- ✓ Closed system (pump/pipeline)?

- ✓ Open conveyance, leaky ditch?
- ✓ Look for written information in the application that describes efficiency.
- ✓ Look at web soil survey for soils information

Do the soils have irrigation limitations? Are soil conditions and characteristics conducive to the crop production potential purported in the application?

- ✓ Review web soil survey.
- ✓ Does the Applicant state anything about soils in the application?
- ✓ Does the Applicant state anything about crop production in the application?
- ✓ May want to review Cadastral to assist with this factor.

Did the historical irrigation system (pre-1973 if a claim) deliver water to all parts of the field?

- ✓ Consider the type of irrigation system
- ✓ Aerial photo review.
- ✓ Topo review.
- ✓ Do the application materials shed light on the historical field efficiency of the system?

Prior to 1973 did the place of use contain improvements or infrastructure such as field leveling, contour ditches, border dikes or conversion to sprinklers that could result in the consumptive use value purported in the application?

- ✓ Keep in mind the level of consumptive use purported in the application while considering this factor.
- ✓ Keep in mind the source while considering this factor.
- ✓ Keep in mind how difficult it is to achieve maximum crop production.

Ditches

Ditch loss for a single field can be calculated using the following equation, which is outlined in further detail on page two of the [Development of standardized methodologies to determine Historic Diverted Volume memo](#):

Seepage Conveyance loss= Seepage Loss + Vegetation Loss + Ditch Evaporation

Ditch loss for multiple fields should be calculated following the procedures identified in the [Technical Memorandum: Distributing conveyance loss on Multiple User Ditches](#).

Water Use

Water use records, commissioner records, etc. Do records support the Applicant's consumptive use estimate?

- ✓ This factor requires actual water use records that are understandable.

Are there crop production records, ranch operations logbooks, power records for pumps, or affidavits of owners/workers/lessees familiar with pre-1973 operations that support the Applicant's consumptive use estimate?

- ✓ This factor requires actual and understandable records.

Do Cadastral land classification, grade and description support the Applicant's estimates?

- ✓ Research the actual results from Cadastral.
- ✓ Report "land classification", "acres irrigated", "grade & description", and "type" (e.g. tillable irrigated, 99.72 acres, 2.5-2.9 tons alfalfa per acre, flood irrigation).

- ✓ Compare the results on crop production (grade & description) with the purported historical use (i.e. crop production level).

Does the Applicant's irrigation management style support its consumptive use estimates (e.g. number of irrigations per year or pattern of use, rotation schedule with other water users, labor considerations, etc.)?

- ✓ Review the application or communicate with the water user for these results.
- ✓ How many cuttings per year does the water user get?
- ✓ Does the water user divert water for a Fall application for soil moisture content?
- ✓ Consider the location and source of water. Can the source support a highly managed operation?
- ✓ Consider the type of irrigation system.
- ✓ Are there other irrigators on the ditch? Is a rotation schedule in place that would limit the ability to maximize crop production?
- ✓ Focus on the private water right, not supplemental or contract water.

Water Resources Survey field notes information.

- ✓ Pull the field notes and review. Some surveys have detailed and valuable information on the extent of historical use (e.g. last known date of use, extent of water use, reliability of source, etc).

Specific Concepts and Q&A:

Stock Direct Flow Rate Calculations for Legal Demands

To calculate the volume for stock direct water rights, use the following procedure:

1. Query NRIS for the stretch of creek using the advanced search. Use the purpose index as it will return the number of animal units, (AU's). Beware of multiple files for the same water right.
2. For permits, take the number of AU's times .017 (15 gpd/AU) to determine the AF/year.
 - This figure, (.017), is found in Form 615 Water Conversion Table
3. For claims, 0.034 (30 gpd/AU) times the number of AU's or the claimed volume should be used, since that is what the Water Court decrees.
4. Back calculate a flow rate by using an assumed 365-day period of use or use 35 GPM as a total flow rate for all stock direct water rights used to calculate the legal demand combined. For sources with a large number of livestock direct rights (that will likely exceed 35 GPM if back calculated), back calculating the flow rate is recommended.

Examples:

Tenmile Creek, (Basin 41I)

- $(3,713.9 \text{ AU})(.017)=63 \text{ AF/YR}$
- $63 \text{ AF/YR} = 39 \text{ GPM}$

S. Fork Smith River, (Basin 41J)

- $(16569.5 \text{ AU})(.017)=282 \text{ AF/YR}$
- $282 \text{ AF/YR}=174.5 \text{ GPM}$

Can a change be granted more flow rate or volume than decreed?

No. If a volume was decreed the change will be limited to the decreed volume. If a water right holder disagrees with the volume decreed, they will need to address it with the Water Court and get them to decree something different before we can accept something different. See the Historic diverted volume determinations for

changes to existing rights decreed with no volume, August 4, 2020, memo for information on how to proceed with claims where volume was not decreed.

If a person changes only irrigation methods (i.e. flood to sprinkler), do they need to file a change?
As long as the irrigated acreage remains in the footprint of the historical irrigated acreage and the POD does not change, a change is not needed.

If a change from flood to sprinkler irrigation takes place, what happens from a legal perspective to the flow rate that is not being used at the new sprinkler system? For example, if my existing water right (flow rate) for flood irrigation purposes is 10 CFS, and I change all of my previously flood irrigated acreage to a center pivot that diverts 3 CFS, what happens to the 7 CFS difference? Is it lost or abandoned? If the Department defines my water right by the beneficial use at the center pivot, or 3 CFS, has the Department “taken away” the 7 CFS difference?

The Department has not “taken away” the difference. That water is in limbo and for the moment is being left in the source with no defined beneficial use. For the sake of discussion, let us assume in this example that the maximum amount of consumed volume is being used up in the sprinkler system. Any leftover diverted flow rate (the 7 CFS above) along with its associated diverted volume is considered nonconsumptive in nature. This means that it can only be used for a nonconsumptive purpose on a future change. If the owner decided to change or lease that remaining 7 CFS for a nonconsumptive instream fishery purpose, they would need to complete a change application and prove up the -402 change criteria including beneficial use of the new fishery purpose. The new nonconsumptive use can only be used between the historical point of diversion and historical point of return flow (Hohenlohe). However, the remaining 7 CFS cannot be used for mitigation water. The intent of mitigation is to offset another consumptive use and prevent adverse effect. So, the water used for mitigation has to be the consumed amount of water from an existing use. In this example, the remaining water (7 CFS) consists of a diverted flow and diverted volume; the consumed volume remains with the existing sprinkler irrigation (3 CFS).

Adequate Means of Diversion for Changes

Overview:

Adequate means of diversion is an element (criterion) which must be analyzed in order to issue a change under [MCA 85-2-402](#). The Applicant must prove by a preponderance of evidence that the proposed means of diversion, construction, and operation of the appropriation works are adequate for the proposed beneficial use. Substantial credible information would show that water could be withdrawn from the source and conveyed to the place of use in the amounts applied for without unreasonable loss through design or operation. When analyzing the information below please keep in mind that it is the MCA and ARM that should ultimately be acting as your guide when analyzing the diversion means.

MCA: The following MCA provides the basis for why we analyze adequate means of diversion.
[85-2-402. Changes in appropriation rights - definition.](#)

ARM: The following ARM provides us with guidance as to how we must analyze adequate means of diversion.
[36.12.1904: CHANGE APPLICATION CRITERION - ADEQUATE DIVERSION MEANS AND OPERATION](#)

Forms & Addenda: The following forms and addenda include a description of the diversion works.

- Pre-Application Checklist: During the pre-application meeting elements relating to adequate diversion means and operation will be discussed. The location of all primary and secondary diversions should be provided in map form. If the diversion is a well, a well log should be provided. Specific elements assessed should include the flow rate, timing, overall efficiency, and features which are intended to reduce or eliminate adverse effects on other water rights.
- Form 606 (Application for Change of Appropriation Water Right): Required information for both surface water and groundwater applications include a description of the proposed means of diversion and the timing of withdrawal from the source. For surface water appropriations the source name is also required.

Process:

The Applicant must provide credible information that the diversion works are capable of delivering the amount of water requested without unreasonable loss through design or operation. Preliminary design plans must be submitted that meet the requirements of ARM 36.12.1904. The first step in this analysis is to determine how much water is required for the proposed beneficial use. For change applications, the amount of water required to support the historical beneficial use must be determined by the Department as outlined in ARM 36.12.1902. If the change application involves a new diversion, the diversion works must be adequate for the proposed beneficial use. Exceptions to this criterion include any change where the water will be left instream, (fisheries, mitigation). When the change involves a new well or other groundwater diversion, the diversion must be able to produce the requested flow rate and volume within the constraints of well efficiency and the available water column. In these cases, the Water Management Bureau will review the Aquifer Testing Addendum and Form 633 and draft an Aquifer Test Report. Past water use records may be substituted when available when the proposed diversion from the well is not changing.

In cases where it has been determined that there is a possibility for adverse effect, conditions requiring water measurement may be necessary. The DNRC conducts a yearly Water Commissioner Training program which provides the basics of water measurement. Information relating to water measurement is available from numerous sources including the following:

- <https://www.usbr.gov/tsc/techreferences/mands/wmm/index.htm> - (Water Measurement Manual USDI, BLM)
- Irrigation Water Measurement, University of Wyoming – (Provided at Water Commissioner training)

General Examples:

Adequate Diversion

FINDINGS OF FACT

59. The proposed means of diversion is a 75 horsepower Cornell Pump (Model #5RB) **capable of diverting the requested flow rate and volume of water**. Water conveyance will occur through a 12 inch mainline (plastic pipe) to a 188.7 acre center pivot sprinkler irrigation system. Total sprinkler system length will be 1,525 feet operating at a pressure of 80 pounds per square inch. The system was designed by Billings Pump & Irrigation from Billings, Montana, and **certified as adequate** by Otto Ohlson, retired Engineering Tech from the US Natural Resources and Conservation Service. May 2, 2010 letter from Otto Ohlson: Irrigation System Proposal, Billings Pump & Irrigation, September 16, 2009. The Department finds the proposed means of diversion, construction, and operation of the appropriation works are adequate for the proposed beneficial use.

The above example proposes to use 2.52 CFS up to 419.3 AF to irrigate 188.7 acres under a new pivot.

Submitted design specifications show the system is capable of diverting the requested flow, which represents

adequate irrigation, (6 GPM / AC). The Period of Diversion outlined earlier in the Preliminary Decision was determined to be April 15 to September 1. The proposed system would be able to operate 24 hours/day for 83.8 days of the total 138-day Period of Use.

Specific Concepts and Q&A:

What is the policy on adverse effect in relation to someone else having an inadequate diversion and with regard to people being able to reasonably exercise their right?

We don't have a firm directive on how to deal with these situations. These situations are highly dynamic and dependent on a multitude of variables including things like aquifer/well depth, drought cycles, local knowledge, and practices. With so much variability involved it is difficult to nail down a specific manner in which to deal with all of these situations. That said we are always willing to talk about specific circumstances as explained by the Applicant.

Beneficial Use for Changes

Overview:

If applying for a change authorization to change the purpose, an Applicant must prove the beneficial use just like they would for a permit. If applying for a change authorization and not changing their purpose, the beneficial use is essentially established in the historical use section. There are rules that establish "reasonable" amounts of water for several different purposes and the Applicant may use those amounts or come up with different amounts if they can be justified.

MCA: The following MCA provides the basis for why we analyze beneficial uses.

[§ 85-2-102 Definitions](#)

ARM: The following ARM provides us with guidance as to how we evaluate beneficial use.

[36.12.1801: PERMIT AND CHANGE APPLICATIONS – BENEFICIAL USE](#)

[36.12.115: WATER USE STANDARDS](#)

Memos & Policies:

- [Technical Memorandum: Pond and Wetland Evaporation/Evapotranspiration](#), dated March 14, 2018
- [Assessment of new consumptive use and irrecoverable losses associated with change applications](#), dated April 15, 2013

Forms & Addenda: The following forms and addenda are directly related to beneficial use.

- [Form 606 Purpose Addendum](#): If an Applicant is asking to change their purpose, they must prove the beneficial use of the new purpose similarly to how they must prove the beneficial use of a new appropriation of water.

Process:

Change Application—not changing the purpose

The beneficial use should be well-established in the historical use section. You will need to pull information from historical use to establish the beneficial use because beneficial use is not specifically addressed on the form. If the amounts of water conform to DNRC guidelines, you can use those guidelines in the PD to establish the use as reasonable. Even if their historical use exceeds the DNRC guidelines we will accept it if they have proven that they have historically used that amount.

Change Applications involving purpose changes

The Applicant must provide some information including why the proposed use is a beneficial use. You may relate that back to definitions in § 85-2-102; however, as long as there is some benefit provided to the appropriator, other persons, or the public, then the use is considered beneficial. The Applicant must also quantify the amount of water they are requesting for the new use. If they are requesting amounts that are addressed in ARM 36.12.115 or ARM 36.12.1902, then they do not need to justify those amounts. That said, if the appropriation involves supplemental water rights, then the standards set out in ARM may not be suitable without additional information being provided by the Applicant.

If the Applicant requests an amount that does not conform to DNRC standards, they must provide information as to why the amount requested is the amount needed. If not provided with the application materials, it would need to be requested in a deficiency letter. The Applicant may provide other credible information such as calculations from IWR to justify the requested amount. Of course, there are purposes that are not addressed in rule, so the Applicant will need to provide all information relating to beneficial use in those instances. Review the information provided to determine if it conforms to being substantial credible evidence. If so, proceed to the next criterion. As always, you may request additional information if they didn't provide enough for you to properly evaluate the criterion.

If there are supplemental water rights involved, the use from each water right must be distinct from the others. The Applicant may use DNRC standards, but they may need to reduce their request by the amount of water provided by supplemental water rights if water is already being provided for the purpose. For example, if they wish to irrigate 5 acres of lawn and garden which requires 12.5 AF according to DNRC rule, and they have another water right for the same acreage that provides 10 AF, they can only request the 2.5 AF of additional volume in their application unless they prove that more volume is needed via some other methodology.

Specific Concepts and Q&A:

When is a water right needed for use of sewage effluent?

Refer to the [HB52 memorandum](#) for guidance.

How do we look at beneficial use for fish ponds?

We do not have straight forward guidelines or rules for addressing beneficial use with regard to fish ponds. This is because fish ponds tend to have very dynamic variables associated with them (size, number of fish, species of fish, o₂ content, flow needs, and location of pond). What we do have is a set of decision documents which provide examples for both granting and denying based on the beneficial use criterion. Until we have established guidelines, use existing examples to help you craft the beneficial use section of your PD. Having information from a fisheries biologist and references to scientific literature helps to support the beneficial use of the pond(s). It is important that the literature or documentation getting cited supports the application at hand. Citing literature that pertains to the needs of catfish in Louisiana does not correspond to what trout will need in a small pond at high elevations in MT. Please let us know if you have any questions regarding fish ponds and beneficial use.

Possessory Interest for Changes

Overview:

Possessory interest is an element (criterion) which must be analyzed in order to issue a change authorization under [MCA 85-2-402](#). An Applicant must have possessory interest, or the written consent of the person with possessory interest, in the property where the water is to be put to beneficial use. Exceptions include applications where the stated purpose is municipal, sale, instream flow, mitigation, or water marketing. The Applicant's signature on form 606 attests to possessory interest. If any element of the proposed water right involves federal land, the Applicant must provide proof of special use authorization.

MCA: The following MCA provides the basis for why we analyze possessory interest [85-2-402. Changes in appropriation rights – definition.](#)

ARM: The following ARM provides us with guidance as to how we must analyze possessory interest. [36.12.101 DEFINITIONS](#)
[36.12.1802 PERMIT AND CHANGE APPLICATION CRITERION - POSSESSORY INTEREST](#)

Forms & Addenda: The following forms require the Applicant to affirm possessory interest.

- Form 606 Irrigation (Application to Change an Existing Irrigation Water Right)
- Form 606 Non-Irrigation (Application to Change an Existing Non-Irrigation Water Right)

Process:

The Applicant's signature on form 606 attests to possessory interest. Make it very clear that the Applicant may be asked to provide proof of possessory interest, or written consent of the person/persons owning the property where the water will be put to beneficial use. If there is any doubt as to the authority of a person to sign the application, require the Applicant to provide additional information (power of attorney, corporate records, etc.). Although it may not be professional, it is not illegal to cross out a signature on a form and then have the proper party sign.

When processing a change application, it is not uncommon to discover that a portion of a historical Place of Use is located on land owned by the State of Montana or another government agency. The private landowner cannot change a portion of the water right that they do not own. Whenever a privately held water right is discovered on state land, contact the Trust Land Management Division (currently the contact person is Dennis Meyer). There may be a very rare exception involving private ownership of a water right on state land under the Pettibone decision. For more information regarding the Pettibone decision or any other Montana Supreme Court decision, check the Montana Supreme Court page: <http://searchcourts.mt.gov/>

If any element of the proposed water right involves federal land, the Applicant must provide proof of special use authorization. The most common type of special use authorization whereby a private individual holds a water right located on federal land involves grazing leases.

Special Possessory Interest Considerations

Water and Sewer Districts

Water and Sewer Districts are unique and are not considered municipalities. They are governed under MCA Title 7; Chapter 13 and each district has a unique set of articles of incorporation which further dictates how the body must operate. That said, in order to address the possessory interest criterion in a change application, water and sewer districts need to have the proposed place of use included within the district boundaries. Upon perfection of the change, it must be shown that the water and sewer district is utilizing the water in the proposed place of use. This could be accomplished by providing proof of hookups or providing contracts with users within the place of use.

Homeowners Associations

Homeowners Associations (HOAs) need to be registered with the Secretary of State (SOS) to be able to complete a water right application. All business entities must be filed with the SOS in order to exist as a legal entity and transact business. Therefore, an HOA that has not properly formed under the laws of Montana is not a legal entity. DNRC can't transact business with any entity that is not in good standing with SOS because any signature is likely invalid. The Board of Directors, its officers, and its existence must all be in good standing to function as an entity. You can relate this concept with issuing a 602 to a deceased person.

Procedural Considerations

Amendments

(ARM 36.12.1401) Anytime an Applicant changes their original application; it is considered an amendment. If there is a need to amend the application, have the Applicant use the Amendment to Application form which is located on the ROCO drive.

If the Applicant is simply supplying additional clarifying information within the scope of the application, then a formal amendment to the application is not necessary. That is not to say that the Department would not need to pursue a Waiver of Timelines with the Applicant should the situation warrant such an action.

Amendments include anything that is:

- More than a mere refinement
- Increases requested flow rate or volume
- Requires the Department to either redo or complete a different analysis
- Applicant does not dispute calculations in Tech report that are less than the proposed*
- Example:

Original application for a fish pond is 20 AF, Applicant requests a change to 50 AF—this is an amendment.

Siebel Supreme Court Opinion stated that “significant modification” to an application becomes a new application.

Amendments **may** reset our timelines for review. If an Applicant submits a major amendment, timelines will be reset. This includes the ability to send out a new deficiency letter. Typically, when determining whether an amendment is a major or minor amendment, the office processing the application should review the elements being amended to determine the significance of the amendment. An example of a minor amendment would be where the Applicant reduces their flow rate or proposed place of use. An example of what could constitute a major amendment would be an expansion of the place of use or increase in flow rate which could significantly impact the Department's analysis of the proposed water use.

At some point, if the changes proposed in the amendment to the application are a significant deviation from what was originally proposed, the Applicant may want to start over with a completely new application. Talk with your regional manager and the Central Office if you have questions about whether or not a major amendment constitutes the need for a new application. In this situation, the Department may transfer the initial application fee to the new application.

*It has been decided that if in the Department's technical report, the Department's calculations are based on less than what was proposed (acres, flow rate, or volume etc.) and the Applicant does not dispute the calculations, it is considered an amendment to the application. The application will be considered a "grant" not a "grant in modified form." The Applicant needs to be made aware that this is the case, so be sure to include the applicable language in your Correct & Complete letter.

Conditions

- If a formatted remark (condition) exists in the database, it must be used. Always check to see if a formatted remark exists before you go about adding it as an II remark (freeform). This is important because statistics and queries are often run based on remarks and if everything is entered as an II remark functionality is lost.
- Only add conditions when they are necessary to meet the criteria
- Conditions can be anything you believe is needed to meet the criteria
- Use an II Remark if no formatted remark exists and no specific placement of the remark on the water right abstract is needed
- The Applicant does not need to sign off on the conditions to do a PD to grant
 - The Department may include conditions in the written preliminary determination to satisfy applicable criteria for issuance of a permit or change in appropriation right, see 85-2-307, MCA.
 - If a condition is warranted, a condition notification letter should be sent to the Applicant which will notify them of the condition(s) which will be included on the PD. This letter will give them the opportunity to provide a recommendation on the condition language, but they do not have to sign off on the condition. The intention of this letter is to provide the Applicant notification of any condition(s) and allow them an opportunity to collaborate on the condition(s) to best suit their diversion and use of the water. Ultimately, it is up to the Department to determine final language of a condition.
 - A condition notification letter does not need to be sent if the Applicant volunteers in their application materials to follow a condition that the Department would likely impose. An example of this is the measurement condition. If an Applicant states they will measure their water use, they do not need to be sent a condition notification letter.
- Conditions on a Draft PD to Deny
 - Include any conditions that would be required in order for the criteria to be met within the specific criteria section of the PD that the condition applies to. This tells the Applicant that if the application were to be granted, it would be subject to the conditions identified.

- If you go to a Final PD to Deny, remove the conditions since the usage will not be implemented as requested.
- If the draft PD to Deny is changed to a PD to grant, the conditions must remain.

Environmental Assessments

The Montana Environmental Policy Act (MEPA) requires state agencies to consider the physical, biological, social, and economic implications of their actions. Decision-making on permit & change applications requires MEPA compliance.

The Department shall conduct an environmental assessment on all permit and change applications. This assessment must be in the approved format. During the assessment, the Department shall determine if an environmental impact statement (EIS) is necessary. The Department may adopt another agency's EIS findings and include them in a change application.

Because the MEPA process requires full public disclosure of any environmental impacts, all environmental assessments must be posted on the internet.

Full EA instructions and templates are contained on the ROCO drive.

Variances

The only variance that the Department can and does deal with on changes is related to aquifer testing requirements. The Department cannot grant variances other than for 36.12.121:

[36.12.1601 Water Right Permit and Change- Correct and Complete Determination](#)

36.12.1601(6): A water right change application will be deemed correct and complete if an applicant's information, required to be submitted by ARM 36.12.110 through 36.12.116, 36.12.121, 36.12.1301, 36.12.1401, 36.12.1801, 36.12.1802, 36.12.1901 through 36.12.1904, and 36.12.2001, conforms to the standard of substantial credible information and all necessary parts of the application form requiring the information, including any required addendums, have been filled in with the required information.

- Administrative Rule 36.12.1601, which addresses the "Correct and Complete" determination of an application, requires that the Aquifer Testing requirements of 36.12.121 be met for changes. The Department's determination of applying this set of rules is that 36.12.121 only applies to changes if a new groundwater POD is being proposed. If an applicant is proposing a new groundwater POD and has no intention of completing aquifer testing as required by 36.12.121, they will need a variance from the testing requirements to proceed to Correct & Complete. If no new groundwater POD is being proposed, then 36.12.121 is not applicable to the Correct and Complete determination of the application.

Application Termination

Withdrawn by Applicant

When an application is withdrawn by the Applicant during processing, a copy of the signed letter withdrawing the application must be placed in the file.

Annotate the withdrawal, include a copy of the withdrawal letter in the file, and send the file to the Central Office to complete processing.

Deficiencies not Met

As described in ARM 36.12.1501, if the application is not considered correct and complete within 120 days after the deficiency letter is sent, terminate the application with a standard termination letter that points out exactly what Administrative Rules the application did not meet. The termination letter can only list the deficiencies not addressed from the deficiency letter. A standard termination letter is available on the ROCO Folder.

Send the termination letter to the Applicant, annotate the termination, include a copy of the termination letter in the file, and send the file to the Central Office to complete the termination processing.

Data Entry

1. Under the **Events** Tab add a **TERMINATED / DENIED / REVOKED** event with the date of the termination document, either a letter of withdraw or a termination letter.

Relevant Statutes and Rules

[36.12.1501 PERMIT AND CHANGE APPLICATION DEFICIENCY LETTER AND TERMINATION](#)

Termination of Change Authorization

In the event that a water right holder wishes to terminate an existing change authorization, they may do so as long as they have not perfected any of the change. If perfection or partial perfection of the change has taken place, a change will be required to revert the water right back to the pre-change conditions. Alternatively, the water right holder can wait until the project completion period expires and if they do not file a Project Completion Notice (Form 618), or Application for Extension of Time (Form 607), the change will be expired by operation of law and revert to the most recent version prior to the change being authorized. If there is evidence in the file that the change has been partially completed, the Department cannot just terminate the change and have it revert back to the previous version.

PD Writing Tips & Guidance

PD Writing Dos and Don'ts

DO:

- Write with conviction—the findings are yours, embrace them!
- Include all information on which the decision is based
- Explain each topic so someone with no prior knowledge of the subject can understand the decision
- Understand that the decision document may be used by the Hearings Unit or even District or Supreme Courts
- Include tables as well as the written description

- If applicable, state that a hydrologist reviewed the application and finds the information/methods credible, but then make a finding by the Department. “The Department finds...”
- Reference conditions in the proposal and criteria sections as well as the end of the document
- Review the Writing Tips & Standards document

DO NOT:

- Include unnecessary information
- Say “the Applicant believes/stated/etc.” without following up with a Department finding. Don’t use “I find.”
- Include the proposed appropriation when discussing legal demands
- Use ambiguous/subjective terms (lots, should, typically, only)
- Include percentage statements such as:
 - The Applicant will utilize up to 25% of the flow of the stream
 - The Applicant historically diverted one half the water flowing in the stream

Writing Tips for PDs:

1. Use the correct template. The current templates will always be kept in the ROCO folder.
2. Don’t remove Conclusions of Law from the Template unless it has been vetted by legal. The Conclusions of Law highlighted in grey in the Template can be added as necessary depending on the specifics of the decision.
3. Write the PD as though a reader has no knowledge of the application nor the facts included in the application. In the decision document, the reader should not have to review any part of the file to understand the facts in the file. Don’t include statements that say X is included in the application or indicate where something is located in the file; the reader should be able to discern why the writer, based on the facts, made the decision.
4. Application details need to provide the specifics of an application. What is the source, POD, POU, flow rate, volume, etc. A thorough understanding of both historical use and what is being requested is especially important for changes. A comprehensive knowledge of the application needs to be developed for the reader to understand what the application is for; otherwise, the reader is more likely to make comments that don’t make sense. The application details can follow the same order as the public notice, but just make it in paragraph format, rather than sections.
5. Be consistent. If flow rate is talked about in GPM, then continue to use GPM. Don’t use CFS in some parts. The rule of thumb applied by the Department is use GPM for flow rates under 1 CFS (448.8 GPM) and CFS for anything equal to or greater than 1 CFS.
6. When referencing source, flow rate, volume, period of use, period of diversion, etc. state the source name, the actual flow rate & volume applied for, the actual period of use. This way the reader doesn’t have to go back to the application details section of the PD to find the information.
7. Only existing legal demands on the source should be included in the legal demands table. The Applicant’s application is not a legal demand.

8. If the application is for illegal water use that has occurred, those details are not pertinent and often confuse the reader. Ignore that information and simply talk about the present application.
9. Provide facts of the application, not assertions.
Fact: a piece of information about circumstances that exist or events that have occurred; a statement or assertion of verified information about something that is the case or has happened; an event known to have happened or something known to have existed; a concept whose truth can be proved; scientific hypotheses are not facts.
10. Make sure applications are correct and complete and the necessary information is in the file. Make the findings of the Department rather than saying "Applicant says" or "Applicant contends". Identify what information is factual. Don't use such terms as maybe, will likely, unlikely, typically, etc.
11. Make findings of the Department. Rather than saying "I concur with the Department hydrologist"; state the hydrologist's technical findings. You don't want to imply that you have the same level of knowledge unless you do. Remember the Department as a whole makes the ultimate finding.
12. Do not make a finding that a drawdown of X, as our hydrologists state, "typically" does not cause adverse effect. Make a finding based on this case.
13. Make findings that the criteria have or have not been met. Do not say there "should" not be or it is "unlikely" that an adverse effect will occur.
14. Reference condition requirements in a finding. For example, why a condition of X is needed in order for the criteria to be met. Then add conditions to the end of the document. Don't say the Applicant says they will be sure to do A or B to prevent adverse effect.
15. For permits that require a change for mitigation, a mitigation plan must be included in the permit application and must state the mitigation details and explain why the mitigation plan is adequate to offset adverse effects. There cannot be a complete evaluation in the adverse effect section if there has not been a discussion of the adequacy of their *plan* as it relates to exercise of the permit. Also remember that in the permit application, in the mitigation plan, the amount, timing and location of mitigation water has to be analyzed. Under the Adverse Effect section, include the following sub-sections for permit applications that include a mitigation plan: Mitigation Strategy; Mitigation Amount; Mitigation Duration; and Mitigation Location.
16. The change application process only requires looking at whether the change itself will cause adverse effect. Address the rate, timing and location of return flows in a change application if the historical use is irrigation. What changes to return flows will occur as a result of the proposed change(s)?
17. Historical use in changes needs to follow the rule requirements and the decision document needs to clearly set out the facts, not allegations.
 - a. Add a table that identifies the water right(s) being changed and what you found for each right. Include the following columns: WR#, Source, Priority Date, Purpose, Diverted Flow Rate, Diverted Volume, Historical Consumptive Use; Acres Irrigated.
 - b. Make historical use findings in the Historical Use section of the document. Don't just give one general conclusion at the end.
 - c. Make a finding for the number of acres of historical irrigation and what is shown in the WRS survey book. If need be, the finding can be, "No WRS book exists for this county".
 - d. Make a finding of whether the historical irrigation was full or partial irrigation.

e. Describe facts included in an affidavit of historical use.

18. Be sure the information under each section is applicable. There shouldn't be a need to duplicate information.

19. Don't put the Project Completion Notice deadline in a PD. The Applicant cannot request a hearing on the deadline date.

Tips for Writing Findings of Fact:

- Not all of the information provided by an Applicant needs to be in the decision document, only the facts on which you based your decision.
- HB 831 - Applicant must provide a net depletion amount. However, mitigation must be for the amount of "adverse effect". Refer to the mitigation for adverse effect rather than net depletion.
- ~~The average rate of depletion is 0.013 percent of the lowest mean monthly flow in the Bitterroot River.~~ Don't include percentage of flow or volume statements. They may be factual; however, they are not facts used in decision making. We don't want any misconceptions by the public that percent of flow or de minimis amount is a part of water law.
- If you agree with what is being said, state it as a fact. Make the statement a finding.

EXAMPLES OF HOW YOU SHOULD CRAFT FINDINGS OF FACT:

Not a Finding of Fact	Finding of Fact
The Applicant contributes this fluctuation was due to a change in the barometric pressure.	This fluctuation was due to a change in the barometric pressure.
According to the Applicant this pattern of minimal drawdown and no increase in drawdown as the test progresses is typical for an aquifer test performed in a highly productive aquifer where the pumping rate is relatively low.	This pattern of minimal drawdown and no increase in drawdown as the test progresses is predictable for an aquifer test performed in a highly productive aquifer where the pumping rate is relatively low.
I concur with the Hydrogeologist determination.	Based on the information provided by the Department hydrogeologist, the Department finds the Applicant has addressed the requirements of the Hydrogeologic Assessment as required by § 85-2-360 and -361, MCA.
Drawdown interferences less than X will not typically prevent an existing groundwater user from reasonably exercising their water right.	Drawdown interferences less than X will not prevent an existing

	groundwater user from reasonably exercising their water right.
The Applicant presented sufficient documentation to justify water is physically available using a hydrologic model using precipitation events for small basins.	A hydrologic model using precipitation events for small basins showed the annual predicted runoff will provide X AF.
The existing annual volumetric demand was then compared with the natural flow through the aquifer across the zone of influence to determine if water is legally available.	The natural flow through the aquifer across the zone of influence is 8139.5 AF minus the existing annual volumetric demand of 2733 AF equals 5406.5 AF of water remaining in the aquifer.
The Applicant concluded that there is legally available water for this proposed application because there are no legal demands within the Applicant's delineated zone for the groundwater considered physically available.	Water is legally available for this proposed application because there are no legal demands within the Applicant's delineated zone for the groundwater considered physically available.
The Applicant states that the nearest senior water user along the orientation of the fracture system is over three quarters of a mile from the zone of influence.	The nearest senior water user along the orientation of the fracture system is over 3960 feet from the zone of influence.
The system can be turned off at isolation valves where groundwater comes into each building, allowing for the diversion to be shut off in the event of water shortage.	The Applicant's plan to prevent adverse effect is to turn off the system at the isolation valves where groundwater comes into each building allowing for the diversion to be shut off in the event of water shortage.
The information shows that water is available throughout the period of diversion.	X shows that water is available throughout the period of diversion. (X is the information.)
The Applicant states that 10,952 AF of water annually passes through the ZOI, and as a result it appears that approximately 13,048 AF/yr is over appropriated for this source.	Although 10,952 AF of water annually passes through the ZOI, and as a result it appears that approximately 13,048 AF/yr is over appropriated for this source (legal demand of 24,000 AF/yr minus 10,952 AF/yr of water physically available). However, water is legally

	available in this case since the proposed use is nonconsumptive.
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Writing Standardization Table:

Statute Cite	<ul style="list-style-type: none"> ▪ § 85-2-311, MCA (YEAR-for 1st citation only) ▪ For first citation, include the year of which codes are being used. ▪ Multiple Sections - §§ 85-2-360 to -363, MCA
Rule Cite	ARM 36.12.1701
Statute and Rule Cite	§ 2-4-611, MCA, and ARM 36.12.211
Findings	<ul style="list-style-type: none"> ▪ Use “the Department finds”, however, if the finding is constructed as a statement, then neither phrase has to be used. <i>Example: The Applicant contributes this fluctuation to a change in the barometric pressure. You can use, the Department finds this fluctuation was due to ... or preferably just say, this fluctuation was due to ...</i>
Abbreviate	<ul style="list-style-type: none"> ▪ AF ▪ CFS ▪ GPM
Always put a comma after a year	The hearing will be held on May 4, 2005, at ...
One Word	<ul style="list-style-type: none"> ▪ Groundwater ▪ Instream ▪ Prestream ▪ Unperfected
Capitalize	<ul style="list-style-type: none"> ▪ Department ▪ Applicant ▪ Objector
Don't Use <i>If you write the phrase, the Applicant ..., then there must be a finding stating what you find about the information. (I find ...) It's easier to state the factual information.</i>	<ul style="list-style-type: none"> ▪ Only ▪ Just ▪ Should not ▪ It is unlikely ▪ Conservatively ▪ The Applicant says ▪ The Applicant determined ▪ The Applicant found ▪ The Applicant contends ▪ Percent of flow or volume
Use	<ul style="list-style-type: none"> ▪ Use <u>aquifer flux</u>. Don't use volumetric flux; water flux, or groundwater flux ▪ Department hydrogeologists ▪ Mitigate, not augment
Hyphens & Apostrophes	<ul style="list-style-type: none"> ▪ No apostrophe in years (1970s)

	<ul style="list-style-type: none"> ▪ Use hyphen in modifiers (24-hour pump test) ▪ No hyphen - Nonconsumptive
Limit the use of prepositions	<ul style="list-style-type: none"> ▪ of ▪ to ▪ in ▪ for ▪ with ▪ on
Adverse effect - noun	The appropriation causes adverse effect
Adverse effect - adverb	The water rights will be adversely affected.
Domestic Use	<p>Refer to "Domestic" if the water right is for a house. If there was a lawn and garden component included under the domestic use, break this out into the "lawn and garden" purpose.</p> <p>In some situations in the past, a water right was issued for domestic use which included a lawn and garden component. If this occurred on a water right being changed, break out the individual purposes so that it is clear what the water right is for moving forward. Use the Department standard of 1 AF/household for the Domestic use and then calculate the lawn and garden component by applying the 2.5 AF/acre standard to the remaining volume.</p>

Public Notice

This section covers the part of the Public Notice process that is done within the Regional Office while processing an application. All elements of the water right should be entered into the database exactly how we are proposing to grant it. Any conditions should also be entered into the database prior to sending to public notice (required by 85-2-307(2)(b)). The only events left to enter into the database once the application has been sent to public notice should be an "Issued" event and a "Project Completion Notice Due" event.

Database Entry-Change Description for Public Notice

The change description under the Proposed Change field of the Change Description Screen displays on the printed public notice report. It's usually modified after the public notice to more accurately describe what is being changed as issued, but at this stage the description should have enough detail that anyone could understand the nature of the change.

Enter a description of the change in the Proposed Change field of the Change Description Screen with the following information:

- The intent of the change application
- What specifically is being changed (acres, point of diversion, place of use, purpose, etc.)
- A brief explanation why the change is being requested.

Note: Avoid writing anything that could be viewed as a conclusion about the criteria. The public notice is intended to present the application exactly how the Applicant is applying for it.

Sample of a Proposed Change Description:

THIS APPLICATION IS FOR A TEMPORARY CHANGE TO THE PURPOSE AND PLACE OF USE. THE CHANGE WILL MOVE 113 ACRES OF IRRIGATION TO INSTREAM FLOW FOR THE BENEFIT OF THE FISHERY RESOURCE IN STONEWALL CREEK SPECIFICALLY AND THE BLACKFOOT RIVER BASIN IN GENERAL. THE MONTANA WATER TRUST HAS LEASED THESE WATER RIGHTS FROM THE SAWBUCK RANCH FOR A PERIOD OF TEN YEARS THROUGH A LEASE AGREEMENT IN ACCORDANCE WITH MCA 85-2-407 AND 85-2-408. THE CHANGE SEEKS TO PROTECT THE COMBINED HISTORICALLY DIVERTED FLOW RATE OF 4.28 CFS AND THE COMBINED HISTORICALLY DIVERTED VOLUME OF 847.4 ACRE-FEET AT THE HEAD GATE LOCATED IN SE NE NW OF SECTION 14, T. 14N, R.9W IN LEWIS & CLARK COUNTY. THE NEW PLACE OF USE WILL PROTECT THE COMBINED HISTORICALLY CONSUMED VOLUME OF 137.2 ACRE-FEET FROM THE POINT OF DIVERSION 0.9 MILES DOWN STONEWALL CREEK TO ITS CONFLUENCE WITH KEEP COOL CREEK.

Past Use of Water Description for Public Notice

Enter a description of the past use of water in all water rights being changed. Include the following information:

1. Purpose
2. Source
3. Legal Land Description of POD
4. Historical Diverted Flow
5. Historical Diverted Volume
6. Historical Consumed Volume
7. Historical Period of Diversion
8. Historical Period of Use

Sample of a Past Use of Water Description:

THE PAST USE OF WATER IS FOR IRRIGATION. CLAIM NO. 76F-5351 USED WATER FROM STONEWALL CREEK, WITH A POINT OF DIVERSION LOCATED IN THE NE NE SW, SEC. 14, T.14N, R.09W. THIS RIGHT WAS USED ON 63 ACRES IN SEC. 14, T.14N, R.09W. THE HISTORICAL USE OF THIS WATER RIGHT IS A MAXIMUM DIVERTED FLOW RATE OF 2.39 CFS, A DIVERTED VOLUME OF 473.2 AF, AND A CONSUMED VOLUME OF 67.2 AF.

WATER RIGHT NO. 76F-5354 IS FOR AN IRRIGATION CLAIM USED FROM STONEWALL CREEK, WITH A POINT OF DIVERSION LOCATED IN THE SE NE NW, SEC. 14, T.14N, R.09W. THIS RIGHT WAS USED ON 50 ACRES IN SEC. 14, T.14N, R.09W. THE HISTORICAL USE OF THIS WATER RIGHT IS A MAXIMUM DIVERTED FLOW RATE OF 1.89 CFS, A DIVERTED VOLUME OF 374.2 AF, WITH A CONSUMED VOLUME OF 70 AF.

THE APPLICANT EXPLAINED THAT HISTORICALLY THESE WATER RIGHTS WERE DIVERTED INTO THE EVANS DITCHES FOR APPROXIMATELY 100 DAYS PER YEAR FROM JUNE TO OCTOBER. THE COMBINED DIVERTED VOLUME IS 847.4 AF AND THE CONSUMED VOLUME IS 137.2 AF.

Public Notice Map

A public notice map must be created that shows the POD(s) for the application being noticed as well as all of the water rights that will be included in the notice list. The Notice Map should be at a scale that allows the entire project and the notice area to be viewed with adequate detail. Multiple maps or other descriptive documents may be produced for large-scale projects if necessary. Make sure anyone else can fully understand the notice situation based upon the documents/maps produced.

The Notice Map should follow the same general map guidelines described in ARM 36.12.111(1) including a north arrow, scale bar, section lines and numbers, etc.

The creation of the Public Notice Map and the Public Notice List are part of the same task and should be approached together with the notice area and the notice list in mind.

Preparing a Public Notice List

The notice list is a set of water right owners that may have interest in the application being noticed. Water right owners on this list will be sent individual public notice abstracts for the application being noticed. There is no set standard for how far away or how many water rights should be included with a notice list. However, there are several considerations that should be included in deciding on a list:

- It's best to over notice than under notice an application.
- Be aware of contentious situations on the source or in the area and include those likely to be concerned.
- The public notice should include appropriators who, according to the records of the department, may be affected by the proposed appropriation.
- An impacted water right may have a different source of water than the water right being changed.

The extent of a public notice list depends on the region, population density, demand for water in that area and other local issues. The notice lists should always be discussed with the Regional Manager because of their knowledge of local water issues. The Department may also send a copy of the notice to other interested persons. For example, government agencies, private companies and consultants, persons with water reservations, Indian tribes with compacts, or persons who could be affected by an alteration in water quality may receive copies of the public notice.

Note: Keep in mind that many water rights can be owned by one person or entity. Don't assume because a list has dozens of water rights that it will represent more than a couple owners.

Once a list of water rights is decided on, create a new mailing job in the database. The Mailing Job Number will be used to print labels for the public notice mailing.

Check the Public Notice Form

Review a copy of the Public Notice available from the database. The Public Notice abstract appears exactly how it will appear in the Newspaper and on the individual notices sent to people on the public notice list.

Have another Specialist or a Regional Manger review the Public Notice Form to ensure the following:

1. All the required information is included and correct
2. The notice is understandable
3. The notice describes the proposed application clearly
4. There are no spelling errors
5. The notice is concise with as few words as possible

Sending Public Notice to CO

After all the following is completed the public notice project can be sent to the Central Office to finish the process:

1. The notice area map is completed
2. The list of water rights to be notified is finalized
3. The proposed change description is entered in the database
4. The past use of water description is entered in to the database
5. A change version with all elements of the proposed authorization is entered into the database for all water rights being changed
6. Any proposed conditions are entered into the database
7. The water rights to be notified are entered into the database

Once all these steps are completed, email the **Application Number** and the **PD** to the Central Office public notice coordinator.

The Central Office public notice coordinator will prepare the public notice, arrange a notice date with the newspaper(s) and mail the public notice out to everyone listed on the public notice list.

Public Notice Errors

If a there is an error found in the public notice after it's published; a new public notice is required. For example, a period of use less than intended, a purpose described that doesn't fully explain the complete use, or a significant land description error. Refining a POD or POU after public notice is acceptable and does not require a new notice as long as the refined legal land description falls within the description on the public notice.

Errors by the Department

The Department will pay to re-publish a notice if the error was caused by the Department. Therefore, a meticulous review of the notice and application is necessary before publication.

Errors that do not Require a New Public Notice

Minor errors that do not affect the substance of the notice do not need to be fixed and re-published. Errors such as a misspelled water right number, basin or Applicant's name.

- Under the Events Tab add a PUBLIC NOTICE-SENT TO CO event and the date sent.

Finalizing the Change Application File

After an application has gone through Public Notice, the Change Authorization needs to be issued. The following are the general procedures for issuance.

- About 1 week after the Objection deadline has passed with no valid objections, the Central Office will send the PN packet back to the RO.
- Check the database to be sure the coding corresponds with the decision document, including any conditions or measurement requirements.
- Prepare the Final Order adopting the Preliminary Determination. The template is on ROCO in the PD template folder. Make a copy of the signed Final Order for the file.
- Update the change description tab under the application so that it now applies to a granted change authorization (versus the proposal wording for initial posting and then public notice).
- In the Events Tab, make sure all applicable events have been entered. Also, enter the Issued event and the Project Completion Notice Due date.
- Print on legal size paper an ivory one for Applicant and a copy for the file (and copies for any consultants).
- Send copy of Adoption and ivory Change Authorization to the Applicant.
- Organize file for scanning.

Change Authorization Document

The printed Change Authorization on watermarked paper is the final document prepared for the application. It reflects how the changed water rights are to be used and a description of the intent of the change application. It includes the following information:

- A list of all water rights being changed by the application
- A change description from the Proposed Change field under the Change Description tab
- An asterisk identifying all features of the water rights that were changed
- A Completion Deadline and a date the project completion notice is due generated from Project Completion Notice Due event
- Standard remarks and conditions placed by the Statement of Opinion or the Final Order
- Two signature blocks
- Date Issued line from the Issued event
- A page for each changed version of the water rights with asterisks on the changed items
- Print on legal size paper an ivory one for Applicant and a copy for the file (and copies for any consultants). Hole punch the file copy, place it in the application folder in the appropriate place with a Permit/Authorization flag. Send the other copy to the Applicant with a cover letter which includes a statement about when the project completion notice is due. A cover letter template can be found on ROCO.

Data Entry

1. Modify the Proposed Change field in the **Change Description Tab** to reflect how the change authorization is being issued.
2. Add the appropriate remarks in the **Remarks Tab** of each new version of the water right being changed.
3. Under the **Events Tab** add a **Project Completion Notice Due** event with the date the project completion notice is due.
4. Under the **Events Tab** add an **ISSUED** event with the date the change authorization is printed.

File Organization and Documentation

Please keep in mind that you can look at and organize files (applications and materials) in whatever manner you like while you are working on them. The following file organization procedures must be completed prior to a file being moved on to hearings or to be scanned.

- All files should be organized in the same manner to aid in consistency. When the public or Department staff is looking at the scanned documents it really helps to have things organized in a consistent manner such that content is located where you would expect it to be located and in a consistent order. Organization should not be changing from one scanned document to the next.
- A final version of Form 633 (and only the **final version** of Form 633) should be on a CD and attached to the application within the file
(If the 633 is submitted by email, a final version should be copied onto a CD and attached to the file)
- All other application material submitted electronically, or processing information used by the Department in electronic format, should be printed out and put into the file
- Write on the front of the file – **Records: Form 633 information disc needs to be converted**
- The attached instruction flag ([Form633_instructions_flag](#)) should be attached to the front of the file
- Upon issuance, denial, termination, etc.... or request, the file must be routed to the Records Unit for scanning

Form 633 instructions

The Form 633 instructions and flag can be found in the following location: G:\WATER_RT\ROCO FOLDER\FILE ORG & FLAGS\FLAGS

Files as Legal Documentation

Water rights files are legal documents. Maintaining water right files in good order includes documenting every substantive communication or reason for a change in the file. A good rule of thumb is to imagine that you are on the witness stand in five years regarding this water right file – what information would you need to defend all the actions taken with regards to the water right file? If you have a stellar memory, imagine your successor on the witness stand having to defend every action the Department took with regards to the file. Imagine a coworker will have to review this file in the future due to a filed change application – you want your coworker to know exactly what went on with the water right file (and to be thinking complimentary thoughts of you while reviewing your work!). Erring on the side of caution and documenting when in doubt is good practice.

Some ways to document different file actions are explained. For form/document changes, make a copy of the form, clearly stamping "WORK COPY" on the form. On this clearly noted copy, make any changes and document why you are making those changes. Always initial and date the noted changes on this work copy as others may work on this file after you. An example might be a purpose clarification you received on a phone call; note the date, time, name of person, along with the purpose clarification information. If you are adding paper to the file, make sure to document that DNRC added that information to the file. If something comes in later from an Applicant, make sure a date received stamp is on the submission, indicating that the document was received after the original form.

If you are having a meeting or an extended conversation with a party to the water right change application, consider using a memo format to document what was said during the meeting. You might consider multiple forms of documentation, if, for example, the meeting resulted in form changes. One could have a memo documenting all the content in the meeting along with a work copy of a form noting a clarification or change resulting from that meeting.

Any substantive email or letter correspondence needs to be copied to the file. One can easily forget to include emails in water rights files, so attempt to include them right away upon receipt or after a thread exchange is completed. DNRC also has some templates for documenting multiple phone contacts (created for the complaint process) that one could use if applicable in other water right situations.

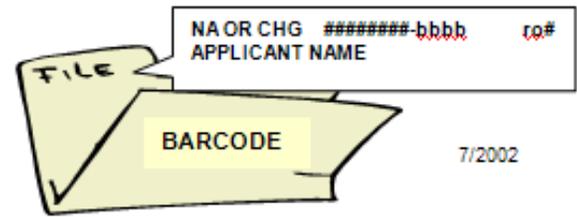
In larger water right files, one can consider creating a custom file flag for unique situations. If you have a special circumstance where file organization might benefit from a customized section, consider creating a custom flag to represent material that doesn't fit the typical flagged sections.

Methods exist to correct errors in DNRC documents in the file. If a technical report has been finalized and then later calculations are changed, this should be documented in some manner. A regional manager might have a preference, but some ways include a dated work copy, a written memo, an explanation in the decision document, or an explanation or correction in a final order (the nature of the change will help dictate the level of documentation).

File Organization

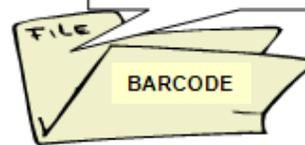
The following file organizational charts show how to organize a file for records scanning. There are two organizational structures depending on if the folder is a single folder or multi-tab folder.

NEW APPROPRIATIONS FILE ORGANIZATION CHART



RCO = Reverse Chronological Order (earliest dated document on bottom, most recent on top.)

LEFT SIDE/TOP TO BOTTOM	RIGHT SIDE/TOP TO BOTTOM
MEASURING & PROGRESS REPORTS All measuring device or progress reports	VERIFICATION/CERTIFICATION All materials Draft Certificate or All-Purpose Abstract Verifab 617/618 Field Report (Post 4/14/92 NOC) Questionnaires (Pre 4/14/92 NOC) Maps & Photos NRCS "as built" form Well Log Correspondence - RCO
EXTENSION/NOC/REVOCATION Official Revocation Form Project Completion Form Extension – Notice of Action Extension Form Extension – Reminder letter Correspondence	
HEARINGS INFO/CORRESPONDENCE <u>All materials should be placed in RCO</u> Orders, except final order Notices Proposal for Decision Motions Appointment of Hearing Officer & Discovery Order	PERMIT/AUTHORIZATION Permit/Authorization Final Order Criteria Assessment
OBJECTIONS/CORRESPONDENCE All in RCO Request for Hearing Objector List Withdrawal Forms Standard Central Office Objection Letters Objection Forms w/ objection determination form placed with the respective objection	APPLICATION MATERIALS Work Copy Original Application Criteria Supplement Evidence Well log General Correspondence
	MAPS Any and all maps except for the Notice Area Map
PROCESSING FORMS/PUBLIC NOTICE Waiver 612 (if no objections received) Public Notice Notice Area Map Form Checklist Environmental Assessment PN Bill and Tear Sheet Affidavit & Certification of Publication PN Letters to Applicant & Newspaper Certificate of Service PN Return Mail	EXISTING RIGHTS Associated Flag Copies of Associated Water Rights
	FIELD INVESTIGATION Field Investigation Report
OWNERSHIP UPDATES Ownership Update Information	



6/2003

NEW APPROPRIATIONS

FILE ORGANIZATION CHART - MULTI TAB FILES

Left to Right and RCO = Reverse Chronological Order (earliest dated document on bottom, most recent on top.)
 When the multi-tab folder is full, start another multi-tab folder. Label the folders the same and then on each folder put "File? of?".

INSIDE COVER	1 ST TAB - FRONT TOP TO BOTTOM	1 ST TAB - BACK TOP TO BOTTOM Use however many tabs are needed.	FROM THIS POINT FORWARD, EACH SECTION SHOULD BEGIN ON A NEW TAB
PERMIT/AUTHORIZATION Permit/Authorization Final Order Criteria Assessment APPLICATION MATERIALS Work Copy Original Application Criteria Supplement Evidence Well log General Correspondence MAPS Any and all maps except for the Notice Area Map EXISTING RIGHTS Associated Flag Copies of Associated Water Rights FIELD INVESTIGATIONS Field Investigation Report	PROCESSING FORM /PUBLIC NOTICE Waiver 612 (if no objections received) Public Notice Notice Area Map Form Checklist Environmental Assessment PN Bill and Tear Sheet Affidavit & Certification of Publication PN Letters to Applicant & Newspaper Certificate of Service PN Return Mail	OBJECTIONS /CORRESPONDENCE All in RCO Request for Hearing Objector List Withdrawal Forms Standard Central Office Objection Letters Objection Forms w/ objection determination form placed with the respective objection	HEARINGS INFO /CORRESPONDENCE All materials should be placed in RCO Orders, except final order Notices Proposal for Decision Motions Appointment of Hearing Officer & 1 st Pre-Hearing Order OWNERSHIP UPDATES Ownership Update Information MEASURING & PROGRESS REPORTS All measuring device or progress reports EXTENSION/NOC REVOCATION Official Revocation Form Project Completion Form Extension Notice of Action Extension Form Correspondence VERIFICATION/ CERTIFICATION All materials Draft Certificate or All- Purpose Abstract Verifab 617/618 Field Report (Post 4/14/92 NOC) Questionnaires (Pre 4/14/92 NOC) Maps & Photos NRCS "as built" form Well Log Correspondence - RCO

Flags

File flags are used to divide application and file content as shown in the organizational structures above. You can find the [flags that are available](#) to be used on the ROCO drive. You will find that the flags in that folder are in .PDF format and cannot be edited. If you would like to alter a flag or create a new flag, please contact CO staff so the master flag can be updated, and statewide staff made aware of the change. Existing file organizational structure must also be considered.

PD Naming Standards & Posting Information

When you post a PD on ROCO, please name it using the following standard:

Form Number_GW/SW_Grant/Deny/Modify_Basin & Number_Last Name (of Applicant)

Example: **606-IR_SW_Grant_38H 30105555_Jackson**

Upon ADOPTION, the PD should be posted in [ROCO\DECISION DOCUMENTS\PRELIMINARY DETERMINATIONS\Finalized PDs By Ros\Your Office](#). Each office is responsible for posting PDs on ROCO. If the application is finalized by the Hearings Unit / CO, CO staff will post the PD, if applicable. CO will update the PD finder occasionally. All PDs that are in the proper spot on ROCO will be loaded into PD Finder and then moved to ROCO\DECISION DOCUMENTS\PD Finder\PDFs.

Purpose Specific Considerations

Domestic

ARM 36.12.115(2) identifies the standard for domestic use at 1 AF per household. This value is used as a maximum value in issuing a Certificate of Water Right and can be used to calculate the volume of a Provisional Permit. More precise, and typically lower, values for domestic use can be found in Montana DEQ Circular #3 (Standards for Small Water Systems) and the Planning Guide for Water Use (New Appropriations form 615). The Department should default to the DNRC standard. If the Applicant wishes to use a value differing from the DNRC standard, they must provide the extra information and explain why it is appropriate.

If more than one household is identified on the application, the purpose is identified as Multiple Domestic. Multiple Domestic rights are typically subdivisions where the water right is held by a homeowners' association. A Multiple Domestic water right has the same water use standards as Domestic rights, (i.e. 1 AF per household). If there are greater than 15 service connections the application will be for a minimum of two wells as a redundant well is required. See ARM, Title 75, Chapter 6: Environmental Protection, Public Water Supplies, Distribution, and Treatment.

When calculating the volume associated with domestic use in a change application, the Department will utilize any and all information available in order to most accurately identify the exact amount of historical domestic use taking place. This might involve looking at historical aerial photos and counting the number of homes on the photo(s) as well as any associated lawn and garden acres. If you have questions concerning how best to approach calculating domestic volumes on a change, contact the Central Office.

In some situations, in the past, a water right was issued for domestic use which included a lawn and garden component. If this occurred on a water right being changed, break out the individual purposes so that it is clear what the water right is for moving forward. Use the Department standard of 1 AF/household for the Domestic use and then calculate the lawn and garden component by applying the 2.5 AF/acre standard to the remaining volume. If the Applicant wishes to deviate from standards for the historical use, they will need to provide evidence such as measurement records as proof. There is a range of how these water rights were issued; some were issued with $\frac{1}{4}$ acre of lawn and garden irrigation for each domestic use and some were issued for max volume based on flow rate of the well.

Helpful References, (links):

- [ARM 36.12.115](#)
- [Montana DEQ Circulars](#) – DEQ 3, (Standards for Small Water Systems)
- [Planning Guide for Water Use – Form 615](#)
- [Title 75, Chapter 6 MCA – Public Water Supply](#)

Fire Protection

Water for temporary emergency fire protection does not require a water right from DNRC. If water is to be stored for fire protection and the storage impoundment exceeds .1 AF (the place of storage definition, ARM 36.12.113), a water right may be required. Generally speaking, if evaporation is expected to occur from the storage reservoir, a water right is required. If any water appropriated for fire protection is to be used for activities other than emergency firefighting, such as practice firefighting or washing equipment, a water right is required.

Montana Code Annotated Reference: [§ 85-2-113\(3\)](#) The Department shall adopt rules providing for and governing temporary emergency appropriations, without prior application for a permit, necessary to protect lives or property.

Administrative Rules of Montana Reference: [36.12.105](#) Temporary Emergency Appropriations 1) A temporary emergency appropriation may be made without prior approval from the Department, but the use must cease immediately when the water is no longer required to meet the emergency. 2) A temporary emergency appropriation does not include the use of water for the ordinary operation and maintenance of any trade or business.

Beneficial Use for actual firefighting is typically difficult if not impossible to quantify. Generally speaking, the volume required is that of the storage capacity plus evaporation and any additional water used for non-emergency use.

*Special Note: The Form 647 is available for governmental fire agencies to record a water right for fire protection. See the form for specific information.

Hydropower

Hydropower changes can be consumptive or nonconsumptive and may or may not include storage. A hydropower project which does not have a diversion and does not include storage is referred to as “run of the river”.

FERC Licensing (Federal Energy Regulatory Commission)

Hydropower projects almost always involve a FERC license or exception. The State of Montana cannot require a State based water right for a FERC hydropower project or exception, though Montana and/or the appropriator can protect existing water rights. Hydropower is a beneficial use under 85-2-102(4)(a) MCA, and thus a hydropower project may get a state-based water right in order to protect the amount of water required for the project.

Micro Hydro

Micro hydro is a catch-all term for small scale hydropower. Presently, it is not treated any differently than other hydropower under Montana Law, but it demands certain considerations because of its small size.

- For a change, micro hydro cannot simply be added to an existing right – an existing purpose has to be removed or reduced. Adding a purpose without any other change is called bootstrapping.
 - **Bootstrapping:** Adding a use to the underlying right without altering the underlying right (for example putting a hydro generator in an irrigation ditch) is referred to as “bootstrapping” and is prohibited as an enlargement of the water right through the change process.
- For an example of adding a new nonconsumptive use (micro hydro), alongside an existing water right, see the Diamond T Bar PD to Grant Permit #30050523. This Permit conditions the new use on the timing and flows of the existing irrigation right in order to avoid adverse effect.

Nonconsumptive Hydropower

Nonconsumptive use means a beneficial use of water that does not cause a reduction in the source of supply and in which substantially all of the water returns without delay to the source of supply, causing little or no disruption in stream conditions ([85-2-102\(19\), MCA](#)). Typical Micro Hydro systems, or “run of the river” systems, probably qualify as nonconsumptive as do micro hydro permits bootstrapped onto existing uses and conditioned on operation in accordance with the preexisting permit. Conversely, any hydropower facility with an impoundment or non-enclosed diversion works probably does not fit within the definition of a nonconsumptive use. Pipeline diversions have been accepted if it can be shown that there is no adverse effect and water is legally available between the POD and the discharge point.

Nonconsumptive Hydropower Use and Basin Closures

Some basin closures have a nonconsumptive exclusion for hydropower while others do not. Listed below are the basin closure exceptions for hydropower found in the Montana MCA:

- Bitterroot River Basin Closure: there is no exception for nonconsumptive use, 85-2-344, MCA.
- Upper Clark Fork River Basin Closure: there is no nonconsumptive exclusion in the upper Clark Fork Closure. However, one may expand existing hydropower projects as long as consumption is not increased. 85-2-336(2)(f), MCA.
- Jefferson River, Madison River Basin Closures: nonconsumptive new permits are OK. 85-2-341, MCA.
- Teton River Basin Closure: nonconsumptive new permits are OK. 85-2-330(b), MCA.
- Upper Missouri River Closure: nonconsumptive new permits are OK. 85-2-343, MCA.

What to do in a Closed Basin?

If there is an exception for nonconsumptive use, then a new permit is the most logical option for run of the river hydropower. If it is piggybacked on an existing use (say the diversion for an irrigation right) then remember that the new permit must be conditioned upon the operating conditions of the existing water right to fit the definition of nonconsumptive and to avoid adverse effect.

If there is no exception for nonconsumptive use, or a new permit will create adverse effect, the appropriator must rely on a change. In order to retain a priority date and avoid adverse effect, water is available for a new purpose only when water is removed from the existing purpose. For example, irrigation water may be changed to fill and maintain a fish pond only when water is removed from irrigation.

Industrial

The Department typically considers industrial purposes on a case by case basis. Ultimately, it must be shown that the amount of water necessary for the industrial use is necessary to accomplish the beneficial use.

Instream Fishery

Temporary Change Authorization for Instream Flow

Since the passage of the Montana Water Use Act in 1973, instream flow to benefit the fishery resource can be protected through the temporary instream leasing statute (85-2-408, and 85-2-436, MCA). The change must be temporary as described by [§85-2-407, MCA](#) of not more than ten years at a time, and the application must adhere to the criteria in [§85-2-402, MCA](#) and administrative rules in 36.12, ARM. There is no limit on how many times the temporary change can be renewed. If the lease expires, the water right automatically reverts to its original use. Instream flow changes may be revoked by the Department if another user comes forward within 10 years of the original approval and submits new evidence of adverse effect.

- A permit cannot be completed for instream fishery protection.
- A permanent change can only be completed by FWP under 85-2-436(6)(a).
- There are special circumstances surrounding USFS instream flows. The USFS can permanently change their own water rights to instream flow and the USFS can apply for a new use (as a water reservation) for instream flows through the terms of the USFS Montana compact. All USFS instream flow applications (form 638) are handled through the Missoula Regional Office.
- [§85-2-408, MCA](#) outlines the process for private individuals to change a water right to maintain or enhance instream flow to benefit the fishery resource.

***A note on legal representation for instream flow applications: If the contact person is identified as an attorney who works for a non-profit (such as Trout Unlimited), you should be asking for clarification if they are representing the applicant in a court of law or representing the applicant as a consultant for the application.**

There are six criteria which must be met with regards to changing a water right to instream flow for fishery protection. They are:

- Historical Use
- Adverse Effect
- Beneficial Use/Fishery Resource
- Adequacy of Diversion
- Possessory Interest
- Protected Reach/Measurement plan

Historical Use

Instream Flow Applications are treated the same as any change; historical use must be proven. Instream flow does not need the reliability that other purposes might, so the water right does not need to be restricted to times of guaranteed reliability; a mitigation change water right is an example of a water right that might be

restricted to only times of guaranteed use. The Applicant will have to show what they have perfected for use and demonstrate that no expansion is occurring. While an instream flow change could come in on an unperfected water right, they can only change to instream flow what they can show was perfected, or the “amount historically consumed” (85-2-408(7), MCA). When this occurs, the water right is then in a dual process – the partial temporary instream flow change with renewal timeline and the remainder of the water right with a project completion notice timeline/extensions. The timeline to perfect the underlying water right would be tolled until the temporary lease expires. At that point, the timelines for perfection of the underlying water right would resume.

Historic Diverted Flow & Volume §85-2-408(7), MCA

The historical diverted flow rate/volume of the water right can be protected above the point where return flows historically re-entered the source. Case law (Hohenlohe) allows for protection of the full diverted flow rate/volume in the reach between the historical diversion and the point where return flows enter the source. From the historical diversion to the point where diverted flow rate/volume return to the source is defined in case law as “consumed from the reach (source)”. This is unique to instream flow changes.

- If the Applicant is making the assertion or DNRC is finding that return flow did not return to the protected reach, this should be addressed clearly in the hydrologist review memo (acceptable, reasonable, etc.).

Historic Consumed Volume §85-2-408(7), MCA

The historical consumed volume of the original water right is the maximum volume that can be protected below the point where return flows enter the source.

- **Consumed from Reach versus Consumed by Purpose** - This is unique to Instream Flow Applications. A finding on any “consumed from the reach” amount must be included briefly in the Historical Use section and then in more detail under the return flow discussion in the Adverse Effect section. If the Applicant is making the assertion or DNRC is finding that return flow did not return to the protected reach, this should be addressed clearly in the hydrologist review memo (acceptable, reasonable, etc.). For additional explanation see [Hohenlohe final order](#).

Adverse Effect

As instream flow applications typically turn a consumptive, diversionary use into a nonconsumptive non-diversionary use, the potential for adverse effect is low. Two areas need to be looked at closely: 1) a change in the upstream/intervening juniors call pattern, and 2) the return flow analysis. If non-use is a factor, this also needs to be addressed by the Applicant.

- 1) Call/Enforcement: The specifics of water use on the source need to be discussed in the findings, including history of call, complaints, and the presence or absence of a Water Commissioner. These findings will help to determine the wording of your measurement condition: whether measurement reports will be required (a more contentious source) or that they be made available upon request (a less contentious source).
 - a. If the flow rate over time can achieve the historical diverted volume in a significantly shorter time frame than the period of use, then the Applicant must explain what flow rate is being protected and when it is being protected. A flow rate over time finding and information remark is one way to address that, although the decision maker has flexibility in this (Change Application 43B 30052465 provides an example of this). Also, verify that the diverted volume makes sense.

- 2) Return Flow Analysis: With the addition of consumed from the reach (if applicable), this is otherwise the same as any other change application. WMB will complete a return flow analysis for instream flow change applications. If the Applicant provides a return flow analysis of their own, WMB will review the analysis and make findings. Make sure that the findings regarding return flows are well documented in case the numbers are challenged; the same goes for any ditch loss calculations. If the Applicant or DNRC determines that some diverted water did not return to the protected reach, or is consumed from the reach, this additional documentation needs to be included in the PD.
- 3) Non-use (if applicable): While changing a water right that has not recently been used to an instream flow purpose does not result in a change in conditions on the source, it could shift the burden of call on other users during water short times. While not an analysis of resumption of the old use, one does want to look at this from the perspective of conditions on the source as a whole (contentious/non-contentious, open or closed basin, land use changes since non-use, new users since non-use, etc.).
- 4) When analyzing the Applicant's measurement plan, DNRC needs to ensure that the plan adequately addresses junior water users within the protected reach. Water made physically available by keeping flow instream would historically have been available to any senior water right user; however, water rights junior to the instream water right would not have had access to the water being protected and may now be subject to call. The measurement plan should take this into account.
- 5) General Tip: Make sure to have a finding on impacts to upstream users, a finding on impacts to intervening users, and a finding on impacts to downstream users with a return flow discussion; as this is the only way downstream users can be affected.

Beneficial Use/Fishery Resource

A variety of tools can be used in this section, with no set "recipe". The tools that have generally been used are in weighted levels below.

- Heavy Weight Tools – Chronically Dewatered Stream status, Endangered Species/Species of Concern Habitat, existing FWP instream reservation with evidence the reservation is not regularly met (too junior to be effective)
- Middle Weight Tools – Habitat studies with specific data (observational or empirical) on water needs and/or fish numbers, letter from fisheries biologist, letter from FWP
- Light Weight Tools – general scientific/technical information, scientific/technical information prepared for a different geographical area, limited scope studies
- **"More water is better" is not adequate.**

Benefit Description

The Applicant must submit substantial, credible information explaining why the flow rate and volume is needed to enhance that particular reach of stream. The evidence should include credible biologic data of the fish species to be enhanced, habitat enhancement needs, and any other information that may add to the evidence. It is vital that the Department verify that the flow rate and volume being protected have a beneficial use. Specifically, you must verify that the protected flow rate over the period of use does not exceed the protected volume (both diverted and consumed). Optionally, the Applicant can provide an operation schedule that explains when they are protecting flows within the historical period of use. When looking at the quantity of water proposed for change, compare the proposed amount to measurements and/or reservations. If no reservations exist, then an expert in fisheries should be represented in the file with a letter or other document explaining the need for the water per the change request. Ideally, the amount of water being requested and why the requested amount is needed to meet the beneficial use criterion is specified in the material (Wetted Perimeter Method and 50th Percentile Flow Method are two FWP Reservation Methods that we accept).

Protected Reach Considerations: Is the protected reach a gaining or losing stretch? If it is a losing stretch, does the protected amount requested take into consideration losses in lengthier protected reaches? Does the measurement plan adequately protect the water within the protected reach, especially if the reach is extra-long with multiple other diversions?

Adequate Means of Diversion and Possessory Interest

Applications for full changes to instream flow, are exempt from Adequate Means of Diversion and Conveyance and Possessory Interest criteria (85-2-402(2)(b)(i) & (ii) and 85-2-402(2)(d)(i) & (ii)). The Applicant should respond with n/a on the form and no deficiency questions can be asked in the deficiency letter based on Administrative Rule or Statutory Requirements. While earlier decision documents have findings in this area, language has recently been accepted concluding that the Applicant is exempt from having to provide any information under these criteria for a change to instream flow. If there will be other purposes besides instream flow, these criteria apply to the other purposes proposed.

Protected Reach/Measurement Plan

The place of use for instream flow is required in statute to be a stream reach. Because it is specifically required in statute, the place of use can be a stretch of stream or the bed of a stream that the Applicant does not have a possessory interest in. Statute also requires that a detailed measurement plan be provided. The measurement plan must describe the point(s) where water will be measured and the way it will be measured.

Fish Wildlife & Parks Instream Flow Changes

Through [§85-2-436, MCA](#) the Montana Department of Fish, Wildlife & Parks (FWP) may lease water for maintaining or enhancing instream flows to benefit fisheries. FWP must obtain a change authorization from the DNRC to temporarily change the purpose of a water right to benefit a fishery. A separate application is required for each stream reach. FWP's ability to lease water rights for instream use terminates on June 30, 2029 (85-2-436 MCA). This date applies to both new leases and renewals of existing leases. The legislature may choose to extend the sunset date of this statute in future sessions.

- Under 85-2-436, MCA, FWP is the sole Applicant for a lease authorization. The authorization document is issued to FWP, not the lease holder or water right owner of record.
- All FWP lease applications must be public noticed. Any interested person may object to the proposed change. DNRC may not approve a temporary lease authorization until all objections are resolved by the parties involved or through a contested case hearing.
- The lease authorization priority date is the same as the original water right priority date. A water right reverts to its original form when the lease authorization expires.

Additional Requirements

In addition to the change criteria, FWP shall meet the criteria and guidelines described in [§85-2-436, MCA](#). These criteria must be reviewed and addressed by the Department in the PD. Because water will not be diverted from the source, evidence proving adequate diversion means is not necessary.

- The maximum quantity of water that may be changed to instream flow is the amount historically diverted. However, only the amount historically consumed, or a smaller amount if specified by the department in the change authorization, may be used to protect, maintain, or enhance stream flows below the point of diversion that existed prior to the change in appropriation right. FWP may lease up to the entire amount of water historically diverted. However, only the amount historically consumed from the source may be changed to benefit the fishery. FWP shall submit evidence proving the amount of water historically consumed from the source. A detailed stream flow measuring plan describing where and how the stream will be measured is also required.
- FWP shall identify the length and location of the stream where the stream flow will be maintained or enhanced. This is generally the stream reach from the first measuring device, located at or below the existing point of diversion, to the stream's confluence with the next source. The maintained or enhanced stream reach is the new place of use.

Term and Renewal

Generally, the lease authorization term for a change to instream flow is concurrent with the lease term between FWP and the water right owner.

A lease authorization may be approved for up to 10 years and can be renewed an indefinite number of times, not to exceed 10 years per term. A lease authorization that involves a water conservation or storage project may be for a term equal to the expected life of the project but not more than 30 years.

To renew a lease authorization, FWP shall notify DNRC prior to the authorization expiration date. DNRC shall notify potentially affected appropriators and accept new evidence of adverse effect for 30 days. If new evidence is submitted which proves adverse effect, FWP shall address the effect. If the effect is not addressed, DNRC shall not renew the lease authorization. However, FWP may apply for a new lease authorization.

Relevant Statutes and Rules

[85-2-407, MCA. Temporary changes in appropriation right.](#)

[85-2-408, MCA. Temporary change authorization for instream flow -- additional requirements.](#)

[85-2-436, MCA. Instream flow to protect, maintain, or enhance streamflows to benefit fishery resource -- change in appropriation rights by Department of fish, wildlife, and parks until June 30, 2029.](#)

Mining

In determining whether a mining activity requires a water right, remember that the key is whether the mining diverts or consumptively uses water, not necessarily what the miner does with that water.

Most commercial placer mining and technologically advanced recreational mining relies on the diversion and withdrawal of water. Diversion for nonconsumptive uses still requires a water right. There is no de minimis exception in Montana water law; some of the oldest water rights in Montana are very small water rights associated with placer mining. In fact, the flow rate for one Montana mining water right dating back to 1874 is for 1.85 GPM, and there are hundreds of Montana mining water rights with flow rates less than 1 CFS.

Gold Panning

Gold panning extracts gold by mixing water with gravels and separating the water and gravel from the gold. Panning is typically done while standing in or at the edge of the water. Essentially, the miner is dipping up water and sloshing it in the creek, the water is not diverted or withdrawn, rather the pan is typically partially submerged during the panning process. Gold panning does not require a water right.

Sluicing

Sluicing is the use of a "sluice box" in a creek to separate gold from gravels. A sluice box is a metal, wood, or plastic channel that has corrugations and other features in it to catch gold. The sluice box is placed in the water with the entrance of the box upstream, so water flows through the box. Gravels are shoveled into the top of the box where water enters. Sluice boxes in their traditional form are placed in the creek channel and use the natural flow of the creek to wash gravel. It follows that there is no diversion of water in using a sluice box in the creek, and no water right would be required. If the sluice box is not in the creek and requires a diversion of water to operate, a water right is necessary.

Dredging

Dredging is the use of a suction dredge to "vacuum" gravels off the bottom of a creek. A dredge is the combination of a pump and a sluice box either placed on the creek bank or mounted on floats. An engine-pump combination is either mounted on the floats with the sluice box or placed on the shore. High pressure water from the pump travels through a hose creating suction in a vacuum hose and the suction developed is sufficient to suck up gravels. The gravel and water travel through the suction hose up to a sluice box. Unlike the traditional use of a sluice box, the water from a suction dredge is physically pumped from the bottom of the stream through a hose and into the sluice box. Thus, the suction dredge is by its very nature a diversionary device, pumping water from the stream into a sluice box. If the sluice box is placed in the river channel then although the water in the suction dredge discharge hose has been redirected, it has not been diverted from the stream itself, and operation of a suction dredge would not require a water right. If the dredge discharge hose leads to a sluice box on the bank or is otherwise placed outside of the actual river channel, then the dredging is considered a diversion, and requires a water right.

High-Banker

A high-banker is a sluice box with a hopper mounted on one end into which the miner shovels gravel. A pump draws water from the stream into the sluice box and washes the ore, discharging washed gravel and water at the end of the sluice. High banking is also called "power sluicing" because it imitates the action of stream water in the sluice but enables the miner to work more efficiently by diverting operations to the stream bank or other work site. The high-banker withdraws and diverts water out of the stream by its very nature, and thus requires a water right.

Marketing

The Marketing purpose is used any time water is offered for sale to end users that are not the Applicant. There are a few exceptions to this, including municipal use and marketing for mitigation use (see respective sections for information on those purposes). In the past, the marketing purpose was sometimes identified as "sale," and may appear that way on a Statement of Claim.

There are special statutory requirements for all marketing applications. Per 85-2-310(9)(v)(D), MCA, marketing applications require the submission of contracts to prove a bona fide intent to perfect the water right. Without contractual agreements, the use is considered speculative. **DNRC requires firm contractual agreements for all**

of the water that is to be marketed. You will need to get these contracts prior to being able to deem an application correct and complete.

The water should be for use in Montana only, unless the Applicant has addressed the out of state criteria in the application (85 -2-311(4) MCA).

If the water is intended for a water depot, then access to the depot facility should be controlled so only people with valid purchase contracts may obtain water. Conditions regarding these issues may be added to the water right if deemed necessary.

There are special Conclusions of Law for water marketing PDs; contact CO or the Glasgow office for this language.

For database coding purposes, the place of use is the point of sale. The service area is the location where the water is to be used. Possessory Interest must be proven regarding the point of sale/place of use, not the service area. You may enter a place of use information remark listing the service area if you wish. Depending upon the nature of the marketing situation, the service area may be a specific section or as large as several counties.

A CD may apply for a water marketing permit. If the CD chooses to apply for water marketing instead of irrigation, the CD must meet the same requirements as any other Applicant with respect to marketing. Additionally, if they are using their water reservation, a change of purpose is required and this change must meet the requirements of 85-2-316 MCA.

A note on Extensions & Project Completion for Marketing:

- Prior to the Atlantis District Court decision dated August 1, 2016, water marketing applications were permitted based on letters of intent to contract at least 50% of the requested volume rather than firm contracts. Following the Atlantis decision, firm contracts were required for the entire requested volume before an application could be considered correct and complete.

Extension

To receive an extension, the facility must be built, and water use measurements must be provided, regardless of when the permit was issued.

For permits issued prior to the Atlantis Decision, copies of all contracts must be submitted. The contracts must identify the maximum volume of water being purchased. The combined total volume of all contracts must be equal to or greater than 50% of the permitted volume to show diligence. Maximum yearly measurement records can be less than 50% of the permitted volume. No credit towards completion will be given for diverted water in which no contract is provided. To control speculation only one extension will be granted, and the extension period cannot exceed 5 years. If copies of contracts are already in the file from a previous progress report for the maximum year, they do not have to be submitted again.

If the Permittee files for an extension and later finds out they must file a Project Completion Notice, the filing fee for the extension will be refunded.

Project Completion Notice

For permits that were received prior to the Atlantis Decision, measurement records and contracts are needed because letters of intent to purchase water were accepted at the application stage. For permits received after the Atlantis Decision, only measurement records are needed because contracts were required at the application stage and are in the file.

Marketing for Mitigation/Aquifer Recharge

Marketing for Mitigation was specifically approached by the 2011 legislature as HB24, and now codified in [85-2-420, MCA](#). Marketing for mitigation allows a water right owner to change the purpose on their water right, or add a marketing for mitigation purpose, prior to having any projects requiring mitigation water. By completing this change prior to securing a use, the water remains available for mitigation for a period of up to 20 years while not subjecting the water right to abandonment proceedings. The owner may sell or lease all or a portion of the water for mitigation, depending upon the project needing mitigation. DNRC will not dictate the sale of the water for mitigation; however, DNRC must assess the mitigation water required and determine if the water provided is adequate with regard to quantity, timing, and location, as with any other mitigation water.

When providing marketing water for mitigation, the full flow rate may still be diverted at the original POD; however, some of the flow/volume is now used for a different purpose. Usually, the mitigation water will be diverted secondarily to fulfill its final purpose (example: diverted from a ditch into an infiltration gallery).

Reductions in the flow and volume must take place at the primary POD.

Owners of changed water rights are required to submit the WM-09 form any time a portion of the water is leased or sold for mitigation or aquifer recharge. DNRC will enter the information into the marketing for mitigation section of the database to maintain an accurate accounting of the water use at any specific point in time.

Marketing for mitigation changes are exempt from the adequate diversion and possessory interest criteria. The owner may not own or control the area where the water will be used, and the diversion works will be dependent upon the actual mitigation plan discussed in the permit.

*All marketing for mitigation PDs should go through a review from legal before being sent out.

Helpful References, (links):

- [HB 24 Implementation Document](#)

Municipal

Municipal use refers to water appropriated by and provided for those in and around a municipality or an unincorporated town. Municipal use water rights can be held by municipalities, unincorporated cities and towns, water and sewer districts, or other entities. The municipal purpose should not be used by individuals, regardless of the number of purposes on a water right. For example, a rancher should not have a municipal water right even though he/she may have a water right for domestic, lawn & garden, stock, and irrigation. Those purposes should be individually identified on the water right.

The municipal purpose may be used any time an entity owns a water right for at least three different purposes which could be construed as municipal in nature. Typically, municipal rights have domestic, lawn & garden, and

commercial/institutional/industrial purposes but could include any other purposes such as water marketing, irrigation, stock, mining, etc.

Entity Specific Considerations

Municipalities

A municipality is different than using water for a municipal beneficial use. [Municipality](#) means an incorporated city or town organized and incorporated under Title 7, chapter 2. Additionally, the Department considers unincorporated towns as a municipality outside of a closed basin. Municipalities may own any type of water right used for any purpose (i.e. a municipality may own water rights for purposes other than municipal). A municipality or other entity may own a water right for a municipal purpose which can essentially be used for anything. If the municipality owns water rights for specific purposes, those water rights may only be used for the purposes identified.

There is no growing cities doctrine in Montana. Municipalities must own water rights in the same fashion as an individual to legally appropriate water. A municipality may not exceed any element of its water rights at any time, regardless of boundary changes, population growth, etc.

Notes:

- If the municipality would like to reuse wastewater, the Applicant will submit a copy of the DEQ application and DNRC will evaluate the proposal to see if a new permit would be required. If the reuse is part of treatment, a new permit will not be required; however, if treatment of the water has concluded and it is going to be once again beneficially used rather than discharged, a new permit would likely be required. See the [HB 52 Summary Discussion memo](#) for more detail.
- If a municipality owns an older water right for a diverted volume and DEQ mandates a change in effluent treatment that requires more consumption, a new permit is not required.

Water & Sewer Districts

Water and Sewer Districts—which comes first: permit or boundary expansion?

Water and Sewer Districts are unique and are not considered municipalities. They are governed under MCA Title 7, Chapter 13 and each district has a unique set of articles of incorporation which further dictate how the body must operate. That said in order to address the possessory interest criterion in a permit application, water and sewer districts need written permission from the landowners within the proposed place of use, at a minimum. Upon perfection of the permit it must be shown that the water and sewer district is utilizing the water within the proposed place of use. This could be accomplished by providing a map of the authorized boundary, providing proof of hookups, or providing contracts with users within the place of use.

Subdivisions & Municipal Use

[Multiple domestic use](#) means a domestic use by more than one household or dwelling characterized by long-term occupancy as opposed to guests. Examples include domestic use by:

- colonies
- condominiums
- townhouses
- subdivisions

Multiple Domestic or Municipal Use - Typically a subdivision with a common water supply has a Multiple Domestic Use. A Municipal use for a subdivision is appropriate when there may be three or more uses such as domestic, irrigation, and commercial use on the water system.

Stock

An appropriator may add stock tanks to a water right provided the number of animal units and volume of water diverted is not increased. For example, appropriators with livestock direct from source rights sometimes install stock tanks to prevent livestock from damaging stream riparian areas.

ARM 36.12.115 identifies a New Appropriations standard diverted volume for stock use at 15 gallons per day (GPD) or .017 AF per year per animal unit (AU). Note that stock use is considered 100% consumptive and thus consumptive volume equals diverted volume. Animal units are defined in ARM 36.12.101 and in the water conversion table, (DNRC Form 615). It is important to note that for Statements of Claim, the Water Court decrees 30 GPD/AU, or twice the volume used in the permit process. In processing a change for stock use, it is important to apply the same standard to the historical use as the new use. So, on a pre-1973 water right, historical use is calculated as 30 GPD/AU, and the new use shall use the same standard of 30 GPD/AU. On a permit or other water right issued on/after July 1, 1973, use the new appropriations standard of 15 GPD/AU. This practice ensures that we are consistent with assessing volume and are applying an apples to apples comparison on the historical and new uses.

Ponds

*The application process for an on-stream stock water pit or reservoir that retains 15 AF or less of water from a non-perennial source can be done using a Form 605 with a fraction of the detail required for a permit and at a lesser cost. All other stock reservoirs require a standard permit.

Under 85-2-312 MCA, the DNRC may issue a permit only for the amount of water that can be beneficially used without waste for the purpose(s) stated in the application. The requested volume will include the amount consumed by stock plus evaporative losses. Evaporation is calculated per the Department's Technical Memorandum: Pond and Wetland Evaporation/Evapotranspiration, dated March 14, 2018.

If the appropriation is for a reservoir where the impounded volume exceeds the volume that can be put to a beneficial use, an allowance for carryover water can be incorporated into the beneficial use. Guidelines for the extent of this carryover volume do not currently exist. If the application requests a volume for beneficial use that far exceeds the reservoir capacity, then the decision should be to grant with modifications or deny absent of further justification from the Applicant.

Additional Considerations:

- Hazard Classification – To build a new dam or alter an existing dam, either of which have an impoundment capacity of 50 acre-feet or more, you must apply to the DNRC Dam Safety Program for a hazard classification.
- Drainage Device – Where it is likely that senior water rights will be affected, the ability to drain the reservoir or allow for flow-through is necessary.

- Existing water rights – Check for existing rights on the subject reservoir. Do the numbers match? Was the dam verified?

Helpful References:

- [Estimation of Evaporation from Shallow Ponds and Impoundments in Montana](#)
- [Pond Evaporation](#)
- [USDA Field Manual, Chapter 11 Ponds and Reservoirs](#)

Tanks

If stock have historically used a creek for water and the producer wants to move the stock away from the creek so that the riparian area can be protected, the producer can apply to change the instream place of use to a stock tank. This type of change is typically granted as long as the stock tank has an automatic shut-off or once the stock tank is filled, any overflow is immediately directed back to the source. The key to this type of change is that stream conditions must remain relatively unchanged.

- Reduced application fees for an Application to Change a Water Right if the change application proposes only moving or adding stock tanks to an existing system.
- For changes to livestock direct from source water rights, the maximum flow for the new use cannot exceed 35 GPM.
 - Must have float valve shut off or have water return directly to source
 - Can be used on an exempt stock direct from source right if date of first use can be determined

Reservoirs

See ponds section above.

Memos & Policies

Note that all the Memos & Policies contained in this document can also be found in the ROCO folder in the folder named "MEMOS & POLICIES & OPINIONS".

Historic diverted volume determinations for changes to existing rights decreed with no volume

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



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MEMORANDUM

To: Millie Heffner, Water Rights Bureau Chief
From: Barbara Chillcott, Attorney
Re: Historic diverted volume determinations for changes to existing rights
decreed with no volume
Date: August 4, 2020

Question presented. When determining historic use of an existing water right as part of a water right change application process, may the Department find a higher historic diverted volume than what was originally claimed on the statement of claim when the water right is included in a temporary preliminary or preliminary decree with no volume decreed?

Short answer. Yes. The provisions of a temporary preliminary or preliminary decree, as modified after objections and hearings, supersede a statement of claim. If a claim is included in a Water Court decree with no volume decreed, the Department may not limit the historic diverted volume to the amount on the statement of claim simply because a lower volume was provided on the statement of claim form. The Department also should not require the applicant to file a motion to amend volume with the Montana Water Court in order to find a higher volume, because, when no volume is decreed, there is nothing to amend.

Background. For an application to change a water right, filed pursuant to § 85-2-402, MCA, the Department "must consider historical use in determining whether changing the water right would constitute an enlargement in historic use of the original water right," ARM 36.12.1901(5), and the "amount of water being changed for each water right cannot exceed or increase the flow rate historically diverted under the historic use, nor exceed or increase the historic volume consumptively used under the existing use." ARM 36.12.1902(3). While the rule goes specifically to historically diverted flow rate and not volume, the Department applies the rule to restrict both diverted volume and consumed volume to the amount historically put to beneficial use. For statements of claim filed pursuant to §§ 85-2-221, 85-2-222, and 85-2-224, MCA, the historic use is based on the water right as it was used prior to July 1, 1973. ARM 36.12.1902(1)(a).

In 2010, the Department adopted rules for standardizing methodologies for calculating historic diverted volume and consumptive volume for irrigation water rights to "provide an option to applicants who want to change a water right, but have no knowledge of the actual historic use or who would rather not expend resources to determine the historic use." Mont. Admin. Reg. ("MAR") Notice 36-22-134, No. 22, Notice of Amendment (Nov. 25, 2009);¹ see

¹ Available at <http://www.mtrules.org/gateway/ShowNoticeFile.asp?TID=2238>

also MAR Notice 36-22-134, No. 10, Notice of Public Hearing on Proposed Amendment (May 28, 2009); ² ARM 36.12.1902(10), (16).

Once the historic consumptive volume is determined utilizing the methodology in rule, the historic diverted volume calculation can be made using the formula in rule. The Department has also prepared a memorandum, dated September 13, 2012, from Mike Roberts and James Heffner, Hydrologists, to Millie Heffner, Water Rights Bureau Chief regarding “Development of standardized methodologies to determine Historic Diverted Volume.” The memorandum explains the formula for calculating historic diverted volume. ³

If the Department’s methodology is used in an application to “establish the historic consumptive volume, the department will recognize that volume as a reasonable calculation, unless a valid objection is received which offers proof that the volume is inaccurate.” ARM 36.12.1902(15). “If the applicant chooses not to accept the methodology used by the department, the applicant shall provide additional information on the Historic Water Use Addendum.” ARM 36.12.1902(14). ⁴

For changes to stock water rights, which typically involve the addition of tanks to an existing stock water system, the Department must also calculate historic diverted and consumed volume. However, a stock water right is generally considered one hundred percent consumptive, so the historic diverted volume will equal the historic consumptive volume. Pursuant to ARM 36.12.115, the Department uses its water use standards “when reviewing notices or applications for new uses of water” to calculate volumes associated with a stock water system.

A statement of claim filed for an “existing right” ⁵ included a blank for the volume of water appropriated. The volume stated on a statement of claim was presumed to be the diverted volume, and until 1987, the Water Court decreed diverted volumes for direct flow water rights. ⁶

² Available at <http://www.mtrules.org/gateway/ShowNoticeFile.asp?TID=1886> (“An applicant and the department must be certain that the historic use of a water right that is being changed is accurately known. If a change authorization is granted that exceeds the historic use of the water right being changed, adverse [e]ffect to junior or senior water rights may occur. Often, the individuals who know about the historic use are no longer available; so, there can be difficulty in determining the exact amount of water that was historically used, and how that water right was historically operated. These rules are necessary to assist the public and the department to identify a credible amount of water that may have been historically used on irrigation water rights to facilitate changes in water rights.”)

³ The memorandum is available here: http://dnrc.mt.gov/divisions/water/water-rights/docs/new-appropriations/historic_diverted_memo.pdf.

⁴ If an applicant elects not to use the standard rules, “. . . an applicant can bring forward proof of the actual amount of water diverted and consumed. In so doing, the applicant will have to demonstrate that the factual conditions exist for the use of formulas and guides, such as the Montana Irrigation Guide. For example, the Montana Irrigation Guide assumes optimum conditions, including but not limited to water availability. The applicant will have to make this showing in the absence of use of the rules . . .” MAR Notice 36-22-134, No. 22.

⁵ An existing right is a “right to the use of water that would be protected under the law as it existed prior to July 1, 1973” for which typically a statement of claim was filed pursuant to § 85-2-221, MCA. § 85-2-102(13), MCA.

⁶ See “Historical Background of the Law of Changing a Water Right in Montana, Tim Hall, former

However, since a legislative amendment in 1987, the Water Court has the discretion as to whether a volume should be decreed on direct flow rights, such as irrigation rights. § 85-2-234(6)(b)(iii). Since that time, most direct flow irrigation water rights have not been decreed a volume. See DNRC Claims Examination Manual (May 2013), Ch. 7 Irrigation, C. Volume. Instead, a decreed irrigation water right will include the following statement regarding volume: “The total volume of this right shall not exceed the amount put to historical and beneficial use.” Rule 15(c), W.R.C.E.R. Decreed water rights are included in preliminary and temporary preliminary decrees issued by the Water Court.

The Water Court generally decrees direct from source stock water rights with no volume but includes the following remark: “This right includes the amount of water consumptively used for stock watering purposes at the rate of 30 gallons per day per animal unit. Animal units shall be based on reasonable carrying capacity and historical use of the area serviced by the water source.” Rule 24(c), W.R.C.E.R.⁷

There has been some confusion about what weight the Department should afford to the volume provided on statements of claim when processing applications to change existing direct flow irrigation water rights and direct from source stock water rights. The question arises when: (1) an applicant uses the Department’s methodologies to establish historic diverted and consumptive volumes, and the diverted volume calculated exceeds the amount provided on the statement of claim; and (2) an applicant files an Historic Water Use Addendum and attempts to demonstrate higher diverted and/or consumed volumes than the rule would yield and the diverted volume exceeds the amount on the statement of claim. It appears that in the former case, the Department will accept the historic consumptive volume calculated per rule. However, if the diverted volume calculated per rule exceeds what appeared on the claim form, the Department will not accept the higher volume, and will therefore limit the historic diverted volume to the amount on the claim form. In the latter case, the Department appears to elevate the diverted volume listed on the statement of claim above other evidence an applicant may offer to demonstrate a higher volume, thereby limiting the diverted volume to the amount on the statement of claim.

In the alternative, the Department has advised applicants who want to establish the higher diverted volume calculated by the rule or established by other evidence, in the case of filing an Historic Use Addendum, to file a motion to amend the volume on the statement of claim with the Water Court pursuant to § 85-2-233(6), MCA. Further, the Department has advised that simply filing a motion to amend opens the door for the Department to consider a higher volume because the Department will consider the motion to amend as subject to the same *prima facie* status as the original statement of claim.

As set forth below, there is no legal basis for the Department to limit historic diverted volume to the amount on the statement of claim form where a water right has been included in a

DNRC Chief Legal Counsel, p. 6 (undated) (citing to Water Right Claims Examination Rules that define the volume as the “diverted” volume).

⁷ This memorandum does not discuss the difference between the Water Court adjudication standard of 30 gallons per day per animal unit (AU) and the Department’s 15 gallons per day per AU.

decree with no volume decreed. Further, a motion to amend is not entitled to the same *prima facie* status as the original statement of claim.

Analysis. First, while a statement of claim and supporting information may include useful evidence for the Department to consider in evaluating historic use of a water right, it is merely a claim. The Water Court has equated statements of claim and objections to pleadings filed in district court. *Open A Ranch Inc. v. Clark Canyon Water Supply Co.*, No. 41B 10699-00, 2018 WL 7574153, at *1 (Mont. Water Ct. Sep. 19, 2018). While a claim is subject to *prima facie* status for purposes of adjudication, it is not for purposes of processing a water right change application.⁸

Importantly, the Water Use Act provides that “[f]or purposes of administering water rights, the provisions of a temporary preliminary decree or a preliminary decree, as modified after objections and hearings, *supersede a claim of existing right* until a final decree is issued.” § 85-2-227(1); see *Eldorado Coop Canal Co. v. Hoge*, 2016 MT 145, ¶ 21, 383 Mont. 523, 530–31, 373 P.3d 836, 841. Therefore, when a water right is included in a temporary preliminary decree or a preliminary decree, the associated statement of claim is superseded, and the Department should look to the water right as decreed for documentation of the specific elements decreed, and not to the statement of claim.

Second, unlike a statement of claim, the Water Court does not consider a motion to amend *prima facie* proof of the elements of the claim. *Nelson v. Brooks*, 2014 MT 120, ¶ 34, 375 Mont. 86, 95, 329 P.3d 558, 564–65. As the Montana Supreme Court has said, “[t]he effect of a motion to amend a statement of claim is simply that it is judged against the original claim to determine if sufficient evidence supports the requested amendment.” *Id.* As the Water Court has explained: “[p]arties seeking to amend water rights have the same burden of proof as an objector. To meet that burden, a party must ‘prove by a preponderance of the evidence that the elements of the original claim do not accurately reflect the beneficial use of the water right as it existed prior to July 1, 1973.’” *Open A Ranch Inc.*, WL 7574153, at *1 (citing *Nelson*, ¶¶ 34, 37 (quoting Rule 19, W.R.Adj.R.)).⁹ Therefore, the Department should not view motions to amend as carrying any legal significance with regard to the decreed elements of an existing water right prior to the Water Court’s approval of the requested amendment.

⁸ Standard language in the Department’s preliminary determination template includes: “A claim only constitutes *prima facie* evidence for the purposes of the adjudication under § 85-2-221, MCA. The claim does not constitute *prima facie* evidence of historical use in a change proceeding under § 85-2-402, MCA. For example, most water rights decreed for irrigation are not decreed with a volume and provide limited evidence of actual historic beneficial use. § 85-2-234, MCA.”

⁹ “An amendment to a water right changes the claimant’s property interest in that right. Once an amendment to a claim is approved, changes to the water right abstract are made in the central database and the claim appears as amended in the next decree. Amending a claim is a substantive act which changes the property interest that is the central focus of an adjudication proceeding. . . . Amending a water right requires the claimant to prove the amendment conforms with historical beneficial use. *Nelson*, ¶ 34. The burden of proof applied to such amendments at trial is a preponderance of the evidence.” *Open A Ranch Inc.*, WL 7574153, at *1-2.

Conclusion. The Department may make findings on diverted volume that are higher than what was originally claimed when a water right has been incorporated into a temporary preliminary or preliminary decree with no volume decreed without requiring an applicant to file a motion to amend with the Water Court. There is no legal basis for the Department to preclude an applicant from utilizing the historic diverted and consumptive volume calculations found in rule solely because the statement of claim included a lower diverted volume than what is calculated per rule. Further, if an applicant attempts to prove, through the filing of an Historic Use Addendum, higher volumes than what the rule would provide, the Department must weigh the evidence to make findings on historic diverted and consumed volumes, without elevating the statement of claim above other reliable evidence in the record. Similarly, for a change to an existing stock water right, where the water right has been decreed with the above-referenced remark (30 gallons per day per animal unit) the Department should calculate historic diverted volume based on the 30 gallons per day per AU.

Technical Memorandum: Net Surface Water Depletion from Ground Water Pumping

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION Water Resources Division



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Technical Memorandum: Net Surface Water Depletion from Ground Water Pumping

Date: July 6, 2018

To: Millie Heffner, Water Rights Bureau Chief

From: Russell Levens, Hydrologist, Water Management Bureau

The purpose of this technical memorandum is to describe the standard practices DNRC use to calculate net depletion to evaluate criteria under §85-2-311, MCA for ground water permits and §85-2-402, MCA for ground water changes. Net depletion calculations also are subject to provisions of §85-2-360, MCA for ground water permits in basins closed to new surface water appropriations.

Net depletion of surface water resulting from ground water pumping is the calculated volume, rate, timing, and location of reductions to surface water flow resulting from a ground water pumping. Net depletion is evaluated by:

1. developing a hydrogeologic conceptual model
2. identifying potentially affected surface waters,
3. calculating monthly consumption, and
4. calculating monthly net depletion.

The standard practices for evaluating net depletion are believed to be generally adequate to provide substantial credible evidence necessary to evaluate criteria under §85-2-311, MCA. DNRC may deviate from standard practices for evaluation of net depletion if an applicant provides credible information to support a different evaluation. Additional information provided by an applicant might refine the hydrogeologic conceptual model, support delineation of different potentially affected surface waters, justify different consumption calculations, and/or support more detailed modeling. DNRC will assess the value of additional information and justify whether or not to deviate from the standard practice.

Hydrogeologic Conceptual Model

A hydrogeologic conceptual model is a description of the physical characteristics of an aquifer that control the flow and storage of ground water including interactions with surface water. Hydrogeologic conceptual models developed in net depletion evaluations by DNRC rely on aquifer testing and information readily available in published reports, maps, and databases. Reports and maps published primarily by the U.S. Geological Survey (USGS) and the Montana Bureau of Mines and Geology (MBMG) provide fundamental information on geology, aquifer

boundaries, and aquifer properties. The Ground Water Information Center (GWIC) and Montana Board of Oil and Gas Online Oil and Gas Information System databases provide information pertaining to lithology and well construction reported on driller's logs as well as water level and water chemistry monitoring, and aquifer test data. Aquifer testing conducted by applicants provides site-specific information on aquifer properties and boundaries.

A hydrogeologic conceptual model in a net depletion evaluation incorporates information on the hydraulic connection and interactions between a source aquifer and surface water. Information incorporated in a conceptual model may include the depth a stream penetrates the saturated thickness of an aquifer, character of streambed sediments, and measured stream losses or gains.

Potentially Affected Surface Waters

Potentially affected surface waters in a net depletion evaluation are identified by their hydraulic connection to the source aquifer of a prospective ground water diversion based on the hydrogeologic conceptual model. Procedures for evaluating hydraulic connection and identifying one or more potentially affected surface water(s) depend on whether a proposed well is in an unconfined aquifer, in a confined aquifer in western Montana intermontane basins, or in eastern Montana regional bedrock aquifers. Aquifer type is determined from information obtained from geologic maps, lithology from well logs, or published reports by the USGS, MBMG, or other researchers, or hydrogeologic assessments conducted by consultants. Procedures in this document pertain to unconfined aquifers and confined aquifers in intermontane basins. Procedures for regional bedrock aquifers in eastern Montana are presented in a separate document.

Net depletion is apportioned between multiple potentially affected surface waters generally following procedures described in Section 3.2 of a guidance document developed by the Province of British Columbia (2016) for determining the effect of ground water diversion on specific streams. Depletions are apportioned through an iterative process based on inverse-distance squared stream weights. Once an initial set of streams has been identified, calculated stream weights are assigned. These weights represent the percent of depletions assigned to individual streams and sum to one. If any of the streams initially evaluated have scaled weights less than 0.1, representing less than 10% of total depletion attributed to that source, they are eliminated from consideration and the weights are recalculated for the remaining potentially affected sources, with the sum of all final weights equal to one.

Hydraulic Connection - Unconfined Aquifer

Hydraulic connection of surface water(s) to an unconfined source aquifer of a proposed well is based on an iterative consideration of proximity and comparison of ground water elevations relative to surface water bed elevations of potentially affected sources. For an initial screen, potentially affected surface waters are identified in the area surrounding a proposed ground water diversion that lies between the source aquifer boundary and the highest order stream transecting the source aquifer. Hydraulic connection of individual stream reaches to ground water is evaluated by comparing streambed elevations to static ground water elevations measured in wells less than 50 feet deep and within 1,000 feet of surface water or from published water table maps. Surface water within that area is considered hydraulically connected to the source aquifer if static ground water elevations are above or within 10 feet of the elevation of the stream bed.

Hydraulic Connection - Confined Basin-Fill Aquifers

Tertiary-age basin-fill sediments that underlay shallow alluvial aquifers in intermontane basins in western Montana can be 1,000s of feet thick and contain thick confining layers. Drawdown caused by pumping may spread over large distances, often extending to basin margins and ultimately depleting either the main outflow from the basin or surface waters at locations where confining layers are thinner, more permeable, or absent. Hydraulic connection of a confined aquifer to surface water depends on the continuity and properties of its confining layer as well as the hydraulic connection of the overlying unconfined aquifer to surface water.

The existence, continuity, and thickness of confining units are examined to determine whether depletions will occur at local or basin scales. Examinations of confining layers are based on the occurrence of fine-grained sediments in lithology descriptions from driller's logs obtained from GWIC, geologic cross sections constructed by DNRC or other sources, or published confining unit thickness maps by USGS or MBMG.

Hydraulic Connection- Fractured Bedrock Aquifers

Fractured bedrock aquifers in western Montana may be tapped for ground water beneath basin-fill sediments, but typically are important around basin margins or in valleys without significant basin fill sediments. Fractured bedrock aquifers may be unconfined at shallow depths or confined where fracturing does not extend to the water table.

Hydraulic connection of surface waters to fractured bedrock aquifers in intermontane basins is based on a geologic conceptual model describing the location and character of mapped geologic structures, outcrops or sub-crops, karstic conditions, and a confining unit. Generally, wells completed greater than 100 feet deeper than the bed of a potentially affected surface water are considered confined. Geologic maps are key evidence of the location and character of geologic structures that may connect a source aquifer in fractured bedrock to surface water or an overlying unconfined aquifer. Surface drainage patterns also often provide evidence of the presence of faults or fracture patterns that can reveal hydraulic connection between a bedrock aquifer and surface water. Distance measured to evaluate hydraulic connection and weight depletion among potentially affected surface waters is measured along the strike of any geologic structures believed to provide hydraulic connection.

Consumption

Consumption is evaluated according to the use of a proposed ground water appropriation following standard practices adopted by DNRC.

Ponds and Wetlands

Standard procedures for estimating evaporation from ponds and evapotranspiration (ET) from wetlands fed by ground water are described in the Technical Memorandum: Pond and Wetland Evaporation/Evapotranspiration dated March 14, 2018.

Crop Irrigation

Monthly consumption for crop irrigation is equal to the net irrigation requirement (NIR) calculated using the USDA Natural Resources Conservation Service (NRCS) Irrigation Water Requirements (IWR) program plus irrecoverable losses not associated to crop growth. The IWR Program computes total monthly crop ET, effective precipitation and NIR. The Blaney-Criddle

Method (TR21) used by DNRC, is described in detail in the National Engineering Handbook (1993). The following inputs to IWR for calculation of NIR are consistent with inputs used to develop the DNRC consumptive use rules in ARM 36.12.1902:

1. System and Local defaults in the Options Tab in IWR are unchanged.
2. The closest weather station is selected for climate data unless there is a more representative station based on elevation or another factor.
3. Site elevation and precipitation ratios are unchanged.
4. Start and end dates are calculated by IWR using default temperatures.
5. Net irrigation depth applied each irrigation is set to 1" for center pivot irrigation and 4" for other irrigation methods.
6. Carryover used at the beginning and at the end of each season is 25% of the net application depth.

Irrecoverable losses are equal to 5% for flood, wheel line, or hand line sprinkler, and 10% for center pivot irrigation sprinkler. Application rate is equal to NIR divided by an appropriate on-farm efficiency (Table 1). Values presented in Table 1 are similar to those percentages associated with the Irrigation Standards presently in rule for permit applications (ARM 36.12.115). An additional value for wild flood on-farm efficiency is presented as 25% (Neibling 1997, Utah State 2008).

Table 1: On-farm efficiency.

<u>Irrigation Method</u>	<u>Efficiency</u>
Sprinkler	0.70
Level Border	0.60
Graded Border (<i>Design Slope = .1-.4%</i>)	0.70
Graded Border (<i>Design Slope = .75-1.5%</i>)	0.65
Graded Border (<i>Design Slope = 3%</i>)	0.60
Furrow (<i>Design Slope = .1-.4%</i>)	0.70
Furrow (<i>Design Slope = .75-1.5%</i>)	0.65
Furrow (<i>Design Slope = 3%</i>)	0.60
Contour Ditch (<i>Design Slope = .75%</i>)	0.60
Contour Ditch (<i>Design Slope = 1.5-3%</i>)	0.55
Contour Ditch (<i>Design Slope = 6%</i>)	0.45
Wild Flood	0.25

Public Water Supplies and Other Multiple Use Appropriations

Consumption for public water supplies and combined appropriations results from evaporation during cooking, showering, and other indoor uses, evaporation during wastewater treatment and disposal, and NIR for lawn and garden irrigation. Withdrawals for specific uses can be obtained from DNRC or DEQ administrative rules or from values in publications such as the Manual of Small Water Supply Systems (EPA, 1991). Consumptive use coefficients listed in Table 2 are multiplied by withdrawal values to calculate consumption for evaluations of net depletion. These coefficients are based on the results of studies by Kimsey and Flood (1987), Vanslyke and Simpson (1974), and Paul, Poeter, and Laws (2007). Consumptive use coefficients for other purposes can be obtained from published reports such as Shaffer and Runkle (2007).

Table 2: Consumptive use coefficients for public water supply use with wastewater disposal and treatment.

<u>Wastewater Treatment / Disposal</u>	<u>Consumed</u>
Individual drainfields	10 %
Central treatment facility with minimal consumption	5 %
Evaporation basin or land application	100 %

Consumption for lawn and garden irrigation is based on the NIR for pasture grass calculated using IWR with inputs consistent with ARM 36.12.1902 and estimates of irrigated acreage provided by applicants.

Other Uses

Consumption for evaluating net depletion is assumed to be 100% for municipal, stock water, industrial, oil well flooding, water marketing for water depots, agriculture spraying, and some commercial uses. Open-loop geothermal systems where ground water is pumped and reinjected into the same source aquifer are considered non-consumptive if the pumping and injection rates are equal.

Rate and Timing of Net Depletion

Net depletion is the calculated difference between the amount of water depleted from a surface water source by pumping ground water and the amount of that water put to beneficial use but not consumed that accretes to surface water. Depletion results from propagation of drawdown from a pumped well to potentially affected surface waters. Drawdown can propagate in any direction independent of ground water flow rate or direction (Leake, 2011). Drawdown also can propagate through a confining layer to an overlying aquifer (Konikow and Neuzil, 2007) or to outcrops of a confined aquifer located miles away from a pumping well. Capture occurs as drawdown propagates through an aquifer to hydraulically connected surface waters and areas of phreatophyte vegetation that takes water directly from ground water. In the absence of credible evidence to the contrary, capture of ET by phreatophytes is neglected and net depletion is assumed to equal total capture. This assumption is made because published estimates for conditions common in Montana alluvial valleys indicate capture of ET generally is less than 10 percent of total capture (Xunhong, 2006). Return flows accrete to surface water in a process opposite of capture as mounding propagates to hydraulically connected surface waters and areas of phreatophyte vegetation. Similar to depletion, mounding propagates in all directions independent of ground water flow rate or direction and generally does not depend on surface topography.

Net depletion is calculated based on the fundamental concept that the amount of water withdrawn eventually is offset by an equivalent increase in ground water recharge or decrease in ground water discharge (Theis, 1940; Leake et al., 2008), a process defined as capture by Lohman (1972). The rate and timing of depletion to surface water source resulting from pumping from an unconfined aquifer typically is modeled by DNRC using analytical models including the Alluvial Water Accounting System (AWAS) and the Well Pumping Depletion Model (WPDM). A source aquifer is assumed to behave as an equivalent porous medium with constant aquifer properties and the model is run until equilibrium conditions are achieved.

Return flows also are modeled using AWAS and WPDM using recharge wells distributed across the place of use instead of pumping wells used in a depletion analysis. Return flows also may be calculated using the Glover parallel drain model implemented in a spreadsheet or the Stream Accretion Model (SAM). All analytical models used by DNRC have specific assumptions regarding the properties, geometry, and boundaries of an aquifer being modeled that need to match the conceptual model of a specific application. Complex numerical ground water flow models may be used to calculate net depletion if they are available from MBMG, the USGS, other researchers or consultants and appropriate for that purpose. However, appropriate numerical models generally are not available and the ground water models used most frequently by DNRC are analytical models that represent simple aquifer and stream geometries that are suitable where input data are limited.

Net depletion is evaluated by calculating depletion from ground water pumping and return flows of non-consumed water separately where return flows go to a different source or occur at a different location than ground water pumping. However, the timing of depletion from pumping ground water and timing of associated return flows are assumed to be the same under circumstances where a pumped well and the place of use where return flows occur are the same relative distance from a potentially affected surface water. Under those common circumstances, net depletion is modeled directly by setting the monthly pumping rate equal to the monthly consumption (e.g. from IWR). Net depletion equals consumption from a source on an annual basis whether pumping withdrawals and return flows are modeled in separate steps or whether the difference between withdrawals and return flows (i.e. consumption) is modeled in one step.

Standard inputs to models used to calculate net depletion are transmissivity, specific yield, distance to a surface water source, and distance to any no-flow boundaries that are modeled. Aquifer transmissivity is taken from the Department's Aquifer Test Report unless more representative values are available or where an aquifer test was not conducted under a variance. Transmissivity also may be calculated by multiplying tabulated values for hydraulic conductivity from published sources such as Bear (1972) by saturated aquifer thickness determined from representative driller's logs from GWIC. A specific yield of 0.1, based on Lohman (1972), is the default value for modeling net depletion. Distances to potentially affected surface waters and no-flow boundaries are representative values taken from mapped hydrography and/or geology.

The rate and timing of net depletion is assumed to be constant year-round where a proposed use from any aquifer type is constant year-round or where a well pumps from a confined basin-fill aquifer or from a depth greater than 100 feet in a fractured bedrock or a karstic limestone aquifer.

Return Flow Analysis

The following procedures are followed when net depletion is evaluated by modeling return flows depletion from ground water pumping separately. Monthly volumes of non-consumed water that returns to a source from a proposed new ground water use that are input to an appropriate model are calculated by dividing total consumption including irrecoverable losses by on-farm efficiency.

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Technical Memorandum: Distributing Conveyance Loss on Multiple User Ditches

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Technical Memorandum: Distributing Conveyance Loss on Multiple User Ditches

Date: February 14, 2020

To: Millie Heffner, Water Rights Bureau Chief

From: Water Management Bureau

The purpose of this technical memorandum is to describe standard practices DNRC uses to distribute conveyance loss among users on multiple user ditches. As stated in ARM 36.12.1902(10)(a) and (c), conveyance loss refers to the portion of water diverted at the head gate that does not arrive at the irrigated place of use due to seepage and evapotranspiration from the ditch.

In the case where there are multiple users and/or fields on one ditch, the following methodology will be used to distribute conveyance loss to each field based on the total flow rate for that field. Conveyance loss should be calculated to the edge of each field on the ditch. This will include calculating the length of ditch segments that are within the boundary of an upgradient field(s). The approach is a simplistic way to parse conveyance loss to each field based on:

- The geographic location of the field
- Percentage of flow rate in the ditch appropriated to each field

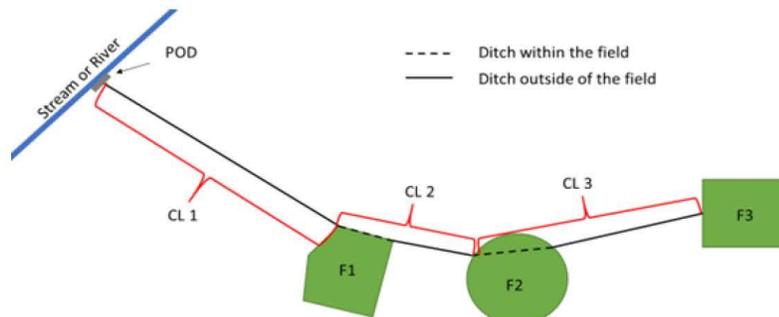


Figure 1. Example of multiple fields served by one irrigation ditch.

When multiple fields¹ are serviced by one ditch, the process to distribute conveyance loss to each field is:

1. Calculate the proportion of total flow appropriated to each field (Figure 1) for each segment of the ditch. For segment 1 (CL 1) where all users are active, the flow rate is 40 CFS, and the distribution of losses for that segment is:

Water Right No.	Field No.	Diverted Flow (CFS)
No. 1	F1	10
No. 2	F2	20
No. 3	F3	10
Total Ditch Flow (CFS)		40

$$\text{Field 1} = 10 \text{ CFS} \div 40 \text{ CFS} = 25\%$$

$$\text{Field 2} = 20 \text{ CFS} \div 40 \text{ CFS} = 50\%$$

$$\text{Field 3} = 10 \text{ CFS} \div 40 \text{ CFS} = 25\%$$

For segment 2, subtract the user No. 1 flow rate and recalculate the percentages of remaining flow (30 CFS). The distribution of losses for that segment is:

$$\text{Field 2} = 20 \text{ CFS} \div 30 \text{ CFS} = 66.6\%$$

$$\text{Field 3} = 10 \text{ CFS} \div 30 \text{ CFS} = 33.3\%$$

For segment 3, subtract the user No. 2 flow rate and recalculate the percentages of remaining flow (10 CFS). The distribution of losses for that segment is

$$\text{Field 3} = 10 \text{ CFS} \div 10 \text{ CFS} = 100\%$$

2. Calculate the conveyance losses for each segment of the ditch as described in the Historic Diverted Volume Memo (2012) and apply the distribution above for each segment. Total conveyance loss for each field is the sum of losses for each segment used to deliver water to the edge of that field.

¹ Multiple fields may include multiple water rights with a single owner, multiple owners, or a single water right with multiple places of use.

Technical Memorandum: Calculating Return Flow

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION Water Resources Division



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Technical Memorandum: Calculating Return Flow

Date: April 18, 2019

To: Millie Heffner, Water Rights Bureau Chief

From: Russell Levens, Hydrologist, Water Management Bureau
Amy Groen, Hydrologist, Missoula Water Resource Office
Brent Zundel, Hydrologist, Bozeman Water Resource Office
Danika Holmes, Hydrologist, Missoula Water Resource Office

The purpose of this technical memorandum is to describe standard practices DNRC uses to calculate return flows to evaluate adverse effect criteria for certain changes of use under §85-2-402, MCA. The practices described here also may be part of an evaluation of net depletion of surface water for ground water permits under §85-2-311, MCA, and subject to §85-2-360, MCA, where return flows are modeled separately from groundwater withdrawal. A separate technical memorandum describes the standard practices DNRC uses to calculate net depletion from ground-water pumping.

DNRC policy on changes in method of irrigation (Davis, 2015) and return flows analysis in general (Davis, 2016) specifies instances when the Department will consider changes in return flows or the need for a detailed analysis of return flows. The 2015 policy memo specifies how DNRC reviews changes of use under §85-2-402, MCA that involve a change in method of irrigation. This policy limits the instances when DNRC will conduct a detailed return flow analysis to those where historically irrigated acres are retired. The 2016 policy memo specifies that the Department will not develop a detailed return flow analysis for change authorizations without an objection if:

- a. return flows will enter back into the source where they have historically returned upstream of or at the location of the next downstream appropriator; or,
- b. water is left instream so historically diverted flows are available during the historic period of diversion either below the point of diversion or where return flows historically returned to the source.

DNRC also may not develop a detailed return flow analysis where water is physically and legally available on sources of supply located in basins open to new surface water appropriations or where existing water rights on a source are limited to wastewater rights.

Identifying the likely receiving stream for historical return flows and an evaluation of the next downstream appropriator is necessary to determine whether a return flow analysis will be prepared. For shallow unconfined alluvial aquifers typically found along most streams, the receiving stream is determined by proximity to the historical place of use. There frequently are multiple streams located at different distances from the place of use that may receive return flows; however, for the purposes of determining whether a return flow report must be prepared, the most likely receiving stream is identified by evidence of hydraulic connection and procedures patterned after those developed by the Province of British Columbia (2016).

Return Flow Analysis

Return flow is that part of a diverted flow which is put to beneficial use and is not consumed and returns to a surface water source. Return flow does not include conveyance losses, application consumptive losses, or crop consumptive losses. An evaluation of return flows for a change of use generally requires separate calculations for historical and changed conditions to determine the net effect of the proposed change. When examined as part of a net depletion evaluation, a separate return flow evaluation is required (a) when the place of use is located at a different distance from a depleted reach than a proposed well or (b) where return flows accrete to a different aquifer than the source aquifer of the proposed well. When a separate return flow analysis is conducted, net depletion is calculated by subtracting return flows from depletions caused by pumping the full withdrawal at the well.

Return flows are evaluated by:

1. developing a hydrogeologic conceptual model,
2. identifying receiving stream reaches
3. calculating monthly volumes not consumed by beneficial use(s), and
4. modeling the monthly accretion of return flows.

The standard practices for evaluating return flows are generally believed to be adequate to provide substantial credible evidence necessary to evaluate criteria under §85-2-402, MCA and §85-2-311, MCA. DNRC may deviate from standard practices for evaluation of return flows if an applicant provides credible information to support a different evaluation. Additional information provided by an applicant might refine the hydrogeologic conceptual model, support delineation of different receiving stream reaches, justify different consumption calculations, and/or support more detailed modeling. DNRC will assess the value of additional information and justify whether to deviate from the standard practice.

Receiving Reach

The receiving stream is determined by proximity and evidence of hydraulic connection to ground water. Similar to depletion of surface water by ground water pumping, mounding beneath irrigated fields propagates in all directions independent of ground water flow rate or direction and generally does not depend on surface topography (Theis, 1938; Leake, 2011). Return flows may accrete to more than one receiving reach or to a different stream than the source water is diverted from.

Hydraulic connection of surface water(s) to an unconfined aquifer that lies beneath an irrigated place of use is based on an iterative consideration of proximity and comparison of ground water elevations relative to streambed elevations of receiving reaches. Hydraulic connection of individual stream reaches to ground water is evaluated by comparing streambed elevations to static ground water elevations measured in wells less than 50 feet deep and within 1,000 feet of surface water or from published water table maps. Surface water within that area is considered hydraulically connected to the source aquifer if static ground water elevations are above or within 10 feet of the elevation of the stream bed.

Return flows are apportioned between multiple receiving surface water reaches generally following procedures described in Section 3.2 of a guidance document developed by the Province of British Columbia (2016) for determining the effect of ground water diversion on specific streams. Return flows accrete to surface water in a manner that is analogous to pumping wells depleting surface water and thus, the same methodology is applicable. Return flows are apportioned through an iterative process based on inverse-distance squared stream weights. Once an initial set of streams has been identified, calculated stream weights are assigned. These weights represent the percent of return flows assigned to individual streams and sum to one. If any of the streams initially evaluated have scaled weights less than 0.1, representing less than 10% of total return flows attributed to that source, they are eliminated from consideration and the weights are recalculated for the remaining potentially affected sources, with the sum of all final weights equal to one. This is done to focus accounting of return flows on the most likely affected surface waters.

Calculation of Monthly Non-Consumed Volumes

Monthly non-consumed volumes, as they pertain to return flow, are determined by calculating the difference between the volume of water applied to a field and the volume of water consumed by the crop plus irrecoverable losses at the field (ARM 36.12.1902(17)). Calculation of monthly applied, consumed, and non-consumed volumes begins with the calculation of crop consumption, which is equal to the net irrigation requirement (NIR). The NIR is obtained from the consumptive use rules in ARM 36.12.1902 or derived from evidence of historical use submitted on a Historic Use Addendum. Monthly NIR values are calculated using the Irrigation Water Requirement (IWR) computer program (NRCS, 2003) and inputs consistent with those used in the consumptive use rules - except where alternative information has been provided using the Historic Use Addendum (crop mix, end dates, etc.). These inputs, including net irrigation depth, carryover moisture, and beginning and end dates of crop growth are specified in the DNRC Historic Consumptive Use Methodology.

The monthly volumes of water applied to a field are calculated by dividing the NIR by the on-farm efficiency value obtained from Table 1. Irrecoverable losses consisting of evaporative losses not related to crop growth are calculated as a percentage of the applied volume: 5% for flood irrigation and 10% for sprinkler irrigation (see DNRC irrecoverable loss memorandum dated April 15, 2013). Once the volumes above have been determined, monthly non-consumed volumes are calculated by subtracting crop consumption and irrecoverable losses from field application volumes. These monthly non-consumed volumes are then used as inputs in the Department's return flow analysis.

Table 1. On-farm efficiency for use in estimating return flows

Irrigation Method	Efficiency
Sprinkler	0.70
Level Border	0.60
Graded Border (Design Slope = 0.1 – 0.4%)	0.70
Graded Border (Design Slope = 0.75 – 1.5%)	0.65
Graded Border (Design Slope = 3.0%)	0.60
Furrow (Design Slope = 0.1 – 0.4%)	0.70
Furrow (Design Slope = 0.75 – 1.5%)	0.65
Furrow (Design Slope = 3.0%)	0.60
Contour Ditch (Design Slope = 0.75%)	0.60
Contour Ditch (Design Slope = 1.5 – 3.0%)	0.55
Contour Ditch (Design Slope = 6.0%)	0.45
Wild Flood	0.25

Rate and Timing of Return Flows

The rate and timing of return flows to unconfined aquifers for historical and changed conditions are modeled using either the Well Pumping Depletion Model (WPDM) or the Alluvial Water Accounting System (AWAS) to simulate accretion of return flows to receiving surface water(s). WPDM and AWAS can be used to model accretions from a single location, represented by a recharge well, to one source with simple aquifer boundaries. AWAS allows multiple recharge wells to be modeled simultaneously, so it is typically the model of choice. Adjustments may be made to either program to simulate more complex conditions using the method of images (Ferris, et al., 1962) or other superposition techniques.

The basic inputs to WPDM and AWAS are transmissivity, specific yield, distance from recharge wells to the receiving reach, and, optionally, distance from other model boundaries to the receiving reach. Transmissivity is either derived from an applicant's or other representative aquifer test or by multiplying an estimate of hydraulic conductivity from Table 2 in Bear (1972) by aquifer saturated thickness, typically obtained from well logs. Based on Lohman (1972), a specific yield of 0.1 is the default value for modeling return flows. Distances from recharge wells

used to represent return flows or aquifer boundaries are the perpendicular distances to the receiving reach.

An additional model that may be used to assess the rate and timing of return flows is the Glover (1977) model. This model can be applied either through a direct reconstruction of Glover in spreadsheet form, or through the commercial Stream Accretion Model (SAM). Great care is taken to only apply the Glover model to the very restrictive model geometry of a bounded alluvial aquifer with specific input requirements. While its simplicity is appealing, one important restriction of the Glover model is that it represents uniform recharge across the full width of the alluvial aquifer and therefore, is not applicable to places of use that overlay only a portion of the aquifer. Its simplicity is appealing, but care is taken not to misapply the Glover model. Inputs to the spreadsheet reconstruction of the Glover model are the same as the other models with the exception that aquifer width equal to twice the 1/2 width of an alluvial aquifer between the receiving reach and aquifer boundary is used instead of the distance values in the other models.

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Glossary

Groundwater mound – increase in the elevation of a water table that results from downward percolation of water applied for irrigation but not consumed.

Hydraulic conductivity – the capacity of a unit thickness of an aquifer to transmit water per unit width and unit gradient.

Hydraulic gradient – change in groundwater level per unit distance in the direction of groundwater flow.

Specific yield – measure of the amount of water released from or taken into storage in an unconfined aquifer in response to lowering or raising of the water table.

Transmissivity – the capacity of the full thickness of an aquifer to transmit water per unit width and unit hydraulic gradient.

Change in Method of Irrigation - Policy Memo

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



STEVE BULLOCK
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
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STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
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PO BOX 201601
HELENA, MONTANA 59620-1601

December 2, 2015

To: WRD Regional Managers, Water Rights Bureau, and Hydro Science Section
From: Tim Davis, Administrator, Water Resources Division
RE: Policy memo – change in method of irrigation

I am sending you this policy memo in order to explain and clarify the department's policies related to change applications that include a change in method.

"Change in Appropriation Right means a change in the place of diversion, the place of use, the purpose of use, or the place of storage." (85-2-102(6), MCA). This definition does not include change in method of irrigation; the clearest example being changing from flood irrigation to pivot irrigation. While it has long been recognized that in most cases, an increase in efficiency through a change in method also increases consumption and reduces return flows, if a water right owner is not changing their point of diversion, place of use, purpose, or place of storage then a change authorization is not required. This creates some complication when a method change has occurred after June 30, 1973 but prior to submitting a change application.

For a change application submitted under 85-2-402, MCA, the department conducts an historic use analysis as required in ARM 36.12.1902. As part of the analysis, the rule requires that a comparison be done of the historic consumptive use to the amount of water being changed. For irrigation, historic use typically involves flood irrigation and the consumptive use associated with that method because prior to July 1, 1973, most irrigated land in Montana was irrigated by flood methods. What the department has done, and currently does, when a water right user has changed from flood to sprinkler is include any increased consumption from a method change in the amount of water being changed even if the place of use or purpose is not changing. This often results in requiring a reduction of irrigated acres so that the historic consumptive use is not increased and to prevent expansion of the underlying right.

The department recognizes the conundrum that has evolved as a result of the department's authority to not allow an expansion of a water right through a change authorization while a water right appropriator has the ability to change their method of irrigation resulting in increased consumption and reduced return flows outside of the change process. The department is proposing these policy changes in order to attempt to rectify this conundrum. These policies do not infer nor imply that a change in method of irrigation will not result in increased consumption or reduced return flows. This policy instead recognizes that the department does not have the authority, under 85-2-402, MCA, to review changes in method. For that reason, starting from the date of this memo, when reviewing a change application involving a change in method the following policies apply:

STATE WATER PROJECTS
BUREAU
(406) 444-6646

WATER MANAGEMENT
BUREAU
(406) 444-6637

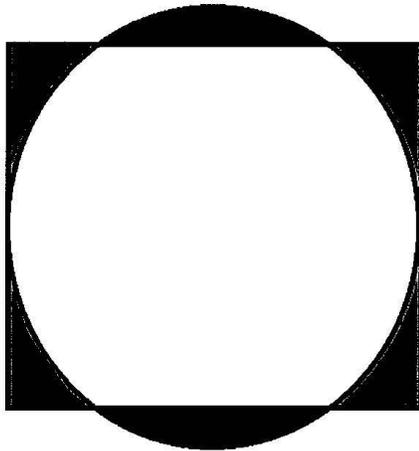
WATER OPERATIONS
BUREAU
(406) 444-0860

WATER RIGHTS
BUREAU
(406) 444-6610

- 1) The department will continue to conduct a historic use analysis on all changes as we have always done and will assign a flow rate, diverted volume, and consumed volume based on our findings of what they used pre-1973.
- 2) In addition to other potential application specific conditions, the department may place the following conditions on a change authorization under this policy:
 - a. Requiring installation of measuring devices or taking other steps to ensure that diverted volume or flow rate will not be increased; or,
 - b. Specifically for changes in POD only, requiring that a future change in POU or purpose will be limited to the flow rate, diverted volume, and consumed volume identified in this change.
- 3) Change in POD only: If a water right appropriator is only changing their point of diversion and is not increasing the number of acres historically irrigated or changing the place of use, then the department will assume for purposes of the comparison of the historic use to the new use that there is no change in consumption or return flow resulting from a post 1973 change in method. This applies only to the place of use and number of acres historically irrigated. If the change finds that new or expanded acres have or will be irrigated then MCA 85-2-402 does apply to those acres (see examples under number 4).
- 4) Change in POU or purpose: If a water right appropriator is changing their place of use or purpose, then the department will only look at a comparison of the historic consumptive use to the amount of water **being changed** including any increased consumption from a method change. This might apply to only the portion of the acres or water being changed.

The following examples are intended to help explain how the policies will apply.

Example 1 – Partial change in POU



A historically flood irrigated field is now being irrigated with a pivot. The circumference of the pivot falls outside of the historically flood irrigated field requiring a change in place of use (black area in diagram above). The department will conduct a historic use analysis on the flood irrigated field to determine a total consumptive use associated with the historically irrigated acres. The department will then determine the consumptive use associated with the corners that are no longer being irrigated (gray area in the diagram above) and compare that with the new acres being irrigated under the pivot (black area). The consumption on the new acres will be determined based on the efficiency of the pivot irrigation. Analysis of return flows will also be based on the change of retiring the corners and adding the new acres under the pivot. The area under the pivot that overlaps the historic place of use (white area in the diagram above) will not be used in the comparison or return flow analysis because this area is not being changed.

Example 2 – Partial change to instream flow

There is a historically flood irrigated field consisting of 100 acres. The water right appropriator has changed their method to sprinkler irrigation within the original footprint 15 years ago. The appropriator would now like to change 25 acres to instream flow for fish. The department will conduct a historic use analysis for flood irrigation on the 100 acres and determine the associated historic consumptive use for those acres. The department will not consider the increase in efficiency for the acres that are not being changed. The amount available to change to instream flow is the historic consumptive amount for 25 acres. The return flow analysis will be conducted on the 25 acres that will be retired and the associated flow rate and volume left instream.

Example 3 – Partial change of the diverted volume/flow to instream flow

There is a historically flood irrigated field consisting of 100 acres. The water right appropriator has changed their method to sprinkler irrigation within the original footprint 15 years ago. The appropriator would now like to change only the amount of water no longer diverted as a result of the change in method to instream flow for fish. The department will conduct a historic use analysis for flood irrigation on the 100 acres and determine the associated historic consumptive use, diverted volume and flow rate for those acres. The department will not consider the increase in efficiency resulting from the change in method. The department will apply a condition on the change requiring installation of measuring devices to ensure that the combined diverted volume and flow rate for both the irrigation and instream flow change will not be increased over the historically diverted volume and flow rate.

Example 4 – Full change in POU

A water right appropriator historically irrigated 100 acres. They now want to change their place of use to a field across the river and use a pivot. The department will conduct a historic use analysis for 100 acres of flood irrigation. The comparison will consider the historic consumptive use and the consumptive use of the pivot at the new proposed place of use to determine how many acres may be irrigated under the pivot without increasing the historic consumptive use. The return flow analysis will consider the entire acres being changed.

RE: Policy memo – change in method of irrigation
December 2, 2015
Page 4

If you have questions about how this policy memo applies then please work with the Water Rights Bureau NA Program to your questions answers.

The department has the authority to look at whether a new use or a change of an existing use will create an adverse effect. However, not all adverse effects that may occur fall under the authority of the department. If a water right user believes they are being adversely affected, outside of a permit or change proceeding, due to the increased consumption and the reduced return flows resulting from a method change that water user may seek a remedy through the District Court.

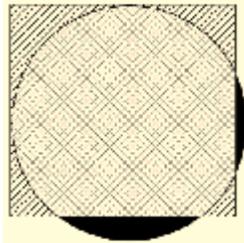
EFFICIENCY MEMO GUIDANCE

Historical System

Square = 100 Ac Flood (ditch)

New System

Circle = 90 Ac Pivot (pump/pipe)



Lined = 20 Ac Flood Removed

Crosshatched = 80 Ac Overlap

Solid Black = 10 Ac Pivot Added

Historical Use

Complete analysis of full water right as would be done with any change proceeding

Using the Historic Consumptive Use Rules - Dillon station (ARM 36.12.1902) and the historic diverted volume memo, the calculations work out as follows:

Flow Rate: 5 CFS proven by applicant

Consumptive Volume: $(18.34'' / 12'') * .637 \text{ mgmt} * 100 \text{ Ac} = 97.35 \text{ AF} + 8.11 \text{ AF} + 2 = 107.46 \text{ AF}$

(irrecoverable losses: $97.35 / 60\% \text{ eff} * 5\% = 8.11 \text{ AF}$ & assume 2 AF (of the total 50 AF conveyance loss) is consumed (ditch erap and vegetation))

Diverted Volume: $(97.35 \text{ AF} / 60\% \text{ eff}) + 50 \text{ AF conveyance loss} = 212.25 \text{ AF}$

Adverse Effect

Only run calculations to ensure the solid black (acreage outside historic footprint) consumptive use does NOT exceed the lined area (historic footprint acreage removed). No calculations will be run for the crosshatched land (overlapping historic and new acreage). In most cases, if using ARM.1902 for historical, you must use ARM.1902 for new. If using an historic use addendum and other method for historical, may use the same or different method for new.

Flow Rate required by pivot is less than 5 CFS

Old Consumptive Use: $1.07 \text{ AF/Ac} * 20 \text{ Ac} = 21.49 \text{ AF}$

New Consumptive Use (using ARM.1902): $(20.74'' / 12'') * .883 \text{ mgmt} * 10 \text{ Ac} = 15.26 \text{ AF} + 1.91 \text{ AF irr loss} = 17.17 \text{ AF}$

(irrecoverable losses using ARM.1902 numbers in beneficial use below: $1.72 \text{ AF/Ac} * 10\% = 17.17 \text{ AF} / 90 \text{ Ac} = .191 \text{ AF/Ac}$)

Consumptive volume of new acreage is less than that of acreage removed—passes the test (if consumption of new exceeds consumption of old, the applicant must reduce consumption of new (i.e. reduce solid black acreage, for example))

Beneficial Use & Adequate Means of Diversion

Based solely upon the applicant's calculations for the pivot (crosshatched and solid black – entire new system)

Flow Rate required by pivot: 2 CFS

Diverted Volume required by applicant—may use ARM or anything else with justification, examples below

IWR: $(20.74'' / 12'') * 90 \text{ Ac} / 80\% \text{ eff} = 194.44 \text{ AF}$

ARM.1902: $1.526 \text{ AF} * 90 \text{ Ac} / 80\% \text{ eff} = 171.68 \text{ AF}$

ARM 36.12.115: $2.08 - 2.41 \text{ AF/Ac} = 187.2 \text{ AF} - 216.9 \text{ AF}$

Operation plan of 2'' per week for 20 weeks: 300 AF

Must be equal to or less than 212.25 AF

NOT OK!! Must be equal to or less than 212.25 AF

Database Coding

Change Application: portion being changed (new flow rate and volume of pivot)

Historical Tab: 5 CFS Flow Rate ; 212.25 AF diverted volume ; 107.46 AF consumed volume

Current Amounts: 2 CFS Flow Rate ; Pivot AF diverted volume (171.68 assuming ARM.1902) ; 90 acres

*The leftover amounts (3 CFS and difference in AF remain on version 1, the applicant does not lose it)

Guidance for Landowners and Practitioners Engaged in Stream and Wetland Restoration Activities

Montana Department of Natural Resources and Conservation

~ Guidance for Landowners and Practitioners Engaged in Stream and Wetland Restoration Activities ~

This document offers guidance for the development and implementation of wetland and stream restoration projects as they pertain to Montana water rights. These guidelines are not intended to offer official departmental policy nor do they serve as a substitute for administrative rules established through the rulemaking process. DNRC's intention in the development of these guidelines is to provide an educational resource to the public and restoration practitioners involved in the work of stream and wetland restoration efforts.

This document discusses restoration techniques in terms of whether or not they constitute a diversion, impoundment or withdrawal of a quantity of water for beneficial use, which is how the Montana Water Use Act defines an appropriation of water that requires a water right. This document only pertains to State of Montana water right issues and does not contemplate other aspects of private property rights or civil law. This document also does not contemplate permitting requirements in addition to those directly relating to Montana water rights, but other permitting information can be found here: <http://dnrc.mt.gov/licenses-and-permits/stream-permitting>

DNRC strongly encourages individuals engaged in restoration work to contact their local DNRC Regional Office staff to obtain assistance regarding water rights questions for specific restoration projects:

Billings: (406) 247-4415 Bozeman: (406) 586-3136 Glasgow: (406) 228-2561 Havre: (406) 265-5516 Helena: (406) 444-6999 Kalispell: (406) 752-2288 Lewistown: (406) 538-7459 Missoula: (406) 721-4284

Background:

There is concern that inappropriately assuming a water right is required for wetland and stream restoration projects, including beaver mimicry, might limit ongoing ecological restoration efforts. Conversely, there is concern that some projects described as restoration are not comporting with water right laws when water is artificially manipulated through diversion, impoundment, excavation, groundwater pumping, or other means. Some of these activities may require a water right and some may not.

Appropriations under Montana Law:

Article IX, section 3(3) of the Montana Constitution provides that all surface, underground, flood, and atmospheric water within the boundaries of the state are the property of the state for its people and are subject to appropriation for beneficial uses as provided by law. These constitutional provisions are the basis of state laws that mandate an individual acquire a water right when intentionally *Appropriating* water for a *Beneficial Use*. There are various types of water rights, including but not limited to *Statements of Claim*, *Permits*, and *Groundwater Notices of Completion*

(aka groundwater exceptions to a permit or exemptions from a permit or 602 wells), but this principal is consistent throughout: a water right is required to appropriate water for a beneficial use in the State of Montana.

Montana Statute defines *Appropriate* to divert [through Means of Diversion], impound, or withdraw, including by stock for stock water, a quantity of water for a *Beneficial Use* (MCA 85-2-301(1)). The Administrative Rules of Montana further describes appropriations by defining *Means of Diversion* as the type of structures, facilities, or methods used to *Appropriate*, impound, or collect water. Examples include, but are not limited to the following: dike, dam, ditch, headgate, infiltration gallery, pipeline, pump, pit, or well (ARM 36.12.101(36)). *Beneficial Use* means a use of water for the benefit of the appropriator, other persons, or the public, including but not limited to agricultural, stock water, domestic, fish and wildlife, industrial, irrigation, mining, municipal, power, and recreational uses. *Beneficial Use* includes specific instances of instream flow to protect, maintain, or enhance streamflows to benefit the fishery resource; *Beneficial Use* includes aquifer recharge, mitigation, and aquifer storage and recovery projects (MCA 85-2-102(4)). The DNRC has determined as a matter of policy that some wetland projects constitute a beneficial use under the Montana Water Use Act, as wetland habitat is inextricably linked to the beneficial uses such as aquifer recharge and fish and wildlife. Furthermore, these laws assume that a water user has intent to put the water to beneficial use and intent to protect those uses, which is why water right uses are governed by prior appropriations for purposes of prioritizing among multiple water users.

Wetland and stream restoration projects that intentionally divert, impound, or withdraw a quantity of water through a human-controlled diversion for a beneficial use clearly require a water right. However, these types of projects are highly variable and diverse which can make them difficult to categorize with respect to water rights. Wetland and stream restoration projects often rely on human initiated alterations to the landscape and/or hydrology with the purpose of restoring or resetting the natural functionality of wetland and stream systems. Sometimes these alterations are very similar to activities commonly associated with appropriation and beneficial use and as a result require water rights. Because restoration methods are so diverse, these activities are neither entirely exempt from water right requirements nor collectively mandated to acquire water rights. This document outlines a number of specific restoration practices as they relate to water right requirements.

The necessity of a water right for a particular restoration project depends upon numerous factors. For this reason, DNRC recommends that you contact your regional office with any water right related questions regarding this guidance document. The fact that a water right may not be required for some restoration activities does not mean that the activity is legal. An activity that results in the waste of water, prevents water from moving to another person, or violates the Montana Water Use Act is illegal and may be subject to judicial enforcement proceedings initiated by the department or another water user. Section 85-2-114, -122, and -125, MCA. Furthermore, restoration projects may be subject to other permitting or regulatory requirements under Montana law. DNRC recommends that you consult the appropriate regulatory agency and seek additional counsel regarding non-water right issues associated with wetland and stream restoration projects.

Water Rights Information:

Depending upon the specifics of the project, it may be necessary or advantageous to secure a water right even on a temporary basis for some restoration projects. The Montana Water Use Act provides numerous methods for obtaining a water right to facilitate or enable restoration efforts on a temporary or permanent basis. For more information on seeking a groundwater certificate (602 form), new right to appropriate (85-2-301 MCA), temporary change in an appropriation right (85-2-407 MCA), short term lease of an appropriation right (85-2-410 MCA), temporary permit (85-2-311 MCA), or other means of ensuring restoration projects comply with regulations, please contact your regional DNRC office or refer to the “Water Rights in Montana Handbook” available online at http://dnrc.mt.gov/divisions/water/water-rights/docs/2014-water_rights_in_mt_handbook.pdf.

Wetland Projects:

For the purpose of this discussion, wetland projects are categorized in terms of *Creation* [Construction], *Restoration*, and *Enhancement*.

Wetland *Creation* [Construction] is the construction of an artificial wetland on a site that was historically non-wetland. Their uses include, but are not limited to landscaping, wildlife enhancement, water quality improvement, and sewage treatment. These wetland projects will always require a water right since water is artificially controlled and diverted to a place-of-use to create artificial wetland features in areas where natural wetland features have not existed in the past. It is noteworthy that some wetland creation [construction] projects used for treatment of wastewater from a public sewage system may not necessarily require a water right specific to reusing wastewater [or purposed as wetland] but that the use of this water is still predicated on an existing water right.

Wetland *Restoration* or *Historic Restoration* is the rehabilitation of a degraded wetland or the reestablishment of a wetland so that soils, hydrology, vegetative community, and habitat are restored to a close approximation of the original *natural* condition that existed prior to modification to the extent practicable. The term “natural” is emphasized here because a restored wetland should have characteristics similar to other natural wetlands in the area. Pool depths, water conveyance, vegetation and wetland water period of impoundments should share similar characteristics to other wetlands in the area. In the long-term, restored wetlands should function entirely in the absence of artificial controls and diversions of water that intentionally appropriate water for wetland use.

Wetland *Enhancement* is the modification of an existing wetland that augments specific wetland characteristics. Some augmentations, such as the non-irrigated promotion of specific plant species, are unlikely to artificially control water and increase water consumption above and beyond natural levels. However, in some wetland enhancements, impoundments and excavations are used to deepen wetland pools, diversions and headgates are used to impound water for longer periods, or the artificial control of water is used to encourage a larger area of wetland vegetation. Any of these types of enhancements that ultimately increase the amount of consumed or diverted water use beyond natural levels, require a water right.

To determine whether or not a wetland project results in a natural, constructed, or enhanced wetland, it is essential to compare the final project design to local natural wetlands characteristics. Characteristics to consider may include relative standing water (pool) dimensions, wetland plant species composition, wetland periods-of-impoundment, baseflow streamflow outputs, elevation

profiles, and floodplain connectivity. Any wetland project (restoration) whose final design approximates the natural characteristics of adjacent natural wetlands or approximates something smaller in magnitude does not require a water right. Any wetland project that results in deeper than normal wetland pools, higher in elevation water profiles, longer than typical periods of impoundment, curtailment of normative streamflow outputs, or diminished connection to the floodplain are wetland projects (enhancement or creation) that are more likely to require a water right. Wetland project designs should include descriptions of these characteristics as they pertain to water right demands.

It is worth looking at some specific techniques associated with wetland restoration projects, as they relate to water rights:

1. Excavations – The removal of fill (soil and rock) that was historically used to level and dry wetland areas so that they could be repurposed, through excavation, does not typically require a water right so long as the final wetland structure approximates natural characteristics. In contrast, an excavation that creates a wetland that will not be connected to a floodplain or not be located in an area that historically contained wetlands will require a water right. An excavation that results in the enlargement of a natural wetland or the enhancement beyond natural dimensions of a wetland will require a water right. Pool deepening beyond natural wetland conditions through excavation requires a water right.
2. Diversion – Any wetland that uses water sourced from a dike, dam, ditch, headgate, infiltration gallery, pipeline, pump, pit, or well will require a water right. [Groundwater Certificates (form 602), also known as exceptions to permits, are a type of water right]
3. Impoundments – Wetlands naturally impound water through natural depressions in the landscape and/or the existence of hydric soils that absorb and store water during periods of high flow and precipitation. These types of natural impoundments result in wetland associated aquifer recharge and storage and do not require a water right. In contrast, wetlands that use human-created berms, human-created dams, and dikes that result in wetlands that are perched in excess of elevation profiles of natural wetlands in the local area, require a water right for those portions of the wetland that are in excess of a natural wetland formation, as they are “enhanced wetlands” as compared to “natural wetlands.” All impoundments that result in “created wetlands” require a water right for the entire appropriation.
4. Removal of Drains – Many wetlands have historically been converted to agricultural land through the process of installing drain-ditches to remove wetland impounded water thereby converting wetland hydric soils to agricultural soils and converting wetland vegetation to agricultural crops. Restoration of drained wetlands often involves elimination of drains that can include the installation of drain-plugs, the filling of drain-ditches, removal of drain tiles, or otherwise causing cessation of the draining of soil and the eventual promotion of hydric soil development. This activity typically does not require a water right. However, activities that affect the water availability or supply of other water users may result in other types of private property liability issues
5. Wetland Vegetation Planting, Seeding, and Establishment – Wetland plant evapotranspiration (ET) is part of a natural system, but some restorations projects require temporary irrigation of newly seeded, planted, and waddled vegetation during the first years of plant establishment after a restoration action has occurred. So long as water is being applied for the establishment of what will become naturally occurring wetland plants associated with a

restoration activity, and the resulting consumptive use is not more what will be the naturally occurring ET of the wetland vegetation after it becomes established, no water right is needed.

Stream Restoration Projects:

Stream or river restoration projects involve activities intended to restore degraded ecosystems to a stable, healthy condition. Channel restoration, floodplain reconnection, the addition of channel structural complexity, bank stabilization, riparian planting and seeding, dam removal, fish passage construction, biological restoration, beaver dam analogues and flow augmentation are discussed here. Stream restoration typically does not include the protection of water under the Prior Appropriations Doctrine.

1. Channel Restoration – Channel restoration or modification is typically used to address channels degraded from down-cutting/incising, widening, artificial braiding, irregular lateral scour, or other impacts to channel morphology. Channel restoration can include full re-sculpting and grading of the channel, installation of cross-vanes or other water velocity reduction structures, engineered log jams, or other channel features designed to raise the stream bed elevation of incised channels and restore floodplain and hydraulic connectivity. Channel restoration does not include channel modifications designed to improve diversions or impoundments of water for withdraw or instream protection under the Montana Water Use Act. Accordingly, channel restoration activities typically do not require a water right. Some grade control structures, developed to address channel incision for example, result in the formation of low velocity backwater and pool areas. Generally speaking, in-channel grade control structures that pool or pond less than 0.1 acre-foot of water will not require a water right.
2. Adding Channel Structural Complexity – This category of restoration activity often overlaps with channel restoration, and may use engineered log jams, root wads, and the insertion of large woody debris to provide slow water habitat and promote scour pool formation. The objectives are typically more focused upon improving aquatic habitat conditions for fish and other aquatic organisms as opposed to channel restoration which is typically designed to address issues of high flow energy and undesirable channel meandering. As far as water rights are concerned, the same principles apply as those articulated in the channel restoration section.
3. Beaver Analogues - The construction of beaver dam analogues generates approximations of naturally occurring beaver dams and beaver ponds, done in a manner intended to also promote the channel stability, diverse aquatic habitat conditions, flow energy dissipation, floodplain connectivity, and other benefits associated with naturally occurring beaver formations. These features are typically deformable grade structures that are not entirely water tight allowing for fish passage both upstream and downstream as well as the conveyance of base streamflows. They may include dam anchors of large buried logs that are incorporated into the dam and are typically constructed from biodegradable materials and designed to inundate as well as incorporate flow deposited cobble, gravel, and other non-organic materials. So long as beaver analogues do not use control gates, culverts, headgates, ditches, or pipelines, they typically do not require a water right.

If installing a series of structures, deformable or otherwise, within close proximity of each other, it is highly recommended that you discuss project specifics with your regional DNR office. Projects that pool or pond more than 0.1 acre-foot of water per structure or per series of structures in close proximity may require a water right.

4. Bank Stabilization - Bank stabilization takes many forms, all of which tend to focus on the armoring of stream and river banks. Projects focused on the installation of hard- and bio-engineered structures typically do not have any water rights requirements.
5. Riparian Vegetation Planting, Seeding, and Establishment – Riparian plant ET is part of a natural system, but some restorations projects require temporary irrigation of newly seeded, planted, and waddled vegetation during the first years of plant establishment after a restoration action has occurred. So long as water is being applied for the establishment of what will become naturally occurring riparian plants associated with a restoration activity, and the resulting consumptive use is not more than what will be the naturally occurring ET of the riparian vegetation after it becomes established, no water right is needed.
6. Dam Removal – Any removal of human-made dams will likely involve water rights, as all legally operating existing dams are required to have obtained a water right for their use and those water rights must be considered when decommissioning a dam. It is necessary to identify each and every existing water user who is legally entitled to the continuation of the operation of any dam being removed, as each of those water users may have unique claim to title and use that needs to be addressed before dam removal.
7. Fish Passage Construction – Dedicated fishways, fish passages, or fish ladders are similar to side-channels of a river. They only serve to route water and therefore do not require a water right.
8. Biological Restoration – Biological restoration is the restoration of biological organisms and focuses on the manipulation of species composition with actions that aide the desirable or removal of undesirable organisms. Biological Restoration projects typically do not involve water rights issues.
9. Flow Augmentation – Flow augmentation, as presented here, is the increase of instream flow through water transactions that include, but are not limited to: acquiring instream flow water rights and protecting water instream through prior appropriations, acquiring other purposed water rights and changing them to instream flow and protecting water instream through prior appropriations, storing/releasing water, and the establishment of diversionary reduction agreements. Any flow augmentation project that involves the acquiring of protectable [prior appropriations] water supplies, including storage, to purpose or repurpose for instream use always involves water rights, often of a complex nature.

Return Flows - Policy Memo

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



STEVE BULLOCK
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
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1424 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

April 1, 2016

To: WRD Regional Managers, Water Rights Bureau, and Hydro Science Section WMB

From: Tim Davis, Administrator, Water Resources Division

A handwritten signature in blue ink, appearing to be "TD", written over the "From:" line.

RE: Policy Memo - Return flows

Montana has dealt with returns flows differently at different times. However, consistently over time, the State has made it clear that an irrigator cannot be compelled to divert, use, or waste water in order to provide return flows to other water right holders. As a result, water right holders, without the approval from the department, can and have ceased water use resulting in decreased return flows that may have harmed other water right holders.

Montana law and policy have also made it clear under MCA 85-2-401 that a change authorization can decrease streamflow or lower a water table if another appropriator can reasonably exercise their right under the changed conditions. Additionally, the adverse effect analysis for a change authorization under MCA 85-2-402 does not explicitly require a legal availability analysis nor a return flow analysis as part of a change authorization. MCA 85-2-402, ARM, and case law do make it clear that a change must be limited to no more than the "maximum historic instantaneous depletion" (or flow rate) and a total volume annually consumed absent specifically identified return flow data.

This policy seeks to ensure the consistent implementation of the change process as it relates to return flows and ensure that a change authorization will not constitute an enlargement in the historic use of the original water right while clarifying the process for other water right holders to object to a preliminary determination if they feel that changes in return flows will adversely affect their water rights. This objection process will be similar to the process set out under MCA 85-2-402(3), requiring an applicant to prove that water quality will not be adversely affected if an objection concerning water quality is filed, and is similar to the findings of several water reservations. As a result, starting from the date of this memo, when analyzing return flows as part of a change authorization the following policies apply:

- 1) Under ARM 36.12.1901(5), the department must consider historical use in determining whether changing the water right would constitute an enlargement of flow rate and consumptive use over the historic use of the original water right.

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- 2) When determining historic use, the department will rely upon the standards set out under ARM 36.12.1902 including but not limited to (3) "The amount of water being changed for each water right cannot exceed or increase the flow rate historically diverted under the historic use, nor exceed or increase the historic volume consumptively used under the existing use."
- 3) The department will analyze the change to determine if:
 - a. return flows will enter back into the source where they have historically returned upstream of or at the location of the next downstream appropriator; or,
 - b. water is left instream so historically diverted flows are available during the historic period of diversion either below the point of diversion or where return flows historically returned to the source.

This will help to ensure that the next appropriator and others have similar or greater opportunity for appropriations than were historically available.

- 4) If 1-3 are met then the department will not develop a monthly return flow analysis for change authorizations without an objection.
- 5) If a water right holder feels that they will be adversely affected by a change because return flow timing and amount will change then they may object. If a valid objection regarding adverse effect related to return flows is received then the hearing examiner will appoint department staff under ARM 36.12.235 to issue a written report determining whether changes in return flows will result from the change authorization including additional details on the estimated monthly timing of return flows.

This policy does not apply to change of points of diversion from surface water to ground water.

Under MCA 85-2-311, as well as under 85-2-360 for closed basins, the department will continue to analyze monthly physical and legal availability and adverse effects resulting from net depletions for new permits. Mitigation changes will still need to match the timing of depletions from new permits. For example, mitigation changes will need to match year round depletions in closed basins where new depletions will be from ground water sources.

85-2-360. Ground water appropriation right in closed basins. (1) An application for a ground water appropriation right in a basin closed pursuant to [85-2-319](#), [85-2-321](#), [85-2-330](#), [85-2-336](#), [85-2-341](#), [85-2-343](#), or [85-2-344](#) must be accompanied by a hydrogeologic report conducted pursuant to [85-2-361](#), an aquifer recharge or mitigation plan if required, and an application for a change in appropriation right or rights if necessary.

(2) The department shall use the hydrogeologic report to determine if the proposed appropriation right could result in a net depletion of surface water.

(3) (a) For the purposes of [85-2-360](#) through [85-2-362](#), the prediction of net depletion does not mean that an adverse effect on a prior appropriator will occur or if an adverse effect does occur that the entire amount of net depletion is the cause of the adverse effect. A determination of whether or not there is an adverse effect on a prior appropriator as the result of a new appropriation right is a determination

April 1, 2016
RE: Policy Memo - Return flows
Page 3

that must be made by the department based on the rate, location, and timing of the net depletion that causes the adverse effect relative to the historic beneficial use of the appropriation right that may be adversely affected.

(b) The department may grant a permit for a new appropriation only if the applicant proves by a preponderance of the evidence that the adverse effect would be offset through an aquifer recharge or mitigation plan that meets the requirements of [85-2-362](#).

Ditch Rights

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



BRIAN SCHWEITZER, GOVERNOR

DIRECTOR'S OFFICE 406-444-2074
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03-19-2012

Ditch Rights General Information

The Montana DNRC and in particular the Water Rights Bureau is often asked to answer questions pertaining to ditch rights. Ditch rights are rights of access across another's land to convey water. They may be mere licenses, or actual easements. Ditch rights and water rights are separate. A water right does not convey a ditch right and a ditch right does not convey a water right.

The Water Rights Bureau of the DNRC does not administer, maintain or enforce ditch rights. That said we have a responsibility to provide whatever useful information we have in order to best serve the public.

The following is a list of Montana Code Annotated (MCA) sections and readings that may be helpful regarding ditch rights. This list is not exclusive. If one has questions regarding their ditch rights, he or she should contact their legal counsel. DNRC cannot give advice, legal or otherwise, concerning ditch rights.

- MCA 70-17-112 Interference with canal or ditch easements prohibited
- MCA 85-2-202 Road or ditch right-of-way
- MCA 7-31-4205 Procedure to close and fill ditch – notice
- MCA 7-31-4203 Open ditch declared nuisance
- MCA 85-2-414 Conduction of water
- MCA 85-5-106 Maintenance and repair of ditches or systems
- MCA 85-7-1933 Diversion of waters
- MCA 85-7-2211 Safety
- Chapter 8. Ditch Rights. Taken from: Montana Water Law Handbook, by Ted Doney, 1981, published by State Bar of Montana.

Recent opinions by the Montana Supreme Court may also be helpful in understanding ditch rights: *Sitz Angus Farms V. Dallaserra*, 2002 MT 295N (non-cite); *Byrum v. Andren et al*, 2007 MT 107; and *Musselshell Ranch Co. v. Joukova*, 2011 MT 217. These opinions can be found on the Montana Supreme Court's website, <http://searchcourts.mt.gov/index.html>

Jamie Ellis
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"AN EQUAL OPPORTUNITY EMPLOYER"

Clark Fork Supplemental Memo

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



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MEMORANDUM

To: Bill Schultz, Missoula Regional Manager
Marc Pitman, Kalispell Unit Manager
Jan Langel, WRD Operations Manager
Terri McLaughlin, Water Rights Bureau Chief
Kim Overcast, New Appropriations Program Manager

From: John E. Tubbs, Administrator

Re: Permitting in the Open Clark Fork and Flathead Basins
Follow-up to June 9, 2008, Memorandum

Date: May 1, 2009

This memorandum is to clarify the direction I intended for applying the TRLC case¹ as precedent² for surface and ground water uses in the open Clark Fork and Flathead Basins. All applications for permits remain subject to requirements of MCA 85-2-311.

Above Reservation Boundary: (all of Basins 76I, 76J & 76K and that portion of 76L & 76LJ north of Reservation boundary)

- o The TRLC case is not considered as precedent and therefore is not a consideration in evaluating issuance criteria for surface water or groundwater applications.

Below Reservation Boundary: (all of Basins 76M & 76N and that portion of 76L west of Reservation boundary)

Surface Water Sources

- o For requested appropriations of 35 gpm or less and 10 acre feet of consumption per year or less, do not consider TRLC as precedent. TRLC is not a consideration in evaluating issuance criteria.
- o For requested appropriations of greater than 35 gpm or greater than 10 acre feet of consumption per year, TRLC is considered as precedent and is a consideration in evaluating issuance criteria.

¹ Application for Beneficial Water Use Permit No. 76N 30010429 by Thompson River Lumber Co (2006).

² Precedent: An adjudged case or decision of a court, considered as furnishing an example or authority for an identical or similar case afterwards arising or a similar question of law. From Black's Law dictionary, Fifth Edition.

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Ground Water Sources

- o When net depletion to surface water sources is calculated to be 35 gpm or less and 10 acre feet per year or less, do not consider TRLC as precedent. TRLC is not a consideration in evaluating issuance criteria.
- o When net depletion to surface water sources is calculated to be greater than 35 gpm or greater than 10 acre feet per year, TRLC is considered as precedent and is considered in evaluating issuance criteria.

Criteria Assessment: When TRLC is not a consideration in the evaluation, the following language should be added to the criteria assessment when evaluating applications in the Clark Fork and Flathead basins.

In regard to senior hydropower water rights, the facts in this application are distinguishable from those in *In the Matter of Application for Beneficial Water Use Permit No. 76N30010429 by Thompson River Lumber Co* (2006) (TRLC) concerning the Avista Company's water rights for Noxon Reservoir. Thompson River Company's proposed diversion on the Clark Fork was surface water immediately upstream of Avista's Noxon Reservoir that had an immediate calculable adverse impact on Avista's water rights and power production.

The proposed appropriation in this case is for **[i.e. domestic lawn irrigation]** more than **[XX]** miles upstream of Noxon Reservoir. Section §85-2-401, MCA, makes clear that an appropriator is not entitled under the prior appropriation doctrine to protect itself from all changes in condition of water occurrence. In this basin which is not closed to surface or ground water appropriations, priority of appropriation for a large hydropower right that may otherwise prohibit future upstream development in the basin, does not, pursuant to §85-2-401, MCA, include the right to prevent the decrease of streamflow or the lowering of a water table or water level if the prior appropriator can reasonably exercise their water right under the new conditions. Here, the Department finds that Avista's prior appropriation in this basin which has not been closed to appropriation by the Legislature does not include the right to prevent this appropriation where Avista can reasonably exercise its hydropower water right.

Ditch General Information

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



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03-19-2012

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"AN EQUAL OPPORTUNITY EMPLOYER"

Fish & Wildlife

JAN 21 2006 09:01

LEWISTOWN WATER RESOURCES

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DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

GALLAN

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JP
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TED SCHWINDEN, GOVERNOR

1520 EAST SIXTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-6698

HELENA, MONTANA 59620

MEMORANDUM

RECEIVED

MAR 24 1986

TO: Gary Fritz, Administrator
Water Resources Division

FROM: James M. Madden *JM*
Legal Counsel

APPROVED: Tim D. Hall *TDH*
Legal Counsel

SUBJECT: Private Fish and Wildlife Appropriations under the
Water Use Act.

DATE: January 22, 1986

Post-it® Fax Note 7671		Date	# of pages ▶
To	<i>Kim D.</i>	From	<i>Scott J.</i>
Co./Dept.		Co.	
Phone #		Phone #	
Fax #		Fax #	

ISSUE

Should the Department (DNRC) issue new water use permits or final certificates to individuals for private fish and wildlife purposes? Does the Water Use Act authorize individual appropriations for these uses? Does the Department of Fish, Wildlife and Parks (FWP) have any countervailing interests?

BRIEF ANSWER

Private appropriations for fish and wildlife purposes are authorized by the Water Use Act and its amendments. This is in accord with prior case law and with the legislature's intent to maximize the beneficial use of waters in Montana. The Act imposes two restrictions on these appropriations. First, private appropriations for fish and wildlife must involve some kind of a diversion, impoundment, or withdrawal of water. Second, proposed fish and wildlife appropriations must be measured against amounts reasonably needed for that use. Uses that cannot reasonably be quantified cannot be recognized as a right.

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The Department of Fish, Wildlife and Parks has statutory authority to supervise the fish and wildlife of the state, but FWP does not have the exclusive right to appropriate water for fish and wildlife purposes. However, in some private fish and wildlife uses, DNRC and FWP interests overlap.

The DNRC should issue rules defining acceptable private fish and wildlife uses. These rules should be preceded by DNRC study of the quantification problems inherent in these uses, and should be based on the DNRC's interpretation of its duties under the Water Use Act.

DISCUSSION

1. Private appropriations for fish and wildlife under the Water Use Act.

The plain language of the Water Use Act, Title 25, Chapter 2, MCA, appears to authorize private appropriations for fish and wildlife purposes. After July 1, 1973, no person may appropriate water except as provided by the Act. A person may only appropriate water for a beneficial use. §85-2-301(1), MCA. The Act defines "beneficial use" as:

a use of water for the benefit of the appropriator, other persons, or the public, including but not limited to agricultural (including stock water), domestic, fish and wildlife, industrial, irrigation, mining, municipal, power and recreational uses . . .

§85-2-102(2) (a), MCA (emphasis added)

Several other states have also statutorily approved fish and wildlife appropriations as beneficial uses of water. See Ariz. Rev. Stat. Ann. §45-141(A); Cal. Water Code §§ 1242, 1243, 1257; Colo. Rev. Stat. Ann. 37-92-103(4); North Dakota Code Ann. 61-04-01.1; Or. Rev. Stat. 537.170(3) (a); Tex. Rev. Civ. Stat. Ann. 7470, 7471; Wash. Rev. Code Ann. 90.14.031. See also R. Clark, Waters and Water Rights §19.3(c) p. 59 (1967), and Hutchins, v.I Water Rights Laws in the Nineteen Western States, p. 523-24 (1971). A noted commentator has concluded that fish and wildlife uses are undoubtedly "beneficial", as that term is used in western water law. Trelease, The Concept of Reasonable Beneficial Use in the Law of Surface Streams, 12 Wyo. L.J. 6, 11 (1957). No court decisions have been found holding otherwise although an early Utah case, applying a local rule that appropriations must "inure to the exclusive benefit of the appropriator", held that an individual could not irrigate public land to supply food for wild waterfowl. Lake Shore Duck Club v. Lake View Duck Club, 166 P. 300 (Utah 1917).

In 1936 the Montana Supreme Court recognized a private appropriative right for purposes of a swimming pool and fish pond. Osnes Livestock Co. v. Warren, 103 Mont. 284 (1936). With no discussion of the matter, the Osnes court ruled:

If we assume it to be the fact that the Hudson brothers did nothing more with the water diverted than to use it for the purpose of maintaining a swimming pool or fish pond, it is not clear that such a use would not be a beneficial use and hence the basis of a valid appropriation.

Id. at p. 302, citing Kinney on Irrigation, §697; Cascade Town Co. v. Empire Water & Power Co., 181 F. 1011 (D. Colo. 1910), aff'd 205 F. 123 (8th Cir. 1913) (scenic falls are a beneficial use). In a more recent case, the Montana Court assumed that a diversion for a private fishpond was a "lawful appropriation", although the beneficial use question was not directly raised. Paradise Rainbow et al v. Fish and Game Commission, 148 Mont. 412, 418-19 (1966). See also Quigley et. al. v. McIntosh, 110 Mont. 495 (1940). At the time these cases were decided, Montana statutes did not define beneficial use but simply required that an appropriation be for some "useful or beneficial purpose". RCM 1947, 89-802. It was left to the courts to determine what were beneficial purposes.

The Osnes holding that a private fishpond is a beneficial use of water is probably still good law. Both the 1973 and pre-1973 statutes contain the requirement that appropriations be for a beneficial use. See §85-2-301, MCA; §89-802, RCM 1947. In adopting a statute, the legislature is presumed to have acted with knowledge of the judicial construction of previous similar statutes, and to have adopted that construction, unless the contrary is clearly shown in the language of the new statute. Vantura v. Montana Liquor Control Board, 113 Mont. 265 (1942). As a judicial construction of the term "beneficial use", Osnes thus remains valid. Moreover, the Osnes ruling seems to have been expressly incorporated in the Water Use Act's designation of fish and wildlife appropriations as beneficial uses. §85-2-102(2)(a), MCA. Arguably, Osnes' authorization of private fishpond appropriations is incorporated in the 1973 Act as well.

The legislative history available for the Water Use Act gives no indication of the legislature's intent on this issue. However, some perspective on the water law climate at the time of the 1973 Act may be provided by reviewing the transcripts of the 1972 Montana Constitutional Convention. See Verbatim Transcript Vol. V pp. 1301-1351. One proposed constitutional subsection would have listed beneficial uses of water, and was

similar to the present §85-2-102(2)(a), MCA. The proposed subsection stated in pertinent part:

Beneficial uses include but are not limited to domestic, municipal, agriculture, stockwatering, industry, recreation, scenic waterways, and habitat for wildlife, and all other uses presently recognized by the law, together with future beneficial uses as determined by the Legislature or courts of Montana.

Id. at p. 1312. (emphasis added). There was considerable debate at the convention as to whether the proposed recreational and wildlife uses might usurp older, more traditional uses. Nevertheless, the delegation was in agreement that downstream states might soon obtain prior rights to Montana's unappropriated water. An extensive list of beneficial uses was seen as a means of maximizing Montana's claim to the unused waters in the state. See id. at pp. 1316, 1319, 1328, 1334. Moreover, it was clear that the proposed subsection was intended to authorize individual filings for recreational and wildlife appropriations. Id. at p. 1315.

The proposed constitutional listing of beneficial uses was ultimately deleted, in part because of disagreement as to how or whether to rank the uses, and in part based on the realization that the matter was more properly one for the legislature. Id. at p. 1334. The constitutional delegation clearly anticipated that the next legislature would likewise be interested in protecting Montana's water against downstream states, and thus would expand the list of uses for which Montana water could be appropriated. Id. at pp. 1334-35. And in fact, the 1973 legislature incorporated into the Water Use Act a definition of beneficial use very similar to the proposed constitutional subsection. §85-2-102(2)(a), MCA.

The 1973 legislature probably shared the water law concerns of the 1972 constitutional delegation. Thus, one purpose of the Water Use Act was to authorize a broad range of acceptable uses for Montana water. To prohibit private parties from making appropriations for fish and wildlife would not be consistent with that purpose.

In any case, private appropriations for fish and wildlife uses are consistent with the plain language of the Water Use Act and its amendments. This fact, in the absence of indications to the contrary, provides sufficient legal basis for concluding that such appropriations are authorized by the Act.

The Water Use Act does place two restrictions on private appropriations for fish and wildlife. First, as defined in the

Act, "appropriate" means to divert, impound, or withdraw a quantity of water. §85-2-102(1), MCA. A special provision of the Act allows public agencies to claim water without a diversion, impoundment or withdrawal. §85-2-316, MCA. These special claims can take the form of reservations of water for existing or future beneficial uses, or of maintaining a minimum flow level or quality of water. It is clear, both from the Act's definition of "appropriate" and from the separate section allowing public agencies to apply for instream flows, that private individuals cannot make instream appropriations. See, In the Matter of the Application for Beneficial Water Use Permit No. 35527-s41H by Glenn E. and Lyla E. Lehrer, p. 1.2 (1984). Thus, private fish and wildlife appropriations require some kind of a diversion, impoundment, or withdrawal.

The requirement of a diversion or some other exercise of physical control over water in order to obtain a water right has been criticized. One commentator has observed:

It was natural for our water laws to grow up with terminology--which required a 'diversion' for beneficial use, because both placer mining and irrigation generally required it, and they were the only principal uses which concerned our courts and legislatures at the time that water law was developing.

But now there are other uses which do not require a diversion, e.g., hydro-power. And some modern uses do not require impoundment or withdrawal either, e.g. all manner of water-based recreation: swimming, fishing, water skiing, gold mining, scuba diving and so on.

Stone, Montana Water Law for the 1980's, p. 51 (1981). Arguably, the true test of an appropriative water right is the application of the water to some beneficial use, not whether a diversion is employed. Nevertheless, the diversion requirement does reflect the possessory element inherent in a traditional appropriative right. See, Fullerton v. Cal. State Water Resources, 193 Cal.Rptr. 518, 522-23 (Cal.App. 1979). Further, nonpossessory water rights present special problems of notice and quantification, which may justify their receiving special treatment in the Water Use Act.

The second restriction imposed by the Water Use Act on private fish and wildlife appropriations results from the Act's requirement that water rights be quantified. Before a water use permit will issue, an applicant must prove, inter alia, that there are unappropriated waters in the source of supply in the amount requested, and that the proposed use will not harm prior

appropriators or interfere with other planned uses. §85-2-311(1), MCA. This section requires that the proposed use be measured against the existing water supply and the needs of other appropriators. Further, the Act prohibits the DNRC from issuing a permit for more water than can "be beneficially used without waste for the purpose stated in the application." §85-2-312(1), MCA. This section requires the DNRC to measure the proposed use against amounts reasonably needed for that use.

These sections of the Act make quantification of the use an essential step in the granting of a water right. This is in accord with the traditional rule that an appropriative water right extends only to the quantity of water that is in fact beneficially used. Huffine v. Miller, 74 Mont. 50 (1925). See also, Toohy v. Campbell, 24 Mont. 12 (1900); Allen v. Petick, 69 Mont. 373, 377-79 (1924) (beneficial use is the basis and limit of a water right; the amount that can usefully be put to the intended use is the limit of the right itself.) However, the permit procedures of the Water Use Act were also a response to an express constitutional mandate that the legislature provide for the "administration, control, and regulation of water rights" and "establish a system of centralized records". Article IX, section 3(4), 1972 Mont. Const. Thus, the Act was intended to implement a definitive water use system:

The legislature declares that this system of centralized records recognizing and establishing all water rights is essential for the documentation, protection, preservation and future beneficial use and development of Montana's water for the state and its citizens and for the continued development and completion of the comprehensive state water plan.

§85-2-101(2), MCA.

Quantification of rights is especially important to achieve the systematic documentation of water rights contemplated by the Water Use Act.

Appropriations for fish and wildlife are notoriously difficult to quantify, except in certain limited and carefully controlled situations. This quantification problem necessarily will restrict the scope of private appropriations for fish and wildlife under the Water Use Act. A use that cannot be quantified cannot become a right under the Act.

2. FWP Supervision over Fish and Game

It has long been the rule in Montana that the state "owns" its wild fish and game for the use and benefit of its citizens.

Heiser v. Severy, 117 Mont. 105 (1945); Rosenfeld v. Jakways, 67 Mont. 558 (1923). The Department of Fish, Wildlife, and Parks (FWP) has been given authority to supervise all the wildlife, fish, game, and nongame birds, waterfowl, and the game and fur-bearing animals of the state. §87-1-201(1), MCA. Much of FWP's supervisory activity consists of licensing private and commercial activities that affect the state's fish and game resource. See, Title 87, chapter 2, MCA. A license is required not only for hunting, fishing and trapping, but also for any other activity involving the "possession" of wild fish or game:

It is unlawful for any person to: (1) pursue, hunt, trap, take, shoot, or kill or attempt to trap, take, shoot, or kill any game animal, any game bird, or any fur-bearing animal or take, kill, trap or fish for any fish within this state or have, keep, or possess within this state any game animal, game bird, fur-bearing animal, game fish, or parts thereof, except as herein provided or as provided by the department.

§87-2-103(1), MCA (emphasis added)

Another statute also generally regulates possession of fish or game:

It is hereby made unlawful for any person to purchase, sell, offer to sell, possess, ship, or transport any game fish, game bird, migratory game bird, game animal, or fur-bearing animal or part thereof protected by the laws of this state, whether belonging to the same or different species from that native to the state of Montana, except as specifically permitted by the laws of this state.

§87-3-111(1), MCA (emphasis added)

Aside from hunting and fishing, only a few kinds of wildlife "possession" are actually regulated by statute or FWP regulation. Regulations are promulgated for game farms (§87-4-401, et seq, MCA; 12.6.1501, et seq, ARM), menageries and zoos (§87-4-801, et seq, MCA; 12.6.1301, et seq, ARM), and fur farms (§87-4-1001, et seq, MCA; 12.6.1701, et seq, ARM). Restrictions also are placed on the captive breeding of raptors (§85-5-201, et seq, MCA; 12.6.1401, et seq, ARM). As a rule, existing FWP regulations concerning possession of wildlife focus on the possession of animals for commercial purposes. For

example, the licensing provisions for game bird farms expressly do not apply to "a person who owns, controls, or propagates game birds for purposes other than sale or conveyance." §87-4-902, MCA. (Nevertheless, any person that possesses migratory game birds for propagation needs state and federal permits. See, §87-2-807, MCA)

Considerably more extensive are FWP's statutes and regulations concerning private possession of wild fish. Owners of fish ponds must apply to FWP for a private fish pond license. §87-4-603, MCA. A significant limitation on private fishponds is that they must be located in artificial lakes or ponds. Id. The apparent purpose of this limitation is to avoid interfering with natural habitats and migration routes. See, Paradise Rainbow et. al. v. Fish and Game Commission, 148 Mont. 412, 416-18 (1966). FWP also restricts the rearing of fish in "live cages" in public waters. 12.7.301, ARM. The purpose of this regulation is "to protect the recreational and aesthetic use of such water from pollution, excessive private use, and the introduction of disease." §87-3-208, MCA. The effect of the foregoing restrictions is to substantially limit private use of natural streams for the purpose of cultivating fish.

Other statutes and rules also show the FWP's extensive regulatory presence in the fisheries area. Besides enforcing complex regulations concerning fishing methods, FWP supervises a number of state fish hatcheries, and has undertaken a fish planting program throughout the state. See, §87-3-202, MCA; 12.7.601-602, ARM. Also, to further its policy of preventing fish diseases, FWP has developed an inspection and certification procedure for imported salmonid fish or eggs. 12.7.501, ARM.

In summary, FWP has statutory authority to supervise the fish and wildlife of the state. General statutes prohibit the "possession" of any animal or fish except as permitted by statute or FWP regulation. Specific FWP regulations focus on the possession of wildlife for commercial purposes, although FWP has asserted broad regulatory jurisdiction over private possession of wild fish.

3. Policy Approaches

In setting a policy concerning private fish and wildlife appropriations, DNRC must act within the legal guidelines imposed by the Water Use Act. Two basic principles relevant here are:

1. Private fish and wildlife appropriations are a beneficial use of water under the Act. The DNRC is obligated to issue permits for these uses.
2. The Act requires that water use rights be quantified. The DNRC cannot issue a permit for a use that cannot reasonably be quantified.

These principles appear to conflict where, as with fish and wildlife appropriations, a recognized beneficial use is inherently difficult to quantify. This conflict simply reflects two disparate purposes of the Water Use Act: a) to maximize the use of Montana water by authorizing a broad range of beneficial uses, and b) to implement a definitive water appropriation statute, one that quantifies and documents all water rights.

At the outset it is clear from 1) and 2) that two approaches to private fish and wildlife claims are not legally sound. DNRC cannot deny permits on the grounds that private fish and wildlife appropriations are not beneficial uses. Nor can DNRC routinely issue permits for amounts as claimed, without determining that the claimed amount is reasonably related to the proposed use.

A second consideration in setting a policy in this area is the possibility of overlapping interests of DNRC and FWP in private fish and wildlife appropriations. FWP has supervisory authority over Montana's fish and wildlife resources, and in two instances FWP is granted special authority to claim water rights. First, FWP, as a public agency, is allowed to make claims for instream flows and water reservations. §85-2-102(1), 316, MCA. As noted above, private individuals cannot make instream appropriations for fish and wildlife or for any other purpose. Second, the legislature has designated FWP as the exclusive representative of the public for pre-1973 public recreational uses. §85-2-223, MCA. Nevertheless, nothing in the Water Use Act or in FWP's enabling statutes gives FWP the exclusive right to appropriate water for fish and wildlife purposes. On the contrary, as noted above, the Water Use Act by its plain language authorizes private appropriations for fish and wildlife. FWP statutes are consistent with allowing private appropriations for these purposes. For example, FWP licenses private fish ponds. §87-4-603, MCA.

FWP's interest in private fish and wildlife appropriations can be analyzed in either of two ways. First, it is arguable that the only activities for which a private fish or wildlife appropriation should be allowed are those activities specifically permitted and/or licensed by FWP (e.g., licensed fish ponds, game farms, game bird farms, zoos.) This approach is based on the statutes prohibiting "possession" of fish and game except as specifically provided by FWP statute and regulation. §§87-2-103(1), 87-3-111(1), MCA. DNRC's duty to quantify fish and wildlife appropriations will necessarily limit acceptable uses to those where some degree of control is exercised over the wildlife resource. If this control amounts to "possession" of wildlife, FWP statutes and regulations will apply. The advantage of this approach is simplicity: DNRC would grant fish and wildlife permits only for FWP-licensed activities.

However, it may be hard to justify this first approach if what DNRC requires to control or quantify fish and wildlife uses is not always "possession" as contemplated in the FWP statutes. As noted above, present FWP regulations concerning "possession" of wildlife focus on private ownership of animals, or possession of wildlife for commercial purposes. It may be hard for DNRC to argue that only in these cases can the beneficial use of water for wildlife reasonably be quantified.

A second approach is to recognize that FWP's interest in private fish and wildlife appropriations may vary depending on the use for which water is sought to be appropriated. Rather than weigh the FWP interest as well as assessing the quantifiability of the use for every permit application, some general observations can be made by class of use.

Fish. Private appropriations for fish would probably involve instream impoundments or diversions to artificial ponds. To achieve sufficient control to quantify the use, fairly substantial structures may be needed. At this point, the impact on the fish resource probably invokes the regulatory jurisdiction of FWP. FWP has in effect prohibited rearing fish in public waters or locating private fishponds on natural streams. §87-3-207, MCA; §87-4-603, MCA. Moreover, private artificial fishponds are required to be licensed.

Given FWP's extensive regulatory presence in fisheries, DNRC could justify limiting private appropriations for fish to activities licensed or approved by FWP. This approach would limit permit issuance to serious private fishery uses, which may be sufficiently controlled to aid DNRC in quantifying the use. This approach also properly recognizes the overlapping interests of FWP in these uses.

Wild Game. Appropriations for freely roaming wild animals, such as deer and elk, or coyotes and jackrabbits, or grouse and grosbeaks, may be impossible to quantify. Such animals can obtain water from numerous sources or from any point along a stream. Consequently, there may be little or no correlation between the existence or size of a private diversion and a benefitted wildlife population. If, after study, DNRC concludes that this is the case, it would be justified in declining to issue permits for watering wild game.

FWP does not extensively regulate the possession of wild game, although private game farms and zoos must be licensed. §87-4-401, et seq, MCA; §87-4-801, et seq, MCA. In these controlled situations, water use can probably be quantified. If so, DNRC should issue water permits for wildlife use in these cases.

Waterfowl. Private appropriations for waterfowl would probably consist of duckponds or other impoundments, either instream or offstream. Some state and federal regulations may apply in this area. Possession of migratory game birds for propagation purposes requires state and federal permits. See, §87-2-807, MCA. Ownership or control of nonmigratory game birds for sale requires a game bird farm license from FWP. §87-4-901, MCA. This licensing requirement does not apply when birds are owned, controlled or propagated for noncommercial purposes, §87-4-902, MCA, although the bird owner is required to receive written authorization of exemption from FWP. Section 901 and 902 game bird farms probably would be quantifiable beneficial uses.

Duckponds where the birds are privately owned and controlled appear to fall under FWP supervision, either under sections 901 or 902 of Title 87, chapter 4, MCA. The ownership of the ducks is probably sufficient to create a quantifiable use. Duckponds constructed to attract and sustain wild birds are outside present FWP regulations. These uses may be quantifiable, or they may be akin to watering wild game. Since there is no FWP interest involved, the only question is whether the use can reasonably be quantified. DNRC should undertake some further study of this question.

By limiting private fish and wildlife appropriations to those that can reasonably be quantified, DNRC would take a more restrictive stand towards these uses than does the Water Court for pre-1973 rights. At present, Water Court policy seems to be to recognize and grant all private fish and wildlife claims, although no quantity of water is specified beyond the "minimum necessary" for the use. The DNRC policy would reflect the 1973 Water Use Act's mandate to document and quantify post-1973 water uses. Based on the Act, DNRC can justify rejecting unquantifiable private fish and wildlife claims.

In conclusion, DNRC should proceed by rulemaking to delimit acceptable private fish and wildlife uses. The options suggested in this memo are based on the general legal effect of the quantification problems with these uses, and on an analysis of the overlapping interests of FWP. Rules restricting private fish and wildlife appropriations will be defensible in court if they have a solid legal grounding in the Water Use Act, and are a result of express DNRC studies of the various quantification problems.

DEPARTMENT OF NATURAL RESOURCES
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Water Resources Division



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To: Kathy Olsen, Regional Manager
Kalispell Water Resource Office

From: Russell Levens, Hydrosciences Section Supervisor
Attila Fohnagy, Groundwater Hydrologist
James Heffner, Hydrologist
Water Management Bureau

Date: March 13, 2018

RE: Legal availability of groundwater in the Flathead Deep Aquifer

The purpose of this memo is to describe the standard practice for evaluating legal availability of groundwater from the deep alluvial aquifer in the Kalispell Valley referred to by Montana Bureau of Mines and Geology (MBMG) as the Deep Aquifer. This memo supersedes a memo by Heffner and Levens (2011) as well as practices applied in the Kalispell Valley prior to 2011. The reason for the break from past practices is the availability of new information on physical availability of groundwater from an estimate of recharge to the deep aquifer provided by the MBMG. Previous evaluations of legal availability took advantage of the best information available at the time; however, the availability of estimates of physical availability from an independent source is more rigorous.

An evaluation of physical availability of groundwater used to evaluate legal availability of groundwater will be based on an estimate of inflow to the Deep Aquifer of 213,000 AF from Wheaton et al. (2016). An evaluation of legal demands from wells completed in the Deep Aquifer for comparison to physical groundwater availability will be based on information from the MBMG's Groundwater Characterization Program and an ESRI GIS ArcMap project. In the ArcMap project, a boundary of the Deep Aquifer used to select wells to be included as legal demands is delineated by the 100-foot depth to bedrock contour from gravity surveys by Konizeski et al. (1968) and interpretation by Smith (2000A). Groundwater water rights with depths listed in the DNRC Water Right Database between the depth to the deep alluvium (Smith, 2000A) and the depth to the bedrock (Smith, 2000B) will be assigned to the Deep Aquifer. Groundwater rights without depths in the DNRC Water Right Database will be assigned to the Deep Aquifer.

WATER RIGHTS BUREAU
WATER RESOURCES DIVISION

TO: WATER RESOURCES MANAGERS AND SPECIALISTS
FROM: TERRI MCLAUGHLIN, CHIEF
WATER RIGHTS BUREAU
SUBJECT: HB 24 IMPLEMENTATION
DATE: OCTOBER 1, 2011
CC: TIM DAVIS, JAN LANGEL

SHORT TITLE:

"AN ACT GENERALLY REVISING WATER LAWS RELATED TO AQUIFER RECHARGE AND MITIGATION; PROVIDING UP TO 20 YEARS TO COMPLETE A CHANGE OF USE FOR AQUIFER RECHARGE OR MITIGATION OR MARKETING FOR AQUIFER RECHARGE OR MITIGATION; AND AMENDING SECTIONS 85-2-102, 85-2-310, AND 85-2-402, MCA."

EFFECTIVE DATE: October 1, 2011

APPLICABILITY DATE: Applications received after October 1, 2011. Further, New Section 1 will be part of 85-2-402 and all parts of 85-2-402 apply to new Section 1.

GENERAL INTENT: To provide for the change of existing water rights to marketing for mitigation or aquifer recharge by water right owners that want to make water available for other appropriators that need mitigation water for their groundwater developments. It allows the water right owner to change their right to marketing for mitigation/aquifer recharge and still use it for their historic use, e.g. irrigation, as approved by the department while they market their water.

STATUTORY AMENDMENTS AND NEW SECTION PROVISIONS: The New Section 1 provides for the following:

1. A change in an existing water right to marketing for mitigation or aquifer recharge
2. Allows the appropriator to continue their historic use while marketing their water
3. When setting the completion due date bill allows up to 20 years for completion
4. Requires the appropriator to notify the Department within 30 days of each sale or lease of a portion of his water right

Amendments

85-1-102: (1)(f) and (4)(e) redefine "appropriate" and "beneficial use" by removing the reference to closed basins. It makes clear that mitigation and aquifer recharge are allowed in all basins state-wide.

85-2-310: (9)(v) provides an exception for marketed water under the New Section 1 by not requiring up front, signed contracts before the change is authorized. (10) requires the change applicant to identify the place of use for the marketed/mitigation water. This is the place (reach of stream) where the water will provide effective mitigation. It is equated to a service area for marketing/mitigation.

85-2-402: (2)(b) and (d) are rewritten to exempt changes for mitigation or marketing for mitigation under new Section 1 from proving the adequacy of diversion, construction, and operation criterion and the possessory interest criterion.

GUIDELINES FOR IMPLEMENTATION:

1. Marketing for Mitigation/Aquifer Recharge: The language of the bill is interpreted to allow a change application for the purpose of marketing for mitigation/aquifer recharge.

For a change application to the purpose of marketing the owner can either retain the water right and lease or contract out their water to the end-user for mitigation/aquifer recharge or sell all of his water right to the end-users for mitigation/aquifer recharge. This could be a one-time sale/lease or incrementally sold/leased over 20 years. The applicant will have to specify his or her intent is when the change application is submitted.

A new purpose code in Oracle will be created for marketing (for mitigation/aquifer recharge).

2. Place of Use for Marketing for mitigation/aquifer recharge: Previous to HB24 the place of use for marketed water and mitigation was identified as the POD. This was because the applicant makes his water available for sale at his POD. The user of mitigation water did not have possessory interest in the reach of stream that needed mitigation so we used the POU=POD which is the call point for the mitigation water.

With HB24, the possessory interest criterion no longer applies to changes for mitigation or marketing for mitigation. However, in new 85-2-310 (10), the change applicant is required to detail the proposed place of use. Now with the possessory interest criteria removed from the equation for mitigation and marketing for mitigation, we can identify the POU as that stream reach in which the water will effectively mitigate future groundwater depletions. The reach can be identified in the database as 2 points; the uppermost point (likely the headgate) and the lowermost point.

Aquifer Recharge and marketing for aquifer recharge still have the possessory interest requirement. The applicant will have to demonstrate possessory interest in the place where the recharge will occur (i.e. infiltration gallery). This will be identified in the database as the place of use. However, the applicant will still have to detail the reach where the water will be available for mitigation.

The identified reach will need to be assessed for its reasonableness. This assessment will include review by one of our hydrologists and/or hydrogeologists. Considerations should include; the amount of water proposed for change to marketing for mitigation/aquifer recharge, the length of the reach identified, and the probability of the water mitigating groundwater depletion in the reach.

3. Continued historic beneficial use:

After a Change Authorization is granted under new Section 1, an appropriator may continue to use his water right for its historic use until all of his water is sold/leased for mitigation. The change applicant will have to provide information as part of the application showing how he will decrease his historic use as portions of his water right is sold/leased for mitigation. If his plan includes incrementally decreasing his irrigated acres, he will have to identify how he calculated a flow and volume for each acre irrigated. The water right (minus the amount marketed) will revert back to the historic use if not all water is sold or leased for mitigation/aquifer recharge.

4. Report of marketed water to the Department:

Within 30 days of leasing or selling a portion of the changed water, the water right owner is to submit a report to the Department along with a copy of the contract or deed. It will be critical to accurately track the amounts of sold/leased water and the associated reduction in historic use or irrigated acres. The new reporting form no. ___ for this specific purpose must be used by the appropriator. The report will be reviewed and contact made with the appropriator if information is missing or does not track with our records. Our records will reflect each portion that is sold/leased and the subsequent reduction in acres/historic use. Currently, the enhancement for Oracle is being developed to accommodate this tracking.

5. Change Authorization Conditions:

In addition to any case specific conditions, an authorization for marketing will contain the following conditions.

Water Market Report: The appropriator shall submit to the Department Form 666 within 30 days of leasing or selling any portion of water under this authorization. The Form shall be accompanied by a copy of the water lease agreement or deed evidencing the sale of a portion of the water right for mitigation/aquifer recharge purpose.

Progress Report on Marketing: The appropriator shall submit a progress report every 5 years from the date of issuance of this authorization of the activities to date towards diligence in marketing the water. The reports must be sent to the Water Resources Regional Office.

6. Completion Due Date:

The completion due date for a change under new Section 1 can be initially set for up to 20 years. The amount of water to be changed and the specific location, source and potential for groundwater development in the area shall be considered in determining the due date. This requirement does not prevent the Department from granting an Extension of Time. An extension can be granted if the applicant for an extension provides evidence that they have been diligent in pursuing completion. The appropriator may use, in addition to other evidence, the progress reports as evidence of his diligence in perfecting the authorization. If the change is not fully perfected by the completion deadline and no extension is requested, the appropriator shall file a Project Completion form for the amount completed. The remaining water not changed reverts to its historical use on a pro rata basis as authorized by the department and can be used as such if practical.

WATER RESOURCES DIVISION
WATER RIGHTS BUREAU

TO: WATER RESOURCES MANAGERS AND SPECIALISTS
FROM: MILLIE HEFFNER, CHIEF, WATER RIGHTS BUREAU
SUBJECT: HB 52 (EFFECTIVE 10/1/2011)
DATE: SEPTEMBER 14, 2012
CC: TIM DAVIS

“An act providing rulemaking authority to the Board of Environmental Review to regulate reclaimed wastewater from public sewage systems...”

"75-6-103. Duties of board.

(2) The board shall, subject to the provisions of 75-6-116 and as provided in 75-6-131, adopt rules and standards concerning:

(k)(iv) a requirement that an applicant who proposes to use reclaimed wastewater pursuant to this subsection (2)(k) has obtained any necessary authorizations required under Title 85 from the department of natural resources and conservation

Below is a general discussion of the applicability of §75-6-103, MCA. Each case is fact specific and the following are offered only as general guidelines.

Situations when a new water right is not required before reusing wastewater:

A new water right is not required if the disposal or discharge of effluent from a public sewage system as defined in 75-6-102, MCA, is part of the method of treatment and is employed in response to state or federal regulatory requirements. This statement generally applies to water rights reflected in statements of claim and would rarely apply to any permit issued after the Supreme Court's decision in the Trout Unlimited case (2006). The method of treatment may be to discharge water into a water source or discharge the water onto the ground, or into a pit. If the treatment is to discharge water onto the ground and there is no intent to use the water beneficially, even though a benefit may occur as a result of where the water is discharged, a permit is not required. The effluent could be land applied onto a golf course or other land that may be hayed, used to grow trees, or used as pasture and a new water right would not be required. It does not change the decision as to a new permit requirement if the ground is located inside or outside of the place of use.

September 2012

Situations when a water right is required before reusing wastewater:

If someone wants to put the effluent to use after the water right holder has finished treatment of the water, then a new water right is required. It does not matter if the ground on which it is applied is located inside or outside of the place of use.

Examples:

Example:

A water right is required if an entity with a public sewage system sells its wastewater to an irrigator to irrigate outside of the entity's historic place of use. However, a water right is not required if the entity leases the land from the irrigator in order to dispose of their wastewater.

Example:

A water right is not required if an entity with a public sewage system sells its wastewater via a water depot as long as they have historically had such a system in place and it is within the historic place of use. However, a water right would be required if the depot is outside of the historic place of use.

Permits issued after the Trout Unlimited Decision

Many newer groundwater permits (post HB831) base their net depletion analysis on their type of wastewater treatment and associated return flows. If they alter their treatment system/return flow pattern in the future then they may be in violation of their permit and/or mitigation plan. If it is found that additional mitigation water is needed to compensate for a new reduction in wastewater return then a permit modification and a new change application would be required.

Memorandum of Understanding (MOU)

DEQ and the DNRC have entered into a MOU in order to establish a process for determining when approval by DNRC is necessary prior to DEQ's approval of a proposal to use reclaimed wastewater.

Upon receipt of an application to use reclaimed wastewater, DEQ will notify the applicant that a copy of the application must be forwarded by the applicant to DNRC's Water Rights Bureau for a determination on whether an authorization under Title 85 will be required. If the application is sent to the Central Office, it will be forwarded to the appropriate regional office for review. Once the application and any pertinent water rights have been reviewed, the regional office shall draft a letter stating either that:

- (a) no authorization under Title 85 is required;
- (b) the applicant already has the appropriate authorization under Title 85; or
- (c) the applicant must obtain an authorization from DNRC under Title 85 prior to DEQ's approval.

The regional office shall send the draft letter to the Central Office for review. The regional office will send the final version of the letter to DEQ and the applicant. The DNRC must inform the applicant and DEQ in writing within 45 days after receiving the application.

September2012

Technical Memorandum: Pond and Wetland Evaporation/Evapotranspiration

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION Water Resources Division



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Technical Memorandum: Pond and Wetland Evaporation/Evapotranspiration

Date: November 8, 2019

To: Millie Heffner, Water Rights Bureau Chief

From: Russell Levens, Hydrosciences Section Supervisor, Water Management Bureau
James Heffner, Hydrologist, Water Management Bureau
Ethan Mace, Hydrologist, Water Management Bureau
Jim Nave, Manager, Missoula Water Resource Office

A pond and wetland working group was established by the Water Rights Bureau of the Montana Department of Natural Resources and Conservation (Department) Water Resources Division to recommend procedures for estimating surface water evaporation (evaporation) from ponds and evapotranspiration (ET) from wetlands for water right permit (Forms 600) and change applications (Forms 606). The following discussion details reference sources of pond evaporation, clarifies when to use net versus gross evaporation or ET, and identifies specific estimation procedures to be used. The following discussion does not include methods for determining the diversion required to maintain a pond or wetland.

See separate guidance and FAQs available on the Water Rights Bureau Internet site to determine when a permit or change is needed and the following methods apply.

When to Use Net vs Gross Evaporation (Open Water)

Except for Notices of Completion for Groundwater Development (Form 602), evaporation from ponds and ET from wetlands should be evaluated using net evaporation (accounting for precipitation). This is consistent with how the Department evaluates irrigated crops, where the net irrigation requirement is used to determine consumptive use.

Net Evaporation is calculated on a monthly timestep by subtracting monthly average precipitation from monthly estimates of gross evaporation. Annual estimates of net evaporation are calculated as the sum of the positive monthly net evaporation values. Average precipitation and gross evaporation data should be for matching locations, periods of the year, and periods of record. Average precipitation, not to be confused with effective precipitation from IWR, can be

found at the Western Regional Climate Center and the National Centers for Environmental Information. Gross evaporation is evaluated following the methods described in the following sections of this document.

The Department should use gross evaporation in water use calculations for Notices of Completion of Groundwater Development (Form 602) because this type of water right is exempt from review of statutory criteria relating to physical availability, legal availability and adverse effect. Furthermore, there is no means for objection to 602s by potentially affected water rights owners nor any immediate means to mitigate potential effects once a pond or wetland is constructed under a 602.

Sources of Information

Evaporation from open water from shallow water bodies such as ponds and wetlands should be calculated using methods found in the Potts (1988) and SCS (1974). Methods specifically developed for deep water bodies should not be used because shallower water bodies maintain higher water temperatures than deeper water bodies, such as reservoirs, at similar locations. This is mainly due to higher concentrations of solar heat absorbing vegetation, a thinner water column to filter solar heat, and lower thermal mass to offset daytime solar warming. Evaporation standards set forth in ARM 36.12.116 are a mix of deep and shallow water body methods. Accordingly, not all methods are appropriate for estimating pond and wetland evaporation.

Evaporation data collected by a standard USGS evaporation pan is an acceptable alternative to the Potts or SCS documents, but is less reliable. Pan data are often not collected during winter months, which results in gaps that disqualify annual and winter month estimates. The methodologies in both the BLM's (1997) document titled "Joint Technical Working Group Report for Water Rights Compact Between the State of Montana and the USDI BLM 1997" and the Meyer (1942) document titled "Evaporation from Lakes and Reservoirs, a study based on 50 years of weather bureau records" are referenced in ARM 36.12.116, but are not recommended for use on ponds or wetlands as they provide evaporation standards for large reservoirs.

Wetland ET can be converted from Net Irrigation Requirements (NIR) for alfalfa calculated by the Irrigation Water Requirement Program (IWR) (NRCS, 2003) using coefficients from Allen et al. (1994).

Pond and Wetland Evaporation (Open Water)

Monthly evaporation for ponds and wetlands that dry up outside the irrigation season can be calculated from the NOAA weather adjusted Penman/Linacre (P/L) for the months where the Net Irrigation Requirement from the IWR Program is non-zero. Take care to use the adjusted P/L which is 75% of the P/L estimates described in Potts. Data from the SCS document also can be

used by distributing annual evaporation values by month according to the monthly percentages produced by the adjusted P/L procedure.

Monthly evaporation for ponds and wetlands that do not dry up outside the irrigation season and do not ice over should be estimated from monthly calculations of adjusted P/L described in Potts for all months. Data from SCS (1974) also can be used by distributing annual evaporation values by month according to monthly percentages calculated from the adjusted P/L procedure. Again, take care to use the adjusted P/L for all calculations.

Monthly evaporation for ponds and wetlands that ice over should be calculated from the adjusted P/L procedure until permanent icing occurs. Data from the SCS document also can be used by distributing annual evaporation values by ice-free month according to monthly percentages calculated from the adjusted P/L procedure.

Wetland Evapotranspiration

Wetland ET should be calculated using an appropriate coefficient from Allen, et al. (1994) in combination with the NIR for alfalfa from IWR. The estimates for alfalfa should correspond to NIR estimates from IWR for flood irrigation systems, consistent with the method described in the “Historic Consumptive Use Methodology” and “DNRC’s Use of the Irrigation Water Requirements (IWR) Program”. NIR values should not be reduced by management factors.

Not all areas of wetlands contain both wetland vegetation and standing or open surface water, but when they do simultaneously occur on the same piece of ground, both Wetland ET values and surface water evaporation values are additively used to determine consumptive use. Surface water evaporation for wetlands should be estimated using the procedures described above in “Pond and Wetland Evaporation” and added to wetland ET for each month.

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Eastern Montana: <https://wrcc.dri.edu/summary/Climsmemt.html>

Development of standardized methodologies to determine Historic Diverted Volume Memo

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



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Memorandum

Date: September 13, 2012

To: Millie Heffner, Water Rights Bureau Chief

From: Mike Roberts, Hydrologist, Water Management Bureau

James Heffner, Hydrologist, Water Management Bureau

Re: Development of standardized methodologies to determine Historic Diverted Volume

The Montana Department of Natural Resources and Conservation (DNRC) Water Management Bureau (WMB) was tasked with developing standardized guidelines to estimate historic diverted volume for DNRC rule-making as it pertains to water rights changes and permit applications. In addition, guidelines for estimating historic use associated with surface water permit applications are included.

This document outlines the methods used and how the procedures will be applied. The majority of the data used herein were either taken from the United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS), generated using the USDA Natural Resources Conservation Service (NRCS) Irrigation Water Requirements (IWR) program, or derived from equations taken directly from the National Engineering Handbook (1993).

These approaches are similar to those used for estimating historic consumptive use (ARM 36.12.1902) enacted in 2010. They are methods supported by literature and data to be used by DNRC during application review under the new reform process.

Historic Diverted Volume

Three components require quantification to determine the historic diverted volume:

- Historic consumptive use
- Historic conveyance losses

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- Historic on-farm efficiency

Historic Diverted Volume =

$$(\text{Volume}_{\text{historic consumptive use}} / \text{On-farm efficiency}) + \text{Volume}_{\text{conveyance loss}}$$

Historic Consumptive Use

Historic consumptive use is determined using the existing rules (ARM 36.12.1902).

Conveyance Loss

Conveyance loss is defined as the portion of water diverted at the headgate that does not arrive at the irrigated place of use due to seepage and evapotranspiration from the ditch. The total conveyance loss is the summation of the seepage and evapotranspiration components estimated using the following equations and constants which were taken directly from the National Engineering Handbook (1993). While ditch evaporation is typically less than 1% of the total conveyance loss, it is included in these calculations.

Seasonal Conveyance Loss = Seepage Loss + Vegetation Loss + Ditch Evaporation

$$\text{Seepage Loss} = \frac{(\text{wetted perimeter})(\text{ditch length})(\text{loss rate})(\text{days})}{43,560 \text{ ft}^2/\text{acre}}$$

Where: Wetted perimeter: Determined from user supplied ditch dimensions (feet)

Ditch length: Distance from headgate to field (feet)

Loss rate: Based on soil type (from Web Soil Survey) and Figure 2-50 (from NEH 1993). Note: Soil type should reflect soils below flow level of ditch.

Days: Number of days during the season the ditch supports flow. (This value is based on information provided by the applicant on Form 606, Section 3(B))

Vegetation Loss = (% loss/mile)(flow)(days)(ditch length)* 2 (unit conversion constant)

Where: Percent loss/mile: 0.75 % (NEH standard, 1993)

Flow: user supplied or estimated flow rate of ditch

Days: Number of days during the season the ditch supports flow (user supplied)

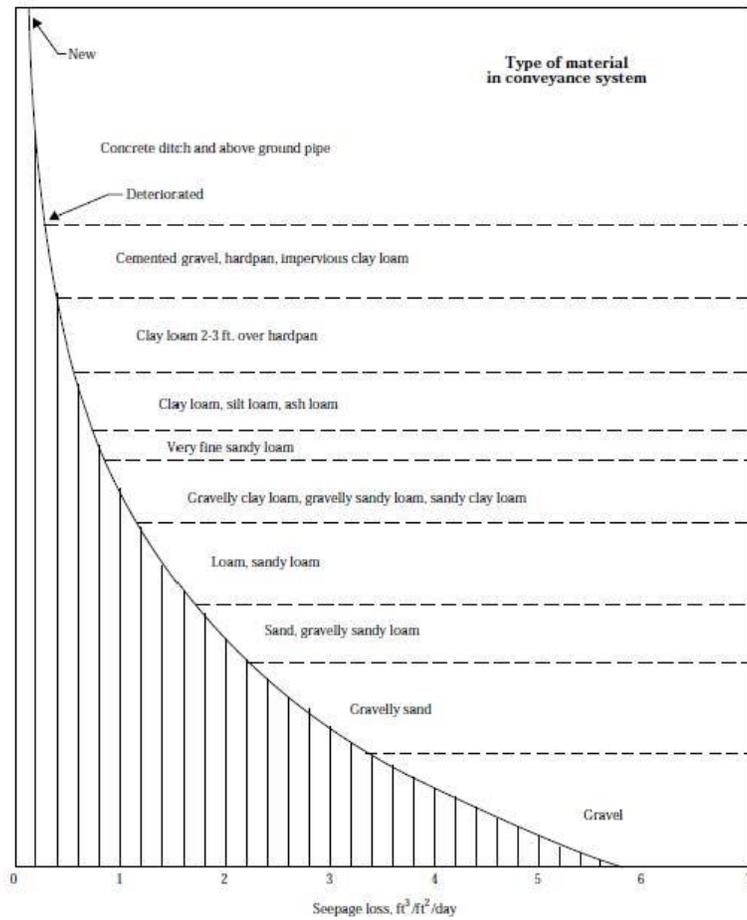
Ditch length: Distance from headgate to field (miles)

Ditch Evaporation = (surface area of ditch)(evaporation rate)/43,560 ft²/acre

Where: Surface area = wetted width (ft) * length of ditch (ft)

Evaporation rate = From Potts (1988)

Figure 2-50 Method to estimate seepage losses from irrigation delivery systems (adapted from USDA 1985)



On-Farm Efficiency

On-Farm efficiency refers to the percent of the water delivered to the field that is used by the crop. Values presented in the table below are similar to those percentages associated with the Irrigation Standards presently in rule for permit applications (ARM 36.12.115). An additional value for wild flood on-farm efficiency is presented as 25% (Neibling 1997, Utah State 2008).

<u>Irrigation Method</u>	<u>Percent Efficiency</u>
Sprinkler	70
Level Border	60
Graded Border (<i>Design Slope = .1-.4%</i>)	70
Graded Border (<i>Design Slope = .75-1.5%</i>)	65
Graded Border (<i>Design Slope = 3%</i>)	60
Furrow (<i>Design Slope = .1-.4%</i>)	70
Furrow (<i>Design Slope = .75-1.5%</i>)	65
Furrow (<i>Design Slope = 3%</i>)	60
Contour Ditch (<i>Design Slope = .75%</i>)	60
Contour Ditch (<i>Design Slope = 1.5-3%</i>)	55
Contour Ditch (<i>Design Slope = 6%</i>)	45
Wild Flood	25

Historic Use – Permit Applications

Historic consumptive use associated with change applications for permits will use the existing rules as stated in ARM 36.12.1902 with the exception of employing a management factor derived from more recent production data. A new column (G) is included in Table 1 to provide management factors developed for the period 1973 to 2006.

The following hypothetical scenario provides an example how historic diverted volume, new consumptive use, and new diverted volume would be calculated.

A Helena valley applicant proposes to change their place of use of 150 acres of flood irrigated alfalfa (contour ditch, flat slope) to a center pivot with similar acreage. The applicant submits ditch cross-section data (wetted width = 7 ft, wetted perimeter = 8.5 ft). Determine (1) historic consumptive volume, and (2) historic diverted volume

(1) Historic consumptive volume:

$$\begin{aligned}
 & (20.23 \text{ in}) * (1 \text{ ft} / 12 \text{ in}) * (0.601) * (150) \\
 & = \text{acres} \\
 & = \mathbf{152 \text{ acre-feet}} \qquad \qquad \qquad (\text{ARM } 36.12.1902)
 \end{aligned}$$

(2) Historic diverted volume: $(\text{Vol.}_{\text{historic consumptive use}} / \text{On-farm eff.}) + \text{Vol.}_{\text{conveyance loss}}$

historic consumptive volume = 152 acre feet

on-farm efficiency = 0.6

seasonal conveyance loss = seepage loss + vegetation loss + ditch evaporation

seepage loss = $\frac{(\text{wetted perimeter})(\text{ditch length})(\text{loss rate})(\text{days})}{43,560 \text{ ft}^2/\text{acre}}$

wetted perimeter = 8.5 ft

ditch length = 3000 feet (determined from map)

loss rate = 1.2 ft³/ft²/day (based on web soil survey dominant soil type and Figure 2-50)

days irrigated = 100 (applicant supplied, Form 606)

seepage loss = $\frac{(8.5 \text{ ft})(3000 \text{ ft})(1.2 \text{ ft}^3/\text{ft}^2/\text{day})(100 \text{ days})}{43,560 \text{ ft}^2/\text{acre}} = 70.3 \text{ acre-feet}$

vegetation loss = $(\% \text{ loss/mile})(\text{flow})(\text{days})(\text{ditch length})(2 \text{ ft}^3/\text{s}/\text{d})$

% loss/mile = 0.0075 (NEH standard, 1993)

est. flow rate = 6 ft³/s (estimated from applicant or water right)

days irrigated = 100 (applicant supplied, Form 606)

ditch length = 0.57 miles (converted to miles)

$$\begin{aligned}
 \text{vegetation loss} &= (0.0075)(6 \text{ ft}^3/\text{s})(0.57 \text{ mi})(100 \text{ days})(2 \text{ ft}^3/\text{s}/\text{d}) = 5.13 \text{ acre-feet} \\
 \text{ditch evaporation} &= (\text{surface area})(\text{evaporation rate})/43,560 \text{ ft}^2/\text{acre} \\
 \text{ditch evaporation} &= (7 \text{ ft} \times 3000 \text{ ft})(3.2 \text{ ft})/43,560 \text{ ft}^2/\text{acre} = 1.54 \text{ acre-feet} \\
 \text{seasonal conveyance loss} &= (70.3 \text{ acre-feet}) + (5.13 \text{ acre-feet}) + (1.54 \text{ acre-feet}) \\
 &= 77.0 \text{ acre-feet} \\
 \text{Historic diverted volume} &= (152 \text{ acre-feet}/0.6) + (77 \text{ acre-feet}) \\
 &= \mathbf{330.3 \text{ acre-feet}}
 \end{aligned}$$

Conversion from Seasonal Volumes to Monthly Volumes

The approaches describe above provide seasonal volumes. Surface water diversions are assumed to be, at the monthly scale, identical in timing to the monthly crop irrigation requirements.

Irrigation Water Requirements Summary

Job: Example	Crop: Alfalfa Hay
Location: Helena	County: Lewis And Clark, MT
By: MR	Date: 04/12/12
Weather Station: HELENA WSD	Sta No: MT4055
Latitude: 4636 Longitude: 11200	Elevation: 3830
Computation Method: Blaney Criddle (TR21)	Net irrigation application: 4 inches
Crop Curve: Blaney Criddle Perennial Crop	Estimated carryover moisture used at season:
Begin Growth: 5/5 End Growth: 9/27	Start: 1 End: 1 inches

Month	Total Monthly ET (3)	Dry Year 80% Chance (1)		Normal Year 50% Chance (1)		Average Daily ETc	Peak Daily ETPk
		Effective Precipitation	Net Irrigation Requirements	Effective Precipitation	Net Irrigation Requirements		
	(inches)	(inches)	(inches)(2)	(inches)	(inches)(2)	(inches)	(inches)
January							
February							
March							
April							
May	2.75	0.71	1.03	0.98	0.77	0.10	
June	6.04	1.02	5.02	1.40	4.64	0.20	0.21
July	7.67	0.84	6.83	1.16	6.52	0.25	0.28
August	6.46	0.76	5.70	1.04	5.42	0.21	0.23
September	3.11	0.46	1.65	0.63	1.48	0.12	
October							
November							
December							
TOTALS	26.03	3.80	20.23	5.21	18.82		

Using outputs from IWR, monthly irrigation requirement percentages can be applied to diverted volume to estimate monthly diverted volume estimates. For example:

Historic Diverted Volume (ac-ft) =		330	
	<u>Net Irrig. Req (in)</u>	<u>Percent of Total</u>	<u>Diverted Vol. (ac-ft)</u>
May*	1.03	5.1	16.8
June	5.02	24.8	81.8
July	6.83	33.8	111.5
August	5.7	28.2	93.1
<u>September</u>	<u>1.65</u>	<u>8.2</u>	<u>27.1</u>
Total =	20.23	100	330

*Example: $(\text{May}_{\text{net Irrig. Req}} / \text{Total}_{\text{Irrig. Req}}) * \text{Historic Diverted Volume}$
 $(1.03 \text{ in} / 20.23 \text{ in}) * 330 \text{ ac-ft} = 16.8 \text{ ac-ft}$

Table 1 - Montana County Weather Station IWR Data for Seasonal Alfalfa Evapotranspiration and Montana County Management Factor. Season ET derived from Irrigation Water Requirements Program (Dalton, 2003)

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	Management Factor Percentage 1964 - 1973	Management Factor Percentage (for Permit Hist. CU only) 1973 - 2006
Beaverhead	Dillon	5239	18.34	20.74	63.7%	82.8%
	Wisdom	6060	7.34	9.29		
	Jackson	6480	8.35	10.30		
	Lakeview	6710	8.39	10.67		
	Lima	6583	13.75	16.01		
Big Horn	Busby	3430	20.32	22.88	55.4%	78.7%
	Hardin	2905	27.46	29.96		
	Hysham 25	3100	20.25	22.86		
	Wyola	3750	19.19	21.89		
Blaine	Yellowtail Dam	3305	28.07	31.30	58.7%	63.6%
	Chinook	2420	20.80	23.57		
	Harlem	2362	21.62	24.27		

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	Management Factor Percentage 1964 - 1973	Management Factor Percentage (for Permit Hist. CU only) 1973 - 2006
Broadwater	Townsend	3840	19.42	21.88	69.2%	79.5%
	Trident	4040	20.64	23.31		
Carbon	Joliet	3776	22.41	25.12	58.3%	66.8%
	Red Lodge	5500	15.57	18.41		
Carter	Ekalaka	3425	20.13	23.14	38.4%	54.7%
	Ridgeway	3320	20.28	23.01		
Cascade	Cascade 20	4600	14.12	16.63	57.3%	70.0%
	Cascade 5	3360	17.90	20.75		
	Great Falls	3675	19.78	22.55		
	Neihart	4945	12.17	15.08		
Chouteau	Sun River	3340	18.10	20.65		
	Big Sandy	2700	21.52	24.37	52.5%	64.9%
	Fort Benton	2640	21.98	24.75		
	Geraldine	3130	20.30	23.27		
	Iliad	2950	21.55	24.27		
	Loma	2700	22.64	25.37		
Custer	Shonkin	4300	13.32	16.70		
	Miles City	2628	26.68	29.55	54.5%	72%
	Mizpah	2480	23.80	26.57		
	Powderville	2800	24.83	27.68		
Dawson	Glendive	2076	26.01	28.99	56.8%	63.6%
Deer Lodge	No weather station				See appropriate adjacent county	
Fallon	Plevna	2780	22.48	25.34	47.6%	47.8%
Fergus	Denton	3620	15.39	18.12	48.8%	65.8%
	Grass Range	3490	18.93	21.93		
	Lewistown	4167	15.54	18.44		
	Roy	3450	19.94	22.78		
	Winifred	3240	17.86	20.75		
Flathead	Creston	2949	14.97	17.81	87.6%	94.5%
	Hungry Horse Dam	3160	14.66	18.06		
	Kalispell	2972	16.45	19.03		
	Olney	3165	12.50	15.16		
	Polebridge	3600	10.20	12.50		
	West Glacier	3154	13.74	16.78		
	Whitefish	3100	15.74	18.61		
Gallatin	Bozeman Exp	4775	16.84	19.55	73.5%	92.1%

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	Management Factor Percentage 1964 - 1973	Management Factor Percentage (for Permit Hist. CU only) 1973 - 2006
	Farm					
	Bozeman MT State	4913	18.42	21.39		
	Hebgen Dam	6667	10.09	12.77		
Garfield	Cohagen	2710	22.36	24.99	43.4%	50.6%
	Jordan	2661	23.58	26.32		
	Mosby	2750	24.51	27.34		
Glacier	Babb	4300	12.12	14.87	59.7%	73.6%
	Cut Bank	3855	16.01	18.60		
	Del Bonita	4340	14.61	17.30		
	East Glacier	4810	10.60	13.26		
	St Mary	4560	13.64	16.60		
Golden Valley	Ryegate	4440	17.60	20.17	62.6%	65.5%
Granite	Philipsburg Ranger Station	5270	12.90	15.26	86.5%	87.4%
Hill	Fort Assinniboine	2613	22.42	25.20	54.1%	59.8%
	Guilford	2820	19.54	22.06		
	Havre	2585	20.94	23.46		
	Simpson	2815	19.67	22.13		
Jefferson	Boulder	4904	17.08	19.47	61.0%	77.9%
Judith Basin	Moccasin Exp Station	4243	16.17	19.06	49.3%	68.0%
	Raynesford	4220	16.14	19.05		
	Stanford	4860	16.74	19.69		
Lake	Bigfork	2910	17.37	20.61	55.0%	69.2%
	Polson	2949	20.46	23.23		
	Polson Kerr Dam	2730	21.37	24.08		
	St Ignatius	2940	19.53	22.33		
Lewis & Clark	Augusta	4070	17.51	20.13	60.1%	79.0%
	Austin	4790	15.41	17.96		
	Helena	3828	20.23	22.69		
	Holter Dam	3490	23.88	26.61		
	Lincoln Ranger Station	4575	12.87	15.22		
Liberty	Chester	3132	19.28	21.74	54.8%	65.7%
	Joplin	3300	19.01	21.40		
	Tiber Dam	2850	22.98	25.46		
Lincoln	Eureka Ranger	2532	20.63	23.26	47.1%	56.3%

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	Management Factor Percentage 1964 - 1973	Management Factor Percentage (for Permit Hist. CU only) 1973 - 2006
	Station					
	Fortine	3000	16.09	18.69		
	Libby Ranger Station	2096	21.20	23.71		
	Libby	3600	11.06	13.36		
	Troy	1950	19.90	22.68		
Madison	Alder	5800	14.33	16.75	65.2%	79.0%
	Ennis	4953	17.19	19.71		
	Glen	5050	17.81	20.01		
	Norris	4750	20.88	23.97		
	Twin Bridges	4777	16.98	19.22		
	Virginia City	5770	15.57	18.13		
McCone	Brockway	2630	20.74	23.35	43.7%	55.0%
	Circle	2480	22.23	25.01		
	Fort Peck Power Plant	2070	25.37	28.16		
	Vida	2400	21.74	24.65		
Meagher	Lennepe	5880	11.93	14.38	57.3%	70.4%
	Martinsdale	4800	15.19	17.73		
	White Sulphur Spr	5060	16.41	18.89		
Mineral	St Regis Ranger Stn	2680	17.61	20.05	56.1%	63.3%
	Superior	2710	21.94	24.54		
Missoula	Lindbergh Lake	4320	14.63	17.22	69.5%	67.5%
	Missoula	3420	18.85	21.49		
	Missoula WSO AP	3199	19.45	21.89		
	Potomac	3620	14.05	16.26		
	Seeley Lake Ranger Station	4100	14.86	17.31		
Musselshell	Melstone	2920	24.22	27.17	50.0%	58.7%
	Roundup	3386	23.98	26.79		
Park	Cooke City	7460	8.68	11.63	56.9%	66.1%
	Gardiner	5275	22.46	24.70		
	Livingston	4870	16.59	19.41		
	Livingston FAA AP	4656	18.63	21.39		
	Wilsall	5840	13.20	16.01		
Petroleum	Flatwillow	3133	22.27	25.01	44.0%	50.0%
Phillips	Content	2340	21.15	23.97	54.7%	54.7%

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	Management Factor Percentage 1964 - 1973	Management Factor Percentage (for Permit Hist. CU only) 1973 - 2006
	Malta 35	2650	20.28	22.99		
	Malta 7	2262	21.61	24.39		
	Port of Morgan	2830	20.15	22.72		
	Saco	2180	20.13	22.70		
	Zortman	4660	14.38	17.40		
Pondera	Conrad	3550	16.93	19.42	71.4%	81.0%
	Valier	3810	18.31	20.96		
Powder River	Biddle	3597	21.87	24.66	38.5%	49.3%
	Broadus	3032	23.03	25.69		
	Moorhead	3220	23.72	26.42		
	Sonnette	3900	18.32	20.96		
Powell	Deer Lodge	4678	13.14	15.32	77.6%	90.0%
	Ovando	4109	12.28	14.43		
Prairie	Mildred	2510	22.92	25.58	59.6%	73.6%
	Terry	2248	22.82	25.47		
	Terry 21	3260	18.65	21.34		
Ravalli	Darby	3880	18.91	21.44	79.5%	88.6%
	Hamilton	3529	19.93	22.34		
	Stevensville	3380	19.19	21.44		
	Sula	4475	12.09	14.42		
	Western Ag Research	3600	19.82	22.15		
Richland	Savage	1990	23.61	26.59	56.0%	72.9%
	Sidney	1931	22.49	25.45		
Roosevelt	Bredette	2638	19.99	22.86	46.5%	64.9%
	Culbertson	1942	20.84	23.73		
	Wolf Point	1985	24.16	27.03		
Rosebud	Birney	3160	24.57	27.29	47.7%	67.7%
	Brandenberg	2770	23.83	26.52		
	Colstrip	3218	23.32	26.10		
	Forsythe	2520	25.17	28.04		
	Ingomar	2780	23.18	25.83		
	Rock Springs	3020	21.35	23.93		
Sanders	Heron	2240	14.82	17.73	58.8%	69.1%
	Thompson Falls Power	2380	22.49	25.36		
	Trout Cr Ranger Station	2356	16.60	19.40		
Sheridan	Medicine Lake	1975	21.64	24.49	44.8%	68.5%

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	Management Factor Percentage 1964 - 1973	Management Factor Percentage (for Permit Hist. CU only) 1973 - 2006
	Plentywood	2063	20.64	23.48		
	Raymond Border Station	2384	19.13	22.04		
	Redstone	2300	17.86	20.58		
	Westby	2120	18.10	21.033		
Silverbow	Butte FAA AP	5545	14.73	17.06	68.8%	90.3%
	Divide	5350	15.25	17.58		
Stillwater	Columbus	3602	22.31	25.09	46.5%	62.9%
	Mystic Lake	6544	13.57	16.57		
	Nye	4840	15.00	17.93		
	Rapelje	4125	20.35	23.07		
Sweet Grass	Big Timber	4100	20.60	23.47	44.7%	53.6%
	Melville	5370	12.83	15.49		
Teton	Blackleaf	4240	14.74	17.34	68.8%	80.2%
	Choteau Airport	3845	20.53	23.07		
	Fairfield	3980	19.10	21.76		
	Gibson Dam	4724	13.57	16.22		
Toole	Goldbutte	3498	16.30	18.96	51.8%	66.5%
	Sunburst	3610	18.74	21.46		
	Sweetgrass	3466	18.22	21.22		
Treasure Valley	Hysham	2660	25.01	27.78	53.4%	75.2%
	Glasgow WSO AP	2293	23.48	26.12	57.9%	66.6%
	Hinsdale	2670	22.18	25.25		
	Opheim 10	2878	16.19	18.86		
	Opheim 16	3258	16.73	19.34		
Wheatland	Harlowton	4162	17.83	20.56	46.6%	58.7%
	Judith Gap	4573	13.77	16.40		
Wibaux	Carlyle	3030	19.87	22.75	See appropriate adjacent county	
	Wibaux	2696	18.69	21.50		
Yellowstone	Billings Water Plant	3097	26.16	28.92	59.5%	71.4%
	Billings WSO	3648	25.49	28.22		
	Huntley Exp Station	3034	21.92	24.61		

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DEPARTMENT OF NATURAL RESOURCES
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MEMORANDUM

To: Water Resources Division
From: Brian C. Bramblett, Legal Unit DCB
Approved by: Anne W. Yates, Legal Unit ASY
RE: Imported Water
Date: September 17, 2012

QUESTION PRESENTED:

SHOULD IMPORTED WATER BE TREATED DIFFERENTLY FROM NON-IMPORTED WATER FOR PURPOSES OF ANALYZING RETURN FLOWS AND ADVERSE EFFECT IN A CHANGE PROCEEDING?

No Montana authority directly addresses whether return flows from the use of imported water relied upon by subsequent appropriators in the foreign basin¹ should be treated differently from return flows from non-imported water relied upon by water users in the basin of origin for purposes of analyzing adverse effect of a change in use.

Nothing in the change provisions of the Montana Water Use Act (MWUA) or Department's definition of return flow limits the analysis of adverse effect or return flow in a change proceeding to the basin of origin of the water right proposed for change. Nor does the MWUA expressly provide an exception to the adverse effect analysis for imported water.

Montana case law provides that imported water is subject to the fundamental water law principles regarding original intent, place of use, purpose of use, and extent of use as established through historic use patterns. Once imported water leaves the control of the importer, it loses its character as such, is treated the same as "natural" tributary water occurring in the foreign basin, and is subject to appropriation pursuant to Montana's prior appropriations doctrine. Montana

¹ For purposes of this analysis the term "foreign basin" refers to the basin into which water has been imported.

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case law provides that the importer may not subsequently expand its use of imported water beyond the originally intended use through recapture, reuse, or sale in a manner that adversely affects subsequent appropriators in the foreign basin. While the Montana Supreme Court has not expressly held that subsequent appropriators are entitled to protection from adverse effect by a change in use of imported water, no Montana Supreme Court decision has treated imported water any differently than non-imported water.

California, Colorado, and Wyoming treat imported water differently from non-imported water. In those states, an importer is entitled to recapture and re-use return flows from imported water without regard to subsequent appropriators. This special treatment is rooted in statute, or early case law of those respective states. However, no Montana statute or Supreme Court case law has afforded preferential treatment to imported water.

Department of Natural Resources and Conservation (Department) administrative decisions have addressed this issue with mixed holdings. Recent Department decisions have concluded that subsequent appropriators may not compel the importer to continue importing water into a basin. Therefore, they cannot be adversely affected by a change in place of use of the imported water that diminishes return flow to the basin. An earlier Department decision concluded that there is no basis in Montana law for treating imported water any differently from non-imported water.

The following discussion analyzes Montana Supreme Court decisions, decisions from other jurisdictions, Department decisions, and the opinions of Montana water law scholars and treatises relevant to the question. Although an argument can be made for the proposition that return flows from imported water should be treated differently than return flows from non-imported water in a change proceeding, a close reading of Montana case law indicates stronger support for the proposition that return flows from imported water should be treated the same as all other return flows. When Montana case law is considered along with the current understanding of hydrology, the protection of existing uses provided by the MWUA, and the Montana Supreme Court's recent recognition that virtually all of Montana's waters have been altered or manipulated by man, it is apparent that imported water should be treated the same as non-imported water when analyzing return flows and adverse effect in a change proceeding.

I. GENERAL RETURN FLOW PRINCIPLES

In Gassert v. Noyes, 18 Mont. 216, 44 P. 959 (1896)² from 1869 through 1878, the defendant diverted water from Oro Fino Gulch for placer mining purposes. After the water was used by defendant, it returned to Oro Fino Gulch and subsequently flowed into Browns Gulch, whereupon in 1875 the plaintiff appropriated it for irrigation. In 1878, the defendant moved the place of use of his water right over a ridge which resulted in the water no longer being returned Oro Fino and Browns Gulches, depriving the plaintiff of water relied upon for irrigation. A dispute arose over the respective water rights of the parties.

The Court quoted the following language with approval:

Undoubtedly, when plaintiff took up the water, and before other conflicting interests had vested, the right to the water carried with it the right to construct such works as were necessary to the full enjoyment of the water. But when it established its works, and fully appropriated the water by means sufficient for the purpose, and used it for a term of years in a particular mode, unless there was something manifesting a more extended right, other parties had a right to suppose that the plaintiff had itself defined the limits of its rights, and act accordingly.

Gassert, 44 P. at 961(*quoting Proctor v. Jennings*, 6 Nev. 83 (1870)). The Court concluded that while the defendant had the right to change the manner and place of use for his water right, in doing so he could not deprive subsequent appropriators of return flows relied upon for beneficial uses:

It will not be disputed, we think, that a prior appropriator of water cannot so change the use of the water as to deprive the subsequent appropriator of his rights. If the prior appropriator cannot encroach upon the rights of the subsequent appropriator by changing the use, we think, for the same reasons, he cannot do so by changing the place of the use.

Gassert, 44 P. at 962.

Thus, the concept of return flows and the balance between a prior appropriator's right to change the manner and place of use for a water right and a subsequent appropriator's right to insist that such a change in use not substantially change the condition of the source to their detriment became the law in Montana. E.g. Spokane Ranch & Water Co. v. Beatty, 37 Mont. 342, 96 P. 727 (1908)(discussed in more detail below). Subsequent cases reflect the difficulty

² Often cited as the seminal Montana case regarding return flows.

early courts had applying this seemingly simple principle to circumstances involving surface water that after being used by a prior appropriator seeped into the ground before returning to a surface water source. Over time, however, as the understanding of hydrology and the connectivity between surface and groundwater has advanced, the so have the protections applied to return flows.

The MWUA incorporates the principals regarding a senior's right to change an existing use subject to a subsequent appropriator's right to insist that such a change in use not substantially change the condition of the source to their detriment. A change applicant is required to prove: "The proposed change in appropriation right will not adversely affect the use of existing water rights of other persons or other perfected or planned uses of developments for which a permit or certificate has been issued or for which a state water reservations has been issued . . ." §85-2-402(2)(a), MCA. Analysis of return flows is central to the determination of whether a change in use will cause adverse effect.

The Department currently defines return flow as:

that part of a diverted flow which is applied to irrigated land and is not consumed and returns underground to its original source or another source of water, and to which other water users are entitled to a continuation of, as part of their water right. Return flow is not wastewater. Rather, it is irrigation water seeping back into a stream after it has gone underground to perform its nutritional function. Return flow results from use and not from water carried on the surface and ditches and returned to the stream.

ARM 36.12.101(56).

Nothing in the change provisions of the MWUA or Department's definition of return flow limits the analysis of adverse effect or return flow in a change proceeding to the basin of origin of the water right proposed for change. Nor does the MWUA expressly provide an exception to the adverse effect analysis for imported water. Because interpretation of the MWUA reflects the fundamental principles of the prior appropriations doctrine, review early case law is instructive in determining whether there is a basis for treating imported water differently than non-imported water in a change proceeding.

II. MONTANA SUPREME COURT CASES ON IMPORTED WATER

A. *Trans-basin Diversions and Return Flows in the Basin of Origin*

In Spokane Ranch & Water Co. v. Beatty, 37 Mont. 342, 96 P. 727 (1908), the Spokane Ranch & Water Co. (Plaintiff), and others with water rights in Beaver Creek sought to prevent the City of Helena (Defendant) from exporting six water rights the City purchased for water from Beaver Creek. Five of the water rights were historically used for irrigation within the Beaver Creek basin, the return flows from which returned to Beaver Creek and were relied upon by the junior appropriators/Plaintiffs. One water right was historically transported out of the Beaver Creek basin for mining purposes and did not return to the Beaver Creek basin. The City sought to divert the water for all six water rights permanently out of the Beaver Creek basin for municipal use.

The Court concluded:

so long employed by our courts, comprehend the legal proposition that each subsequent appropriator is entitled to have the water flow in the same manner as when he located, and that he may insist that prior appropriators shall be confined to what was actually appropriated or necessary for the purposes for which they intended to use the water.

Spokane Ranch, 37 P. at 731. The Court held that the City could not permanently export the full irrigation water rights from the Beaver Creek basin to the detriment of subsequent appropriators on Beaver Creek because the Plaintiffs historically relied upon the return flows from such use as the source and supply of their water. Only that portion of the irrigation water rights that was consumed and did not return to Beaver Creek based upon evidence of historic use could be exported. Id.

The Court concluded that the City could permanently export the placer mining water right out of the basin of origin (consistent with the historic use of its predecessors) because return flows from the placer mining use did not return to Beaver Creek and, therefore, were not available for use by the complaining Beaver Creek water users. The Court did not address, because the issue was not presented, whether junior appropriators in the basin where the placer mining rights were exported and used had the right to continued return flows from the imported Beaver Creek water.

In Galiger v. McNulty, 80 Mont. 339, 260 P. 401 (1923), Galiger (Plaintiff) alleged the right to water from Ramshorn Creek for irrigation of 700 acres in the Ramshorn Creek basin and sought to prevent McNulty (Defendant) from interfering with those rights. McNulty claimed the right to export all of the water from Ramshorn Creek for use in Bivens Gulch based upon a prior 1875 decree. Therefore, McNulty claimed the right to sell water exported from Ramshorn Creek to users in Bivens Gulch for irrigation without consideration of adverse effect to subsequent Ramshorn Creek appropriators. Galiger, 260 P. at 401.

Based upon the evidence at trial, the district court awarded McNulty two water rights: 1) an 1868 right to use 150 inches of the waters of Ramshorn Creek through the Miners Ditch, from May 1 to November 1 of each year; and 2) an 1874 right to use 300 inches of the waters of Ramshorn Creek through the McKay Ditch from May 1 to July 15 each year. Id. at 404. The water for these rights was diverted out of Ramshorn Creek, over a divide and used for mining in Bivens Gulch. Water that was not consumed by the mining operation discharged into Bivens Gulch and did not return to Ramshorn Gulch. Id. at 401.

Simonsen (Intervenor) claimed that for more than 60 years he had irrigated 1/3 of his land in Bivens Gulch with water naturally flowing in Bivens Gulch and irrigated 2/3's of his land with water from a 50% interest purchased from McNulty in the Miners and McKay Ditches in 1925. He argued that he acquired the right to Ramshorn Creek water diverted through the McKay and Miners Ditches which was senior to any right claimed by Galiger. Id. at 405.

Initially, the Court recognized McNulty's right to import water from Ramshorn Creek into the Bivens Creek basin for use in its mining operation:

Waters primarily belong in the watershed of their origin, if there is land therein which requires irrigation. In this case the waters were taken out to be used in the alien watershed, where and after being so used they could not return to the original stream either by percolation, seepage, or otherwise; hence they were lost to the area in the original watershed. . . . It is sufficient here to say that the right to the use of this water for placer mining purposes by the [McNulty] has been sustained, but it may be appropriate to remark that the burden placed upon the water should not be added to, to the detriment of appropriations made for irrigating lands within the area of the stream from which the water is diverted.

Id. at 405.

The Court explained that while McNulty could change the place of diversion and change the use of the water diverted from Ramshorn Creek, he could not do so to the prejudice of

subsequent appropriators on Ramshorn Creek. Id. at 405 (citing Thomas v. Ball, 66 Mont. 161, 213 P. 597; Head v. Hale, 38 Mont. 302, 100 P. 222; Carlson v. City of Helena, 43 Mont. 1, 114 P. 110; Lokowich v. City of Helena, 46 Mont. 575, 129 P. 1063). The Court continued, concluding that an appropriator was not permitted to use the water for its original purpose, and then, in the interim when not continually used by him, sell water for to others in the foreign basin to the detriment of subsequent appropriators in the basin of origin. Id. at 406 (citing Creek v. Bozeman Waterworks Co., 15 Mont. 121, 131, 38 P. 459, 461). The sale of water constituted an expansion of the original right or a new use.

The Court held that after McNulty used water for placer mining it became waste, fugitive, and vagrant water over which McNulty had no right, and, therefore, could not sell. Because McNulty did not relinquish the right to use water for mining he had nothing to sell to Simonsen, and his attempt to sell imported Ramshorn Creek water was invalid. The Court further explained that to the extent Simonsen claimed the right to use of water based upon the purchase of interest in Miners and McKay Ditches, the priority date of the right would be January 16, 1925, as it was a new/additional burden on Ramshorn Creek water and would be junior to Galiger. Id. at 406. Ultimately, the Court's conclusion regarding the increased diversion from and burden upon the source applies equally to imported water and non-imported water – McNulty would not be permitted to increase his diversion from Ramshorn Creek to sell to users in Ramshorn Creek either.

Galiger sheds little light on the issue regarding how return flows from imported water relied upon by subsequent appropriators in a foreign basin should be analyzed for purposes of adverse effect in a change proceeding. The issue was whether McNulty could increase the burden on Ramshorn Creek by continuing to divert water from Ramshorn Creek for its original placer mining operation in Bivens Gulch **and** divert and sell additional water diverted from Ramshorn Creek to irrigators in Bivens Gulch to the detriment of subsequent appropriators in Ramshorn Creek. It appears that the right claimed by Simonsen was for Ramshorn Creek water that McNulty had no right to divert in the first place. Therefore, whether Simonsen had the right to use return flows from McNulty's placer mine operation consistent with McNulty's historic use was not at issue or addressed.

In McIntosh v. Graveley, 159 Mont. 72, 495 P.2d 186 (1972), the Court considered whether the Defendant (Graveley), whose predecessor diverted water from the Ophir Creek basin for use in the Three Mile Creek basin for irrigation, could change the place of use in the Three Mile Creek basin over the objection of the Plaintiff (McIntosh), who possessed water rights in the Ophir Creek basin. The evidence established that the water diverted by Defendant and its predecessor did not return to the Ophir Creek basin. McIntosh, 159 Mont. at 75, 495 P.2d at 188.

The Court initially recognized that that a water user may not extend the use of water to additional lands not under actual or contemplated irrigation at the time the right was decreed to the injury of subsequent appropriators. McIntosh, 159 Mont. at 80-81, 495 P.2d at 191 (*citing* Spokane Ranch & Water Co. v. Beatty, 37 Mont. 342, 96 P. 727; and Quigley v. McIntosh, 110 Mont. 495, 103 P.2d 1067). However, the Court concluded that where water was exported from the basin of origin no injury could occur to subsequent appropriators in the basin of origin: “this principle is not germane to the instant case, as no injury to subsequent appropriators in the drainage of origin is possible where permanent diversion of the waters into another basin was decreed in the original appropriation.” *Id.*

The Court concluded that the Plaintiff could not complain of injury from Defendant’s change in place of use because return flows from the water exported from the Ophir Creek basin were never available as a source of supply for Plaintiff’s water rights: “Plaintiffs could not further benefit from the waters diverted to the Three Mile Creek drainage under the original appropriation, so they are not burdened or damaged in any way from irrigation of other lands in that drainage.” McIntosh, 159 Mont. at 83, 495 P.2d at 193.

McIntosh confirms that water users in the basin of origin may not complain of injury from a change in use of water that was permanently exported for use outside the basin of origin. However, similar to Spokane Ranch, it does not address whether water users in the foreign basin may insist that a change in use of imported water not alter the condition of the source of supply in the foreign basin.

In summary, the above cases establish that where a senior water user exports water from one basin for use in another, he is limited to his originally contemplated use. Any change in that use may not increase the burden on the basin of origin. Subsequent appropriators in the basin of origin may not object to a change in the exporter’s manner or place of use in the basin of import

based upon adverse effect from diminishment of return flow, as they could not have relied upon return flows as a source of supply. However, they may insist that the exporter not increase the burden on the source through an expansion or change in use.

B. Trans-basin Diversions and Return Flows in the Foreign Basin

The case of Popham v. Holloron, 84 Mont, 442, 275 P. 1099 (1929), involved a dispute between two competing water users who diverted water from Holloron Gulch for irrigation purposes. Prior to 1900, but for intermittent snowmelt and precipitation, Holloron Gulch was a dry ravine. In 1900 the Ravalli Land and Irrigation Co. completed construction of the Hedge Ditch which imported water from a another basin and thereafter overflow, waste, and seepage water from Hedge Ditch found its way into Holloron Gulch and flowed down the Holloron Gulch during the irrigation season. In 1909 the Bitterroot Valley Irrigation Company completed a canal which imported water from Como Lake, 50 miles away, from which seepage water also materially augmented the flow of water in Holloron Gulch. Popham, 275 P. at 1101.

In 1902, Popham (Plaintiff) built a dam in Holloron Gulch which diverted water through a 1 ½ mile ditch for irrigation. Over time as the amount of water in Holloron Gulch increased Popham improved his dam and diverted more water as it was available. By 1911, Popham was impounding and diverting all of the water out of Holloron Gulch for irrigation. *Id.*

In 1923, E. Holloron (Defendant) began diverting water from Holloron Gulch above Popham's point of diversion for irrigation purposes, capturing water that previously flowed unimpeded to Popham's dam and ditch. Popham then filed an action in court to have his rights to Holloron Gulch water decreed and to enjoin Holloron from interfering with those rights. In her defense, Holloron maintained that Popham had not established any right to the water because it was seepage and wastewater which was not subject to appropriation.

The issue before the Court was whether, and the extent to which, either party established an appropriation under Montana law:

each attempted to appropriate water flowing in a well-defined channel, but which, except for the negligible quantity supplied by rains and melting snow, comes from no natural source, but is the result of waste, seepage, and percolation from artificial irrigation works bringing water from foreign sources to lands adjacent to the gulch in question.

Popham, 275 P. at 1102.

The Court initially concluded that the use of seepage or wastewater did not constitute an “appropriation” pursuant to Montana case law prior to the adoption of § 7093 R.C.M. (1921), when Popham’s appropriation was commenced. One could not obtain the right to use of someone else’s waste or seepage, and could not compel a water user to continue providing water through waste or seepage. *Id.*

However, the Court concluded that once “vagrant” groundwater reaches a natural channel (whether from precipitation, seepage or percolation, imported water over which the importer has lost control, or water of a slough feed by seepage from irrigation) its loses character as seepage or wastewater and constitutes a “water course” within the meaning of the law of water rights and is subject to appropriation.

The main source of supply of all western streams is, primarily, the melting of snow and the fall of rain in our mountains and foothills . . . Such waters, thus forming a water course and flowing with regularity from year to year, although the channel may be dry for the major portion of each year, are a proper subject of appropriation and *where such waters did not originally collect and flow down the channel, if through the instrumentality of man they have been made to do so and, through years of so flowing have acquired a permanent character as the natural drainage of the watershed, the original manner of the creation of the stream is immaterial; it is a “water course” with all the attributes of one wholly natural.*

Popham, 275 P. at 1102 (emphasis added)(citations omitted). The Court held:

We are of opinion that, under our statute, under the authorities and on principle, the water in question, having lost its character as waste, seepage, or percolating water, and having become a “water course” in a well-defined channel, where it had flowed for more than twenty years, mingled with such waters from a natural source as flowed in the natural channel, and has furnished a never failing supply of water for the development of valuable grain lands, *was a proper subject of appropriation, regardless of the original source of the water at a point distant from this watershed* or the fact that the flow was not, during the early years of the life of the stream, continuous throughout the year.

Popham, 275 P. at 1103 (emphasis added). The Court ultimately affirmed the district court’s decree to Popham of 50 inches of water appropriated in 1902, and 110 inches appropriated in 1911, and to Holloron 40 inches as of 1924 subject to Popham’s senior appropriation.

Popham confirmed that once imported water escapes the control of the original appropriator and reaches a natural water course it is subject to appropriation the same as water

naturally occurring in the basin and may be appropriated by subsequent appropriators. However, the dispute before the Court did not address whether the original importer could change its manner or place of use of the imported water without consideration of subsequent appropriators in the foreign basin.

In Rock Creek Ditch and Flume v. Miller, 93 Mont. 248, 17 P.2d 1074 (1933), Miller (Defendant) appropriated water from Wyman Creek in 1911. In 1914, the Plaintiff Rock Creek Ditch Co. (RCDC) constructed a canal running from the east fork of Rock Creek over the ridge into the Trout Creek basin, where RCDC sold water conveyed by the canal to its stockholders for irrigation. Water used from the canal for irrigation that was not consumed by crops seeped into the ground and discharged into Wyman Creek, increasing the flows in Wyman Creek. Miller diverted and used the increased flow from Wyman Creek for irrigation as it became available. In 1928, with the permission of RCDC, Hickey constructed a ditch to divert water from Wyman Creek. Rock Creek, 17 P.2d at 1075. Hickey and RCDC maintained that the ditch diverted “imported” Rock Creek water from Wyman Creek to which RCDC had the right to sell as the original appropriator and importer of said water. RCDC argued that by bringing Rock Creek water into the Trout Creek basin it created a new source of supply – “developed water” - and that through its stockholder Hickey, RCDC recaptured this developed water for the use and benefit of RCDC stockholders. RCDC maintained that it was entitled to sell and/or reuse all Rock Creek water imported into the basin because it was not part of the natural Wyman Creek watercourse and, therefore, not subject to appropriation by others. Rock Creek, 17 P.2d at 1076.

The Court rejected the contention that the imported water constituted “developed water” comparing the definition of developed water set forth in *Kinney on Irrigation and Water Rights* (2d Ed.) § 1205; Beaverhead Canal Co. v. Dillon El. L. & P. Co., 34 Mont. 135, 85 P. 880, 882 (1906) and Smith v. Duff, 39 Mont. 382, 102 P. 984 (1909). It explained that “developed water” was subsurface water that was not previously available to any surface water appropriator and could not be created simply by diverting surface water from one basin to another:

One cannot be said to have developed water who has diverted it from a running stream and has conveyed it elsewhere. The idea of developed water connotes obtaining subsurface waters which have not theretofore been available.

.....

In other words, the rule of developed water contemplates the increase of a stream occasioned through the exertions of man directed to that end, and does not contemplate accessions to the stream through the processes of nature, as by percolating waters.

Rock Creek, 17 P.2d at 1078. This notion of developed water reflects the then existing understanding and state of the law at the time. At the time, one could not obtain an appropriation right to groundwater. Therefore, bringing groundwater to the surface constituted a new and independent source of water. This conclusion refines the Court's prior decision in Beaverhead Canal Co. v. Dillon Electric Light & Power Co., 34 Mont. 135, 85 P. 880 (1906), in which the Court concluded that an appropriation is measured by the natural flow of the source and may not include artificial accretions thereto.

The Court concluded that through its appropriation of Rock Creek water, RCDC acquired only the right to the beneficial use of that water - not title to the corpus of the water. The Court explained that Montana's prior appropriation doctrine relied upon the right of subsequent appropriators to appropriate unused water returning to or discharging into a source of supply to maximize the beneficial use of Montana's water resource:

even though the first appropriator claims the whole volume, and can at times, or even constantly, use the same for some industrial purpose, because such use does not usually swallow it, but leaves it available to others. By such an appropriation the first appropriator does not acquire a pre-emption of the whole creek, so that he or his successor may, after enjoying the use of it for some beneficial purpose, convey the creek away, and cut off subsequent appropriators. Therefore a subsequent right to use the same water, or so much of it as returns to the creek, and to use the waters of the creek when the first is not using the same, may be acquired.

Rock Creek, 17 P.2d at 1079 (*quoting* Creek v. Bozeman Water Works Co., 15 Mont. 121, 38 P. 459).

Although the Court recognized that RCDC and its shareholders could recapture or reuse seepage or wastewater while it remained on their land, it explained that the right to do so terminated when the water seeped underground and escaped onto other land, joined a natural stream, or came into another's control:

Where vagrant, fugitive waters have reached a natural channel, and thus have lost "their original character as seepage, percolating, surface, or waste waters," they serve to constitute a part of the water course, and are subject to appropriation.

Rock Creek, 17 P.2d at 1077 (citing Newton v. Weiler, 87 Mont. 164, 286 P. 133; Galiger v. McNulty, *supra*). The Court continued, citing United States v. Haga, 276 F. 41 (Idaho S.D.C 1921), for the proposition that a water user could recapture or reuse seepage or wastewater while it remained on their land *only to the extent that they had originally manifested the intent to do so*, or done so before subsequent appropriators made use of the water for beneficial purposes. Because RCDC through Hickey made no attempt to recapture the imported water before it reached Wyman Creek, it retained no right to do so to the detriment of subsequent water users on Wyman Creek. Rock Creek, 17 P.2d at 1080.

The Court concluded that Miller made use of all the waters of Wyman Creek³, whether consisting of the flow in ordinary season from snowmelt, seasonal rains, or imported Rock Creek water, long before RCDC through Hickey made any attempt to appropriate water from Wyman Creek in 1928. Therefore, it held that neither RCDC nor Hickey could interfere with Miller's use:

If the rule were otherwise, we should be compelled to hold that on this feature of the case Galiger v. McNulty, *supra*, was incorrectly decided; and the Bitter Root Valley Irrigation Company, whose canal lost water by seepage, creating the supply over which Popham and Holloron were litigating, could "recapture" the water from Popham, who prevailed in that lawsuit. Popham v. Holloron, *supra*. *The rule contended for by plaintiff would lead us into "a morass of practical difficulties and doctrinal refinements." It would disturb the settled policy upon which the owners of water rights of this state have depended, founded upon the decisions of this court, through the long course of the years. Derangement of a policy so deeply rooted is not to be contemplated except under a compelling necessity, which does not seem to exist.*

Rock Creek, 17 P.2d at 1080(emphasis added). Rock Creek provides no distinction between water naturally occurring within the basin and water imported to the basin for purposes of appropriation by other water users.

In Mungas v. Third Judicial District Court, 102 Mont. 533, 59 P.2d 71 (1936), the Court subsequently re-affirmed the principles previously set forth in Rock Creek. Mungas, a stockholder in the RCDC, maintained that they brought the water involved from an independent source of supply and it would not naturally have been available as a part of the waters of Wyman

³ Except the 25 inches to which Carey had a prior right.

Creek for the irrigation of the Miller land. Mungas asserted that they were entitled to recapture and use the water on additional lands before it crossed the boundaries of their land. Mungas, 59 P.2d at 72. Following a discussion of its decisions in Rock Creek, Popham and Galiger, the Court rejected Mungas' argument, concluding:

The evidence is conclusive that the draw heretofore mentioned is a tributary of Wyman creek. The court in the original suit adjudged that the Millers had certain rights in the waters of that creek and its tributaries, and hence the company's successors in interest were without right to the waters of that creek. The stockholders of the corporation plaintiff in that action were expressly enjoined from interfering with those rights. The waters which the relators are utilizing in section 7 have become, under the authorities cited supra, waters flowing in a water course, although it is true that the relators and the ditch company have brought these waters originally from another watershed, but for us to hold that they may devote them to the use of irrigating section 7 would be contrary to the holding of this court in the Galiger-McNulty Case, supra, and approved in the case of Rock Creek Ditch & Flume Co. v. Miller, supra, unless we were to make a distinction between the case of Galiger v. McNulty and this one. *There it is said that where water was brought from an outside watershed into another and used for the purpose for which it was brought, thereafter this water might not be sold to another, upon the theory that the corpus of the water did not belong to the first user and after he had completed his use he must permit it to continue down the water course. Here the relators are not selling the water but propose to devote it to another and additional use. We are unable to draw any real distinction between the two cases. If the appropriator may not sell the water remaining after it has served its intended use or can no longer be devoted to that purpose, then he may not devote it to an entirely new, distinct, and independent use.*

Mungas, 59 P.2d at 74(emphasis added).

Similar to Galiger, the Court's analysis in Rock Creek and Mungas provides that the extent of a water right for an appropriator who imports water from one basin for use in a foreign basin is limited by his original intent and actual beneficial use like any other water user. Once the imported water is used for the original intended purpose and leaves the control of the appropriator, it loses its character as imported water and is indistinguishable from water naturally occurring in the basin. The water is then subject to appropriation and the original importer may not reuse, recapture, or sell the water beyond its originally intended use to the detriment of subsequent appropriators in the foreign basin. Neither Rock Creek nor Mungas directly addresses whether a change in use of imported water that does not expand the underlying right

must be analyzed for adverse effect caused by a change in return flows relied upon by appropriators in the foreign basin. Indeed, Mungas reflects the Court's hesitance to carve out any exceptions for imported water and its unwillingness to distinguish imported water from non-imported water for purposes of the prior appropriations doctrine.

In Mannix & Wilson v Thrasher, 95 Mont. 267, 26 P.2d 373 (1933), the Pioneer Placer Mining Company (PPMC) and Gold Creek Place Mines (GCPM) possessed 1865, 1866, and 1867 water rights to divert water from Gold Creek over a ridge for mining purposes. After the water was used in PPMC's and GCPM's mining operations, it seeped underground discharging into Pioneer Creek where it subsequently flowed into Pikes Peak Creek which subsequently flowed into Gold Creek. While the exact quantity of water diverted from Gold Creek was not known, it was established that 2/3 of the water flowing in Pikes Peak Creek below its confluence with Pioneer Creek was "Gold Creek water" imported into the basin by PPMC. Mannix, 26 P.2d at 373.

Defendant Hogan possessed two water rights to divert water from Gold Creek dated June 1, 1883, and June 1, 1886. Defendant Thrasher possessed one water right to divert water from Gold Creek dated June 1, 1885. On April 30, 1888, Plaintiffs Mannix & Wilson and others began diverting water for agriculture purposes from Pikes Peak Creek between its confluence with Pioneer Creek and Gold Creek through the Cannon & Brand Ditch. In doing so, they relied upon return flows to Pioneer and Pikes Peak Creek from the Gold Creek water imported by PPMC and GCPM. On June 1, 1888, the Defendants constructed the Company Ditch which diverted water from Pioneer Creek and deposited the water in Gold Creek, which Defendants subsequently diverted from Gold Creek to the respective places of use associated with their Gold Creek water rights. Prior to this time, the first ditch to divert return flows from water imported by PPMC and GCPM was the Cannon & Brand Ditch on Pikes Peak Creek. Mannix, 26 P.2d at 374.

Plaintiffs sought to enjoin Defendants from diverting Pioneer Creek water to Gold Creek through the Company Ditch. Defendants conceded that Plaintiffs had the prior right to the "normal and natural" flows for Pioneer and Pikes Peak Creek. However, Defendants maintained they had a superior right to Gold Creek water flowing in Pioneer Creek, arguing that water imported from Gold Creek to Pioneer Creek never left the Gold Creek basin and was subject to

recapture from Pioneer Creek in order of priority by those having appropriations from Gold Creek. The water commissioner and district court agreed with the Defendants, ruling that Defendants' had the prior right to divert "Gold Creek" water from Pioneer Creek through the Company Ditch. Plaintiffs appealed. Mannix, 26 P.2d at 374.

On appeal, the Montana Supreme Court initially confirmed that pursuant to both Montana law and the 1915 decree, PPMC and GCPM were restrained from changing the place or manner of use of water to the detriment of subsequent appropriators:

When the appropriations were first put to use, it was the practice of the miners, never changed, to release the water after use to the channel of Pioneer creek. *The obligation put upon the mining companies by the decree was that after using the water for the purpose and at the place for which it was appropriated to return it immediately to the channel of Pioneer creek, which would carry it to Pikes Peak and eventually to Gold creek (unless intercepted by others). The idea was to confine the water to the object of and to the place for which the water was appropriated, nothing more . . .*

Mannix, 26 P.2d at 375(emphasis added). The Court then rejected Defendants' argument concluding:

When this water was deposited in Pioneer creek, it was as much beyond the reach of the [Defendants], until the construction of the Company Ditch, as if Pioneer creek were entirely without the Gold creek watershed. When [Plaintiffs] made their appropriations from Pikes Peak through the Cannon & Brand ditch, the water thereby appropriated was that in which [Defendants] . . . had no interest whatsoever. [Defendants] rights to the water used in placer mining at Pioneer and thereafter flowing in Pioneer creek did not come into being until the date of their appropriation of the same through the Company ditch; then it was to them Pioneer water, and so they appropriated it, notwithstanding the gratuitous assertion of the court that they appropriated the natural flow of Pioneer and the water of Gold creek therein flowing after use.

Id.

Similar to the other cases discussed above, Mannix does not directly address the issue raised when one seeks to change the use of imported water. However, the analysis indicates that the importer is confined to the purpose and place of use for which the imported water was originally appropriated and may not change its place or manner of use to the detriment of subsequent appropriators in the foreign basin who rely upon the return flows from the imported water. It further suggests that return flows from the place of use for imported water are to be

treated the same as return flows from the place of use for water used in the basin of origin.

The above cases do not provide a definitive answer regarding analysis return flows from imported water in a foreign basin for purposes of evaluating adverse effect. However, these cases indicate that once imported water has been beneficially used in foreign basin, the original importer's right to the use of that water terminates. Any return flows are subject to appropriation and priority in the foreign basin in the same manner as water naturally occurring in that basin.

III. IMPORTED WATER IN OTHER JURISDICTIONS

Unlike Montana, other states have directly addressed issues regarding return flows from imported water through case law and/or legislation. In California, Colorado, and Wyoming an importer is entitled to exclusive use of imported water with few exceptions and need not consider adverse effect to those who rely upon return flows from the imported water in the foreign basin. On the other hand, Utah courts have recently indentified the issue of imported water as an important legal issue in need of careful consideration.

A. Colorado

In Colorado, both case law and statute provide that one who imports water is entitled to the exclusive use of the imported water. Colorado statute provides:

(1) Whenever an appropriator has lawfully introduced foreign water into a stream system from an unconnected stream system, such appropriator may make a succession of uses of such water by exchange or otherwise to the extent that its volume can be distinguished from the volume of the streams into which it is introduced. Nothing in this section shall be construed to impair or diminish any water right which has become vested.

(2) To the extent that there exists a right to make a succession of uses of foreign, nontributary, or other developed water, such right is personal to the developer or his successors, lessees, contractees, or assigns. Such water, when released from the dominion of the user, becomes a part of the natural surface stream where released, subject to water rights on such stream in the order of their priority, but nothing in this subsection (2) shall affect the rights of the developer or his successors or assigns with respect to such foreign, nontributary, or developed water, nor shall dominion over such water be lost to the owner or user thereof by reason of use of a natural watercourse in the process of carrying such water to the place of its use or successive use.

§ 37-82-106, C.R.S.A.

The Colorado Supreme Court has concluded that unlike users of non-imported water, one who imports water is entitled to recapture and reuse imported water without regard to subsequent appropriators in the foreign basin. Denver v. Fulton Irrigating Ditch Company, 506 P.2d 144 (Colo. 1972); Public Serv. Co. v. Willows Water Dist., 856 P.2d 829, 833 (Colo.1993)(“An appropriator of native, tributary water, which historically flows back to the stream from whence it comes, is permitted only one use of the water because the return flows are subject to water rights on the stream in the order of their priority. By contrast, the owner of a water right which has been imported into a stream system has the right to successive reuse, to extinction, of the water.”); Town of Estes Park v. Northern Colo. Water Conservancy Dist., 677 P.2d 320, 326 (Colo.1984)(“Subject to contractual obligations, and possibly other limitations not relevant here, a developer of foreign water has the right to use, reuse, successively use, and dispose of such water.”).

The Colorado Supreme Court has also concluded that the right to the recapture and reuse of imported water is not subject to the original intent of the appropriator or abandonment of any portion through nonuse. Accordingly, imported water in Colorado is administered independently of the system governing native water and the “no injury” rule does not apply to changes in use of imported water. City of Thornton v. Bijou Irrigation Co., 926 P.2d 1, 66-73 (Colo. 1996)(Statute providing for approval of change of water right that would not injuriously affect owner of or persons entitled to use water under vested water right or decreed conditional water right does not apply to downstream reusers of foreign water imported. Thus, statute did not provide basis for trial court to require that city replicate foreign water return flows, in action in which city was granted changes in use of existing water rights, as downstream users did not have vested water right in imported water return flows).

B. California

California treats imported water differently from non-imported water as well. An importer may recapture/reuse imported water and is not required to maintain return flows even when failure to do so impairs the diversion capabilities of lower appropriators. In Stevens v. Oakdale Irrigation Dist., 90 P.2d 58, 62, 13 Cal. 2d 343, 352 (1939), California’s Supreme Court concluded:

To summarize, one who produces a flow of foreign water for beneficial use and thereafter permits it to drain down a natural stream channel, is ordinarily under no

duty to lower claimants to continue importing the supply or to continue maintaining the volume of discharge into the second stream channel at any fixed rate. . . after importing water from one river, passing it through irrigation works, and discharging it into a natural creek bed in the second watershed, may change the flow of water imported or the volume of water discharged from its works into the second stream, or stop the flow entirely, so long as this is done above the point where the water leaves the works of the district or the boundaries of its land.

Thus, the importer retains the exclusive right to use of imported water in California regardless of adverse effect to subsequent appropriators. *See also* City of Los Angeles v. City of San Fernando, 537 P.2d 1250, 14 Cal. 3d 199 (1975).

C. Wyoming

Wyoming likewise treats imported water differently than non-imported water. In Basin Electric Coop. v. Wyoming, one question before the Wyoming Court was whether Basin Electric's water right could be limited to historic consumptive use where at least part of the return flows from its use discharged into a foreign basin rather than returning to the surface water source or origin. The Court concluded that Basin Electric could not expand its consumptive use based on Wyoming's change statute which expressly limited the amount of water that could be changed to the historic consumptive use.⁴ However, it also explained that Basin Electric was not required to analyze a change in return flows to the foreign basin for adverse effect:

In the usual situation where return flows feed the stream an appropriator would be allowed to change only the amount of his consumptive use because other appropriators would otherwise be injured. In this respect, the consumptive-use and return-flow factors overlap. Where there are no return flows to the stream, as is the situation here with respect to application of water below the divide, the return-flow factor has no relevance. Nevertheless, the consumptive-use factor must still be applied to determine the amount of water which can be transferred. Any other construction would render the consumptive-use requirement of the statute meaningless. Although of less importance in the normal return-flow situation, the consumptive-use limitation becomes significant in cases like that presented here and in other cases where there is a disparity between actual usage and adjudicated rights.

⁴ §41-3-104, W.S. states in relevant part: "The change in use, or change in place of use, may be allowed, *provided that the quantity of water transferred* by the granting of the petition *shall not* exceed the amount of water historically diverted under the existing use, nor exceed the historic rate of diversion under the existing use, nor *increase the historic amount consumptively used under the existing use*, nor decrease the historic amount of return flow, nor in any manner injure other existing lawful appropriators. ..." (Emphasis added).

Basin Electric Coop. v. Wyoming, 578 P.2d 557, 566 (Wyo. 1978). In an interesting analysis, the Court found that only that amount of water “consumed” was beneficially used. Essentially water constituting return flows in the foreign basin had gone to “waste” and was not beneficially used. Id. at 570. Because that amount of water that made up the return flows was not considered beneficial use, the Court found that Basin Electric had no right to those flows and no right to change those flows. Id.

It is not clear from the opinion in Basin Electric whether any appropriator depended on the return flows in the foreign basin. The Dissent understandably takes issue with the Majority’s equating “consumptive use” and “beneficial use,” based on the traditional understanding of duty of water which would include carriage water and acknowledge system inefficiencies. The Dissent argued that change of the portion of the water constituting return flows in the foreign basin should have been allowed because there would have been no injury to other entitled appropriators. Id. at 576.

The Wyoming Supreme Court subsequently addressed return flows and imported water in deciding whether the City of Rawlins could change the place of discharge for its treated municipal effluent:

The right of the City to use such imported waters finds its roots in the common law of property and the Puritan ethic: One who by his own effort adds to the supply of a stream, is entitled to the water even though a senior priority might be without water. A person should reap the benefit of his own efforts, and a priority relates only to the Natural supply of the stream at the time of appropriation.

These concepts are not new to Wyoming water law, since they have been applied to protect the right of a senior appropriator to recapture waste and seepage water. The lower landowner using such water merely takes his chances as to future supplies, no matter how long he uses such water.

....

We hold that in the imported-water context which gives the importer the unrestricted right to reuse, successively use and make disposition the importer's right to do these things is not subject to abandonment insofar as these defendants are concerned. It must be remembered that any other holding would be inconsistent with the fact that the defendants depend entirely on the City's sufferance it is always free to terminate the importation.

Thayer v. City of Rawlins, 594 P.2d 951, 955-56 (Wyo 1979). While the primary focus of the case was the management of sewage effluent, the Court clearly concluded on water law

principles that the state engineer lacked jurisdiction to deny the City's proposed change based upon adverse effect to juniors who relied upon return flows from the imported water. Id. at 958. Thayer v. City of Rawlins further suggests that an importer is not restricted to its original consumption as previously held by the Wyoming Court in Basin Electric.

D. Utah

In contrast, the Utah Supreme Court recently expressed grave concern regarding a water user's argument that it was entitled to recapture its own imported water return flows from an irrigation project without regard to injury to subsequent appropriators. Strawberry Water Users Association v. USBOR, 133 P.3d 410 (2006). However, the issue was not before the Court for decision and, therefore, was not decided.

The majority of other western states treat imported water differently than non-imported water. In those states, an importer is entitled to recapture and re-use return flows from imported water without regard to subsequent appropriators. This special treatment appears to be rooted in statute, or rooted in the early case law of the respective states. No similar statute exists in Montana. Importantly, the rule adopted in other western states conflicts with the Montana Supreme Court's analysis and conclusions in Popham, Rock Creek and Mannix.

IV. DEPARTMENT DECISIONS ON IMPORTED WATER

Department decisions regarding imported water and return flows have reached different results depending upon how the issue was framed in the proceeding. In Matter of the Application for Beneficial Use Permit No. 19804-S41I by City of Helena, Final Order (1982) the Department considered whether the City could obtain a permit to appropriate water which was originally imported by the City, after it had left the city's control and reached a natural watercourse where it was appropriated by others. The analysis explained that subsequent appropriators were entitled to maintenance of stream conditions substantially as they existed at the time of their appropriation. It continued, concluding that return flows from imported water were part and parcel with the stream and that the objector's appropriations included "wastewater" from the water imported by the City as part of the source of supply. City of Helena, Final Order, at Pgs. 1-2.

While the analysis in City of Helena recognized the policy reasons for treating imported water differently citing Denver v. Fulton Irrigation, it rejected the proposition that an importer

was entitled to the exclusive use of all imported water under Montana law. City of Helena, Final Order, at Pg. 3. With regard to the extent of an importer's right to use of imported water, City of Helena relied upon Rock Creek explaining:

the Court therein characterized such trans-basin diversions as yielding nothing more than the typical usufructory interest in these foreign waters. That is, the importer does not own the corpus of the water, but only the right to use the same for some defined purpose. . . . Since the importer of water into new drainage basins has only that interest in the water that is typical of any appropriator, the same principles govern each such water user insofar as they relate to the scope of his water claim.

City of Helena, Final Order, at Pg. 4. While the decision recognized that the objector's rights were subject to the City's privilege to abandon its use (thus discontinuing the return flow source) it concluded that the City did not have the right to expand its use of the imported water in a manner adversely affecting other water users in the foreign basin. City of Helena, Final Order, at Pgs. 4-5.

The analysis in City of Helena suggests that while an importer may not be compelled to continue importing water, so long as an importer continues to beneficially use the imported water, any change in use is subject to the same adverse effect analysis as a change to any other water right. However, City of Helena does not squarely answer the question presented, as the issue in that case was whether the City had the right to a permit to appropriate return flows from its imported water, not whether the City could move the place of use for the imported water thus cutting off return flows in the foreign basin.

In Matter of the Application for Change of Appropriation Water Right No. G115754-43D by Thayer, Final Order (1991), the Department considered whether the objector to a proposed change had a vested right in return flows from an applicant's use of imported water. Thayer explained that were the applicant proposing to recapture and reuse previously abandoned return flows, the loss of return flows to the foreign basin would be considered adverse effect under the law. Thayer, Final Order, at Pg. 5. However, Thayer found the fact that the applicant only proposed to move the initial place of use was pivotal to the inquiry. It cited Rock Creek and Mannix for the proposition that the exclusive use of imported water (water that but for the action of man would not in the natural course of events be available to the source) belongs to the person whose labor has created it. It concluded subsequent appropriators could not compel the

continuation of return flows from imported water solely for their benefit citing Newton v. Weiler, Popham, and Galiger. Therefore, the objectors could not be adversely affected by diminishment of those return flows by a change in the place of use.

Most recently in Application to Change Water Right No. 76F-30047783 by Bignell Ranch, Proposal for Decision (2010), the Department cited Thayer and Galiger for the proposition while a water user may obtain the right to return flows from water imported from another basin, he cannot be guaranteed or compel continued return flows from the imported water. Therefore, return flows from imported water in the foreign basin need not be analyzed for adverse effect purposes a change proceeding. This conclusion was based in part upon its interpretation that:

The practical effect of *Galiger* was that the subsequent irrigators in Bivens Gulch could make an appropriation of the mining operation waters *after those waters ran through and were used beneficially by the mining operation*, but they could not compel (or contract for) the continuation of those waters when the mining operation was idle. The reasoning in *Galiger* comports with the reasoning in Montana's seepage cases in that waste and drainage water may be appropriated by a lower appropriator from a watercourse or drain ditch, but such an appropriator cannot compel his source to continue the use which produces those flows.

This interpretation appears to expand the effect of Galiger beyond what was held by the Court as explained above. In Galiger, the Court held that an importer could not divert from the source of origin more water than its historic use required for sale to others in the foreign basin. Whether water users in the foreign basin were entitled to appropriate and rely upon return flows consistent with the importer's historic use was not decided by Galiger.

Thus, while City of Helena concluded that imported water is subject to the same limitations as any other Montana water right based upon Rock Creek and Galiger, Thayer and Bignell Ranch reached a different conclusion based in large part on the same decisions. Thayer and Bignell Ranch appear to misinterpret early case law principles regarding wastewater, seepage, and developed water by applying those principles to imported water. Neither Rock Creek nor Mannix provide that an importer is entitled to the exclusive use of imported water. To the contrary, both cases indicate that imported water is subject to the same rules of appropriation as non-imported water. As discussed in more detail below, the principles cited by Thayer and

Bignell Ranch regarding wastewater and seepage apply equally to imported and non-imported water, but do not apply to return flows.

V. OTHER ISSUES REGARDING IMPORTED WATER

As discussed above, the question regarding return flows from imported water has not been squarely addressed by the Montana Supreme Court. Other states have, by statute or case law, applied a special rule to an original appropriator's use of imported water, and a subsequent appropriator's right to continued return flows. Department decisions have landed on both sides of the argument. City of Helena provides that imported water is not entitled to any special treatment. In contrast, Thayer and Bignell Ranch provide that while the importer may not expand their use, a change in place of use cannot adversely affect subsequent appropriators in the foreign basin because the subsequent appropriators cannot compel the continued importation of water.

Application of the holdings in the above cited cases to the question presented is further complicated by the current and more advanced understanding of groundwater, return flows, seepage, and wastewater. Importantly, the above cited cases must be put into the context of the advancements in the understanding of hydrology since the time the cases were decided.

A. *Changes in understanding of hydrology*

The majority of the Montana Supreme Court cases cited above were decided before one could acquire an appropriation right for any form of groundwater. At that time very little was known about the interaction between ground and surface water. Therefore, groundwater was not subject to appropriation:

The secret, changeable, and uncontrollable character of underground water in its operations is so diverse and uncertain that we cannot well subject it to the regulations of law, nor build upon it a system of rules, as is done in the case of surface streams.

Ryan v. Quinlan, 45 Mont. 521, 532, 124 P. 512, 515(1912) and Woodward v. Perkins, 116 Mont. 46, 147 P.2d 1016, 1019(1944). Likewise, groundwater was only considered tributary to surface water and subject to appropriation and protection as such upon proof of the existence of an underground stream directly contributing to surface water. Ryan, 124 P. at 515. All other groundwater was considered to be part and parcel with the land under which it was found for ownership purposes. Thus, the recognition in Rock Creek and Popham of a landowner's right to

use or recapture water while it remained on his property without consideration of other water users was consistent with water law and existing understanding of hydrology at the time.

As the understanding of groundwater and the connection between ground and surface water evolved, so did the law. For example, the Montana Ground Water Code of 1961 was enacted and for the first time created a clear protectable right for the appropriation of groundwater. A landowner's ownership interest in groundwater terminated with the passage of the Montana Ground Water Code. Moreover, the Code implicitly recognized the connectivity between surface and groundwater, providing: "as between all appropriators of surface or groundwater on and after January 1, 1962, the first in time is first in right." This language clarified that a senior surface water user had priority over the subsequent appropriation of tributary groundwater.

In Perkins v. Kramer, the Montana Supreme Court concluded that the distinctions drawn between ground and surface drawn in early cases must be applied in a manner consistent with modern hydrologic principles:

Modern hydrological innovations have permitted more accurate tracing of groundwater movement. For this reason, we feel that traditional legal distinctions between surface and groundwater should not be rigidly maintained when the reason for the distinction no longer exists.

148 Mont. 355, 363, 423 P.2d 587, 591(1966). The Supreme Court's more recent decision in Montana Trout Unlimited v. DNRC, 2006 MT 72, 331 Mont. 483, 133 P.3d 224, further reflects how Montana water law has evolved with the more exacting understanding of hydrology. The Trout Unlimited Court concluded that it was an error for the Department to ignore the wealth of knowledge regarding hydrology and connectivity in its administration of the MWUA.

Montana water law expert Al Stone questioned whether the principle set forth in early case law regarding the right to recapture or reuse water that has seeped into the ground but remains on one's property remains valid. Stone explained that the adoption of groundwater appropriation statutes along with the more advanced understanding of hydrological principles regarding the interaction between surface and groundwater has made the distinction in the appropriation of ground and surface water cited in early case law largely irrelevant. Montana Water Law, Albert Stone, Pg. 67 (State Bar of Montana 1994).

When considering the analysis and right to waste, seepage, and return flows discussed in early cases, one must be cognizant of the rudimentary understanding of groundwater that existed at the time the imported water cases above were decided. Thus, while Rock Creek and Popham provided that the imported water was only subject to appropriation and protection from interference once it reached a surface water source in the foreign basin, this may not be applicable considering current understanding of hydrology.

B. Developed Water versus Imported Water

The distinction between “developed water” and “imported water” is worth noting, as the Department’s analysis in Thayer appears to extend principles regarding developed water to imported water. Developed water traditionally referred to non-tributary groundwater that contributed to surface water due to the labor of the water user who developed the water for the purpose of augmenting surface water flows. Montana Water Law, at Pg. 62-63 (“Commonly the term applied to groundwater pumped into a stream [where it was not recognized as being naturally tributary to the stream], or water drained from sloughs or swamps.”) It must be remembered that the notion of developed water came to be at a time when little was known about the interaction between ground and surface water and groundwater was presumed to be non-tributary to surface water.

Al Stone noted that due to the increased recognition of the interrelationship between ground water and surface water, it is unlikely a valid developed water argument can be made today. Montana Water Law, at Pgs. 62-63. “Developed water” appears to be a fiction created by the limited understanding of hydrology at the time. Stone opines that similar to imported water and water used within the basin of origin, once developed water has served the developer’s originally intended use any residual water is treated as part of the natural flow and subject to existing priorities. Montana Water Law, at Pg. 65.

On the other hand, Ted Doney opined over a decade earlier that an appropriator is only entitled to the “natural” condition of the source of supply and may not demand continued supply from water “developed” by someone else’s labor. Montana Water Law Handbook, Ted J. Doney, Pg 75-76 (State Bar of Montana 1981). Thus, similar to Thayer and Bignell Ranch, Doney suggested that return flows may be treated differently purposes of evaluating adverse effect depending upon the nature of the water involved.

This proposition is arguably supported by the holding in Beaverhead Canal Co. v. Dillon Electric Light & Power Co., 34 Mont. 135, 85 P. 880 (1906), in which the Court concluded that the rights of a subsequent appropriator are “limited to the natural condition of the stream at the time the appropriation is made, he has no interest in improvements subsequently made which increase the supply of water flowing in it.” The Court explained:

When an appropriation is made of the water of a stream, the rights of the appropriator are limited to the natural condition of the stream at the time the appropriation is made, and he has no interest in improvements subsequently made which increase the supply of water flowing in it. Therefore, if by his own exertions another increases the available supply of water in the stream, he has a right to appropriate and use it to the extent of the increase. This rule does not apply to mere removal of obstructions or hastening of water, so that the actual amount of water which passes along the stream is not increased, but only to cases in which a supply of water is added to the stream which would not otherwise have flowed there.

Beaverhead Canal Co., 85 P. at 882. While the Court used the term “natural condition” in its analysis, it appears to be referring to the existing condition of the source at the time of an appropriation rather than its natural condition prior to any human alterations.

Regardless, more recent Montana case law discussing the “natural” condition of a stream suggests that Doney’s opinion should be limited to “developed” water in its purest sense (the artificial increase of a stream occasioned through the exertions of man directed to that end). The Montana Supreme Court recently recognized that virtually all Montana water bodies flow in their current manner due to manipulation by man and, therefore, it is inappropriate to use a technically precise definition of “natural” when applying Montana’s 310 Law and Stream Access Law. Bitterroot River Protective Association v. Bitterroot Conservation District, 2008 MT 377, ¶¶ 31-46, 64-85, 346 Mont. 507, 198 P.3d 219.⁵ In reaching its holding, the Court relied upon Popham and Hidden Hollow Ranch v. Fields for the proposition that return flows contributing to a

⁵ “However, the conclusion that natural, perennial-flowing streams must have flows which have never been diverted, impounded, appropriated or otherwise manipulated by man was incorrect. That definition is unreasonably narrow as inconsistent with the 310 Law and the extensive, man-impacted condition of the state’s waters. The Mitchell flows continuously through significant portions of a historic channel, includes flows from groundwater, springs, return flows and precipitation, and includes waters exceeding what are necessary to serve seasonal irrigation rights and other beneficial uses. Such excess waters are a state resource.” Bitterroot River Protective Ass’n, Inc. v. Bitterroot Conservation Dist., ¶46.

watercourse must be considered part and parcel with a stream when determining whether a stream is a natural perennial flowing stream regardless of the water's original source or whether the water was tributary before manipulation by man. Id. In doing so, the Court confirmed through analogy that for purposes of the MWUA, the "natural condition" of a source referenced in Popham in fact means the condition of the source at the time a junior makes an appropriation, including return flows and seepage from imported water, rather than a technically pure definition of "natural" condition. Popham, 275 P. at 1102 ("where such waters did not originally collect and flow down the channel, if through the instrumentality of man they have been made to do so and, through years of so flowing have acquired a permanent character as the natural drainage of the basin, the original manner of the creation of the stream is immaterial; it is a 'water course' with all the attributes of one wholly natural").

Ultimately, whether the law provides one who develops water with the exclusive use of developed water is largely irrelevant to the current inquiry regarding imported water. Rock Creek concluded that surface water imported from one basin to another did not constitute developed water under Montana law:

One cannot be said to have developed water who has diverted it from a running stream and has conveyed it elsewhere. The idea of developed water connotes obtaining subsurface waters which have not theretofore been available. In other words, the rule of developed water contemplates the increase of a stream occasioned through the exertions of man directed to that end, and does not contemplate accessions to the stream through the processes of nature, as by percolating waters.

Rock Creek, 17 P.2d at 1078.

Thus, unless an applicant demonstrates that a proposed change involves water artificially developed to increase the flow of surface water for that purpose, there appears to be no basis for treating return flows from imported water differently than return flows from non-imported water. Importantly, when considering subsequent appropriations of imported water return flow, Montana case law indicates that the inquiry should focus on whether the return flows were a source of supply in the foreign basin at the time of the appropriation, rather than whether the water was always "naturally" tributary.

C. Wastewater and Seepage

The Department's decisions in Thayer and Bignell Ranch cite Popham and Newton v. Weiler for the proposition that one who relies upon return flows from imported water may not compel the importer to continue the activity that augmented the natural flow of the source of supply, characterizing the augmentation of natural flows as a windfall. However, there are a number of important aspects of Popham and Newton that Thayer and Bignell Ranch overlook.

In Newton v. Weiler, the plaintiff sought to prevent the defendant from interfering with wastewater flows from the defendant's land, which the plaintiff had subsequently appropriated by digging a drain ditch to collect the water. 87 Mont. 164, 286 P. 133, 139 (1930). The Court concluded that that the plaintiff made a valid appropriation of the wastewaters flowing to her land from the land of defendant citing Popham. However, it concluded that the Defendant, as the proprietor of his land, had the right to use his land as he pleases, and has the right to change the flow of the wastewaters thereon in the reasonable enjoyment of his own property, subject to the limitation that the use must be without malice or negligence. Id. Of note, the wastewater at issue in Newton was not the bi-product of imported water and was appropriated by the plaintiff before it reached a watercourse.

The water at issue in Popham was seepage from the canal and the water at issue in Newton was wastewater. Neither case appears to have involved "return flow" as defined by Department rule. Moreover, this limitation regarding the appropriation of waste and seepage does not depend upon whether the water is imported. It applies equally to imported and native water. Indeed, Newton did not involve imported water at all.

Moreover, at the time Popham and Newton were decided only surface water was subject to appropriation and protection: "These rules, however, apply to surface or wastewater while outlawed and before it reaches or forms a stream flowing in a natural channel; it loses its character as vagrant fugitive water when it collects in a natural lake or stream." Popham, 275 P. at 1102. This language reflects that at the time Popham was decided, seepage and groundwater was "outlawed" - not subject to appropriation or protection under the law until it reached a water course. A landowner could therefore do what it pleased with seepage and wastewater while it remained on their property. As noted above, groundwater is now subject to appropriation and subject to surface water priorities as tributary water, reflecting current understanding of

hydrology.

Finally, the water in Newton was appropriated by the plaintiff through a drain ditch before it reached a natural water course, unlike in Popham where the water was appropriated from Holloran Gulch. It's unclear whether the Court would have reached the same conclusion in Newton had the plaintiff appropriated the wastewater after it reached a natural water course.

The principle that a subsequent appropriator may not compel the continuation of waste or seepage has persisted as reflected in the Department's current definition of seepage and wastewater.

"Seepage water" means that part of a diverted flow which is not consumptively used and which slowly seeps underground and eventually returns to a surface or groundwater source, and which other water users can appropriate, but have no legal right to its continuance. Typical examples of seepage water include underground losses from an irrigation ditch or pond.

ARM 36.12.101(58)(emphasis added).

"Wastewater" means that part of a diverted flow which is not consumptively used and which returns as surface water to any surface water source, and which other water users can appropriate, but have no legal right to its continuance. A typical example is an irrigator who turns into the individual furrows traversing the irrigator's field from the head ditch more water than can seep into the ground. The water that stays on the surface and is not absorbed into the earth and which remains at the end of the furrow and is collected in a wastewater ditch is wastewater.

ARM 36.12.101(73)(emphasis added).

It should be noted that Al Stone questioned the validity of the proposition that a subsequent appropriator's use-based right to waste and seepage may not be enforced against the original appropriator by posing the following question: Considering that Popham was decreed a water right, why should he lose it simply because the canal company discontinues using the ditch, or seals it? Stone suggests that if the former occurs, the water user should be found to have a right to the original source from which the importer diverted the water. Should the latter occur, he should be permitted to divert water directly from the canal. He opined that a valid beneficial use and recognized water right should not be extinguished due to a change in the means of conveyance, relocation of the place of use, or some other act that diminishes return flows from imported water. Montana Water Law, at Pg. 85. However, the current question

regarding imported water does not require resolution of this question.

To the extent that Popham and Newton stand for the proposition that one cannot compel another to provide continued waste or seepage water, this principle has historically been applied equally to imported and native water. Neither case provides a basis for applying this principle to return flows, or for treating return flows from imported water differently than return flows from native water. Thus, it appears that Thayer and Bignell Ranch expanded Popham and Newton to apply to imported water (and imported water return flows) when in fact the language relied upon from those cases applied to waste and seepage.

D. Return Flow

As noted above, Department rule defines return flow as:

that part of a diverted flow which is applied to irrigated land and is not consumed and returns underground to its original source *or another source of water*, and to which other water users are entitled to a continuation of, as part of their water right. Return flow is not wastewater. Rather, it is irrigation water seeping back into a stream after it has gone underground to perform its nutritional function. Return flow results from use and not from water carried on the surface and ditches and returned to the stream.

ARM 36.12.101(56)(emphasis added). This definition suggests that the unconsumed portion of water put to beneficial use constitutes “return flow” regardless of whether it returns to the original source or another source. Thus, it would not matter if the water was imported for purposes of the Rule’s definition of return flow.

It’s worth noting that the waters at issue in Rock Creek and Mannix appear to be return flow rather than waste or seepage. In both cases, the water at issue discharged into the foreign basin after use. These cases emphasize that once imported water serves its originally intended use and leaves the control of the importer, the return flows from the imported water are to be treated the same as water naturally occurring in the foreign basin for all practical purposes, including subsequent appropriations. Mannix, 26 P.2d at 373 and Rock Creek, 17 P.2d at 1075.

Stone likewise explained that once developed or imported water has served its original purpose any return flows are treated as part of the natural flow in the foreign basin and subject to existing priorities. Montana Water Law, at Pgs. 65-66. According to Doney, the historic prerequisite that return flows reach a watercourse to be appropriable is no longer a prerequisite to the valid appropriation and protection of such water under current law. Montana Water Law

Handbook, at Pg. 21.

In addressing the amount of water available in a change or transfer, Stone explained that when the place of use is changed, the water right holder changing their water right is unlikely to receive the full amount claimed or used at the original place of use due to reliance upon return flows by other water users. Although rare, he explained that total consumption to the source of supply was most likely to occur where water was transported and used outside the basin from which the water originated citing Spokane Ranch. However, he emphasized that this does not mean return flows need not be accounted for: “But, people relying on return flow from the placer claim or other use will be protected from a change of location of use in that basin. As to them, the imported water was not consumptively used.” Montana Water Law, at Pgs. 116-17. To that junior the water was always tributary to the source.

IV. CONCLUSION

Whether return flows from the imported water in the foreign basin must be analyzed for adverse effect has not been directly addressed by the Montana Supreme Court. As is apparent from the differing opinions of Montana water law commentators, the manner in which other states have treated imported water, and the different results reached in Department decisions, an argument can be made both for and against analyzing changes in imported water return flows. The pivotal consideration is whether the right of senior importer to *change* the type or place of his use outweighs a junior appropriator’s right to continue with his *original* use in the foreign basin.

Montana case law clearly provides that:

- an importer is limited to his originally intended use and may not expand his use of imported water to the detriment of subsequent appropriators in the basin of origin or foreign basin;
- once imported water leaves the control of the importer it is subject to appropriation in the foreign basin;
- appropriation of return flow from imported water in the foreign basin is subject to the same rules of appropriation applicable to non-imported water in the foreign basin;
- one who appropriates return flow from imported water may prevent other appropriators in the foreign basin from interfering with his use; and,

- one who appropriates return flow from imported water may prevent the importer from causing adverse effect through an expansion of his original use.

Analysis of adverse effect recognizes the fundamental principle that a subsequent appropriator is entitled to maintain the condition of the source as it existed at the time of his appropriation and that a senior's proposed change in use may not substantially alter conditions on the source in a manner that causes adverse effects. Nothing in §85-2-402, MCA, limits the analysis of adverse effect to existing water rights on the original source of supply. Nor does the MWUA provide any other statutory exception to the change criteria for imported water. Importantly, none of the above Montana case law provides clear authority for treating return flows from imported water differently than return flows non-imported water. To the contrary, case law suggests that once imported water has been used for its intended purpose, return flows are subject to the same rules of appropriation as other water in the basin.

Although an argument can be made that subsequent appropriators are only entitled to water "naturally" occurring in the foreign basin, Bitterroot River Protective Association suggests that because the flow in virtually all of Montana's water courses has been altered by the activities of man, a strict definition of "natural" should not be used in application of the MWUA. Likewise, Popham, Rock Creek, and Mungas provide that where waste, seepage, or return flow from imported water acquire a permanent character as tributary to the foreign basin and are relied upon as the source and supply of water for beneficial use by subsequent appropriators, they are subject to the same rules of appropriation as all other water in the foreign basin. These cases support the proposition that return flow from imported water should be subject to the same rules for purposes of appropriation and changes as return flows from non-imported water.

The early case law principle that a junior may not compel a senior to continue providing waste or seepage water does not apply to return flows. Nor does it depend on whether the waste or seepage is derived from imported or non-imported water. While it's true an importer cannot be compelled to continue importing water and may discontinue return flows through abandonment, this principle likewise applies equally to imported and non-imported water. Thus, it appears that the Department decisions in Thayer and Bignell Ranch erroneously applied these principles regarding wastewater, seepage, and abandonment when they concluded a change in imported water return flows could not adversely affect appropriators in the foreign basin.

While the developer of water theoretically has a superior right to the use of “developed” water, Montana case law has rejected the proposition that waste, seepage, or return flow from surface water diverted from one basin for use in another constitutes developed water. Given the advancement and current understanding of hydrology, tributary water, and ground/surface water connectivity, it’s doubtful that true “developed water” actually exists.

Any attempt to treat return flows from imported water differently than return flows from non-imported water would require the Department to make a determination regarding what constitutes a “basin” for purposes of defining imported water. Aside from the technical difficulty and potential for inconsistency of making such case-by-case determinations, the Montana Supreme Court has concluded the location of the original source is not a determinative factor when resolving conflicts involving imported water. For example, in Popham the Court concluded that the original source of the imported water – which was 50 miles distant from Holloran Gulch – was irrelevant in determining the rights of subsequent appropriators in the foreign basin. In Rock Creek and Mungas, the Court similarly concluded that the fact that the water at issue was imported from another basin did not provide the basis for applying a different rule of appropriation to the importer or subsequent appropriators in the foreign basin. Accordingly, a basin based approach for treating return flows from imported water differently in a change proceeding is inconsistent with prior case law.

Special treatment of imported water in other states is based upon statute or early case law in those jurisdictions. No Montana case law or statute provides a similar exception. While those states cite valid policy reasons for treating imported water differently (which are often cited by change applicants in Montana), there are equally important policy reasons for treating changes to imported water and non-imported water the same.

For example, depending upon how narrowly or broadly a basin is defined for purposes of defining imported water, the existing flow in many of Montana’s rivers likely relies upon return flow from imported water. Indeed, many irrigation projects have imported water into foreign basins since early in Montana’s statehood such as those discussed in Rock Creek and Popham. A change in use of water that has been imported into a foreign basin for decades has the potential to significantly impact flows that have existed and been relied upon by other waters users for decades. To summarily ignore the impacts of such changes could drastically change the

condition of Montana's water resources supplied through return flows from imported water. Accordingly, the policy reasons that support providing an exception to the adverse effect analysis for imported water return flows based upon the fruits of the importer's labor must be weighed against the time, labor, and resources invested by subsequent appropriators who appropriated and put to beneficial use water that was part of the source of supply in the foreign basin at the time of their appropriation.

The potential effect of the Department's treatment of imported water should be considered in light of the multiple closed basins in the State, the protection of existing uses provided for by the MWUA, the advancements in the current understanding of hydrology, and recognition that virtually all of Montana's waters have been altered or manipulated by man. When these factors are considered in conjunction with the Montana case law discussed above, there appears to be stronger support for the proposition that imported water should be treated the same as non-imported water when analyzing return flows and adverse effect in a change proceeding.

Instream Flow Memo

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



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MEMORANDUM

To: WRD Managers
From: John E. Tubbs, Administrator
Date: January 23, 2008
Re: Changes for Instream Flow Rights

In mid-December WRD staff met with representatives from TU and the Montana Water Trust to discuss how DNRC processed changes of existing irrigation water rights to instream flow rights. The concern from the two groups was that DNRC may be diminishing historic rights by taking a narrow view on what could be changed. Specifically, the concern was that only the consumptive use associated with the historic use could be changed. The end result is that even though, the historic diversion water lasted several months, by limiting the change to consumptive use, the period of time that the instream flow could be protected was reduced to a few days. For example a change was issued on the North Fork of Fridley Creek that awarded a flow rate of 4.34 cfs with the maximum volume of 78.41 acre-feet. This would appear to limit the instream flow right to less than 10 days of protection ($1 \text{ cfs} = 1.98 \text{ af/day}$; $4.34 \text{ cfs} * 1.98 \text{ af/cfs/day} = 8.59 \text{ af}$; $78.41 \text{ af} / 8.59 \text{ af} = 9.1 \text{ days}$). Historically, the water was diverted over the irrigation season.

After discussing the issue, we reached agreement that the concerns had merit. The example below is intended to initiate a review of how we evaluate instream flow change applications. To develop the approach I make several simplifying assumptions in the example. I assume **full service irrigation and maximum management efficiency**. Thus, there are several issues that I do not try to resolve; for example how historic use is proven, historic practices where landowners shut off diversions for haying operations giving neighbors a chance to irrigate, and how instream flows are protected down stream of the historic diversion. In other words there is still work to be done.

Also, when you read the example assume the applicant and the department have agreed on historic use and the system is simple so that protection of the water right downstream

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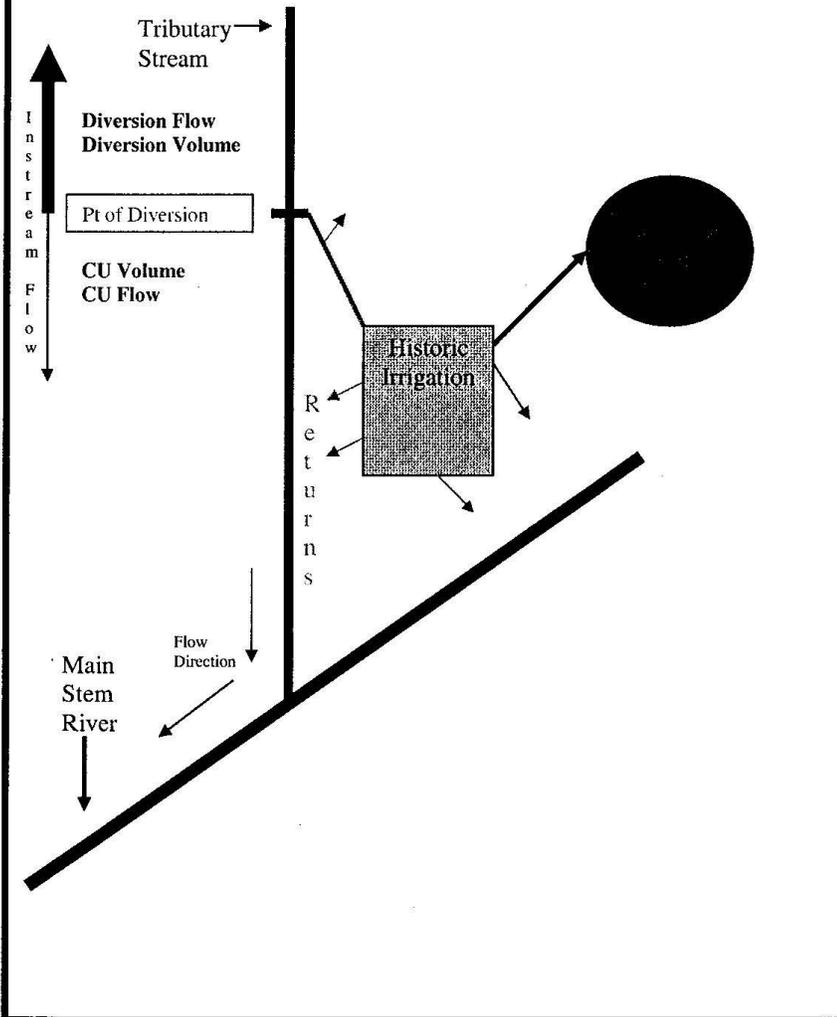
of the historic diversion is not an issue on the tributary stream. I assume that no protection is afforded to the main stem. I worked with Mike Roberts to assure that I was using defensible figures as to consumptive use and return flows in the example. Mike provided the analysis using two approaches: an NRCS program called Irrigation Water Requirements (IWR) that uses the Blaney-Criddle method to estimate monthly and seasonal irrigation requirements and use of the Irrigation Guidelines, also developed by the NRCS (SCS) and included as water use standards in the new appropriations rules (36.12.115).

There are three key points that I want managers to discuss and ultimately use to shape a new approach to these types of changes (see points below). If we fashion a policy based on these concepts I believe we will be consistent with statute and will not be diminishing the historic rights that are being changed.

- The historic right includes all components identified in the graphic: the historic flow and volume diverted, the historic volume and flow consumed (both by the use and other losses to the system), and returns to the system;
- At the historic point of diversion, the historic flow and volume diverted can be protected if the change application supports the need for this flow and volume for its new instream flow beneficial use.
- Below the historic point of diversion, the historic consumptive use can be protected downstream to the confluence in this example. (It is still up for debate how far down a river course this right can be protected.)

This memo begins the discussion on changes to instream flow. The team working on historic use and consumptive use methodologies will take the memo into their overall analysis of how we are processing changes.

Key Elements of a Water Right In a Change Application to Instream Flow



Instream Flow Change Example – Consumptive Use

Water Right Conditions:

Historic flow = 10 cfs
Period of use = May 1 to August 31
Days of continuous flow = 100
Historic Volume diverted = 1983 af

IWR - Alfalfa:

Assumptions: Helena (from Climatic Area III)
Net irrigation requirement (80% exceedance or dry year) = 19.61" or 1.63'

Ditch losses:

Phreatophyte consumptive use of ditch water* = 0.6 % of total volume
Ditch length = 2 miles
Evaporative loss** from ditch = 4.5 af

Consumptive Use:

Crop use 640 acres * 1.63' = 1043.5 af
Phreatophyte use 1043.5 af * 0.006 = 5.8 af
Ditch evaporation = 4.5 af
Total consumptive use = **1053.8 af**

1053.8 af / 100 days = 10.54 af/day divided by 1.983 af/cfs = **5.32 cfs**

Irrigation Guidelines - Alfalfa

Assumptions: Climatic Area III
Sprinkler irrigation = 70% efficient
Water ditched from source to pumping pit
Net irrigation requirement (dry year) = 2.41' = 28.92" * 0.70 = 20.2"/12 = 1.69'

Crop use 640 acres * 1.69' = 1081.5 af
Phreatophyte use 1081.5 af * 0.006 = 6.5 af
Ditch evaporation = 4.5 af
Total consumptive use = **1092.5 af**

Historic Consumptive Flow Right Below the Diversion:

1092.5 af / 100 days = 10.93 af/day divide by 1.983 af/cfs = **5.51 cfs**

* see Robinson (1970) via Dalby/Roberts memo to FWP, 6/21/07

** evaporative loss based on Helena pan evaporation for 4 month period
30 inches * 0.75 pan coefficient = 22.5"
22.5 inches/yr (for 120 day period) * 2.4 acres (2mi * 10') = 4.5 af

Assessment of new consumptive use and irrecoverable losses associated with change applications

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION Water Resources Division



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MEMORANDUM

Date: April 15, 2013

To: Tim Davis, Administrator, Water Resources Division

From: James Heffner, Hydrologist, Water Management Bureau

Mike Roberts, Hydrologist, Water Management Bureau

RE: Assessment of new consumptive use and irrecoverable losses associated with change applications.

Per recent rule adoption in October 2012, the Montana Department of Natural Resources and Conservation (DNRC) now provides the analysis for historic consumptive use and diverted volume for change applications. As part of the review of change applications, DNRC new appropriations and hydrologist specialists are tasked with determining the difference in consumptive use between historic and new uses. Clarification of how DNRC assesses two specific issues during this process is necessary to ensure an appropriate, technical, consistent approach is utilized by all staff.

The purpose of this memo is to address considerations for how DNRC should proceed with the assessment of change applications as it pertains to these issues:

- 1) **Modern Management Factor:** Pursuant to ARM 36.12.1902, the Department applies a management factor when determining historic consumptive use to provide a reasonable estimate of actual crop use. For an application to change water rights, a management factor (see Appendix A) should be applied to new uses as well.
- 2) **Irrecoverable Losses:** Assessing consumptive use losses associated with irrigation diversion and application that are not tied directly to crop use should be considered. Based on existing documentation quantifying irrecoverable losses for flood and sprinkler irrigation, and absent any additional information, irrecoverable losses of 5% (of field application) should be assumed for flood and 10% (of field application) should be assumed for sprinkler irrigation.

For both issues discussed, an applicant always has the opportunity to submit evidence pertaining to management factors and irrecoverable losses with the Historic Use Addendum.

(1) MODERN MANAGEMENT FACTOR

DNRC determines the historic consumptive use for an application to change water rights by implementing a methodology that calculates the net irrigation requirement using the Natural Resources and Conservation Services Irrigation Water Requirements (IWR) Program (ARM 36.12.1902). The net irrigation requirement, which is a value that represents the maximum amount of water the crop could use under ideal water management and water availability, is then reduced to a more realistic value using a management factor based on actual crop production as reported by the National Agriculture Statistics Service (NASS). To develop this management factor, the DNRC used NASS data from 1964 to 1973 as representative of historic (pre-1973) water use. To compare consumptive use for an application to change water rights, DNRC should apply a modern management factor to realistically represent modern consumptive use. The application of such a factor would allow for a more comparable assessment of historic and new use. Should a modern management factor be applied, a 10-year base period would provide consistency with the historic use management factor. Based on NASS data availability, the most appropriate continuous period for a modern management factor is 1997-2006. These data would be presented as another column to the existing IWR Data table and are shown as an example in Appendix A of this memorandum.

(2) IRRECOVERABLE LOSSES

During the review process of an application to change a water right, DNRC implements the historic consumptive use rules (ARM 36.12.1902), unless the applicant has provided additional evidence through a Historical Water Use Addendum. These rules provide the amount of water consumed through evapotranspiration (ET) by crops during irrigation. There are evaporative losses associated with irrigation systems that are not accounted for in these rules. These losses, referred to as irrecoverable losses because they represent water not used by the crop, yet are removed from the system, include:

- Evaporative Losses at the Field – Flood Systems
- Evaporative Losses at the Field – Sprinkler Systems
- Evaporative Losses during Conveyance

A more detailed discussion of these irrecoverable losses is presented in the following pages.

Evaporative Losses at the Field - Flood Systems

Information for evaporative losses (standing water) at the field is limited for surface irrigation systems (flood/furrow). After searching for references in the literature, only four distinct sources were found – a series of studies performed by the USDA Agricultural Experiment Stations in the early 1900's (cited by others); a Kansas State University Extension Service publication with an estimate of losses for a furrow system, a recent guidance document from the Washington State Department of Ecology (Ecology) – based on a conference held in 2005, and a 2012 Food and Agricultural Organization (FAO) document – FAO 61.

The USDA experiments examined the different components of ET and potential management options designed to minimize evaporation. Among the results were two of particular interest for this endeavor: 1) an estimate of bare soil evaporation; and 2) an estimate of potential reduction in evaporation using furrows. Bare soil evaporation is generally included as part of total evapotranspiration. However, as used in the document, bare soil evaporation also appears to include free water evaporation that is associated with early ponding and surface storage. In the experiment, the first three days of soil evaporation closely follow free water evaporation. If this is assumed to be the period of inundation, then an average loss to evaporation from standing water on a flooded field could be estimated as approximately 10% (for example, 0.6 inches evaporated, 6 inches applied).

A second approach to estimating losses from the existing literature would be to use the potential reduction in evaporation by furrows (from the USDA experiments) in conjunction with the estimated evaporative losses provided in the Kansas State University Extension document. The losses from the latter include evaporation from the furrows, runoff water, and the tail water pit and were estimated to be approximately 3%. If the use of furrows reduces evaporative losses by 33% to 66% compared to the first 3 days of flood irrigation (much of the possible reductions occurred in the first week), and conversely flood irrigation results in 1.5 to 3 times more evaporation than furrow irrigation, this results in flood evaporation estimates of approximately 4.5 to 9%.

A third approach providing a value for evaporation from surface irrigation systems is to evaluate the assumptions found in the recent guidance documents from the Washington State Dept. of Ecology and the FAO. The Ecology document was the final outcome of a conference of irrigation experts from the government, academia, and the private sector. While the discussions themselves are not documented, per the guidance document the experts all agreed that 5% consumptive loss component was reasonable for any above-ground application, including flood systems. Similarly, the FAO document, when estimating deep percolation losses, assumed up to 5% evaporative losses from surface irrigation systems (furrow, border, and basin).

Finally, another approach is to find an estimate of free-water evaporation and estimate seasonal evaporation based on a 3 day inundation period. Applying the Penman-Linacre approach (see Potts, 1988) in conjunction with 1981-2010 data (from 181 weather stations in Montana) results in a maximum monthly evaporation rate of 5.78 mm/day (0.23 inches/day) and a minimum rate of 2.00 mm/day (0.08 inches/day) for the irrigation season (April to October). This in turn results in an evaporation estimate of

0.24 to 0.69 inches per irrigation. Assuming an application of 16 inches (4 inch irrigation, 25% field efficiency), this in turn produces estimated losses of approximately 1 to 4%. Assuming an application of 10 inches (4 inch irrigation, 40% field efficiency), the estimated losses would be approximately 2 to 7%.

Evaporative Losses at the Field - Sprinkler Systems

Research on evaporative losses from sprinklers is considerably more robust, but no less variable in the range of possible values. Again, depending on environment, system design, and management, evaporation from sprinklers can range from near 0% (LEPA Pivot under ideal conditions and flawless management) to 45% (impact sprinklers under low humidity, high temperature, and windy conditions).

Author	Location	Estimates	Notes	Reference Type
Christiansen (1942)	California	10% - 40%	Single nozzle	Secondary ¹
Frost and Schwalen (1955)	Arizona	Up to 35-45%	Under extreme conditions	Secondary ²
Kraus (1966)	Unknown	3 -17%		Secondary ¹
Clark and Finley(1975)	Texas	< 10% - 30%	< 10% when wind < 10 mph	Secondary ¹
Spurgeon, et al (1983)		Up to 30%		Secondary ³
Steiner, et al. (1983)	Kansas	15%		Primary
Edling (1985)		0.5-20%	Modeling	Secondary ²
Kincade and Longley (1989)		2-3%	Even under high temp, low Rh	Secondary ²
Keller and Bliesner (1990)		5-10%	Moderate conditions	Secondary ²
Schneider and Howell (1993)	Texas	1-3%	Air losses only	Primary
Thompson, et al. (1993)		<1%		Secondary ²
Hill (1994)	Utah	8-45%	12% typical	Primary
National Engineering Handbook		<10-50%	<10% typical (evap and drift)	Primary
Kincaid, et al (1996)		5-40%	10%-20 typical	Secondary ²
King and Kincaid (1997)		3-20%	3-10% below 6 ft, wind <10mph	

¹Cited in Steiner, et al (1983)

²Cited in Uddin, et al (2010)

³Cited in McLean, et al (2000)

With regard to local information, an often cited source is an extension publication titled “How Much Irrigation Water Do You Lose When It’s Windy” (2000). This document, in turn is based directly from an Australian Farm note publication describing the effects of wind on high pressure sprinklers in Perth, Australia.

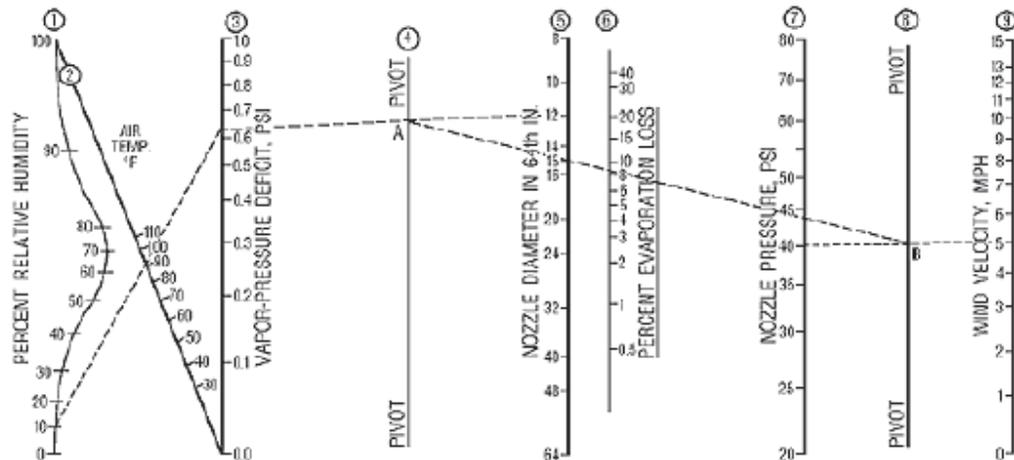
With regard to these studies, there are a few issues to keep in mind:

- a) Given the wide range of studies, the methods used and errors associated therein (catch cans), difference in sprinkler systems analyzed, and difficulty in parsing out and categorizing evaporation components (strictly evaporation versus part of evapotranspiration), values in the upper range should be viewed with caution.
- b) Evaporative losses are a factor of relative humidity, wind speed, and temperature. While high values may be observed at short temporal scales, they seldom exist consistently throughout the irrigation season. High temperatures are typically limited to daylight hours in the late irrigation season, and do not extend to spring irrigation. Likewise, relative humidity varies during the day as well as by month. Average monthly wind speeds exceed 10 mph (from Clark and Finley, 1975) in certain areas of the state – primarily east of the divide; but sometimes not during the irrigation

season, and sometimes only in the spring. An example of this can be seen from wind data taken from the Two Dot Wind Farm location (DEQ). The average wind speed (corrected for a height of 10 feet) is 10.8 mph. However the actual monthly distribution shows lower average wind speeds during the height of the irrigation season and wind speeds exceeding the 10 mph threshold outside of the irrigation season.

Sheep Valley monitoring site (Two Dot Wind Farm)											
Monthly Average Wind Speed (2001-2002 data, corrected for height of 10 feet)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
15.5	16.3	11.0	10.4	10.0	8.5	7.5	7.0	8.1	12.3	10.8	12.9

- c) While environmental conditions are a factor in evaporative losses, so is the system design. In many cases, new center pivot sprinkler systems can and are designed to minimize evaporation, through low pressure application in conjunction with large nozzle diameters. On the other hand, older high pressure systems or new systems specifically designed to be inefficient (wastewater disposal) could have higher evaporation rates. This is best illustrated in the nomograph developed by Frost and Schwalen (1955, 1960) which illustrates the various factors and some accommodations that can be made in sprinkler design to counteract the environmental conditions.



After Frost and Schwalen (1955, 1960)

In the example above, a relative humidity of 10% and an air temperature of 90 degrees Fahrenheit result in a vapor pressure deficit of ~.63 PSI. Taken with a nozzle diameter of 15/16th of an inch, this results in Pivot point A. Likewise, a wind velocity of 5 mph and a nozzle pressure of 40 PSI results in Pivot point B. When the two Pivot points are connected with a line, the resulting prediction of evaporation loss is approximately 8%.

The same nomograph can also be applied to known environmental data in the state of Montana (for eight sites where the necessary historic climate data is readily available) to provide a range of possible evaporative losses. Evaluating each of these sites during the month of July, generally under conditions most conducive to evaporation (lowest daytime relative humidity, highest average monthly temperature), yielded maximum evaporative losses ranging from 5% (western Montana) to 8% (eastern Montana). These estimates are based on the use of a low pressure delivery (nozzle pressure of 20 psi), which is consistent with the sprinkler design in the Swanz application (near Judith Gap which has relatively strong and consistent wind speed and the location of a commercial wind generation facility). As no information regarding nozzle size was available, the smallest size was selected for comparison, which increases the possibility for evaporative losses. Losses could be further reduced based on nozzle selection. To be clear, these values represent maximum daytime evaporative losses assuming new center pivot construction (~80-85% efficiency) with low pressure delivery at low elevation (drop tubes). Older pivots with high pressure delivery at greater elevation would likely be less efficient (~70%) and incur greater evaporative losses. Likewise, pivot systems designed specifically to be inefficient (wastewater disposal) would also have higher evaporative losses.

(Return flows-Deep Percolation from Sprinklers)

The application efficiencies above imply that there are return flows from sprinklers (including pivots). As with evaporative losses for flood irrigation, there is little information and a wide range of estimates of deep percolation losses from sprinklers. At the low end, is the assumption of negligible or near 0% lost to deep percolation (LEPA Pivot under ideal conditions and flawless management). At the upper end are the results from the Utah field evaluations (Hill, 1994) which produced a range for all sprinklers of 8 to 37%. If only low profile or low pressure pivots are examined, the range narrows to 8 to 16%.

Author	Location	Estimates	Notes	Reference Type
Schneider and Howell (1993)	Texas	0%	Assumed	Primary
Hill (1994)	Utah	8-37%	8-16% for center pivots	Primary
FAO 61 (2002)		10-15%	Continuous Move	Primary
Stonestrom, et al. (2003)	Nevada	8%	Center Pivot – chloride tracer	Primary
Arnold (2011)	Colorado	5-14%	Center pivot	Primary

Evaporative Losses during Conveyance

Additional irrecoverable losses can also occur due to direct evaporation and evapotranspiration during the transport of water between the source and the place of use. These losses are most often realized associated with flood irrigation but can also occur with sprinkler operations that utilize ditches and pumping pits. Under most circumstances, this component of loss is less than one percent of the total volume of water diverted (Roberts and Heffner 2012) and is therefore not considered in this calculation. As always, the applicant has an opportunity to present irrecoverable ditch loss data with the Historic Use Addendum.

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Appendix A. Montana County Weather Station IWR Data for Seasonal Alfalfa Evapotranspiration and Montana County Management Factors for Historic and New Uses.

Montana County Weather Station IWR Data for Seasonal Alfalfa Evapotranspiration and Montana County Management Factor. Season ET derived from Irrigation Water Requirements Program (Dalton, 2003)

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	(Historic) Management Factor Percentage 1964 - 1973	(Modern) Management Factor Percentage 1997 - 2006
Beaverhead	Dillon	5239	18.34	20.74	63.7%	88.3%
	Wisdom	6060	7.34	9.29		
	Jackson	6480	8.35	10.30		
	Lakeview	6710	8.39	10.67		
	Lima	6583	13.75	16.01		
Big Horn	Busby	3430	20.32	22.88	55.4%	88.1%
	Hardin	2905	27.46	29.96		
	Hysham 25	3100	20.25	22.86		
	Wyola	3750	19.19	21.89		
Blaine	Yellowtail Dam	3305	28.07	31.30	58.7%	66.0%
	Chinook	2420	20.80	23.57		
Broadwater	Harlem	2362	21.62	24.27	69.2%	87.1%
	Townsend	3840	19.42	21.88		
Carbon	Trident	4040	20.64	23.31	58.3%	70.8%
	Joliet	3776	22.41	25.12		
Carter	Red Lodge	5500	15.57	18.41	38.4%	54.1%
	Ekalaka	3425	20.13	23.14		
Cascade	Ridgeway	3320	20.28	23.01	57.3%	78.8%
	Cascade 20	4600	14.12	16.63		
	Cascade 5	3360	17.90	20.75		
	Great Falls	3675	19.78	22.55		
Chouteau	Neihart	4945	12.17	15.08	52.5%	78.3%
	Sun River	3340	18.10	20.65		
	Big Sandy	2700	21.52	24.37		
	Fort Benton	2640	21.98	24.75		
	Geraldine	3130	20.30	23.27		
	Iliad	2950	21.55	24.27		
Custer	Loma	2700	22.64	25.37	54.5%	81.1%
	Shonkin	4300	13.32	16.70		
	Miles City	2628	26.68	29.55		
Dawson	Mizpah	2480	23.80	26.57	56.8%	72.0%
	Powderville	2800	24.83	27.68		
	Glendive	2076	26.01	28.99		

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	(Historic) Management Factor Percentage 1964 - 1973	(Modern) Management Factor Percentage 1997 - 2006
Deer Lodge	No weather station				See appropriate adjacent county	
Fallon	Plevna	2780	22.48	25.34	47.6%	47.6%
Fergus	Denton	3620	15.39	18.12	48.8%	68.3%
	Grass Range	3490	18.93	21.93		
	Lewistown	4167	15.54	18.44		
	Roy	3450	19.94	22.78		
	Winifred	3240	17.86	20.75		
Flathead	Creston	2949	14.97	17.81	87.6%	96.6%
	Hungry Horse Dam	3160	14.66	18.06		
	Kalispell	2972	16.45	19.03		
	Olney	3165	12.50	15.16		
	Polebridge	3600	10.20	12.50		
	West Glacier	3154	13.74	16.78		
	Whitefish	3100	15.74	18.61		
Gallatin	Bozeman Exp Farm	4775	16.84	19.55	73.5%	98.6%
	Bozeman MT State	4913	18.42	21.39		
	Hebgen Dam	6667	10.09	12.77		
Garfield	Cohagen	2710	22.36	24.99	43.4%	46.1%
	Jordan	2661	23.58	26.32		
	Mosby	2750	24.51	27.34		
Glacier	Babb	4300	12.12	14.87	59.7%	73.9%
	Cut Bank	3855	16.01	18.60		
	Del Bonita	4340	14.61	17.30		
	East Glacier	4810	10.60	13.26		
	St Mary	4560	13.64	16.60		
Golden Valley	Ryegate	4440	17.60	20.17	62.6%	64.6%
Granite	Philipsburg Ranger Station	5270	12.90	15.26	86.5%	96.6%
Hill	Fort Assinniboine	2613	22.42	25.20	54.1%	60.4%
	Guilford	2820	19.54	22.06		
	Havre	2585	20.94	23.46		
	Simpson	2815	19.67	22.13		
Jefferson	Boulder	4904	17.08	19.47	61.0%	81.1%

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	(Historic) Management Factor Percentage 1964 - 1973	(Modern) Management Factor Percentage 1997 - 2006
Judith Basin	Moccasin Exp Station	4243	16.17	19.06	49.3%	68.8%
	Raynesford	4220	16.14	19.05		
	Stanford	4860	16.74	19.69		
Lake	Bigfork	2910	17.37	20.61	55.0%	68.7%
	Polson	2949	20.46	23.23		
	Polson Kerr Dam	2730	21.37	24.08		
	St Ignatius	2940	19.53	22.33		
Lewis & Clark	Augusta	4070	17.51	20.13	60.1%	79.7%
	Austin	4790	15.41	17.96		
	Helena	3828	20.23	22.69		
	Holter Dam	3490	23.88	26.61		
	Lincoln Ranger Station	4575	12.87	15.22		
Liberty	Chester	3132	19.28	21.74	54.8%	63.9%
	Joplin	3300	19.01	21.40		
	Tiber Dam	2850	22.98	25.46		
Lincoln	Eureka Ranger Station	2532	20.63	23.26	47.1%	58.8%
	Fortine	3000	16.09	18.69		
	Libby Ranger Station	2096	21.20	23.71		
	Libby	3600	11.06	13.36		
	Troy	1950	19.90	22.68		
Madison	Alder	5800	14.33	16.75	65.2%	83.3%
	Ennis	4953	17.19	19.71		
	Glen	5050	17.81	20.01		
	Norris	4750	20.88	23.97		
	Twin Bridges	4777	16.98	19.22		
	Virginia City	5770	15.57	18.13		
McCone	Brockway	2630	20.74	23.35	43.7%	60.6%
	Circle	2480	22.23	25.01		
	Fort Peck Power Plant	2070	25.37	28.16		
	Vida	2400	21.74	24.65		
Meagher	Lennepe	5880	11.93	14.38	57.3%	78.3%
	Martinsdale	4800	15.19	17.73		
	White Sulpher Spr	5060	16.41	18.89		
Mineral	St Regis Ranger	2680	17.61	20.05	56.1%	63.6%

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	(Historic) Management Factor Percentage 1964 - 1973	(Modern) Management Factor Percentage 1997 - 2006
	Stn					
	Superior	2710	21.94	24.54		
Missoula	Lindbergh Lake	4320	14.63	17.22	69.5%	69.5%
	Missoula	3420	18.85	21.49		
	Missoula WSO AP	3199	19.45	21.89		
	Potomac	3620	14.05	16.26		
	Seeley Lake Ranger Station	4100	14.86	17.31		
Musselshell	Melstone	2920	24.22	27.17	50.0%	56.2%
	Roundup	3386	23.98	26.79		
Park	Cooke City	7460	8.68	11.63	56.9%	67.5%
	Gardiner	5275	22.46	24.70		
	Livingston	4870	16.59	19.41		
	Livingston FAA AP	4656	18.63	21.39		
	Wilsall	5840	13.20	16.01		
Petroleum	Flatwillow	3133	22.27	25.01	44.0%	43.2%
Phillips	Content	2340	21.15	23.97	54.7%	54.9%
	Malta 35	2650	20.28	22.99		
	Malta 7	2262	21.61	24.39		
	Port of Morgan	2830	20.15	22.72		
	Saco	2180	20.13	22.70		
	Zortman	4660	14.38	17.40		
Pondera	Conrad	3550	16.93	19.42	71.4%	83.7%
	Valier	3810	18.31	20.96		
Powder River	Biddle	3597	21.87	24.66	38.5%	53.3%
	Broadus	3032	23.03	25.69		
	Moorhead	3220	23.72	26.42		
	Sonnette	3900	18.32	20.96		
Powell	Deer Lodge	4678	13.14	15.32	77.6%	100.0% ¹
	Ovando	4109	12.28	14.43		
Prairie	Mildred	2510	22.92	25.58	59.6%	84.3%
	Terry	2248	22.82	25.47		
	Terry 21	3260	18.65	21.34		
Ravalli	Darby	3880	18.91	21.44	79.5%	96.1%
	Hamilton	3529	19.93	22.34		
	Stevensville	3380	19.19	21.44		
	Sula	4475	12.09	14.42		
	Western Ag Research	3600	19.82	22.15		
Richland	Savage	1990	23.61	26.59	56.0%	88.4%

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	(Historic) Management Factor Percentage 1964 - 1973	(Modern) Management Factor Percentage 1997 - 2006
	Sidney	1931	22.49	25.45		
Roosevelt	Bredette	2638	19.99	22.86	46.5%	74.6%
	Culbertson	1942	20.84	23.73		
	Wolf Point	1985	24.16	27.03		
Rosebud	Bimey	3160	24.57	27.29	47.7%	72.7%
	Brandenberg	2770	23.83	26.52		
	Colstrip	3218	23.32	26.10		
	Forsythe	2520	25.17	28.04		
	Ingomar	2780	23.18	25.83		
	Rock Springs	3020	21.35	23.93		
Sanders	Heron	2240	14.82	17.73	58.8%	62.8%
	Thompson Falls Power	2380	22.49	25.36		
	Trout Cr Ranger Station	2356	16.60	19.40		
Sheridan	Medicine Lake	1975	21.64	24.49	44.8%	80.7%
	Plentywood	2063	20.64	23.48		
	Raymond Border Station	2384	19.13	22.04		
	Redstone	2300	17.86	20.58		
	Westby	2120	18.10	21.033		
Silverbow	Butte FAA AP	5545	14.73	17.06	68.8%	93.6%
	Divide	5350	15.25	17.58		
Stillwater	Columbus	3602	22.31	25.09	46.5%	72.5%
	Mystic Lake	6544	13.57	16.57		
	Nye	4840	15.00	17.93		
	Rapelje	4125	20.35	23.07		
Sweet Grass	Big Timber	4100	20.60	23.47	44.7%	49.4%
	Melville	5370	12.83	15.49		
Teton	Blackleaf	4240	14.74	17.34	68.8%	88.4%
	Choteau Airport	3845	20.53	23.07		
	Fairfield	3980	19.10	21.76		
	Gibson Dam	4724	13.57	16.22		
Toole	Goldbutte	3498	16.30	18.96	51.8%	70.8%
	Sunburst	3610	18.74	21.46		
	Sweetgrass	3466	18.22	21.22		
Treasure Valley	Hysham	2660	25.01	27.78	53.4%	91.5%
	Glasgow WSO AP	2293	23.48	26.12	57.9%	74.9%
	Hinsdale	2670	22.18	25.25		
	Opheim 10	2878	16.19	18.86		
	Opheim 16	3258	16.73	19.34		

Column A	Column B	Column C	Column D	Column E	Column F	Column G
County	Weather Station	Elevation	IWR Flood Irrigation, Wheeline & Handline Seasonal ET (inches)	IWR Center Pivot Irrigation Seasonal ET (inches)	(Historic) Management Factor Percentage 1964 - 1973	(Modern) Management Factor Percentage 1997 - 2006
Wheatland	Harlowton	4162	17.83	20.56	46.6%	54.4%
	Judith Gap	4573	13.77	16.40		
Wibaux	Carlyle	3030	19.87	22.75	See appropriate adjacent county	
	Wibaux	2696	18.69	21.50		
Yellowstone	Billings Water Plant	3097	26.16	28.92	59.5%	77.8%
	Billings WSO	3648	25.49	28.22		
	Huntley Exp Station	3034	21.92	24.61		

¹The 1997-2006 county management factor was calculated to be slightly greater than 100%, therefore the 1997-2006 Management Factor is set to

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



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MEMORANDUM

Date: February 4, 2013

To: Millie Heffner, Water Rights Bureau Chief
Jamie Ellis, New Appropriations Program Manager

From: Mike Roberts, Surface Water Hydrologist, Water Management Bureau
James Heffner, Ground Water Hydrologist, Water Management Bureau
Ethan Mace, Surface Water Hydrologist, Missoula Regional Office

Re: DNRC's Use of the Irrigation Water Requirements (IWR) Program

The Montana Department of Natural Resources and Conservation (DNRC) developed an approach for approximating historic consumptive crop use associated with water right change applications pursuant to the Administrative Rules of Montana (ARM) 36.12.1902 (9-16). Central to this approach is the use of the USDA-National Resource Conservation Service (NRCS) Irrigation Water Requirements (IWR) Program (USDA NRCS, 2003). The IWR Program provides the basis for determination of the net irrigation requirements used for the historic consumptive use and diverted volume rules. Annual evapotranspiration (ET) estimates can be directly obtained by referencing Columns D and E in Table 1 of those rules. At times, more detailed monthly time-step information may better support water right applications and application reviews and therefore running the actual IWR Program may be necessary to produce those monthly time-step estimates. These individual IWR Program runs are either consistent with or divergent from the Historic Consumptive Use rule, depending on the input variables used.

Contents:

- IWR Program Overview
- DNRC Application of IWR
- Historic Consumptive Use Rule Standard IWR Program Settings
- Historic Consumptive Use Rule IWR Program Example
- Adjusting the IWR Program Inputs
- FAQs
- Glossary of terms

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IWR Program Overview

The IWR Program computes total monthly crop ET, effective precipitation and net irrigation requirements on a monthly and annual time-step. The total ET computed by the IWR Program is equal to the potential crop ET, which is the amount of crop ET that would occur under ideal growing conditions if water availability in the soil profile is not limited.

The IWR Program estimates a theoretical ET and therefore outputs need to be adjusted to reflect real-world growing conditions. The IWR Program does not estimate the irrecoverable or consumed evaporation and wind losses attributed to field application, conveyance, or storage, nor does the IWR Program estimate diverted but not consumed volumes.

The IWR Program estimates the net irrigation requirement for crops by computing monthly and seasonal ET using one of three ET computation methods: Radiation Method (Doorenbros and Pruitt 1977), Temperature Method (FAO Blaney-Criddle), or SCS Blaney-Criddle Method (TR21). Each method requires different climate station variables in order to be calculated. The Blaney-Criddle Method (TR21) used by DNRC, is described in detail in the National Engineering Handbook (1993).

For the majority of uses, IWR requires the user to make selections or enter parameters for four fields: climate station, crop, net irrigation depth, and carryover used (prior to and following each season).

Net irrigation depth is the amount, in inches, of water applied during each irrigation cycle. Net irrigation depth should not be confused with application inefficiency. Ideally, irrigation depth and frequency change as plants develop, as young plants need less depth applied more frequently, while mature plants need less frequency and more depth as developed roots reach deeper into the soil. IWR, however, requires the assigning of one number for the entire season.

Carryover used is the amount of soil moisture that is available for crop use at the start of growth, and that which will be depleted at the end of growth. This water is typically supplied by non-growing season precipitation, fall irrigation, or pre-irrigation. This water can reduce the net irrigation requirement and in some cases is sufficient to bring the soil moisture in the crop root zone to field capacity. In areas that have saline irrigation water, the stored soil-water contribution is generally small because of the leaching requirement and the necessity of maintaining a net downward water movement. (USDA SCS, 1993)

More detailed information pertaining to the development and function of IWR may be obtained through: <http://www.ma.nrcs.usda.gov/technical/engineering/files/IWR/IWRManual.pdf>

DNRC Application of IWR

(Historic Consumptive Use)

DNRC uses the IWR Program to generate total seasonal ET and net irrigation requirement as the basis of its Historic Consumptive Use Rules. The total seasonal ET is divided by six inches to get the obtainable yield. This obtainable yield which represents a production value under circumstances not

limited by water or management, is then divided into the actual production values (from the National Agriculture Statistics Service) to determine a management factor that is applied to the maximum water use value. The end product is the amount of water typically required for irrigation. Method specifics are described in details in the DNRC Consumptive Use Methodology memo (March 2010) located on the DNRC webpage.

http://dnrc.mt.gov/wrd/water_rts/appro_info/cu_methodology.pdf

(New Use)

The IWR Program can also be used for estimating new uses. However, when comparing new use to old use, the default growing season base period for the climate station employed should be used. This will result in comparing an identical number of growing days for the historic use to the new use since the base climate period, 1971-2000, is the same for both iterations. It is anticipated that the NRCS dataset used by IWR (and similar programs in development like IWRpm) will be updated to a more recent climate period, 1981-2010. At that time DNRC will assess the viability of implementing the base climate period to new uses. The 1971-2000 base period currently used in IWR will continue to be used for historic consumptive use estimates.

Standard DNRC IWR Program Settings

The input variables used to produce Table 1 in ARM 36.12.1902 are the DNRC standard inputs that must be used in order to comport with the rule. Running the IWR Program using these standard variables will yield monthly time-step values that are consistent with the rule. These are the same variables that should be used when running the IWR Program for new appropriations as well, but in all cases, an applicant may supply additional information that may justify deviation from these standards:

- 1) All System and Local Defaults: Arrays of variables are presented in the Options Tab when first opening the IWR Program; all are left unaltered, using the program's automated defaults.
- 2) ET Computation Method: The DNRC uses TR21, which happens automatically when coupled with our climate database information. TR21 uses fewer climate station variables for IWR calculations as compared to the other two methods. By using TR21, more Montana climate stations can be used resulting in a more robust geographic coverage and frequency of estimates.
- 3) Climate Station: Column A of Table 1 in ARM 36.12.1902 is a complete list of all available climate stations that can be used.
- 4) Site Elevation: Once a climate station is chosen, IWR will automatically enter the job elevation. This variable should not be adjusted.
- 5) Crop: The Historic Use Rules specify alfalfa hay since there is a large amount of production data available and because alfalfa has the highest seasonal water demand of any commonly grown hay crop in Montana. IWR Program default grow days and temp (begin 50.0° F, end 28.0° F) and default arid-Moderate Wind values are used.

- 6) Net Irrigation Depth: Because TR21 does not recognize different application methods when making crop ET calculations, DNRC adjusts the net irrigation requirement to compensate for the real-world ET differences between application methods. Only two input variables can be selected for net irrigation depth. Four inches of net irrigation depth, as presented in column D of Table 1, is used to estimate crop ET for flood, wheel line, and handline application methods. One inch of net irrigation depth is used, as presented in column E, to estimate crop ET for center pivot application methods.
- 7) Carryover Used: Carryover moisture at the end and start of the season is generally set to one half of the net irrigation application in the western United States. However, to simulate drier end of season and start of season conditions, a carryover moisture equal to 25% of the net irrigation application is used.

Historic Consumptive Use Rule IWR Program Example

The following step-by-step procedure replicates those values found in columns D and E of Table 1 in ARM 36.12.1902. The example is from Beaverhead County, Dillon and is for flood irrigation resulting in a Table 1 Column D value of 18.34 inches of historic consumptive crop ET.

- 1) Open IWR program, click new job, enter job name, location, and planner
- 2) Click >Get New Climate
- 3) Choose Beaverhead County then Dillon WMCE, click >OK
- 4) Click NO when prompted to edit elevation of precipitation ratios
- 5) Click >Add New Crop, Get Crop Name Menu appears
- 6) Click >Alfalfa then click >OK, Job Crop Compute Menu appears
- 7) Click >Compute Dates for Site then click >OK
- 8) Now manually enter 4.00 inches in the Net Irrigation Depth box and 1.00 in each of the Carryover Used boxes and click >OK
- 9) The Summary page should appear and the Net Irrigation Requirements for a dry year (80% chance occurrence) should be 18.34 inches (see figure below).

Summary of Current Crop for Current Job

Irrigation Water Requirements Summary

Job: **Memo Demo** Crop: **Alfalfa Hay**
 Location: **Mike's Office** County: **Beaverhead, MT**
 By: **MR** Date: **12/18/12**
 Weather Station: **DILLON WMCE** Sta No: **MT2409**
 Latitude: **4512** Longitude: **11238** Elevation: **5230**
 Computation Method: **Blaney Criddle (TR21)** Net irrigation application: **4** inches
 Crop Curve: **Blaney Criddle Perennial Crop** Estimated carryover moisture used at season:
 Begin Growth: **5/9** End Growth: **9/19** Start: **1** End: **1** inches

Month	Total Monthly ET (3)	Dry Year 80% Chance (1)		Normal Year 50% Chance (1)		Average Daily ETc (inches)	Peak Daily ETPk (inches)
		Effective Precipitation (inches)	Net Irrigation Requirements (inches)(2)	Effective Precipitation (inches)	Net Irrigation Requirements (inches)(2)		
January							
February							
March							
April							
May	2.38	0.76	0.62	1.03	0.35	0.10	
June	5.79	1.05	4.74	1.42	4.37	0.19	0.20
July	7.26	0.74	6.52	1.01	6.25	0.23	0.26
August	6.11	0.69	5.41	0.94	5.17	0.20	0.22
September	2.38	0.34	1.04	0.46	0.92	0.13	
October							
November							
December							
TOTALS	23.92	3.58	18.34	4.87	17.05		

(1) For 80 percent chance occurrence, growing season effective precipitation will be equaled or exceeded 8 out of 10 years. For 50 percent chance occurrence, effective precipitation will be equaled or exceeded 1 out of 2 years.
 (2) Net irrigation requirements is adjusted for carryover moisture used at the beginning of the season and carryover moisture used at the end of the growing season.
 (3) ET (Evapotranspiration) is adjusted upwards 10% per 1000 meters above sea level.

To reproduce the value assigned to center pivot for the same station (Column E in Table 1 = 20.74"), the only different input would be in #8. The manual entry for net irrigation depth entry would be 1.00 inches and Carryover entry would be 0.25 inches.

Adjusting the IWR Program Inputs:

The IWR Program outputs can be altered or manipulated by adjusting the humidity/wind conditions, beginning and end growth temperatures, crop type, start and end growth dates, net irrigation depth, or carryover used.

For the purposes of DNRC use and the implementation of the historic consumptive use rules, the humidity/wind condition should always be set at Arid – Moderate Wind and the beginning and ending growth temperatures should not be adjusted. However, on occasion the applicant may present evidence using the Historic Use Addendum (Form 606 HUA) that warrants an adjustment of the start and end growth dates. This would require convincing data that suggests typical growth (growth, not diversion) is occurring prior to or following the dates determined by the IWR program. Examples of evidence that may support an alteration of the growth period include:

- different crop types – the applicant may have grown crops other than the default alfalfa that have a different growth period as defined by IWR.
- elevation/aspect – elevation and/or aspect differences between the applicants field and the weather station used in the seasonal ET calculation could potentially result in longer (or shorter) growing periods.
- temperature data –the applicant may have access to temperature data indicating their fields typically met the spring and fall growth triggers at times different than the IWR climate station data indicates.

The water right period of use as it appears on the water right abstract, the inclusion of affidavits, or evidence of a few years that crop growth began prior to the default period are not sufficient evidence to change the growth dates determined by IWR.

Net irrigation depth and carryover used will also alter IWR outputs. For example, increasing these parameters results in the following alterations:

Parameter Adjustment (increase)	Net Irrigation Requirement
carryover used	decrease
net irrigation depth	decrease
growing season	increase

Adjustments to the net irrigation application and carryover used would only be precipitated by information supplied by the applicant. With flood, wheel line, or handline irrigation the application

could be based on the available water holding capacity of soils. Center pivot application rates could be specifically based on the infiltration capacity of the soil (i.e. they should be less than or equal to the infiltration rates of the soil). For example, in coarser soils, the infiltration capacity would be greater and therefore it may require more than an inch per net irrigation application depth. In some cases, soil saline content management may drive application rates or reduce carryover effectiveness.

Frequently Asked Questions (FAQs)

Q: Why does IWR Program result in a higher irrigation requirement for Center Pivots versus Flood, Wheelline, and Handline Systems?

The total ET for a particular site does not change as a function of the irrigation method when using the Blaney-Criddle TR21 program. However, the irrigation requirement will change through a re-allocation of effective precipitation and net irrigation requirement. Center pivot sprinklers are more capable of managing soil moisture and keeping it high thus resulting in less effective precipitation necessary to fulfill the total ET demand. With better uniformity of crops resulting from better soil moisture management, the roots are closer to the surface and thus water gets used faster. While there is less water per application, there are more frequent applications.

Q? If growing season dates are input manually outside of the IWR determined growth dates, the program will compute ET for that period. How do you explain this?

The IWR Program determines the growing season, that is, the period during which plants are consumptively using water, based on a 30-year period of temperature data associated with the climate station chosen. It chooses the average date based on the occurrence of a specific temperature. For example, when the average daily temperature reaches 50 F in the spring, the IWR Program recognizes that date as the beginning of alfalfa growth and when the average daily temperature reaches 28 F in the fall, the IWR Program recognizes that date as a killing frost and ET shuts down. The dates it produces for the growing season are related to the most typical or average beginning and end of the growing season and the net-irrigation requirement is calculated based on this period. When dates are manually entered to override the default IWR dates, the program will still calculate an irrigation requirement, regardless of whether or not this was physically possible (an irrigation requirement could be calculated in the winter months, for example, even though no growth is occurring).

Why does the Department lump flood, wheel line, and handline altogether when it determines irrigation requirements for its historic consumptive use rules?

The short answer is because that was the recommendation of the NRCS. These three irrigation methods are similar in that they attempt to meet the irrigation demand dependent on the available water holding capacity of the soil and thus require more water to be applied per application to keep the soil profile saturated. Conversely, center pivot application is a function of the infiltration capacity of the soil. Water application is set to match the infiltration capacity of the soil and meet the crop demand much more efficiently and thus requiring less water per application.

Why does the Department use IWR when there are more accurate ET formulations out there?

The use of the IWR program is a function of needing to develop an approach that would allow for site specificity but could as well be applied to the entire state. The presence of 180 climate stations in

Montana that supply the necessary data to run IWR made it the DNRCs choice to implement into a methodology. Other accurate methods require data to run them that is not available at the level required to implement across the entire state of Montana. This method was developed with the intent of providing a value for historic consumptive use when no other data or values are present.

For change applications, using this approach for both historic and new use provides a relative and consistent comparison regardless of whether the method under or overestimates use.

Glossary of Terms

The following terms are referenced either in this memo or in the routine application of the IWR Program.

Average Daily Etc

The normal year (50% chance) net irrigation requirement plus the normal year (50% chance) effective precipitation divided by the number of days in the month.

Average Growth Days

These dates represent the most typical period based on the weather station data provided. There are likely years when the growing season begins before and after these dates. The dates are based on crop type and average air temperature. For example, alfalfa growth begins when air temperatures typically reach 50 F and ceases when a killing frost occurs at 28 F.

Blaney-Criddle (TR21)

Blaney-Criddle is a simplistic ET equation that utilizes air temperature and daylight hours. Due to its simplicity and the mass availability of temperature and daylight hours (based on latitude), it is applicable throughout Montana and is the basis of the NRCS IWR Program.

Carryover Used at Beginning and End of Each Season

The amount of available soil moisture that is available for crop use at the start of growth and that which will be depleted at the end of growth. These amounts are deducted from the irrigation requirements. This moisture may be due to non-growing season precipitation, fall irrigation, or a pre-irrigation.

Crop Curve

A crop curve is a reference crop coefficient plotted over time to illustrate different water needs at different growth stages over time. The Blaney-Criddle equations use these crop curves to calculate evapotranspiration.

Dry Year Chance (80%)

Refers to an 80% chance, or 8 out of 10 years, the growing season effective precipitation will exceed this value.

Effective Precipitation

This is the portion of rainfall that can be used to meet the total evapotranspiration requirement of growing crops. It is a component of water use by crops not supplied by irrigation.

Evapotranspiration (ET)

Evapotranspiration is the movement of water to the atmosphere that results from the combination of direct evaporation from soils, plant surfaces, and transpiration from plants.

Growth Temperature (beginning)

This is the date the designated crop typically begins using water. For alfalfa, that period is defined by an average daily air temperature of 50 F.

Growth Temperature (end)

This is the date the designated crop typically ceases using water. The date representative of the average daily temperature at which growth ceases for alfalfa (28 F) is referred to as the killing frost.

Irrigation Water Requirement (IWR) Program

A program developed for the USDA-NRCS to implement procedures to determine monthly and seasonal irrigation requirements.

Killing Frost

The occurrence of temperature that results in the killing off of the plants thus limiting water use and marking the end of the growing season.

Net Irrigation Depth Applied Each Irrigation

The amount of water typically applied for each irrigation. This value is dependent on several factors including soils, crop type, management, and irrigation system type. For alfalfa, the DNRC uses 4 inches for flood/wheeline/handline and 1 inch for center pivot.

Normal Year Chance (50%)

Refers to a 50% chance that growing season effective precipitation will exceed this value and a 50% chance it will be less than this value.

Peak Daily ET

The peak daily ET for the month represented as determined using a formula described in the National Engineering Handbook (Table 2-55).

Potential Evapotranspiration

The evapotranspiration rate of a plant under ideal management conditions and water availability.

References

Doorenbos, J., and W.O. Pruitt. 1977. Guidelines for predicting crop water requirements. Irrig and Drain. Paper No. 24, 2nd edition, Food and Agric. Organ. of the United Nations, Rome, Italy, 156 pp

USDA NRCS. 2003. Irrigation water requirement main program version 1.0, download site:
<http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/manage/?cid=stelprdb1044890>

USDA SCS. 1993. National Engineering Handbook. Part 623 Chapter 2: Irrigation Water Requirements
http://irrigationtoolbox.com/NEH/Part623_Irrigation/H_210_623_02.pdf

Madison Aquifer Guidance

Department Of Natural Resources and Conservation
Water Rights Bureau
New Appropriations Program

Madison Group Aquifer

Purpose

The purpose of this guidance is to identify areas where DNRC has determined that pumping groundwater from the Madison Group aquifer is unlikely to deplete surface water that is subject to prior appropriation. In the absence of objections and information to the contrary, applicants for wells in the Madison Group aquifer in those identified areas are not required to analyze depletion of surface waters.

Authority

The Department has the authority to issue water use permits for beneficial uses of water under §§ 85-2-302, MCA and to establish procedures, forms and requirements for applications under §§ 85-2-112, MCA. The applicant has the burden under §§ 85-2-311, MCA to show the proposed use is a beneficial use of water, justify the amount of water requested for the proposed purpose, and meet all the criteria for issuance of a permit.

Justification

Proving on an application-by-application basis which surface waters are hydraulically connected to the Madison Group aquifer is difficult, expensive and may be impossible. Evidence from extensive published studies of the Madison Group aquifer [see references listed below] and basic hydrologic principles provide a scientific basis on which DNRC has identified general areas and circumstances where groundwater pumping of the Madison Group aquifer will not deplete surface water. The proposed guidance should reduce unnecessary analysis and clarify the analysis that is necessary to evaluate the impacts of wells in the Madison Group aquifer on surface water users.

Boundary

The boundary on the attached map is the area outside of which applicants are not required to analyze depletion to surface waters, subject to limited exclusions. The area inside the boundary where analysis of depletion to surface water is required is delineated by locations of:

- outcrops of the Madison Group aquifer,
- known areas of discharge from the Madison Group aquifer, and
- faults that offset the Madison Group aquifer.

The boundary will be adjusted if justified by new information from groundwater investigations or objections to water right applications.

Requirements

Applicants for wells completed in the Madison Group Aquifer within the mapped area must identify hydraulically connected surface waters and calculate the rate and timing of depletions to those affected reaches. Applicants must evaluate legal availability of surface water and the potential for adverse effects to surface water right holders in the potentially affected reaches. Surface waters of concern within the boundary of the mapped area include at a minimum Giant Springs and the Missouri River in the Great Falls area, and Big Springs and Warm Springs in the Lewistown area.

Applicants for wells completed in the Madison Group aquifer outside of the mapped area will not need to calculate depletion to surface water, except as explained below. Applicants may refer in the Application generally to this guidance and the referenced studies and analyses.

Exclusions from Application Procedure

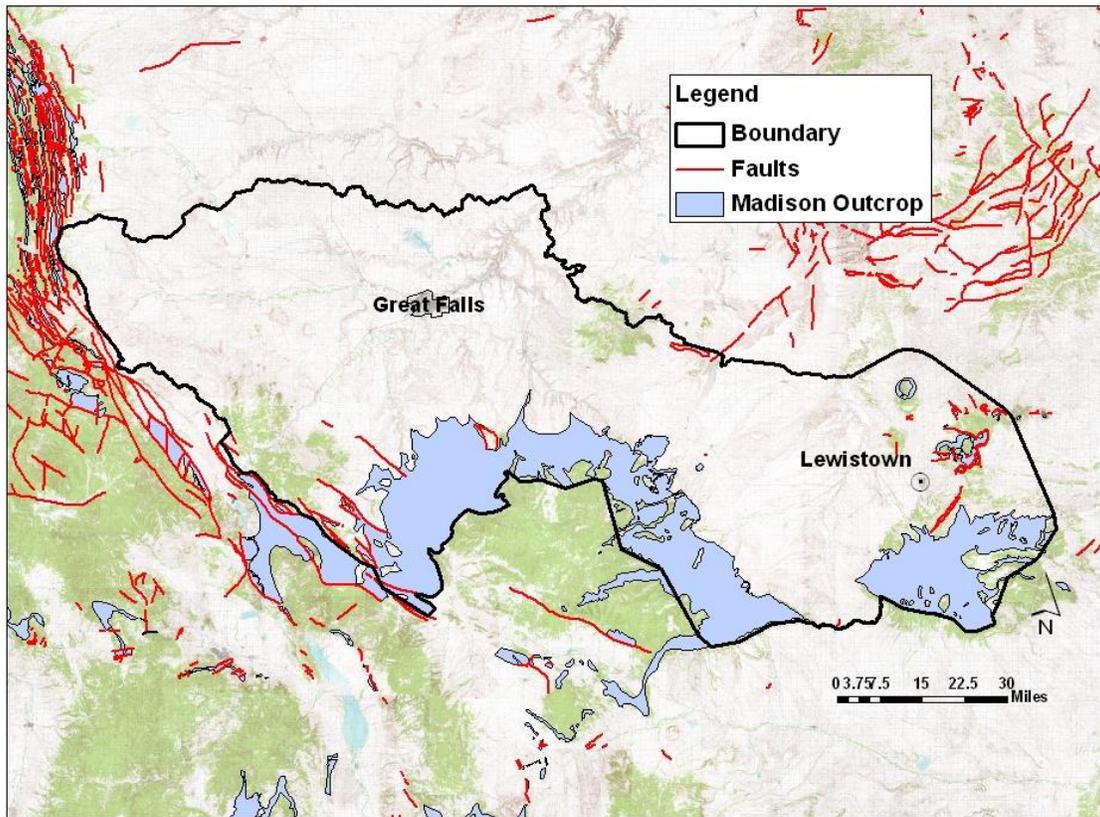
Applicants for wells in the Madison Group aquifer located south of the Yellowstone River are excluded from this guidance until conditions in the Madison near the Bighorn and Pryor Mountains are evaluated more closely. Applicants for wells south of the Yellowstone River must evaluate hydraulic connection of the aquifer to surface water and calculate the rate, timing and location of stream depletion the same as in other areas outside the boundaries identified in the attached map.

Applicants for wells in closed basins subject to §§85-2-360 through §§85-2-364, MCA also are excluded from this guidance. They must submit a hydrogeologic assessment as described under §§85-2-361, MCA that predicts whether their proposed use will deplete surface water.

References

- Downey, J.S., 1984. Geohydrology of the Madison and associated aquifers in parts of Montana, North Dakota, South Dakota, and Wyoming. U.S. Geological Survey Professional Paper 1273-G, 47 pp, 1 plate.
- Huntoon, P.W., 1985, Rejection of recharge water from Madison aquifer along eastern perimeter of Bighorn Artesian, Basin, Wyoming. *Ground Water*, Vol. 23, No. 3, p. 345-353.
- Huntoon P.W., 1993, The influence of Laramide foreland structures on modern ground-water circulation in Wyoming artesian basins. In: Snoke A.W., Steidtmann J.R. and Roberts S.M. (Eds.), *Geology of Wyoming*. Geological Survey of Wyoming Memoir No.5: 756-789.

- Plummer, L.N., J.F. Busby, R.W. Lee, and B.B. Hanshaw, 1990. Geochemical modeling of the Madison Aquifer in Parts of Montana, Wyoming, and South Dakota, *Water Resources Research*, Vol. 26, No. 9, p. 1981-2014.
- Uthman, B. and L. Dolan, 2008. Summary of Surface- and Ground-Water Resources Leaving Montana. Unpublished DNRC White Paper.
- Whitehead, R.L., 1996. Ground Water Atlas of the United States, Segment 8: Montana, North Dakota, South Dakota, Wyoming. USGS Hydrologic Investigations Atlas 730-I.



Area outside of which DNRC has determined that pumping from the Madison is unlikely to deplete surface water.

Mitigating Adverse Affect Memo

WATER RESOURCES DIVISION
WATER RIGHTS BUREAU

TO: WATER RESOURCES MANAGERS
FROM: TERRI MCLAUGHLIN, CHIEF, WATER RIGHTS BUREAU
SUBJECT: ADVERSE AFFECT DETERMINATION [MCA 85-2-311, 360]
DATE: NOVEMBER 2011
CC: TIM DAVIS

The Department is required under MCA 85-2-360 to make a determination of adverse affect caused by a ground water appropriation in closed basins based on the following.

(5) For the purposes of [85-2-360](#) through [85-2-362](#), the prediction of net depletion does not mean that an adverse effect on a prior appropriator will occur or if an adverse effect does occur that the entire amount of net depletion is the cause of the adverse effect. A determination of whether or not there is an adverse effect on a prior appropriator as the result of a new appropriation right is a determination that must be made by the department based on the amount, location, and duration of the amount of net depletion that causes the adverse effect relative to the historic beneficial use of the appropriation right that may be adversely affected.

The purpose of this memo is to explain how flexibility, under 85-2-360, can be applied to the timing (duration) of mitigation when analyzing adverse affect and legal availability. This flexibility can be applied where the existing legal demands include storage and hydropower water rights.

Mitigation or aquifer recharge that does not match the timing of depletion may be acceptable where a prior appropriator utilizes storage for their appropriation. The mitigation water left instream can be captured in storage to satisfy the prior appropriator and may offset the depletion to the source caused by a groundwater appropriation.

Regional Office Managers may find that there is no adverse effect to a prior appropriator when reviewing and approving a mitigation or aquifer recharge plan if:

- 1) The adverse effect and the concern with legal availability is only to a storage or hydropower right;
- 2) The plan offsets the entire amount of the adverse effect and the impact to legal availability; and,
- 3) The plan offsets the adverse effect and provides legal availability cumulatively throughout the year.

When all three conditions above are met, Regional Managers may approve a mitigation or aquifer recharge plan even if mitigation water is provided only during a portion of the year (such as irrigation season) because the storage component allows net depletion and impact to the storage/hydropower right to be offset year-round.

Analyzing Existing Water Rights in a Change Memo

Memo

WATER RIGHTS BUREAU
NEW APPROPRIATION'S PROGRAM

TO: Regional Managers, Regional Office Staff, Chuck Brasen
FROM: Kim Overcast, New Appropriation's Program Manager
SUBJECT: Analyzing Change Authorizations
DATE: Wednesday, July 23, 2014

Attached are three memorandums from 1996, 1997, and 2000 confirming DNRC's authority and obligation to analyze existing water rights involved in a change application. We need to assess all of the elements of the existing right to determine the historic beneficial use. Once the historic use is known, then one can determine whether the proposed change is possible. This memorandum and the attachments will hopefully convince everyone that DNRC has the authority to limit existing rights when a change application has been filed on that right.

The evaluation of the existing right seems, for some, as though we are adjudicating the right. That is not so. The three memorandums clearly state our authority to accurately determine the existing right's historic use. The memorandum from Tim D. Hall to Terri McLaughlin has some very clear and direct information on the subject. Here are a few of the points I highlighted.

1. Page 7 – “[O]nce an appropriator exercises his or her privilege to change a water right ... the appropriator runs a real risk of *requantification of the water right based on actual historical consumptive use*. In such a change proceeding a junior water right ... which had been strictly administered throughout its existence would, in all probability, be reduced to a lesser quantity because of the relatively limited actual historic use of the right.”

(italics added).

2. Page 9 – “Therefore, the applicant in a change proceeding in Montana must prove the historic beneficial use of the water to be changed, no matter how recently the water right was decreed in Montana’s adjudication.¹ Although since Montana started its general statewide adjudication there is no Montana Supreme Court case on point to support the conclusion that even water rights as decreed in final decrees will be limited in change proceedings to their historical use, that conclusion is supported by the case of McDonald v. State, 220 Mont. 519, 722 P.2d 598 (1986), as well as by the study done on Montana’s adjudication at the request of the legislature, Evaluation of Montana’s Water Right Adjudication Process, prepared for the Water Policy Committee of the Legislature of the State of Montana by Saunders, Snyder, Ross & Dickson, P.C., Denver, Colorado, September 30, 1988 (“Ross Report”).”
3. Page 11 - The McDonald case, then, leaves us with the following language that historical beneficial use prevails even over *final* decrees:
4. Page 11 - *and in the long run the amount actually needed for beneficial use within the appropriation will be the basis, the measure and the limit of all water rights in Montana as...*
5. Page 11 - The important point to remember from McDonald is that certainly in the change context the Montana Supreme Court would not find anything peculiar about a change applicant being limited to what their actual historical beneficial use was, even if the final decree stated a different amount.

¹ Compare W.S. Ranch Co. v. Kaiser Steel Corp., 79 N.M. 65, 439, P.2d 714, 715-17 (1968) (an adjudicated water right is *prima facie* proof of the amount of water to be transferred).

6. Page 12 – “In change cases it has always been accepted that the change applicant bears the burden of proving their historical use, no matter how their water right was described in previous decrees. The consultants to the Montana legislature from a Denver water law firm emphasized this point to the Montana legislature, and counseled that any exaggerated or inaccurate water rights in final decrees would be caught in the change process where the change applicant, again, would have to prove and would be bound by their historical use:

As in other appropriation doctrine jurisdictions, the decree for a water right will not memorialize forever the diversion entitlement of the decreed rights. *Historical use* should remain a relevant consideration when decreed rights *are changed to different uses* and when rights are bought and sold by knowledgeable parties either for continuation of the historical use or change to new uses.

Ross Report at 62 (emphasis added).”

The report further states:

Even a 100% accurate, final decree water right should be subject to historical use inquiry if it is *changed* in the future.

7. Page 13 - In a change proceeding, the *consumptive* use of the historical right has to be determined: In a reallocation proceeding, both the actual historic consumptive use and the expected consumptive use resulting from the reallocation are estimated.

When reading Tim’s memorandum, I was surprised by some of the information in the McDonald case. The court said, ... Thus if in a rare case a beneficial use under a pre-1973 water irrigation right required a **greater** amount of water than the *acre feet* fixed in the decree, and such beneficial use was within the pre-1973 flow-rate appropriation as to the pattern of use and means of use, *the amount required by beneficial use would control, though it exceeded the acre feet fixed in the decree*. In like manner, if the beneficial use required a **lesser** amount than the acre feet fixed therein, *the appropriator holds no title or right to the excess volume of water over and above the requirements of his beneficial use.*”

I called Tim and expressed my surprise. I explained that we have always analyzed the existing right with the understanding that the right could be reduced, but not increased. He said, we should maintain that thinking. While the McDonald case helps to confirm that existing rights are based on historical use, the part that deals with the right never being able to be finalized is a concern to DNRC.

The question was asked, do we need a 612 to let the public know how we see their existing right. First, if we can see that the historic use isn’t the same as depicted on the parent right, we should talk with the applicant and voice our concerns. If the applicant amends his application, then we should publish the amended application information and move forward. If however, the applicant is unwilling to amend the application, then we should publish the change as applied for. If there are no objector’s, then we can proceed to issue a 612 and deny the application. If there are objectors, and the file goes to a hearing, then the hearing officer would issue the final order which should reflect the reduced right. It would be extremely important that your analysis of the parent right be thoroughly documented in the file.

Finally, we have a golden opportunity to make change applications clear. With the new database, we are now issuing a change authorization that shows how we see the water right on the ground, today, after the change is completed. That increases our obligation to issue a document that clearly shows the water right, because when the public receives the document with all the elements identified, they will assume the DNRC has placed its stamp of approval on the document. We need to make sure that we indeed are doing just that.

C: Jan Langel Curt Martin Tim Hall

Salvage Water Memo 2011

WATER RESOURCES DIVISION
WATER RIGHTS BUREAU

TO: WATER RESOURCES MANAGERS AND SPECIALISTS
FROM: TERRI MCLAUGHLIN, CHIEF, WATER RIGHTS BUREAU
SUBJECT: SALVAGE WATER [MCA 85-2-419]
DATE: SEPTEMBER 2011
CC: TIM DAVIS

Montana Water Law provides for appropriation of salvage¹ water created through water savings methods². Any use of salvage water requires a Change Authorization and must be approved by the Department, unless it is to be used within the parameters of the original appropriation. Using water for the same purpose, within the historic place of use and from the same point of diversion, such as converting from flood to sprinkler irrigation on the same footprint, does not require prior approval.

This document clarifies how salvage water is authorized by the Department and the considerations used in determining adverse effect. It is based on prior Department discussions comprised in the following documents: Ted, J. Doney, *Memorandum of Law, Changes in Appropriation Rights -- Flood to Sprinkler System* (November 12, 1974); Don MacIntyre Chief Counsel, *Memorandum-Salvage Water* (November 23, 1993); and Anne W. Yates, *Memorandum-Salvage Review* (April 12, 2011).

Section 85-2-419, MCA states: ***Salvaged water.*** *It is the declared policy of the state in 85-1-101 to encourage the conservation and full use of water. Consistent with this policy, holders of appropriation rights who salvage water may retain the right to the salvaged water for beneficial use. Except for a short-term lease pursuant to 85-2-410, any use of the right to salvaged water for any purpose or in any place other than that associated with the original appropriation right must be approved by the department as a change in appropriation right in accordance with 85-2-402 and 85-2-436, if applicable. Sale of the right to salvaged water must also be in accordance with 85-*

¹ MCA 85-2-102 DEFINITIONS (20) "Salvage" means to make water available for beneficial use from an existing valid appropriation through application of water-saving methods.

² ARM 36.12.101 DEFINITIONS (77) "Water saving method" means a change to the actual water use system or management of water use in which the modification being made would decrease the amount of water needed to accomplish the same result. Water saving methods might include: (a) changing from a ditch conveyance to a pipeline; (b) lining an earthen ditch with concrete or plastic; and (c) changing management of a water system to decrease water consumption.

2-403, and the lease of the right to salvaged water must be in accordance with 85-2-408, 85-2-410, or 85-2-436.

When a Change Authorization is Required for the Use of Salvaged Water

Whenever a water right is used at a new place of use, drawn from a new diversion point, or used for a new purpose, a Change Authorization is required; this includes salvage water. Salvage water may be changed to either a new consumptive or new non-consumptive use, including instream flows. The water saving method does not have to be implemented prior to filing a change application, but it does need to be completed before the project completion phase of a change application. A change application that involves salvage must include a report documenting the volume of water that is being saved by the proposed water saving method.

In order for the Department to authorize the use of salvage water, an appropriator has the burden of proving a preponderance of the evidence for the criteria in 85-2-402 and 419, MCA, in particular:

1. If the change in appropriation right involves salvage water, the proposed water-saving methods will salvage at least the amount of water asserted by the applicant.
2. The proposed change will not cause adverse effect to existing water rights.

As with any change application for an existing right, the analysis begins with a description of historic use as it existed prior to July, 1973 for a statement of claim, the filing date of the project completion for a permit, or the date of filing for a groundwater certificate. Even if the pre-73 use of a claim was altered or modified after 1973 without a change authorization, the water right proposed for change must be based upon pre-73 historic use.

When the Department processes a Change Authorization that involves salvage water, there is an additional analysis that examines the salvage water portion of the proposed change. The focus of this analysis is on elements of the existing water right before and after implementation of the water saving method and whether the change (e.g. new use, new acres or instream flows) will result in adverse effects to other water users.

Waters That May Be Salvaged

Salvage water may fall under any combination of the following six classifications of water, but must be created by a "water savings method": 1) evapotranspiration; 2) evaporation; 3) seepage; 4) waste water; 5) deep percolation; and 6) *return flow*³. Current definitions for these classifications are:

(a) "Evaporation" means water dissipated or drawn off in vapor form from water or ground surfaces.

³ In limited situations return flow can be salvaged for instream flow; see Instream Flow on page 4.

(b) "Seepage water" means that part of a diverted flow which is not consumptively used and which slowly seeps underground prior to being beneficially used and eventually returns to a surface or groundwater source, and which other water users can appropriate, but have no legal right to its continuance. Typical examples of seepage water include underground losses from an irrigation ditch or pond;

(c) "Wastewater" means that part of a diverted flow which is not consumptively used and which returns as surface water to any surface water source, and which other water users can appropriate, but have no legal right to its continuance. A typical example is an irrigator who turns into the individual furrows traversing the irrigator's field from the head ditch more water than can seep into the ground. The water that stays on the surface and is not absorbed into the earth and which remains at the end of the furrow and is collected in a wastewater ditch is wastewater.

(d) "Deep percolation" means water that percolates below the root zone and infiltrates a deeper aquifer that is not used by other appropriators or connected to a surface water source

(e) "Return flow" means that part of diverted flow which is applied to irrigated land and is not consumed and returns underground to its original source or another source of water, and to which other water users are entitled to a continuation of, as part of their water right. Return flow is not wastewater. Rather, it is irrigation water seeping back to a stream after it has gone underground to perform its nutritional function. Return flow results from use and not from water carried on the surface in ditches and returned to the stream.

Potential Water Saving Methods

As stated above, it is the appropriator's burden to prove by a preponderance of evidence that the water saving method proposed or implemented will salvage the amount of water asserted by the applicant. Some methods may result in minimal amount of salvaged water, while others may provide sufficient amounts for instream flow protections or other uses.

Although the statute uses the term "water saving method", not all salvage methods equate to water savings. Converting flood systems that may be inefficient to highly efficient sprinkler systems may decrease the volume of water diverted, but likely increases the total amount of water consumed, resulting in no water savings.

Water saving methods include, but are not limited to:

1. Converting an unlined earthen ditch/canal conveyance to pipeline conveyance is likely to reduce evaporative and seepage conveyance losses.
2. Converting an unlined earthen ditch/canal conveyance to a ditch/canal that is lined with concrete, plastic or other impermeable substance is likely to reduce seepage conveyance losses.
3. Lining an earthen ditch, pit, pond or reservoir with concrete, plastic or other impermeable substance is likely to reduce seepage associated with the storage and use of those features.

4. Converting high profile, high pressure sprinklers systems to low profile, low pressure sprinkler systems are likely to reduce evaporation and wind loss.
5. Changing the method of irrigation from flood/headgate/ditch to sprinkler/pump/pipeline is likely to reduce the diversionary requirements of the system.
6. Adding computerized controls and/or improved irrigation scheduling can reduce over-watering and increase evapotranspiration crop efficiency, thereby reducing diversionary requirements.
7. Leveling irrigated ground may increase field efficiency and reduce diversionary requirements.

The following are not water savings methods:

1. Destroying phreatophytes;
2. Deforesting cottonwoods, trees, brush or the removal of vegetation;
3. Converting to a less consumptive crop;
4. Converting from a historic “full” irrigation schedule to a “partial” irrigation schedule – this type of conversion may be considered a Change Authorization, but is not associated with salvage.

Potential Uses of Salvage Water

Non-change authorization use of salvage water (Improving Efficiencies): If salvage water is used on the historic place of use without changing the point of diversion, purpose of use or place of storage, then no Change Authorization is necessary from the Department. If the parameters of the existing water right are not changed, then the Department’s administrative process is not required. As such, a non-change use of the salvage statute is typically used by water users to increase on-field and/or conveyance efficiency for existing operations. Efficiency improvements may be instituted when the water supply is insufficient to accommodate operations that require higher diversionary amounts. Efficiency improvements may also reduce soil amendment requirements and generally increase automation, thereby reducing labor associated with water application. Under a non-change salvage option, the water-user, through efficiency improvements, can reduce their diversionary requirement and/or convert historically diverted but not consumed water to consumed water, increasing agricultural productivity without Department approval.

Although a Change Authorization from the Department is not required by statute where an irrigator changes only his or her method of irrigation, this does not mean that a downstream appropriator cannot seek legal redress in district court where the downstream appropriator’s water supply has been reduced or otherwise adversely affected because of the change in irrigation method resulting in return flow changes.

Change Authorization required use of salvage water

Converting salvage water to non-consumptive use-instream flow: Instream flows are considered non-consumptive and include instream flows for the benefit of fish habitat as set forth in 85-2-408, 85-2-436, and 85-2-320, MCA and, in some circumstances, instream flows may include

instream hydroelectric power generation. Rather than being limited to the historic consumed volume, when changing salvage water to instream flow uses, an applicant may include the historic diverted flow rate and volume that is or will be salvaged (which includes return flows) if the return flows historically entered the source at a point below the proposed protected reach of stream (or place of use for hydro-power) and above any appropriators that rely on that return flow.

Common practices for improving leaky, inefficient earthen ditches include lining ditches with impermeable layers or replacing them with solid piping. Water formerly lost through seepage (or evaporation) is no longer necessary as carriage water. "Carriage water" refers to water needed at the diversion-works to offset ditch seepage that occurs during conveyance of water from the diversion-works to the field. This water can be changed to instream flow through a Change Authorization.

Converting salvage water to consumptive use (Improving Efficiencies):

Efficiency improvements may be instituted when the water supply is insufficient to accommodate operations that require higher diversionary amounts. A water-user, through efficiency improvements, can reduce their diversionary requirement and/or convert historically diverted but not consumed water to consumed water, increasing agricultural productivity. If these improvements create salvage water that is to be used on new land or for a new purpose the applicant must prove the change will not cause an adverse affect from reduced return flows or a change in their timing.

Considerations for Analysis and Authorization

Reduced Return Flows: Recent case law, *Hohenlohe v. DNRC*, 2010 MT 203, ¶43, and as far back as *Spokane Ranch & Water Co. v. Beatty* (1908), 37 Mont. 342, 96 P. 727, provide that a subsequent appropriator is entitled to the stream conditions as they were when he first appropriated. The 1989 Water Plan which formed the background for the 1991 salvage statute recognized that, "one irrigator's water losses can be another irrigator's water supply."

Any change to use salvage water that reduces the stream flow that other appropriators have relied on legally will likely cause an adverse effect, specifically in closed basins where water shortages are common.

Increase in Consumed Amount: Any use of salvage water that increases consumptive use of the original right (e.g. increased acres) will likely cause an adverse effect to downstream appropriators by reducing return flows. Conversion from flood irrigation to sprinklers may reduce the diverted amount of water but is also likely to cause a reduction or change in timing of return flows due to increased efficiency and consumption. The key to whether a change authorization in this scenario could be granted is adverse affect.

Consult the Bureau or Program managers on any situations that raise questions on implementing this policy.

Change in method of Irrigation Policy Memo

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



STEVE BULLOCK
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
TELEFAX NUMBERS (406) 444-0533 / (406) 444-5918
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1428 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

December 2, 2015

To: WRD Regional Managers, Water Rights Bureau, and Hydro Science Section
From: Tim Davis, Administrator, Water Resources Division
RE: Policy memo – change in method of irrigation

I am sending you this policy memo in order to explain and clarify the department's policies related to change applications that include a change in method.

"Change in Appropriation Right means a change in the place of diversion, the place of use, the purpose of use, or the place of storage." (85-2-102(6), MCA). This definition does not include change in method of irrigation; the clearest example being changing from flood irrigation to pivot irrigation. While it has long been recognized that in most cases, an increase in efficiency through a change in method also increases consumption and reduces return flows, if a water right owner is not changing their point of diversion, place of use, purpose, or place of storage then a change authorization is not required. This creates some complication when a method change has occurred after June 30, 1973 but prior to submitting a change application.

For a change application submitted under 85-2-402, MCA, the department conducts an historic use analysis as required in ARM 36.12.1902. As part of the analysis, the rule requires that a comparison be done of the historic consumptive use to the amount of water being changed. For irrigation, historic use typically involves flood irrigation and the consumptive use associated with that method because prior to July 1, 1973, most irrigated land in Montana was irrigated by flood methods. What the department has done, and currently does, when a water right user has changed from flood to sprinkler is include any increased consumption from a method change in the amount of water being changed even if the place of use or purpose is not changing. This often results in requiring a reduction of irrigated acres so that the historic consumptive use is not increased and to prevent expansion of the underlying right.

The department recognizes the conundrum that has evolved as a result of the department's authority to not allow an expansion of a water right through a change authorization while a water right appropriator has the ability to change their method of irrigation resulting in increased consumption and reduced return flows outside of the change process. The department is proposing these policy changes in order to attempt to rectify this conundrum. These policies do not infer nor imply that a change in method of irrigation will not result in increased consumption or reduced return flows. This policy instead recognizes that the department does not have the authority, under 85-2-402, MCA, to review changes in method. For that reason, starting from the date of this memo, when reviewing a change application involving a change in method the following policies apply:

STATE WATER PROJECTS
BUREAU
(406) 444-6616

WATER MANAGEMENT
BUREAU
(406) 444-6637

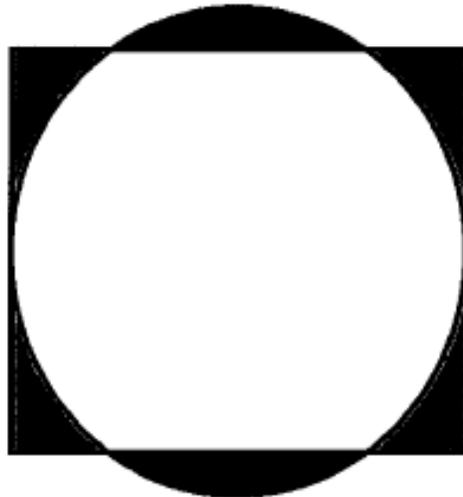
WATER OPERATIONS
BUREAU
(406) 444-0860

WATER RIGHTS
BUREAU
(406) 444-6610

- 1) The department will continue to conduct a historic use analysis on all changes as we have always done and will assign a flow rate, diverted volume, and consumed volume based on our findings of what they used pre-1973.
- 2) In addition to other potential application specific conditions, the department may place the following conditions on a change authorization under this policy:
 - a. Requiring installation of measuring devices or taking other steps to ensure that diverted volume or flow rate will not be increased; or,
 - b. Specifically for changes in POD only, requiring that a future change in POU or purpose will be limited to the flow rate, diverted volume, and consumed volume identified in this change.
- 3) Change in POD only: If a water right appropriator is only changing their point of diversion and is not increasing the number of acres historically irrigated or changing the place of use, then the department will assume for purposes of the comparison of the historic use to the new use that there is no change in consumption or return flow resulting from a post 1973 change in method. This applies only to the place of use and number of acres historically irrigated. If the change finds that new or expanded acres have or will be irrigated then MCA 85-2-402 does apply to those acres (see examples under number 4).
- 4) Change in POU or purpose: If a water right appropriator is changing their place of use or purpose, then the department will only look at a comparison of the historic consumptive use to the amount of water **being changed** including any increased consumption from a method change. This might apply to only the portion of the acres or water being changed.

The following examples are intended to help explain how the policies will apply.

Example 1 – Partial change in POU



A historically flood irrigated field is now being irrigated with a pivot. The circumference of the pivot falls outside of the historically flood irrigated field requiring a change in place of use (black area in diagram above). The department will conduct an historic use analysis on the flood irrigated field to determine a total consumptive use associated with the historically irrigated acres. The department will then determine the consumptive use associated with the corners that are no longer being irrigated (gray area in the diagram above) and compare that with the new acres being irrigated under the pivot (black area). The consumption on the new acres will be determined based on the efficiency of the pivot irrigation. Analysis of return flows will also be based on the change of retiring the corners and adding the new acres under the pivot. The area under the pivot that overlaps the historic place of use (white area in the diagram above) will not be used in the comparison or return flow analysis because this area is not being changed.

Example 2 – Partial change to instream flow

There is a historically flood irrigated field consisting of 100 acres. The water right appropriator has changed their method to sprinkler irrigation within the original footprint 15 years ago. The appropriator would now like to change 25 acres to instream flow for fish. The department will conduct a historic use analysis for flood irrigation on the 100 acres and determine the associated historic consumptive use for those acres. The department will not consider the increase in efficiency for the acres that are not being changed. The amount available to change to instream flow is the historic consumptive amount for 25 acres. The return flow analysis will be conducted on the 25 acres that will be retired and the associated flow rate and volume left instream.

Example 3 – Partial change of the diverted volume/flow to instream flow

There is a historically flood irrigated field consisting of 100 acres. The water right appropriator has changed their method to sprinkler irrigation within the original footprint 15 years ago. The appropriator would now like to change only the amount of water no longer diverted as a result of the change in method to instream flow for fish. The department will conduct a historic use analysis for flood irrigation on the 100 acres and determine the associated historic consumptive use, diverted volume and flow rate for those acres. The department will not consider the increase in efficiency resulting from the change in method. The department will apply a condition on the change requiring installation of measuring devices to ensure that the combined diverted volume and flow rate for both the irrigation and instream flow change will not be increased over the historically diverted volume and flow rate.

Example 4 – Full change in POU

A water right appropriator historically irrigated 100 acres. They now want to change their place of use to a field across the river and use a pivot. The department will conduct a historic use analysis for 100 acres of flood irrigation. The comparison will consider the historic consumptive use and the consumptive use of the pivot at the new proposed place of use to determine how many acres may be irrigated under the pivot without increasing the historic consumptive use. The return flow analysis will consider the entire acres being changed.

RE: Policy memo – change in method of irrigation
December 2, 2015
Page 4

If you have questions about how this policy memo applies then please work with the Water Rights Bureau NA Program to your questions answers.

The department has the authority to look at whether a new use or a change of an existing use will create an adverse effect. However, not all adverse effects that may occur fall under the authority of the department. If a water right user believes they are being adversely affected, outside of a permit or change proceeding, due to the increased consumption and the reduced return flows resulting from a method change that water user may seek a remedy through the District Court.

HB99 Guidance – Limited Analysis of Adverse Effect

To: Water Resource Managers and Specialist
From: Water Rights Central Office
Subject: HB 99 Implementation and Guidance
Date: August, 2017
CC: Jan Langel, Division Administrator

Short Title:

“AN ACT LIMITING ANALYSIS OF ADVERSE EFFECTS FOR CERTAIN WATER APPLICATIONS; ALLOWING WATER RIGHT HOLDERS TO CONSENT TO APPROVAL OF CERTAIN WATER RIGHT APPLICATIONS; AMENDING SECTIONS 85-2-306, 85-2-2311, 85-2-320, 85-2-360, 85-2-402, AND 85-2-408, MCA; AND PROVIDING A TERMINATION DATE.”

Overview:

HB 99 allows for a water right owner(s), whom may be adversely affected by a permit or change application, to provide written consent to the approval of the application. If the water right owner(s) provide written consent, then the Department will not conduct an adverse effect analysis on the consenting water right. Written consent to an application does not necessarily waive the right to make call on other junior water users. Be absolutely sure that by providing the applicant with written consent of approval of their application, the water user isn't shifting the burden to make call on another user. It is anticipated that the use of HB 99 will be limited considering the potential that the consenting water right could shift the burden of call on to other water users and the requirement that the applicant still prove water is legally available. It is unlikely HB 99 would be used for a new surface water right because if water is legally available, it is unlikely the new use will cause adverse effect so long as the new water user can respond to call.

Important Notes: The written consent to approval of application applies to permit and change applications. Although HB 99 amends 85-2-306(7) to state the department may not consider adverse effects on any water right identified in a written consent to approval; the department does not currently conduct an adverse effect analysis for stock water pit application filed on under this statute. It is not a deficiency to the application in the situation where written consent is provided by some existing users, but there may be others which could be adversely affected that have not provided written consent. HB 99 directly applies to criteria for issuance of a permit/change and therefore consent forms are not looked at until after a “Correct & Complete” determination.

Please meet with Central Office and Legal Staff about situation other than the examples below, before communicating about the appropriateness of the situation(s) with applicant(s).

HB 99 FAQ:

Who has to sign consent waivers?	Anyone whom has a water right the Department finds might be adversely affected as part of a water right application. In situation 1, every single water right holder on the ditch must sign. In situation 2, every single water right holder on the source and downstream tributaries must sign.
Do we have an example for a change application?	No, Meet with Central Office and Legal Staff before communicating about the appropriateness of other situations with applicants.
Can you consent to your own water right(s)?	Only if you are the most junior water right(s) on the entire source and downstream tributaries. Otherwise you need consent from all downstream juniors.

Examples of Appropriate Use:

At this point in time the Department has only two example situations where this consent mechanism might be effective as seen in the table below. If you believe you have in a situation that is different than these examples and still might work, then you need to set a meeting up with Central Office and legal staff as soon as possible to review the merits of your situation.

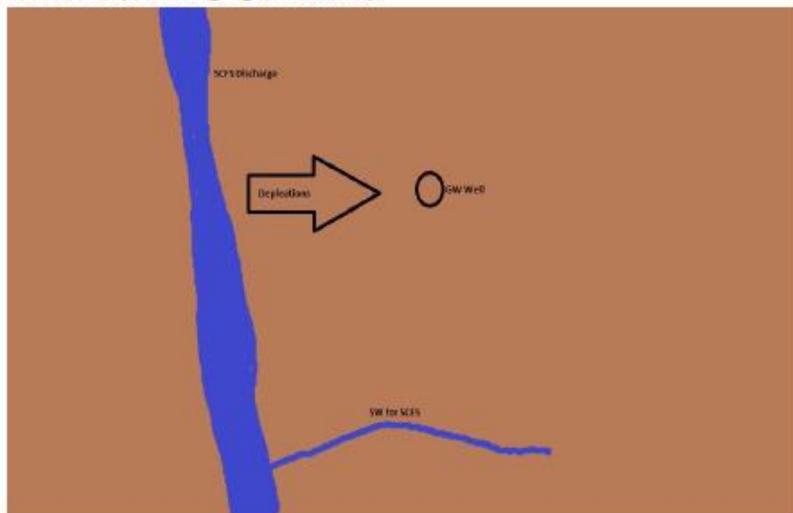
Situation 1:

GW pit depletes surface water in a ditch after it has been diverted from the source and either does not deplete the surface water source, or surface water is legally available on any depleted surface water source. In that scenario, if the only potential adverse effect is to water rights after they have been diverted into the ditch, a written consent from the owner(s) of water right(s) in the ditch would likely authorize issuance of a permit if all of the other criteria are satisfied. Written consent does not allow the user to divert more water into the ditch to compensate for the depletions.



Situation 2:

GW well depletes SW and the only potential adverse effect is to the most junior water user on the source. A written consent by the most junior water user on the source would likely authorize issuance of a permit if all of the other criteria are satisfied, including legal availability.



Example when it shifts the burden and is not appropriate use:

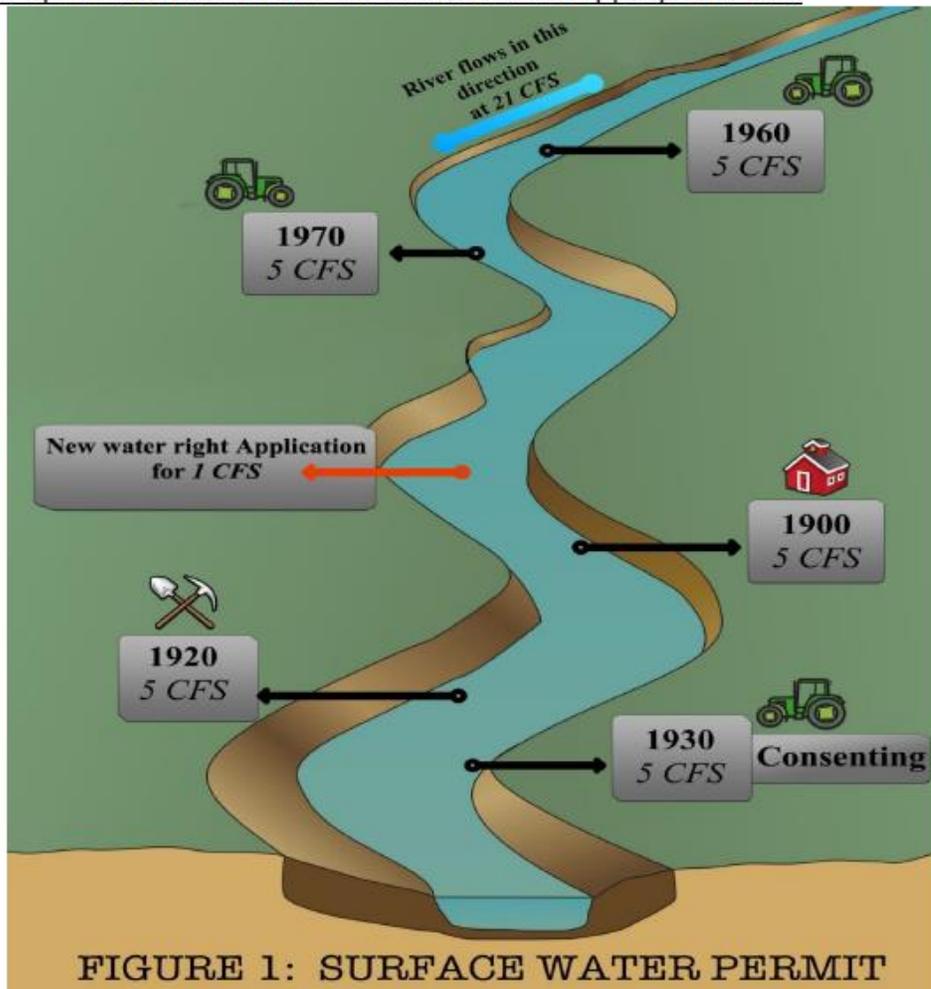


FIGURE 1 DISCUSSION:

Total Physical Water Availability: 21 CFS

Physical Availability at the Point of Diversion: 11 CFS (21 CFS - 5 CFS - 5 CFS = 11 CFS)

Legal Availability at Point of Diversion: -4 CFS (11 CFS - 5 CFS - 5 CFS - 5 CFS = -4 CFS)

Total Surface Demands After Permit: 26 CFS (5 CFS + 5 CFS + 5 CFS + 5 CFS + 5 CFS + 1 CFS)

Total Legal Availability After Permit: -5 CFS (21 CFS - 26 CFS = -5 CFS)

For purposes of this example, the 1930 water right consents to approval of the new permit application.

A) Even though the 1930 water right consented to the new permit, it remains a valid water right and legal demand of 5 CFS on the source. Assuming the consenting water right is still considered for legal availability, the new permit cannot be approved because the legal demands exceed the amount of water available in the source (no unappropriated water is available for the new permit). If the consenting water right is not considered in legal availability then the analysis does not accurately reflect the existing water right demands on the source.

B) If the consenting water right decides to make a call, can it call the new permit it consented to? Assuming it can't call the new water right that it consented to, the burden of any water shortage and call is shifted to other water rights. For example, before the new permit was granted the 1970 water right was required to reduce his diversion to 1 CFS to satisfy call by the 1930 water right. Under the new conditions with the new permit on the source the 1970 user has to completely discontinue diverting to satisfy the call from the consenting water right. The 1970 water user has no remedy to call the new permit as it is downstream.

C) If the new permit is a groundwater well that depletes the surface water source at a constant rate of 1 CFS, the potential for adverse effect is increased. Even if the consenting water right can still theoretically call the new permit, a call would be ineffective because of the delay between shutting off the well and ceasing depletions to surface water. So, the consenting water right is going to call the 1970 water right and it will bear the burden of the new depletions to the source.

Tools, Resources & Training Videos

The Database (Oracle) Training Videos

Montana Water Rights Database and History 

Oracle Forms Basics 

Owner Related Screens 

The Application Screen 

The Water Rights Screen 

The Water Rights Details Screen 

Working with Remarks 

Understanding Related Rights 

The Owner Update Screen 

Reports 