



CHANGE APPLICATION MANUAL

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Prepared by the Water Resources Division
New Appropriations Program



Change Application Manual

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 permit 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 permit applications. **Please note that this manual includes policies and procedures that are used for applications received both before and after Jan. 1, 2024** (change in application processing due to the implementation of House Bill 114 and subsequent updates to administrative rule). When reading this manual, make sure you are looking at the appropriate information depending on when your application was filed. If there is no distinction between pre and post Jan. 1, 2024, processes, then the procedures remain the same.

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 the 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 reformatting 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 staff of major updates or revisions.

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How to Use This Manual

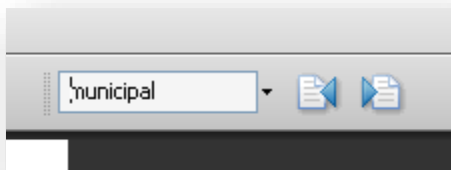
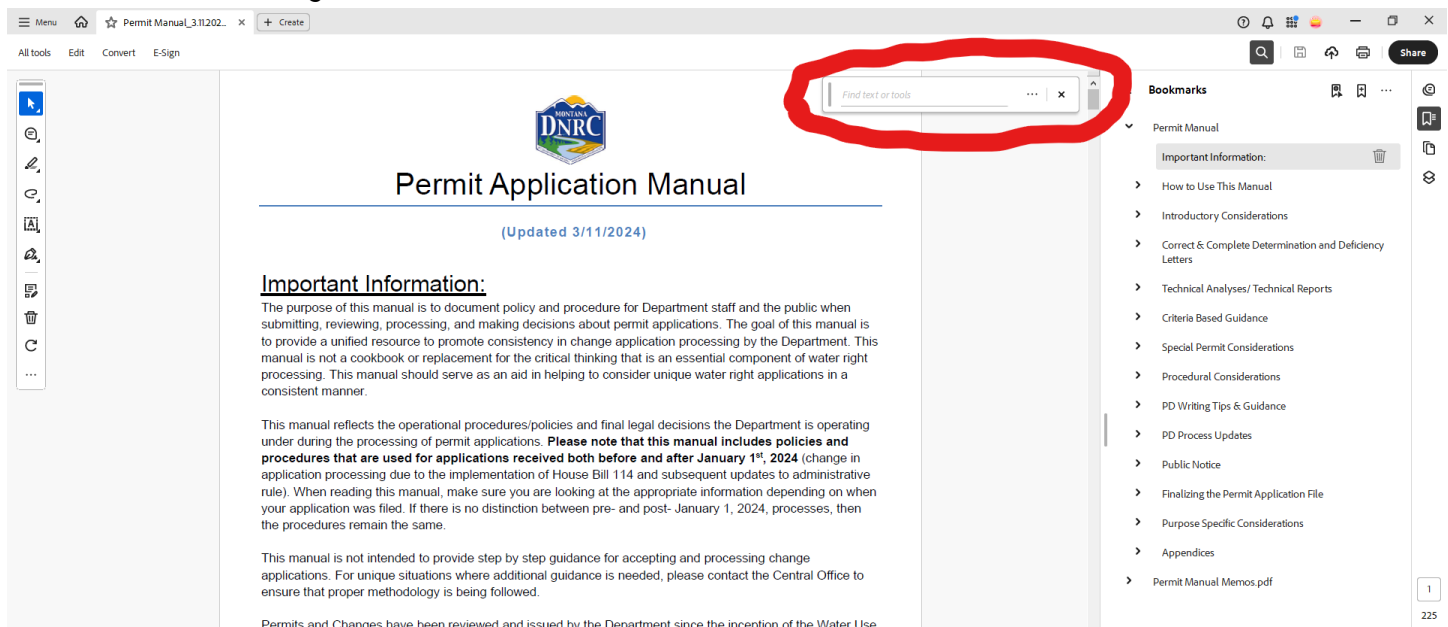
As described in the introduction, this manual is a one stop shop for information relating to how the Department should be processing permit applications. That means that this manual is over 100 pages long and as such, the following are some tips which will help you to find the information you are looking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

The Table of Contents is 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:

You can 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.

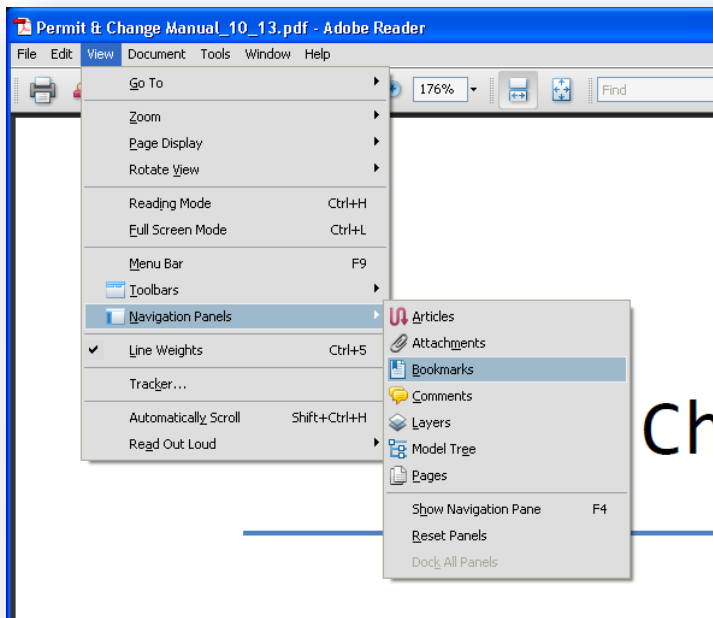


(Just click the arrows after your query to see where the word turns up)

You can view the table of contents:

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 the Table of Contents on 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.

Depending on the type of PDF reader or web browser you are using, the Table of Contents may appear on different sides of the window.

Introductory Considerations

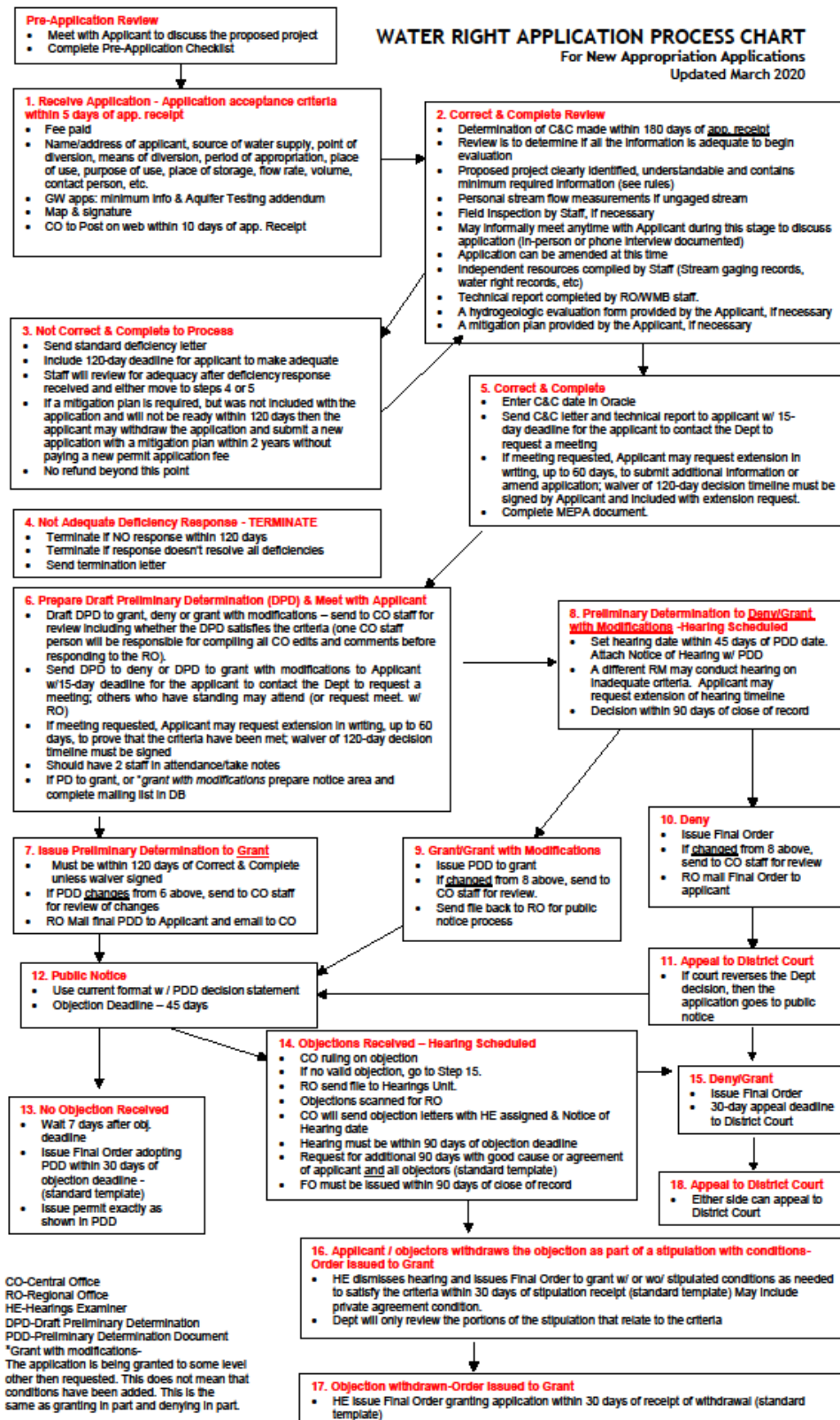
Application Processing Timelines & Flow Chart

For Applications Received Prior to Jan. 1, 2024:

The Department must maintain certain timelines when processing an application. These timelines are identified in statute (§§ 85-2-302 and -307, MCA (2021)). **An application will be processed under the statutes and administrative rules that were in effect at the time of application receipt.** Upon receipt of an application, the Department has 180 calendar days to review the application and send a deficiency letter identifying any defects in the application. The applicant has 120 calendar 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 calendar 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 permit authorization. Once the application is deemed correct and complete, the Department has 120 calendar days to issue a decision in the form of a preliminary determination document (PD). Assuming a PD decision to authorize the permit application, the application is prepared for and sent out to public notice. The notice period can be anywhere from 15-60 calendar days, and the Department has concluded that the notice period will be 45 calendar days unless the RO instructs otherwise for special circumstances. If no valid objections are received during public notice, the permit authorization can be issued immediately with an adoption order. If valid objections are received, the hearings unit will handle the case.

Pre-HB114 Process Flow Chart

The following flow chart outlines the steps in the change process for applications received prior to Jan. 1, 2024.



For Applications Received on or After Jan. 1, 2024:

The Department must maintain certain timelines when processing an application. **An application will be processed under the statutes and administrative rules that were in effect at the time of application receipt.** There are two processing timeline “pathways” that an applicant may take, depending on whether or not the applicant participates in a preapplication meeting with the Department. These timelines are identified in statute (§§ 85-2-302 and -307, MCA (2023)).

Preapplication Meeting Held

Process Overview

Below are the general steps in the permit and change application process if a preapplication meeting is held. See the more detailed description of each step of the process in the following sections.

- Preapplication meeting requested
- Preapplication meeting held
 - Applicant must complete the first signature(s) within **10 business days** of the preapplication meeting
 - Applicant must submit completed preapplication meeting form within **180 calendar days** of the preapplication meeting
- Preapplication Meeting Form (PMF) submission
 - Department must review the submitted PMF for adequate completion (and inform the applicant via Template Letter PA1) within **5 business days** of the PMF receipt date.
 - If the PMF is adequately completed, the Department will sign and accept the form. This acceptance date begins the 45 calendar day period to complete the technical analyses or scientific credibility review.
 - If the PMF is not adequately completed (thus, not accepted), the applicant may use the remaining time prior to the 180- calendar day deadline to submit an adequately-completed PMF.
 - Department must complete (and send the applicant, along with Template Letter PA2) the Technical Analyses or Scientific Credibility Review within **45 calendar days** of deeming the PMF to be adequately completed.
 - Internal timelines for Technical Analyses/ Scientific Credibility Review:
 - ≤ Day 5 after PMF receipt, RO sends WSB Checklist upon determination of adequately completed Preapplication Meeting Form.
 - ≤ Day 40 after PMF acceptance, WSB delivers their completed section of the report, and RO compiles report contents and prepares the report for delivery to applicant.
 - Applicant has **180 calendar days** from the date of the Technical Analyses Report/ Scientific Credibility Review completion to submit their application to the Department.
- Application receipt- deficiencies and correct and complete determination
 - Upon receipt of a permit or change application, the Department has **15 business days** to either send a deficiency letter (Template Letter A1) or determine the application to be correct and complete (and send Template Letter A2).
 - If deficiencies in the application are identified, the applicant has **120 calendar days** to respond to the deficiency letter with information addressing the deficiencies listed.

- If the applicant does not respond to the deficiency letter with substantial and credible information, the Department must terminate the application (and send Template Letter T1) within **30 calendar days** of the deficiency response deadline.
 - Upon receipt of a correct and complete application via deficiency letter response, the Department will determine the application to be correct and complete within **30 calendar days** of the deficiency letter response.
- Preliminary determination
 - Upon determination of a correct and complete application, the Department has **60 calendar days** to issue a Draft PD to Grant/ Grant in Modified Form/ Deny the application (and send Template Letter A3).
 - Internal timelines for Draft PD:
 - ≤ Day 45 after correct and complete determination (≥15 calendar days before PD deadline), the RO will send the Draft PD to CO for review
 - *Please note that each regional office has their own process and deadlines for Regional Managers to review PDs. Those deadlines are not captured in this document, and staff need to be aware of them and build them into their schedule for PD processing.*
 - ≤ Day 55 after correct and complete determination, CO will return the reviewed Draft PD to RO
 - ≤ Day 60 after correct and complete determination, RO will consider CO comments and deliver Draft PD to applicant.
 - See the “PD Process Updates” section of the manual for more information on the PD versions that may be issued after the Draft PD.

Preapplication Meeting Form Completion

Upon the occurrence of the preapplication meeting, the applicant has 180 calendar days to return a completed Preapplication Meeting Form Part B to the Department along with a \$500 preapplication meeting fee. The Department reserves 5 business days to evaluate whether the form was adequately completed to proceed with the technical analyses or scientific credibility review. If the form is adequately completed, the Department will accept the Preapplication Meeting Form and proceed with the technical analyses or scientific credibility review of applicant- completed technical analyses. If it is not adequately completed, the Department will not accept the form and will send the Preapplication Meeting Form Part B back to the applicant. The applicant then has any remaining days in the 180-day period from the date of the preapplication meeting to adequately complete the Preapplication Meeting Form. If the applicant does not adequately complete the form in the 180 calendar days from the date of the preapplication meeting, a new preapplication meeting will need to be scheduled. See the Preapplication Meeting section of the manual for more information on preapplication meetings and the Preapplication Meeting Form package.

Technical Analyses/ Scientific Credibility Review

Upon acceptance of an adequately completed Preapplication Meeting Form, the Department has 45 calendar days to complete either the technical analyses report (if the applicant designated the Department to complete the technical analyses) or the scientific credibility review report (if the applicant opted to complete the technical analyses themselves). After the technical analyses report or scientific credibility review report is completed, the applicant has 180 calendar days to submit their Application Form (600/606) to the Department before the Preapplication Meeting Form expires. Department-completed technical analyses expire one year from the completion date. See the Technical Analyses/Technical Reports section of the manual for more information on the technical analyses and scientific credibility review process.

Application Receipt

Upon submission of an application, the Department initially reviews the application package to determine whether it meets the application receipt requirements. If it does not meet submission requirements per ARM 36.12.1304 (permits) or 1305 (changes), the Department will return the application without stamping it received or accepting funds. If it does meet requirements, RO stamps application as received and performs initial entry. If a preapplication meeting was held, the Department has 15 business days to review the application for deficiencies and either send a deficiency letter or deem the application to be correct and complete. If the application includes information that differs from the technical analyses, or the applicant has since performed their own technical analyses, the application is treated as no preapplication meeting having occurred, and expedited timelines will not apply.

Deficiency Letter/ Correct and Complete

If application deficiencies are not identified within 15 business days of application receipt the application automatically defaults to a correct and complete application. If the Department sends a deficiency letter, the applicant has 120 calendar days from the date of the deficiency letter to submit a deficiency response letter. If a deficiency response letter is not received within that period, the Department must terminate the application. Within 30 calendar days of receiving a deficiency response letter, the Department must deem the application correct and complete or terminate the application. The RO may need to confer with WSB on whether deficiencies were corrected. An application not terminated after 30 calendar days will default to correct and complete. See the Correct & Complete and Deficiency Letters section of the manual for more information on deficiency letters and the correct and complete determination process.

Draft Preliminary Determinations

The Department has 60 calendar days from the determination of a correct and complete application to complete a Draft Preliminary Determination (PD). The applicant has 15 business days from the date of the Draft PD to request an extension of time to submit additional information, if desired. If the Department grants the request for extension of time, the Department will update the Draft PD to consider the new information submitted by the applicant. If the Draft PD is to deny or grant with modifications, the applicant may modify their application one time after the Draft PD is issued. If applicant submits a modification, timelines (and potentially priority date) are reset. Learn more about specific processes for each decision type in the Preliminary Determination Decision Types section below and see the PD Versions section of the manual for more information on the role of different PD version types in the application process.

Opportunity for Public Comment

Draft PDs to grant or grant with modifications will go to a public notice of opportunity for public comment for a period of 30 calendar days. See the Public Notice section of the manual for more information on public comment processes. Learn more about specific processes for each decision type in the Preliminary Determination Decision Types section below and see the PD Versions section of the manual for more information on the role of different PD version types in the application process.

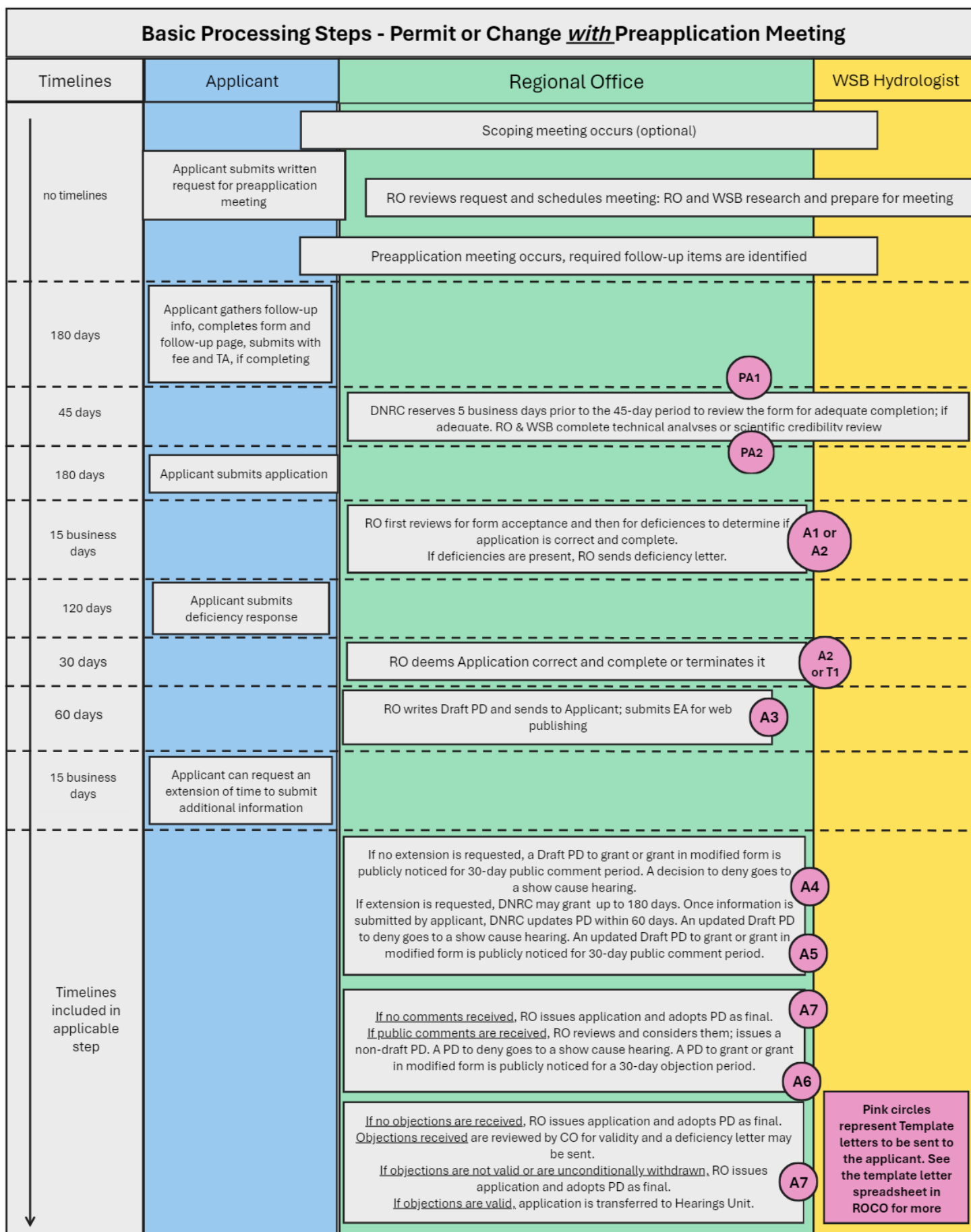
Preliminary Determination

Following the receipt of public comments, the Department will update the Draft PD or updated Draft PD to consider public comments. The Preliminary Determination (non-draft) will be issued within 30 calendar days of the public comment period closing and will then go to public notice for opportunity to object to an application. Learn more about specific processes for each decision type in the Preliminary Determination Decision Types section below and see the PD Versions section of the manual for more information on the role of different PD version types in the application process.

Opportunity to Object to an Application

A PD will go to public notice of opportunity to object for 30 calendar days if the Draft or Updated Draft PD received public comments. Members of the public with standing to object can only object to an application on the basis of issues raised during the public comment period. If no valid objections are received during public notice, the permit or change authorization can be issued immediately with an adoption order. If valid objections are received, the hearings unit will handle the case. For more information on the objection process, see the Public Notice section of the manual.

Flow Chart- Basic processing steps for applications WITH a preapplication meeting:



No Preapplication Meeting Held

Process Overview

Below are the general steps in the permit and change application process if a preapplication meeting is not held. See the more detailed description of each step of the process in the following sections.

- Application receipt- deficiencies and correct and complete determination
 - Upon receipt of a permit or change application, the Department has **30 business days** to either send a deficiency letter (Template Letter A1) or determine the application to be correct and complete (and send Template Letter A2).
 - If deficiencies in the application are identified, the applicant has **120 calendar days** to respond to the deficiency letter with information addressing the deficiencies listed.
 - If the applicant does not respond to the deficiency letter with substantial and credible information, the Department must terminate the application (and send Template Letter T1) within **30 calendar days** of the deficiency response deadline.
 - Upon receipt of a correct and complete application via a deficiency letter response, the Department will determine the application to be correct and complete within **30 calendar days** of the deficiency letter response.
- Technical Analysis/Scientific Credibility Review & Preliminary Determination
 - Upon determination of a correct and complete application, the Department has **120 calendar days** to issue a Draft PD to Grant/ Grant in Modified Form/ Deny the application (Template Letter A3).
 - Internal Timelines for a Draft PD:
 - Day ≤10 after correct & complete determination:
 - RO will send application and WSB checklist to WSB via HYDRODOCS folder (update database events, and send an email notifying WSB the documents are there)
 - RO and WSB will then spend ≤45 calendar days to complete their remaining respective parts of the technical analyses or scientific credibility review.
 - Day ≤55 after correct and complete determination:
 - WSB will send their portion of the technical analyses or scientific credibility review to RO.
 - RO will begin drafting the PD (≤50 calendar days to send the Draft PD to CO).
 - *Please note that each regional office has their own process and deadlines for Regional Managers to review PDs. Those deadlines are not captured in this document, and staff need to be aware of them and build them into their schedule for PD processing.*
 - Day ≤105 after correct and complete determination (≥15 calendar days before PD deadline):
 - RO will send draft Draft PD to CO for review
 - CO will review Draft PD (≤10 calendar days)
 - Day ≤115 after correct and complete determination:
 - CO will deliver Draft PD review to RO
 - RO will incorporate CO comments
 - Day ≤120 after correct and complete determination:

- RO delivers Draft PD and technical analyses or scientific credibility review to the applicant.
- See the “PD Process Updates” section of the manual for more information on the PD versions that may be issued after the Draft PD.

Application Receipt

Upon submission of an application, the Department initially reviews the application package to determine whether it meets the application receipt requirements. If it does not meet submission requirements per ARM 36.12.1304 (permits) or 1305 (changes), the Department will return the application without stamping it received or accepting funds. If it does meet requirements, RO stamps application as received and performs initial entry. If a preapplication meeting was held, the Department has 30 business days to review the application for deficiencies and either send a deficiency letter or deem the application to be correct and complete.

Deficiency Letter/ Correct and Complete

If application deficiencies are not identified within 30 business days of application receipt the application automatically defaults to a correct and complete application. If the Department sends a deficiency letter, the applicant has 120 calendar days from the date of the deficiency letter to submit a deficiency response letter. If a deficiency response letter is not received within that period, the Department must terminate the application. Within 30 calendar days of receiving a deficiency response letter, the Department must deem the application correct and complete or terminate the application. The RO may need to confer with WSB on whether deficiencies were corrected. An application not terminated after 30 calendar days will default to correct and complete. See Correct & Complete Determination and Deficiency Letters section of the manual for more information on deficiency letters and the correct and complete determination process.

Technical Analyses/ Scientific Credibility Review

Upon receipt of a correct and complete application, the Department can begin either the technical analyses report (if the applicant designated the Department to complete the technical analyses) or the scientific credibility review report (if the applicant opted to complete the technical analyses themselves). The technical analyses report or scientific credibility review report will be delivered to the applicant with the Draft Preliminary Determination. Department completed technical analyses expire one year from the completion date. See the Technical Analyses/ Technical Reports section of the manual for more information on the technical analyses and scientific credibility review process.

Draft Preliminary Determinations

The Department has 120 calendar days from the determination of a correct and complete application to complete a Draft Preliminary Determination (PD) (and technical analyses/scientific credibility review). The applicant has 15 business days from the date of the Draft PD to request an extension of time to submit additional information, if desired. If the Department grants the request for extension of time, the Department will update the Draft PD to consider the new information submitted by the applicant. If the Draft PD is to deny or grant with modifications, the applicant may modify their application one time after the Draft PD is issued. If applicant submits a modification, timelines (and potentially priority date) are reset. Learn more about specific processes for each decision type in the Preliminary Determination Decision Types section below and see the PD Versions section of the manual for more information on the role of different PD version types in the application process.

Opportunity for Public Comment

Draft PDs to grant or grant with modifications will go to a public notice of opportunity for public comment for a period of 30 calendar days. See the Public Notice section of the manual for more information on public comment processes. Learn more about specific processes for each decision type in the Preliminary Determination Decision Types section below and see the PD Versions section of the manual for more information on the role of different PD version types in the application process.

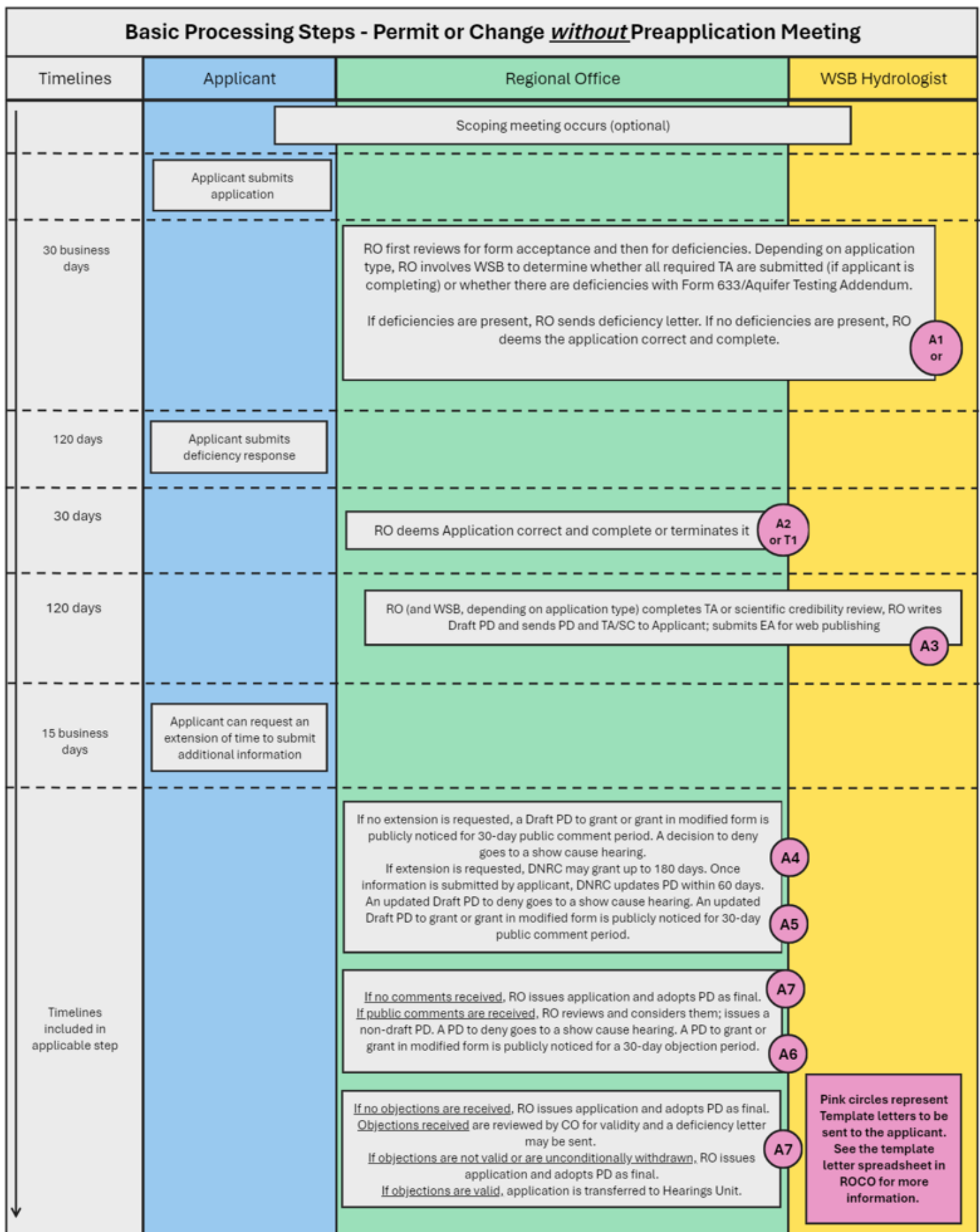
Preliminary Determination

Following the receipt of public comments, the Department will update the Draft PD or updated Draft PD to consider public comments. The Preliminary Determination (non-draft) will be issued within 30 calendar days of the public comment period closing and will then go to public notice for opportunity to object to an application. Learn more about specific processes for each decision type in the Preliminary Determination Decision Types section below and see the PD Versions section of the manual for more information on the role of different PD version types in the application process.

Opportunity to Object to an Application

A PD will go to public notice of opportunity to object for 30 calendar days if the Draft or Updated Draft PD received public comments. Members of the public with standing to object can only object to an application on the basis of issues raised during the public comment period. If no valid objections are received during public notice, the permit or change authorization can be issued immediately with an adoption order. If valid objections are received, the hearings unit will handle the case. For more information on the objection process, see the Public Notice section of the manual.

Flow Chart- Basic processing steps for applications WITHOUT a preapplication meeting:



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. Water right related definitions can be found either in [Mont Code Ann. 85-2-102](#) or the [Administrative Rules of Montana 36.12.101](#).

Roles and Responsibilities

For more information on the roles and responsibilities pertinent to processing permit and change applications, please see the "Permit and Change RACI Diagram" in the appendices of this document.

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 meets 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 (for applications received prior to Jan. 1, 2024 or Technical Analyses Report/ Scientific Credibility Review Report (for applications received on or after Jan. 1, 2024) 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 (for applications received prior to Jan. 1, 2024) or Technical Analyses Report/ Scientific Credibility Review Report (for applications received on or after Jan. 1, 2024) 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 review of Technical Analyses and database coding
- Responsible for final approval or denial of authorizations.

Central Office (CO) Staff

- The CO staff is responsible for answering RO staffs questions relating to processes, MCA, ARM, forms, addenda, policy, precedent, procedure, timelines, PDs, 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 Legal Unit 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 New Appropriations Program Manager, Water Rights Bureau Chief, and RO managers.

Water Sciences Bureau (WSB)

- WSB is responsible for answering RO staff’s questions which relate to surface water measurements and calculations, aquifer testing requirements, evaluation of aquifer testing data. WSB also completes technical hydrological analysis or scientific credibility review for certain sections of the technical analyses, and peer reviews of hydrologist specialists work as deemed necessary by WSB and regional managers.
- WSB models and drafts Groundwater Change Reports for groundwater change applications with potential changes to surface water depletions, and Surface Water Change Reports for change applications in which a return flow analysis is required. For changes to an irrigation place of use, there must at a minimum always be an analysis of the annual volume and location of return flows. Any questions on return flow analysis requirements should be sent to CO.

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 for providing all necessary information for a correct and complete application within the statutory timelines.
- The Department will communicate the steps of the application process to the applicant via template letters provided in [ROCO](#) > #HB114\Application Template Letters:

Template Letter Name	Template Letter Code
Pre App- Form Receipt Confirmation & Successful/ Unsuccessful Completion Notification	PA1
Pre App- Technical Analysis/ Scientific Credibility Review Report Delivery	PA2
Application Deficiency Letter	A1
Application Correct & Complete Notification	A2
Application Termination	T1
Draft PD Cover Letter	A3

Grant of Request for Extension of Timelines Letter	A4
Updated Draft PD Cover Letter	A5
PD (non-draft) Cover Letter	A6
Final Adoption Cover Letter	A7

What to Send to Whom Internally

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 and prior to Correct & Complete or technical analyses/scientific credibility review delivery.

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: After your Regional Manager has completed a comprehensive quality and content review of your PD, send it to your CO contact person and CC the New Appropriations Program Manager, Regional Operations Manager, and other New Appropriations Program Specialists. Do not send PDs to hearings examiners.

Public Notice: Send a copy of the finalized PD in PDF format to both CO CT contacts in the Central Office along with a note that the public notice is ready to go. Be sure to include both individuals in your email, in case your contact is out of the office. Please remember to include the email address contact information for the Applicant and consultant or attorney in the body of your email to the CO CTs. See the Public Notice section of this manual for more information on communication guidelines for the public notice process.

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.
- Please send PDs for CO review **at least 15 calendar days** prior to the PD deadline.
- Initiate discussion between RO and CO staff regarding when legal review is necessary. PDs to Deny, PDs to Grant Marketing for Mitigation applications, and PDs to Grant consumed uses of water that exceed 5.5 CFS and 4,000 AF per year may need to be reviewed by Legal after CO review. Consult your regional manager and your CO contact if you think a PD may need legal review, and please plan to allot extra time in the review process.
- 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.

Preliminary Determination Decision Types

Decision to Deny

For Applications Received Prior to Jan. 1, 2024:

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 calendar days. If a meeting is requested, the applicant may request, in writing, up to 60 calendar 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. If the draft denial proceeds to a PD to deny, a hearing will be scheduled unless the applicant chooses not to pursue the hearing, pursuant to § 85-2-310(1)(a), MCA.

For Applications Received on or After Jan. 1, 2024:

If the PD Decision is to deny, a Draft PD is sent to the applicant. The applicant has 15 calendar days to submit a request for extension of timelines to submit additional information, after which the Department can grant the applicant up to 180 calendar days to submit additional information for the Department to consider in the decision. If no request for extension of timeline is submitted to the Department within 15 calendar days, the Department sends the application to the Office of Administrative Hearings (OAH) to schedule a show-cause hearing. If the applicant does submit a request for extension of timeline within 15 calendar days of Draft PD issuance, the Department may grant a set amount of time (up to 180 calendar days) for the applicant to submit additional information. The DNRC must inform the applicant of the granted extension in writing (see Template Letter A4). Upon receipt of additional information, the RO needs to determine whether the additional information submitted would require the applicant to submit a modification form. If so, RO should direct applicant to submit a Form 655, which will reset timelines, and potentially the priority date (ARM 36.12.1401). DNRC shall issue an updated Draft PD within 60 calendar days after the earliest date of either: the extension deadline set, or DNRC's receipt of written notice from applicant saying all information has been submitted. DNRC may revise PD based on new information submitted (MCA 85-2-307(3)(b)). If the draft denial proceeds to an updated Draft PD to Deny, a show-cause hearing will be scheduled unless the applicant chooses not to pursue the hearing.

Decision to Grant in Modified Form

A preliminary decision to grant a permit or change in modified form is made when the permit or change is granted only partially, and/or in a way that is different from what the applicant proposes.

For Applications Received Prior to Jan. 1, 2024:

The PD to Grant in Modified Form must be clear about which elements/findings made by the Department are modifications to the original application proposal, and why those modifications are taking place (e.g., "The applicant propose to divert X CFS up to a volume of X AF for X purposes. Based on [Y reasons], the modified flow rate and volume that may be appropriated after this change is Y CFS up to Y AF.")

Specific statutory provisions in § 85-2-310(7), MCA apply to decisions to grant in modified form. The following process implements those provisions, and must be followed for a decision to grant in modified form:

1. At least 15 calendar days prior to the 120-day decision deadline, DNRC sends the applicant a draft PD to Grant in Modified Form. The applicant has the opportunity to review the draft PD and has 15 calendar

days to request a meeting with DNRC to provide additional information proving why the application without modifications meets the criteria for issuance, if desired.

- a. If they request a meeting within 15 calendar days, the applicant must sign a waiver of statutory timelines, so the Department is no longer required to issue a final Preliminary Determination within the 120-day statutory deadline.
 - b. If a meeting is requested (and a waiver of timelines has been signed), the applicant can request up to 60 calendar days of additional time to submit information. (The 60-day clock can begin ticking the day the requested meeting is held.)
2. If a meeting is not requested, the draft PD to Grant in Modified Form becomes a PD (non-draft) to Grant in Modified Form and is sent to the applicant, along with a cover letter informing them they have 30 calendar days to request a show-cause hearing. Ensure the Notice language at the end of the PD references the show-cause hearing process. The PD to Grant in Modified Form is not yet sent to public notice. If the applicant wants to request a show-cause hearing, they have 30 calendar days to do so in writing.
3. If a show-cause hearing is not requested, the PD to Grant in Modified Form proceeds to public notice, where the process is then consistent with PDs to Grant. At this stage, ensure the Notice language at the end of the PD references the public notice process, and not the show-cause hearing process.

Specific letter templates have been designed to outline this process for the applicant. 'Step 1' and 'Step 2' letter templates are available in ROCO FOLDER\DECISION DOCUMENTS\PRELIMINARY DETERMINATIONS\PD TEMPLATES. The 'Step 1' and 'Step 2' letters correspond with Steps 1 and 2 detailed in the list above.

For Applications Received on or After Jan. 1, 2024:

If the PD Decision is to grant with modifications, a Draft PD is sent to the applicant. The applicant has 15 calendar days to submit a request for extension of timelines to submit additional information, after which the Department can grant the applicant up to 180 calendar days to submit additional information for the Department to consider in the decision. If no request for extension of timeline is submitted to the Department within 15 calendar days, the Department will send the Draft PD to public notice of opportunity for public comment (See Public Notice section of this manual). If the applicant does submit a request for extension of timeline, the Department may grant a set amount of time (up to 180 calendar days) for the applicant to submit additional information. The DNRC must inform the applicant of the granted extension in writing (see Template Letter A4). Upon receipt of additional information, the RO needs to determine whether the additional information submitted would require the applicant to submit a modification form. If so, RO should direct applicant to submit a Form 655, which will reset timelines, and potentially the priority date (ARM 36.12.1401). DNRC shall issue an updated Draft PD within 60 calendar days after the earliest date of either: the extension deadline set, or DNRC's receipt of written notice from applicant saying all information has been submitted. DNRC may revise PD based on new information submitted (MCA 85-2-307(3)(b)).

Decision to Grant

For Applications Received Prior to Jan. 1, 2024:

If the PD decision is to grant, a non-draft PD is sent to the applicant at the same time as being sent to public notice for objections. See the Public Notice section of this manual for more information.

For Applications Received on or After Jan. 1, 2024:

If the PD decision is to grant, a Draft PD is sent to the applicant. The applicant has 15 calendar days to submit a request for extension of timelines to submit additional information, after which the Department can grant the

applicant up to 180 calendar days to submit additional information for the Department to consider in the decision. If no request for extension of time is submitted to the Department within 15 calendar days, the Department will send the Draft PD to public notice of opportunity for public comment (See Public Notice section of this manual). If the applicant does submit a request for extension of timeline, the Department may grant a set amount of time (up to 180 calendar days) for the applicant to submit additional information. The DNRC must inform the applicant of the granted extension in writing (see Template Letter A4). Upon receipt of additional information, the RO needs to determine whether the additional information submitted would require the applicant to submit a modification form. If so, RO should direct applicant to submit a Form 655, which will reset timelines, and potentially the priority date (ARM 36.12.1401). DNRC shall issue an updated Draft PD within 60 calendar days after the earliest date of either: the extension deadline set, or DNRC's receipt of written notice from applicant saying all information has been submitted. DNRC may revise PD based on new information submitted (MCA 85-2-307(3)(b)).

Request for Extension of Timelines

The Department has made available an opportunity for an applicant to request an extension of time after the Draft PD is issued by the Department. Upon a request for extension of time, the Department can grant the applicant, in writing, up to 180 calendar days to submit additional information for the Department to consider in the decision (MCA 85-2-307(3)(a)). If DNRC granted the request for extension of time, the Department shall issue an updated Draft PD within 60 calendar days of the earliest date of either:

- The extension of deadline set (up to 180 calendar days granted by DNRC upon request of the applicant)
- DNRC's receipt of written notice from applicant saying all information has been submitted. (MCA 85-2-307(3)(b))

If you feel that a request for extension of timelines should be denied to an applicant, please contact Central Office.

Waiver of Timelines

*Note that applications received prior to Jan. 1, 2024 may apply a "Waiver of 120 Days Statutory Timeline for Preliminary Decision" form. **Note that applications received after Jan. 1, 2024 cannot use this form.***

The Department has made available a "Waiver of 120 Days Statutory Timeline for Preliminary Decision" form, more commonly referred to as a 'waiver of timelines. An applicant signing this form is waiving the Department's statutory obligation in § 85-2-307, MCA to complete a preliminary determination within 120 calendar days of an application being deemed correct and complete. The applicant may waive timelines at any point in the process following a correct and complete determination, but before a preliminary determination has been sent to the applicant. An applicant cannot waive any timelines prior to a Correct & Complete determination of the 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.

Preapplication Meetings

Overview

Meeting Purpose

The purpose of the preapplication meeting is to make the Application process more streamlined, predictable, and efficient for both the applicant and Department. While preapplication meetings are optional, they are encouraged by the Department and offer the following incentives:

- Discounted filing fee,
- Expedited application timelines,
- Receipt of Technical Analyses report prior to application submittal.

The preapplication 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. The applicant needs to fully understand all criteria applicable to their proposed project. This will help the applicant prepare themselves and put together a comprehensive application and hopefully avoid difficulties in processing upon completion of the Preapplication Meeting Form.

It is likely that you will meet with the applicant prior to the preapplication 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 preapplication meeting.

It may be beneficial to set up a site visit with the applicant. Work with your regional manager and the applicant to determine if and when a field visit should take place.

Preapplication Meeting Fee and Application Discount

A fee of \$500 is required at the time of Department receipt of the signed Preapplication Meeting Form (within 180 calendar days after the preapplication meeting is held). This \$500 fee will be credited toward the total discounted filing fee of the permit or change application form. The new fees are, per ARM 36.12.103, are as follows:

- Permit application in a closed basin: \$2900
- Permit application in a closed basin with a preapplication meeting: \$1600
 - Permit preapplication fee is \$500 – this \$500 would be credited to the \$1600 fee, so the payment required at application submittal is \$1100.
- Permit application in an open basin: \$2500
- Permit application in an open basin with a preapplication meeting: \$1200
 - Permit preapplication fee is \$500 – this \$500 would be credited to the \$1200 fee, so the payment required at application submittal is \$700.
- Change application: \$2500
- Change application with a preapplication meeting: \$1500
 - Change preapplication fee is \$500 – this \$500 would be credited to the \$1500 fee, so the payment required at application submittal is \$1000.

Preapplication Meeting Timelines

- Preapplication Meeting Held

- **Applicant** has **180 calendar days** from the date of the preapplication meeting to complete and sign the Preapplication Meeting Form Part B and return it to the Department with the \$500 preapplication meeting fee.
- Preapplication Meeting Form Received
 - The **Department** reserves the first **5 business days** after the Preapplication Meeting Form Part B receipt to determine if the Preapplication Meeting Form Part B submitted by the applicant was adequately completed for the Department to proceed with technical analyses. If the applicant has elected to complete the technical analyses, the Department must also determine in these 5 business days whether the applicant submitted each piece of technical analyses required based on the proposed project and the Department is able to proceed with the scientific credibility review. This determination of adequate Preapplication Meeting Form Part B completion is communicated to the applicant with Template Letter PA1.
 - If the Preapplication Meeting Form Part B (and technical analyses if applicable) are not deemed adequately completed, the Department does not accept the Preapplication Meeting Form and will return the form to the applicant. The applicant can use any remaining days in the 180-calendar day time frame (days since the preapplication meeting) to adequately complete the Preapplication Meeting Form by submitting a new Part B (and technical analyses if applicable).
 - If the Department accepts the submitted Preapplication Meeting Form Part B (and technical analyses if applicable), the **Department** has **45 calendar days** from the date of Preapplication Meeting Form Part B acceptance to either complete the technical analyses or complete the scientific credibility review. The Technical Analyses are sent with Template Letter PA2.
- Technical Analyses Report/ Scientific Credibility Review Report Delivery
 - From the date that the Department sends either the Technical Analyses Report or the Scientific Credibility Review Report, the **applicant** has **180 calendar days** to submit their application to the Department.
- Application Receipt
 - Application processing timelines are expedited if a preapplication meeting was held for the application. See Application Processing Timelines section of the manual for more information.

Meeting request

Rule requirements

Per ARM 36.12.1302(2), a request to schedule a preapplication meeting for a permit or change must be written (electronically or physically) and include the following information:

- (a) the flow rate and volume of water required;
- (b) the point of diversion;
- (c) the place of use;
- (d) the source of water;
- (e) the purpose;
- (f) for changes, the water right(s) proposed to be changed;
- (g) for changes, an explanation of historical use of the right(s) proposed for change;
- (h) any proposed places of storage, if applicable; and
- (i) for applications proposing a new well or wells, the well depth(s) and location.

An optional Request for Preapplication Meeting Form is available on our Forms webpage.

Level of detail

The applicants should provide details to the best of their knowledge at the time of the preapplication meeting request, in order for the Department to prepare for the meeting to the best of our ability. We will not “reject” a preapplication meeting request due to lack of detail, so long as the required information is submitted per rule. When scheduling a meeting with the applicant, make sure they are aware of the location and content of the Preapplication Meeting Form Part A. If the applicant has more information than is required per rule when requesting the preapplication meeting, (for example, historical use records that the Department may not otherwise have access to) it would be helpful for the applicant to provide this information prior to the meeting (though not required). It’s important to make clear to the applicant that the information the Department brings to the preapplication meeting is dependent on the information provided in the written preapplication meeting request. If an applicant wants to schedule a preapplication meeting but lacks information that would inform the Department’s preliminary research prior to the meeting, the Department may strongly suggest the meeting be a “scoping meeting”- this behooves both the applicant and the Department.

For all groundwater applications, WSB needs the proposed point(s) of diversion and the proposed well depth(s) (¼ ¼ ¼ section, township, and range) in order to identify the depleted surface water sources before the preapplication meeting. For surface water irrigation changes, WSB needs the historical and proposed places of use and points of diversion to determine where return flows historically accrued and are projected to accrue.

What can change (between preapplication meeting request and preapplication meeting)

The Department will not hold applicants to the information provided in the preapplication meeting request. However, it’s important the applicant is aware that deviating from information provided in the preapplication meeting request may invalidate the preliminary research conducted by the Department. Regional offices should strongly encourage applicants in this situation to change their meeting type to a scoping meeting, so that the applicant can get the correct information at the time of the preapplication meeting.

Scheduling the meeting

Timelines

There is no rule or statutory timelines for when a preapplication meeting needs to be scheduled following a preapplication meeting request. Preapplication meetings should generally be scheduled about a month out so as to give the Department ample time to prepare for the meeting and conduct preliminary research on the application while also managing the current workload.

Coordination with WSB

For all groundwater applications and surface water irrigation water right change applications in which the place of use is being changed, the WSB will prepare for and attend preapplication meetings. When scheduling a preapplication meeting for either groundwater applications or surface water irrigation changes, confirm WSB availability and send an invitation to the meeting via the shared WSB preapplication meeting calendar. Preapplication meetings involving WSB need to be scheduled a **minimum of 30 calendar days** from when the meeting request was made, in order for WSB to have ample time to prepare for the meeting. **Please attach all submitted preapplication materials to the meeting event.** WSB will then designate a staff member to prepare for and attend the meeting.

Preparation for the meeting

Information to bring to the meeting

While applicants are not held to the information provided in the preapplication meeting request, the Department will prepare for the meeting using the information provided in the request. All parties, including WSB and RO, need to be on the same page during the preapplication meeting— schedule a meeting with WSB ahead of the meeting if necessary.

Water right documents and history (for changes)

For changes, the RO should be familiar with the history and current status of the water right, including decree status, if there's a current Water Court case, or any previous changes (active or inactive) on the water right being changed. The RO should also research the historical use of the water right, using the information supplied by the applicant and other resources (WRS maps and field notes, historical imagery, records, etc.).

Unique basin scenarios

If there are basin closures, enforcements, or other potentially unique conditions in the area (such as gaged vs ungaged sources), this is important information to have prepared at the meeting to convey to the applicant.

Any red flags!

Communicate any red flags or points of confusion you come across to the applicant. If you have policy questions at or prior to the meeting, reach out to the Central Office so they can be addressed as soon as possible (there will be limited time for policy discussions during the period of technical analysis or scientific credibility review).

Holding the meeting

Preapplication Meeting Attendees

Groundwater permit or change applications:

- RO staff
- WSB staff
- Applicant and/or applicant representative

Surface water permit applications:

- RO staff
- Applicant and/or applicant representative

Surface water non-irrigation change applications:

- RO staff
- Applicant and/or applicant representative

Surface water irrigation change applications, *if the place of use or purpose is being changed*:

- RO staff
- WSB staff
- Applicant and/or applicant representative

Meeting structure

The preapplication meeting will walk through the proposed project by completing (or going over, if information is not available) the applicable steps of the Preapplication Meeting Form Parts A & B. 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 or act as a consultant. Ideally the meeting will have an interactive nature- so having resources on-hand like the WRS

maps, [Irrigation Calculator Tool](#), and the Technical Analyses Guide will allow for a more quality discussion with the applicant.

How to fill out the Preapplication Meeting Form

The Preapplication Meeting Form (form) Part A will be filled out by the regional office staff during the preapplication meeting. The idea behind the comprehensive form is that most questions are specific and require little narrative, unless otherwise indicated. For questions that require a narrative response, there are specific instructions to do so. For questions that the applicant cannot answer at the time of the preapplication meeting, RO staff should select the “follow up” box so that the applicant and Department know that the applicant is required to submit more information following the meeting using the designated follow-up section of Part A of the form. The follow-up section will be used by DNRC to document required information the applicant must gather during the 180 calendar days after the preapplication meeting. The applicant will then use Part B to document and submit the additional information they have gathered and are now submitting. Part B of the Preapplication Meeting Form can also be used by the applicant to document any changes they desire to make to Part A of the form that was signed at the end of the preapplication meeting.

For example, if the applicant determines during the 180 calendar days following the preapplication meeting that they want to change/ amend their response to question 5a from the response given during the preapplication meeting, the applicant could list question 5a in Part B of the Preapplication Meeting Form, along with their requested change to their earlier response to that question.

Looking for red flags

As mentioned above, if the applicant has changed significant information from their preapplication meeting request, the regional office staff should strongly suggest the applicant consider the meeting at hand to be a scoping meeting instead of a preapplication meeting.

First signatures

At the end of the preapplication meeting, both the applicant and Department will sign the Preapplication Meeting Form Part A. If the applicant or attorney is not physically present at the preapplication meeting, the Department allows for a 10 business day grace period to receive the first set of original signatures on the Preapplication Meeting Form Part A. The Department should be signing the Preapplication Meeting Form after receiving the applicant’s original signature. It’s important that the applicant is aware of the expectations of them at the time of first signatures. At this time, the applicant’s signature will be acknowledging the following:

- “We attest that the information on this form accurately describes the proposed project discussed during the preapplication meeting, and that the items marked for follow-up will require the Applicant to provide additional information before the form is deemed complete.”
- “Applicant acknowledges that any information provided by the Department during the preapplication meeting is preliminary and subject to change.”
- “Applicant acknowledges that if the follow-up information provided to the Department substantially changes the proposed project, for example in a way that alters which sections of the form are applicable or which technical analyses are required, or who is to complete the technical analyses, the applicant will need to schedule a new preapplication meeting so that the Department can identify any additional information necessary for completion of the technical analyses (ARM 36.12.1302(3)(c)).”

Receiving the completed (signed) Preapplication Meeting Form

Deadline for receipt

After the preapplication meeting is held, the applicant has 180 calendar days to finish the Preapplication Meeting Form Part B (gather any missing information indicated as needing follow up, or to make any changes to the content discussed in the preapplication meeting). If the applicant has opted to do technical analyses, the applicant must also submit the technical analyses within 180 calendar days of the preapplication meeting.

Preapplication Meeting Form receipt

- Upon Department receipt of Part B of the Preapplication Meeting Form (within 180 calendar days following the meeting), the Department reserves five business days to **deem the Preapplication Meeting Form package (Parts A & B) to be inadequately completed** if:
 - 1 – the completed form does not include all necessary follow-up information identified in the meeting, **OR**
 - 2 – the completed form is not adequate for the Department to proceed with technical analyses, **OR**
 - 3 – the applicant has elected to complete technical analyses and has not submitted each piece of technical analysis required, **OR**
 - 4 – the applicant has substantially changed the details of the proposed project, such as in a way that alters which sections of the form are applicable, which technical analyses are required, or who is to complete the technical analyses.
- If the Department deems the form package to be inadequately completed within these five business days due to reasons 1-3 above, the applicant can use the balance of their 180-calendar day period in ARM 36.12.1302(4) or (5) to gather the remaining follow-up information needed.
 - If there is no time remaining in the 180-calendar day period, the applicant can submit a written request for a new preapplication meeting, pursuant to ARM 36.12.1302(2).
 - Even if there is still time remaining, the applicant can choose to schedule a new preapplication meeting.
- The Department shall transfer the \$500 payment received to the new preapplication meeting, or refund the payment to the applicant if the applicant desires. If the Department returns the form to the applicant within these five calendar days due to reason (4) above, the applicant must submit a written request for a new preapplication meeting, pursuant to ARM 36.12.1302(2).
- The Department shall transfer the \$500 payment received to the new preapplication meeting, or refund the payment to the applicant if the applicant desires
- If the Department determines the form is **adequately completed**, the Department will sign and accept the form, and the 45- calendar day period for the Department to complete the technical analyses or scientific credibility review begins.

Preapplication Meeting Form Adequacy Review Expectations

Note the differences in both expectations and timing between the Department's application deficiency review, Preapplication Meeting Form (PMF) adequacy review, and Scientific Credibility Review (applicable only if the applicant is completing their own technical analyses). See the table below for a comparison of the three potential stages of review, when each stage is applicable, and what each review should entail.

	Preapplication Meeting Form Adequacy Review	Technical Analyses Scientific Credibility Review	Application Deficiency Review
Details of Review	- Review PMF for completion and adequate answers to mandatory questions - Review amended questions section of the PMF and ensure that no amended answers change the project in such a way that you'd want to call the meeting a scoping meeting (for example, if a mandatory part of the form that was originally not applicable is now applicable) - If Department is doing TA, review TA components (mandatory sections) to ensure previously discussed variables have not changed	- In-depth credibility findings of each component of the applicant-completed TA - N/A if Department completes the TA	- Review for completion and adequate answers to all questions - If preapplication meeting was held, compare previously completed TA / SC review to application contents to ensure preapplication pathway still applies
Preapplication Meeting Pathway	Occurs within 5 business days of Department receipt of the Preapplication Meeting Form <i>Note that at this time, if the Department is conducting the TA, components of analyses are to be vetted for adequacy/ correctness to be used in the TA. This is to ensure that the numbers considered in the TA are usable.</i> <i>Examples of components that must be preemptively vetted are variables of the historical use analysis such as management factor or conveyance losses, or variables of the surface water analysis like gage data and physical availability estimation technique.</i>	Occurs within 45 calendar days of acceptance of the PMF, assuming the PMF is adequately completed <i>Note this step does not occur if the Department is completing the technical analyses.</i>	Occurs within 15 business days of application receipt <i>Note that this review should not include any review of the technical analyses, unless the applicant submitted information in the application/ a new Technical Analyses Addendum that contradicts the existing technical analyses.</i>
No Preapplication Meeting Pathway	N/A (not completed on this application pathway)	Occurs within 120 calendar days of correct and complete determination, to be delivered with the Draft PD. (internal timeline to complete within 45 days of correct and complete application determination) <i>Note this step occurs after the application deficiency review in this pathway.</i> <i>Note that this step does not occur if the Department is completing the technical analyses.</i>	Occurs within 30 business days of application receipt <i>If the Department is completing the technical analyses, the Technical Analyses Addendum (TAA) must be evaluated for deficiencies/ usable data.</i> <i>Examples of components that must be preemptively vetted are variables of the historical use analysis such as management factor or conveyance losses, or variables of the surface water analysis like gage data and physical availability estimation technique.</i>

Second signature expectations

It's important that the applicant understands what is expected of them at the time of Preapplication Meeting Form Part B submission and what is expected of the Department within 5 business days of Preapplication Meeting Form Part B receipt. At these times, the applicant and Department will be attesting to the following:

When the applicant submits the signed Preapplication Meeting Form to the Department:

- Signed at the time they submit completed form with follow-ups to Department: *"I attest that this preapplication meeting form (Form 600P-A and Form 600P-B), follow-up, and amended responses accurately portray the proposed project. I am aware that my/our application for this project will not qualify for a discounted filing fee and expedited timelines if, upon submittal of the application to the department, I change any element of the proposed application from the preapplication meeting form, amended responses, or follow-up materials (ARM 36.12.1302(6)(a))."*

When the Department signs the applicant- signed Preapplication Meeting Form:

- Signed by the Department within five business days of PMF receipt, if PMF is adequately completed: *"We confirm that the preapplication form (Form 600P-A and Form 600P-B), amended responses, and follow-up information are adequate for the Department to proceed with technical analyses in ARM 36.12.1303. Or, if the Applicant has elected to complete technical analyses, we confirm they have submitted each required element of technical analysis based on the proposed project and the Department is able to proceed with the scientific credibility review (ARM 36.12.1303(8))."*
- Note that this second signature begins the 45 calendar day period for the technical analyses/ scientific credibility review process. With the second Department signature, the Department is confirming acceptance of the Preapplication Meeting Form package and that the information in the submitted Preapplication Meeting Form package is adequate and will inform the technical analyses or scientific credibility review for the application at hand. This is why it is so important to use the first 5 business days after Preapplication Meeting Form Part B receipt and prior to the 45 calendar day time period to confirm that all required information is included and is appropriate to be used by the Department.
- For example, If the applicant is proposing to deviate from DNRC standard practices for historical use and is therefore submitting a historical use addendum with their completed preapplication meeting form, the Department needs to confirm during this 5-day review period whether the submitted values on the addendum are adequately justified so that the Department can produce credible technical analyses.

Next steps**Technical analyses report/ scientific credibility review delivery**

Once the Preapplication Meeting Form Part B has been signed by the Department, the Department has 45 calendar days from the date of PMF acceptance to complete either the technical analyses or the scientific credibility review. See the Technical Analyses/ Technical Reports section of the manual for more information on the technical analyses/ scientific credibility review processes and internal timelines.

Application receipt

After the technical analyses or scientific credibility review delivery, the applicant has 180 calendar days to submit the application to the Department. Per ARM 36.12.1302(6)(a), the application will not qualify for the discounted filing fee and expedited timelines if upon submittal of the application to the Department, any element of the proposed application is different from the Preapplication Meeting Form and follow-up materials. See the Application Receipt section of the manual for more information on application receipt processes.

Database coding

Initial entry

Following the preapplication meeting, you will need to create a record of the event and an application number in the database. Listed below is essential information that must be entered into the database.

- Create a new application and enter the **Basin, Application Type** (600P or 606P), and **Date/Time Received** (date/ time of the preapplication meeting).
- Add the **applicant**.
 - You may need to create a new Contact record for the applicant before you are able to add them to the application. If the applicant has a representative (attorney, consultant, etc.) also add that information to the Contact record for the applicant.
 - A “Begin Date” for the applicant will automatically populate in the application based on the date/time the application was received/ preapplication meeting was held.
- File Location and Processor information will automatically populate based on data for the user performing the initial entry. Ensure the Processor Staff information is kept up to date to reflect the staff person assigned as point person for the project.
- A **Preapplication Meeting Held event and date** will be added automatically based on the date and time you entered when creating the application record. The Response Due information for the Preapplication Meeting Held event will automatically show 180 calendar days after the meeting date – this is the date by which the applicant must return the completed preapplication meeting form (and technical analyses if they’ve elected to complete them).
- If a preapplication meeting expires and the applicant schedules a new one, create a new 600P/606P rather than reusing the old one.
- If an application is received for a project that had a preapplication meeting, change the application type on the 600P or 606P to instead be 600 or 606.
 - Do this even if you notice that the application has changed from the preapplication meeting form. In this instance, also add the MNEP event.
- If a preapplication meeting expires and the applicant submits an application (600 or 606) for the same project, create a new 600 or 606, rather than changing the application type on the 600P or 606P for the preapplication meeting.

New Changes to Database entry:

- When the completed and signed Preapplication Meeting Form Part B is received, add the “Preapplication Meeting Form Received” event. Staff should also manually enter the PMF acceptance or rejection deadline (5 business days after PMF receipt) into the “response due” section.
- When the Preapplication Meeting Form is deemed adequately completed and accepted by the Department, add the “Preapplication Meeting Form Accepted” event. Also add the \$500 payment to the Payments tab on the application record.
- If the Department deems the Preapplication Meeting Form inadequately completed (within 5 business days of PMF receipt), add the “Preapplication Meeting Form Returned” event, and add a comment within the event that includes the original Preapplication Meeting Form receipt date. When you add the “Preapplication Meeting Form Returned” event, delete the original “Preapplication Meeting Form Received” event. If the Form is then submitted to the Department again after the applicant resolves any issues, add a new “Preapplication Meeting Form Received” event.

Events

The following events are entered prior to application receipt if a preapplication meeting was held:

- PREAPPLICATION MEETING HELD (PAMH) *(automatically entered when application is created)*
- PREAPPLICATION MEETING FORM RECEIVED (PMFR)
 - Staff should manually enter the PMF acceptance or rejection deadline (5 business days after PMF receipt) into the “response due” section.
- PREAPPLICATION MEETING FORM ACCEPTED (PMFA)
 - Staff should manually enter the 45-day Technical Analyses Report/ Scientific Credibility Review deadline into the “response due” section.
- PREAPPLICATION MEETING FORM RETURNED (PMFX) *(only if applicable)*
- TECHNICAL ANALYSES DELIVERED TO APPLICANT (TASA) *(only if applicable)*
- SCIENTIFIC CREDIBILITY REVIEW DELIVERED TO APPLICANT (SCRS) *(only if applicable)*

See the Standard Application Processing Events table (Appendices) for a comprehensive list of events that may be entered throughout the application process.

Application Acceptance Review & Initial Entry Instructions

Application Acceptance

There are clear requirements for acceptance of an application to change a water right described in ARM 36.12.1304. Statutory timelines begin (or continue, if a preapplication meeting occurred) 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.

Before stamping for application receipt, the RO must perform an initial review to determine whether it meets the application receipt requirements. If it does not meet the requirements, the application should be returned to the applicant without the receipt stamp. If an application does meet the requirements of ARM 36.12.1304, the application will be stamped as received and the RO will perform the initial entry.

If a preapplication meeting was held: If the application includes information that differs from the technical analyses (or if the applicant had since performed a different set of technical analyses), the application is treated as if no preapplication meeting occurred (discounted filing fee and expedited timeline will not apply).

- **If the application as filed no longer qualifies for the expedited timeline or reduced filing fee:**
 - **Add the MNEP event (moved to non-expedited pathway)**
 - **The application will now be subject to the non-preapplication meeting pathway timelines, and the submitted reduced filing fee will now be insufficient for application processing.**

There are clear requirements for acceptance of an application to change a water right described in ARM 36.12.1305. Statutory timelines begin (or continue, if a preapplication meeting occurred) 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.

Received permit and change applications are posted to the Department’s [website](#) every Monday morning by CO CT staff. If you have entered the received application into the database but have not yet completed initial entry, you should inform the CO CT Public Notice Reps so that they don’t post an incomplete Notice of Receipt.

[MCA 85-2-307](#) requires that the Department post all applications for a permit or change on the Department's website, and it is our policy to post received applications within 10 business days. **This means that your initial entry must be complete by the second Monday following application receipt.** The following guidance explains what must be initially entered for change applications.

Sage Grouse Habitat Considerations:

If you receive a Form 606, 644, or 651, check the Sage Grouse Habitat 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 for acceptance. 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.

Change Application Initial Entry:

Posted change applications capture the information entered in the **Change Description Tab** in the database. The **Change Description Tab** should be populated with the following information during initial entry of a change application form:

Past Use of Water Field:

1. County
2. Source
3. Purpose

Proposed Change Field:

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 in the database, complete the following:

- Navigate to the water right number being changed and select the "Create New Version" button.
- Use the drop down to select "Change Authorization" as the version type.
- Once the change authorization version is created, you will need to tie the version to the change application.
- Scroll to the "Applications" accordion of the "Change Authorization" version type, and add the existing application number to the version.

Payment Information:

Do not accept an application unless payment in full is received (ARM 36.12.1305). The specific fee applicable to an application will depend on a variety of factors. The options within the Filing Fee Summary section of the Payments accordion allow you to adjust the Fee Due amount to fit a given application. See the table below to understand the various fee options for a change application and how to adjust the database to enable payment collection. The Department should be waiving fees only in very rare occasions – contact Central Office if you have questions about database entry for fee waivers.

Make sure all payment information is entered into the database upon initial entry. Additional payment entry instructions including information about fee refunds, transfers, and more scenarios can be found on the ROCO drive in the Forms folder. The instructions are a Word document found below the individual form folders titled “Application Fee Entry R12-18”.

Note that if a preapplication meeting occurred, you will have created a 606P record in the database and entered a \$500 payment. When you change the application type to a 606, the \$500 payment will stay listed in the Payment Details and the Amount Paid field will show \$500.

See the table below for database adjustments needed for various application scenarios.

606 Application Details	Fee Required	Database Adjustments
Preapplication Meeting Occurred	Fee is \$1500 (\$500 of which was already paid)	Fee Discount = Yes
No Preapplication Meeting Occurred	Fee is \$2500	No Adjustments
No Preapplication Meeting Occurred; Application is a 606-ST or replacement well that exceeds 35GPM/10AF or replacement well for municipal well that exceeds 450 GPM or replacement reservoir on same source	Fee is \$400	Fee Other = Yes

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

For **groundwater change applications**, WSB will complete a review prior to the deficiency letter being sent to evaluate if the Form 633 and Aquifer Testing Addendum are correct and complete. See the technical analyses guidance for information as to when review by WSB is required for an application.

If WSB will contribute to the technical analyses or WSB insight is needed for an application, a WSB checklist will be sent to WSB to begin their review period. Perform an initial review of the application and create and complete a copy of the appropriate WSB checklist available in ROCO>FORMS > 606-Change. The checklist needs to be filled out completely and the numbers need to be vetted and peer-reviewed before you send the Checklist to WSB. **The numbers you send to WSB need to be the final numbers** that will be in your Technical

Report (for applications received prior to Jan. 1, 2024), or technical analyses/ scientific credibility review report (for applications received on or after Jan. 1, 2024). The Water Sciences Bureau will use the information from the checklist to conduct their portion of the technical analyses or scientific credibility review.

Place your checklist, along with a scanned copy of the application, into your respective office folder within ROCO > HYDRO DOCS > APPLICATION MATERIALS. Send an email to the appropriate staff hydrologist with your request for their review, making sure to explain any application details you want them to consider in their calculations.

Data Entry

Under the **Events Tab**, add a “Checklist Sent to WSB” event and the date sent.

Basin Closure & Compact Considerations

Administrative Rule Closures:

In highly appropriated basins & subbasins 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 subbasin 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 calendar 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. Ten basins have been closed via administrative rule:

- Walker Creek Basin Administrative Closure
- Truman Creek Basin Administrative Closure
- Sixmile Creek Basin Administrative Closure
- Grant Creek Basin Administrative Closure
- Sharrott Creek Basin Administrative Closure
- Willow Creek Basin Administrative Closure
- Houle Creek Basin Administrative Closure
- Towhead Creek Basin Administrative Closure
- Rock Creek Basin Administrative Closure
- Musselshell River Basin Administrative Closure

Legislative Closures:

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

- Upper Clark Fork Basin Legislative Closure
- Bitterroot River Basin Legislative Closure
- Upper Missouri River Basin Legislative Closure
- Jefferson-Madison River Basin Legislative Closure
- Teton River Basin Legislative Closure

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:

- Mainstem of the Milk River Department Closure
- Southern Tributaries of the Milk River Department Closure

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.

High Spring Flow Exception in Closed Basins

Some basin closures have an exception to the closure for high spring flows. The high spring flow exception can be met if the applicant presents information to show that the flow for that source is commonly above the average annual flow during the period of diversion for which they are applying. The applicant must use the most representative gaging station to determine the average annual flow for that source. A representative gage is defined by being in the same geographic area and preferably in the same drainage area and/or by having similar characteristics to the area in which the water right is being applied for (similar slope, aspect, precipitation, geology, etc.).

Basin Closure Links:

- [Montana Basin Closures](#)
- [§ 85-2-319, MCA 2023](#)
- [Form 631 – PETITION FOR CLOSURE OF A HIGHLY APPROPRIATED BASIN](#)

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). In order to create a CGWA the DNRC must be in receipt of a “*PETITION FOR CONTROLLED GROUNDWATER AREA*”, (Form 630). This form may be filed by a state or local public health agency for identified public health risks; a municipality, county, conservation district, or local water quality district formed under Title 7, chapter 13, part 45; or by at least one third of the water right holders in an area proposed for designation of a CGWA. The petition for the creation of a CGWA must contain an analysis by a hydrogeologist, qualified scientist, or qualified licensed engineer concluding that one or more of the following criteria are met:

- Current or projected reductions of recharge will cause groundwater levels to decline to the extent that current water users cannot reasonably exercise their rights.
- Current or projected withdrawals have reduced or will reduce groundwater levels or surface water availability necessary for current users to reasonably exercise their rights.
- Current or projected withdrawals have induced or altered or will induce or alter contaminant migration exceeding relevant water quality.
- Current or projected withdrawals have impaired or will impair groundwater quality necessary for current water right holders to reasonably exercise their rights.
- Groundwater within the proposed area is not suited for beneficial use.

- Public health, safety, or welfare is or will become at risk.

Upon receipt of an application the DNRC has 180 days in which to notify the petitioner of any defects or the petition will be treated as Correct & Complete. If deficiencies are identified the petitioner will then have 90 days to correct these deficiencies before the petition is terminated. Once the petition has been determined to be Correct & Complete the DNRC will have 60 days in which to initiate rulemaking proceedings including public notice, deny the petition in whole or in part with a sufficient explanation, or inform the petitioner that the DNRC will require an additional 90 days in which to come to a final decision. If there is not enough information to conclude that a permanent CGWA is necessary, the DNRC may designate a temporary Controlled Groundwater Area during which ongoing measurements will be utilized to determine if a permanent status is warranted.

Resources:

- [Controlled Groundwater Areas](#)
- [§ 85-2-506, MCA](#)
- [Form 630 – Controlled Groundwater Area Petition](#)

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 page of the website.

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

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

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

Helena Regional Office

- Controlled Groundwater Area
 - Butte Alluvial and Bedrock Site
 - Old Butte Landfill/Clark Tailings
 - Warm Springs Ponds
 - North Valley (East Helena)
 - Rocker
- 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

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

Lewistown Regional Office

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

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

Bozeman Solvent Site Controlled Groundwater Area

- Created based on water quality concerns (dry cleaning solvent) through petition process
- No exceptions to permitting, so have to mitigate any new uses (initially did break out two different types of permits based on level of use, but not in a way that can allow exemptions from mitigation in closed basin)
- Replacement wells are acceptable, but have to be through 606 Replacement Well process
 - Upon receipt of 606, DNRC can issue permit to drill – required for the driller for any beneficial use. DEQ will ensure well is sampled.
- Dewatering wells do not need to go through DNRC
- Most of BSSCGA is within city water supply zone, except north of the East Gallatin River
- Treatment with microbes has been implemented and most levels in the upper level are all below treatment level now

Idaho Pole Controlled Groundwater Area

- Created based on water quality concerns (wood pole treatment) through petition process
- Very small area of effect with low building potential
- (Assuming similar to BSS, where no new permits allowed in closed basin without mitigation)
- Pump and treat system in place
- No beneficial uses allowed at all except for remedial actions
- Conversation has taken place on shrinking the defined area (getting rid of south end, as based on property boundary and not actual contamination)

NPS Compact

Bozeman Regional Office Manager is the liaison/expert for the NPS/MT Compact, generally contact with any questions, both internal questions and questions for the NPS Compact Liaison.

Compact areas of effect: Surface waters and potentially hydraulically-connected groundwaters upflow, in, and adjacent to the following NPS Areas, as delineated by the Compact – Glacier National Park (GNP), Yellowstone National Park (YNP), Big Hole National Battlefield (BHNB), Bighorn Canyon National Recreation Area (BCNRA), Little Bighorn Battlefield National Monument (LBBNM). Grant Kohrs Ranch National historical Site (GKRNHS) and Nez Perce National Park (NPNP) do not include reserved land – these waters are not regulated by Compact.

Yellowstone Controlled Groundwater Area

A separate provision of the Compact, not related to YNP surface water portion of compact, mentioned above, though in some areas both YNP Compact and YCGA can apply.

- Created to protect the hydrothermal resource of Yellowstone National Park through the National Park Service water rights compact
- Water temperature (less than 60 degrees F) and specific conductance are the two parameters requested to ensure that not drawing upon hydrothermal water connected to the park
 - Appropriations of water between 60 degrees F and 85 degrees F are possible, depending upon the specific conductance value and geothermal gradient
 - Attempts to appropriate water greater than 85 degrees F have a high burden and can only be considered in discharge areas (map breaks out recharge versus discharge areas to the YNP hydrothermal system – though these are not well-defined scientifically)
- Has built in exemption to full permitting process for uses under 35 GPM and 10 AF/YR. that can be used in closed basins today
 - Requires notice to NPS on all applications. NPS can object based on hydrological connection to surface water source regulated by the NPS compact (generally sources in, bordering, and up flow of YNP).
 - Permits for non-exempted amounts are required to analyze net depletions to surface waters regulated by the compact, if applicable
- ARM Link: <http://www.mtrules.org/gateway/Subchapterhome.asp?scn=36%2E12.12>
- MCA Link: https://leg.mt.gov/bills/mca/title_0850/chapter_0200/part_0040/section_0010/0850-0200-0040-0010.html

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 nonuse.**

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

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:

- Charles M. Russell National Wildlife Refuge

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

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 Sept. 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 Oct. 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 Aug. 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 Sept. 1992. The Montana Water Court issued a final decree for this compact in Aug. 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 Aug. 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 U.S. 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 Oct. 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 § 85-20-1401, MCA (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 Feb.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 Use 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 from those published in the original water reservation application, the Conservation District is required to file a change application (Form 606CD) 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, Ann Kulczyk) will present a completed DNRC Change Application (Form 606CD) 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 POUs, 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 CARDD Application for Reserved Water Use (Form 102). If available, they need to also include a copy of the CARDD 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.

CD Change Criteria

CD change PDs must also include a specific criteria section titled "Water Reservation Criteria". This section of the PD addresses the history and necessity of the water reservation. See the change PD template for more information on the content of the Water Reservation Criteria section.

Public Notice

For Applications Received Prior to Jan. 1, 2024:

The Department's standard public notice for CD Water Reservation changes is 15 calendar 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.

For Applications Received on or After Jan. 1, 2024:

The Department's standard public notice for CD Water Reservation changes is **the same as a regular change application**. 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 ([ARM 36.12.1305\(1\)](#)). Water rights that can be changed 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.

Evidentiary Requirements

Preponderance of the Evidence

This is the standard evidentiary requirement for permits and changes unless otherwise noted.

Clear and Convincing Evidence

Change applications for the following scenarios are subject required to prove statutory criteria by clear and convincing evidence:

- water rights that consume 4,000 or more AF and 5.5 or more CFS of water (§ 85-2-402(5))
- water rights that are proposed to transfer or use water out of the state of Montana (§ 85-402(6))

Contact the Central office if you have questions about evidentiary requirements.

Number of Rights on One Change

ARM 36.12.1305(6) states, “Multiple water rights may be changed on one application if the place of use and purpose will be exactly the same for each water right, and all water rights will share a common conveyance system.”

Any combination of water right types may be changed on one application provided they adhere to ARM 36.12.1305(6). Note that a “shared conveyance system” does not necessarily require a shared point of diversion and/or place of storage. If water rights are proposed to have a partially shared conveyance system and were commingled in this manner, this meets rule’s intent with the description of the “shared conveyance system”.

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 and places of use the same for each abstract? Do the water rights at least partially share a proposed means of conveyance? If the answer to either question is no, then multiple applications would be required.

If you have questions regarding specific applications as they come in, contact your regional manager or CO for guidance.

* A note about period of use: the period of use (despite being part of the purpose as coded) 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 acreage. 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 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 up to 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 post-change 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 calendar 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 calendar 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 is 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

A change authorization is not required when a sever occurs and the water will be used in accordance with historical practices, but a change authorization is required when water distribution over a historical place of use is proposed to change. For example, if a user were to consolidate their water to a portion of their historically used footprint, this would require a change authorization to account for the removed acreage and newly distributed water use. If the appropriator notifies the Department by filing a Form 642 or 643 when a water right has been legally severed from real property, the Department's water right records may be updated without a change authorization. The POU will not be updated, however the split/sever will be noted in the database along with a remark stating the right has been severed from the POU. See the split/ sever guidance for more information (ROCO>FORMS>641 or 642 or 643).

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. Center 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 historically irrigated 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, when the use is coded as a Municipal purpose. 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 Associations, and Irrigation Districts

Ditch companies, water users associations, and irrigation districts have defined areas known as 'service areas' where water can be used. Department approval is not required to redistribute water within the service area, which is identified on their water right abstract as the place of use. 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 36.12.1305(6), 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.

A reduction in acres within the POU of an irrigation right is not necessarily considered a change in POU by DNRC. For example, if there is now a residence/driveway/reservoir, etc. located within the historically irrigated footprint, the owner is not required to request a change in POU. If the owner is filing a change application for another reason, the reduction in place of use may be considered a change in POU, but only if the applicant requests a change in the POU.

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, depending on the purpose.

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

Period of Use and Period of Diversion

The period of use and period of diversion are typically 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.

If you find that a REEXAMINED or POST DECREE version of a Statement of Claim has a period of diversion or use that is different from the original version, it is possible that the water right was affected by an automated database conversion error from the 1980s. Our historical use findings and post-change elements for a Statement of Claim cannot exceed the 'sideboards' of what was decreed by the Montana Water Court, so it's important to do some additional investigation into the file if you find the period of diversion or use is slightly different across versions.

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.

One 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, and meet the other requirements of ARM 36.12.1305(6).

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 the case of a pumping pit or small pond on a ditch that does not exceed 0.1 acre-feet of volume, 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:

- 1) one tributary to another tributary of a common main stem;
- 2) the main stem of a stream to its tributaries; or
- 3) from a tributary to the main stream.

When a diversion is moved from a tributary to a larger or 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.

When a POD moves downstream from a tributary to a main stream, do not change the source name; use the "Natural Carrier" remark instead (S65, S70, C119-C126 remarks: choose the one that best fits the application).

For moving POD from a main stream to an upgradient tributary, a source name change is required so that the source of water is accurately reflected on the water right (Example: change application 76F 30120623)

The Department cannot authorize a surface water POD change that proposes to divert water via a well.

- MCA 85-2-102 (7) (a) "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. The definition of change in appropriation right does not identify that a source change is something that can be changed.
- MCA 85-2-102 (34) "Well" means any artificial opening or excavation in the ground, however made, by which ground water is sought or can be obtained or through which it flows under natural pressures or is artificially withdrawn. This definition clearly identifies that wells obtain groundwater.
- It is the applicant's burden to ensure that their new diversion will continue to divert water from the same source that water was historically diverted from. When changing a point of diversion that includes a change in the means of diversion, the applicant must show by a preponderance of the evidence or, if applicable, clear and convincing evidence that the new diversion will divert water from the same source as the historical diversion(s) diverted from. This is why on the change application form, we ask for design plans and specifications for any new diversion structures that will be used. This information is necessary for the Department to complete an assessment of the adequacy of diversion criterion.
- During the deficiency review, the Department will ensure all information necessary for the evaluation has been provided. A correct and complete determination does not indicate the proposed diversion is an adequate diversion of surface water. The Department's evaluation will occur during the criteria assessment and the results of this evaluation will be provided to the applicant with the draft preliminary determination. The evaluation will not occur in conjunction with the Department's technical analyses or scientific credibility review.

- In the case where a preapplication meeting is held, and the applicant provides the Department with the necessary information, the Department may provide a preliminary evaluation of whether the proposed diversion is reasonably expected to divert water from the same source as was historically diverted from. This evaluation is subject to change in a similar manner as the other preliminary evaluations conducted by the Department ahead of the preapplication meeting. In the case the applicant does not agree with the findings of the Department's preliminary evaluation, the applicant may provide more information for the Department's consideration with Form 606. The Department will not conduct a second preliminary evaluation but rather will consider the additional information during their criteria assessment. A preliminary evaluation will not be possible if an application is submitted with no preapplication meeting.
- It is important to note that infiltration galleries for surface water diversions also require a 310 permit and floodplain permit, which require a licensed engineer to put together design specifications.

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

See the historical use section (ARM 36.12.1902(1) procedure steps) for step-by-step instructions on how to analyze historical use for each change application type.

Changes that involve a split

If a water right has been divided or split, the divided parts are independent water rights. An entity 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 (641) or Split and Sever of a Water Right Form (642).

When conducting the historical use analysis for a change to a split water right, corroboration of historical use elements of the split/ child right(s) should be limited to the face of the water right being changed (the split flow rate, acreage, and respective volumes). However, it's important to include information on how the whole water

right was operated at the date considered for the historical use analysis, pursuant to ARM 36.12.1902(1) (see the historical use section for more information on the relevant date). Depending on when the split occurred, the PD may need to include background information on the pre-split water right even if the post-split water right is being changed.

Permits

Generally, permits must be verified before they can be split. After the verification and the split are completed, the individual rights can be changed independently. Consult Central Office if you believe an un-verified or un-perfected permit should be split prior to verification.

Claims

For a change application to a filed claim involving 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.

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.

Changes that involve partial/divided ownership

If a Change Application is received and the applicants (in aggregate) do not own the entire place of use of the water right(s) proposed for change, the Department cannot process that Change Application without first receiving and processing a split (Form 641 – Ownership Update, Divided Interest or Form 642- Ownership Update, Split and Sever) on the applicable water right. This applies to two scenarios:

1. If one or more of the listed owners of record do not sign on as applicants for the change. For example, if the water right has five owners of record across five different parcels (one owner per parcel) and only four of the owners have signed on as applicants.
2. If all of a non-severed water right's owners of record jointly file a change application, but those owners do not own all of the place of use. For example, if the water right has two owners of record who combine to own 80 acres within the water right's place of use, but the water right includes 100 acres of irrigated place of use – 20 of which are owned by an individual who has not filed to become an owner of record.

The reason a split needs to be submitted and processed in either of the above scenarios is to avoid partial changes and to ensure that a historical use finding and proposed use determination is not being made on a portion of the water right without input from all entities who have an interest in that water right, pursuant to ARM 36.12.1305(5)(a). This is not to say that all of the different owners of a water right cannot file a change application without the water right being split – all of the owners would just need to jointly apply for the change and sign as applicants.

Note that if a parcel is held in undivided interest (meaning two or more people jointly own 100% of a property) the ownership cannot and will not be divided and split before the owners pursue a change application, but all of the owners still need to sign the application.

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 authorized 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 seek out additional information or 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 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- the Department will not seek this information out independently.
 - 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

- 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.
- 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 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 new change application will NOT be required to revert the water right back to the pre-change conditions. The appropriator may file to withdraw the change version of the water right. 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 will revert back to the most-recent version prior to the change being authorized. 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.

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.

Replacement Well Application

If an entity drills a new well to replace an existing one, they may file a Replacement Well Notice (Form 634) so long as the replacement well is drawing from the same aquifer, and does not exceed either 450 GPM (for a municipal well) or does not exceed 35 GPM and 10 AF per year (for non-municipal wells). If use of the existing well is not discontinued, a Replacement Well Notice form cannot be used. Note that the Replacement Well Notice cannot be used for non-well groundwater diversion replacements.

Details of Replacement Well	Form Required
• Drilled in same aquifer • Replacing existing well • ≤35 GPM and 10 AF, or 450 GPM (for municipal purposes)	Form 634 (Replacement Well)
• Drilled in same aquifer • Replacing existing well • OVER 35 GPM and/ or 10 AF, or 450 GPM (for municipal purposes)	Form 606 - <u>reduced</u> filing fee (Change Application)
• Drilled in same aquifer • Any of the above conditions can apply, but the standard fee is required if <i>any additional elements of the water right are being changed</i>	Form 606 - <u>standard</u> filing fee (Change Application)
• New well is drilled into a <i>different aquifer</i>	Form 600 (Permit Application)

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 new municipal replacement well that exceeds 450 GPM and for all other wells that exceed 35 GPM and 10 acre-feet per year (reduced filing fee), or if additional elements of the water right are being changed (standard filing fee). Even though the standard change application form should be used, if the applicant is filing only to replace an existing well with a newly drilled well, they qualify for a fee reduction (ARM 36.12.103(2)(g)(i)). If the well is not newly drilled (i.e. it has been in existence and is now being added to this water right), the application will not qualify for the fee reduction.

- The newly drilled replacement well must divert water from the same groundwater aquifer at an equal or lesser rate than the existing well. See the WSB [Standard Practice on Aquifer Source Codes](#) for information on how to determine the source aquifer of a well.
- A replacement well change application does not qualify for the reduced filing fee if there is a proposed change to 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

As criteria must be met by the same burden of evidence for both the reduced filing fee replacement well change and regular groundwater change applications, a hydrologic review and groundwater analysis must be completed by a member of the WSB Groundwater Section as would any other groundwater POD change application.

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 or 10 AF per year. Form 606 may be used at a reduced filing fee if the change application concerns a replacement well greater than 35 GPM or ten acre-feet, or a municipal well that exceeds 450 GPM, or replacement reservoir located on the same source.

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 (Form 606-ST) 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

Note that 606 stock tank change applications can't have "official" preapplication meetings (i.e., they cannot receive the expedited timelines or qualify for a further discounted filing fee, and the 606P form will not be completed). Applicants intending to use the 606-ST Form are still encouraged to have scoping meetings. Applicants submitting a 606-ST are not required to submit the Technical Analyses Addendum regularly required with the submission of the 606 Form.

Administrative Rules

For a change application that is only to add stock tanks to an existing stock water system, refer to ARM, 36.12.1305(8).

Flow Rate and Volume

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 36.12.1305(8) 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.

Adding Stock Tanks on State of Montana School Trust Lands

HB 286 (2019) added 85-2-441, MCA regarding ownership of water rights with places of use on state trust land. Implementation details for this statute were finalized in spring of 2023. The following guidance applies:

- Consistent with 85-2-441(1), MCA, a lessee may temporarily use a water right with a point of diversion on private land on state trust land for the duration of a lease by obtaining a *temporary* change authorization to include state trust land as a temporary place of use for the water right.
 - An application for a *temporary* change in appropriation right with a place of use on school trust land for the duration of a lease may not be approved unless the application is accompanied by written consent from TLMD.
 - TLMD is not a co-owner or co-applicant on *temporary* changes.
- An applicant may use a Form 606-ST to apply for a temporary change authorization to add stock tanks on state trust land.
 - *Previously, a Temporary Change Addendum was required for temporary changes, however as of Jan. 1, 2024 the relevant information regarding temporary changes is included in the mandatory project-specific questions of the standard change application form.*
- An applicant may use a single application form to apply to add both permanent stock tanks on private land and temporary stock tanks on state trust land.
- An applicant may file to renew their temporary change, at which point they would need to again show written approval from TLMD. The renewal process will be the same as is outlined in 85-2-407, MCA.

Please see the section below on Temporary Changes for additional considerations.

Data Entry

If the place of use for the stock purpose on a water right includes more than one stock tank within the same legal land description (e.g., three stock tanks within the NENENE), you can list one place of use with that legal land description and include a PL (place of use) remark explaining that there are three stock tanks within the NENENE. You can use one PL remark to explain the distribution of all stock tanks among the places of use. For example, if there are seven total tanks, four within one legal land description and three within a second legal land description, you can list two places of use, and then add one PL remark explaining the number of stock tanks within each place of use.

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 instream flow for the 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 per § 85-2-436, MCA). 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 to partially change a water right does not constitute abandonment or serve as evidence of abandonment of the unchanged portion of the water right (see § 85-2-404(4), MCA).

Temporary changes still require that a project completion notice be filed. The project completion notice for temporary changes must be set to a date no later than the temporary change expiration date.

Applications with both Temporary and Permanent Change Proposals

An applicant may submit one change application for a proposal involving both temporary and permanent changes to a water right (e.g., permanent change in point of diversion and temporary change in purpose to instream flow). The Central Office is currently working to improve and standardize the ways we code these changes in the database and manage the renewal process for temporary changes. If you are working on a change application with both temporary and permanent changes, please contact the Central Office for guidance on how to proceed.

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.

Benefiting Fisheries

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

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 permit's 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.

For changes on unperfected permits that were issued for irrigation, we should not be completing any return flow analysis. Our stance has been that on unperfected permits, we do not make findings on the historical use because the permit is unperfected, and the owner can change the full permitted flow rate and volume. Until a permit is perfected, the water right owner is not locked into a specific consumptive use unless mitigation of the consumptive use was required.

Per ARM 36.12.1903(2)(f), for groundwater change applications, the projected change in rate and timing of net depletion to hydraulically connected surface waters will need to be identified. The analysis will use a comparison of the projected consumptive use of the original water right to the projected consumptive use under the change proposal. This will be addressed in the technical analyses- see the Technical Analyses section or the Adverse Effect section for more information.

Note: The change and the permit project completion notice event dates in the database 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 hydrogeologist will analyze a mitigation plan to determine if it effectively offsets stream depletions.
- Instream flow or irrigation changes, 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 605 Stockwater Permit

Most changes to 605 Stockwater Permits are for replacement reservoirs; however, there is currently nothing that prevents a water right owner from changing a 605 Stockwater Permit to a different purpose. These

permits are issued under an exception to the permitting process. Current procedure is to issue these permits for the capacity of the reservoir/pit, multiplied by the number of fills identified on the application form. This procedure is different from all other permits for determining the necessary volume for the beneficial use. The historical diverted and consumed volumes for these permits will be calculated as follows for the purposes of a change application:

Historical Diverted Volume:

Historical diverted volume should be calculated based on the reservoir capacity and the number of fills. This is how we issue the permit, and in order to file the permit, the project must already be completed. This approach will keep us consistent in how we address total use.

Historical Consumed Volume:

Historical consumed volume should be calculated as the amount the stock actually drank (15 GPD/AU), plus the net evaporation from the reservoir. In some cases, this amount may equal the permitted amount. In most cases, the amount which can be changed will be limited to the amount the stock drank. In order to change the evaporative component, an applicant would have to show that they are reducing the size of the reservoir as part of their change, and thus, reducing evaporation.

*As part of the adverse effect analysis, we will need to evaluate these changes for an expansion of the total use when there are multiple stockwater permits filed that serviced the same stock. They may have all watered at one given reservoir in a year, but in total the use for all reservoirs serving the stock cannot exceed the total stock use (i.e., we shouldn't be stacking volumes for rights which were for the same animals). This means change applicants will have to provide a quality explanation of their ranching operations so that we can complete this evaluation. Since each of these scenarios is likely to be site-specific, there is not a defined answer on what exactly we are going to need. Like regular changes and the determination of expansion of use, you will need to apply your best judgment to each situation.

Change to a Statement of 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. See the Historical Use section for more information.
- If an applicant is asserting historical use that differs from the elements on the abstract of a Claim, the Department will require, along with an explanation of the historical use, documentation that the applicant has requested the Water Court amend the Claim (for example, through submission of a Verified Motion to Amend). If the Final Decree has been issued for the basin, DNRC would not consider explanations of historical use that differ from a Final Decree Statement of Claim abstract. If an error in the Final Decree version of the water right is found by the water right owner, the owner would need to work with the Water Court to resolve the error.

Changes for Mitigation/ Aquifer Recharge

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 groundwater 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. It should be noted that a groundwater permit application and a change application for mitigation in an open basin can apply the combined application preapplication meeting schedule laid out in ARM 36.12.1302(7) to the preapplication processing timeline, despite not being processed in the same manner as combined applications in closed basins.

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. 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. For more information about processing a permit application with a mitigation change application, refer to the Procedural Considerations section of this document.

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 historical 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 to occur during the irrigation season, an irrigation water right will likely be sufficient for mitigation or marketing 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, such as aquifer recharge via an infiltration gallery. In this instance, the period of use will be coded as the period in which water is being applied to the aquifer, as opposed to the period of time accretion to the depleted source is occurring.

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 or marketing for 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. The Permit needing this mitigation water also needs a condition remark that identifies the Change Authorization (for mitigation), and that the operation of the Change Authorization's mitigation plan is necessary for the permit to operate.

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](#)

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. 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. Applications for out-of-state use should be submitted with the Out of State Use Addendum.

Petition to Modify a Change Authorization (Form 651)

A permittee or holder of a change in appropriation right may use this process (as prescribed in 85-2-314(2)) to petition for modification or removal of a condition or to reduce the flow rate or volume of water authorized by a change authorization or permit. **These applications are processed under the same timelines and provisions as regular permit and change applications, except that:**

- the Department may waive the public notice of a preliminary determination to grant the petition if the Department finds, on the basis of information reasonably available to it, that the petition as proposed in the application will not adversely affect the rights of other appropriators;
- if the Department issues a preliminary determination to grant the petition and waives public notice, the determination becomes final; and,
- a preliminary determination to deny a petition is final. Denial of a petition does not affect the permit or change authorization.

Correct & Complete Determination and Deficiency Letters

Review for Deficiencies

The deficiency letter (Template Letter A1) 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 contents with the required form questions and 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. If no preapplication meeting was held, the deficiency letter is also your opportunity to ask for information you will need in your technical analyses or technical analyses scientific credibility review. If a preapplication meeting was held, the technical analyses will have been completed or reviewed by the time the application is going through deficiency review. 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.

There may be additional addenda required to be submitted with the application which will supplement the information requested on the change application form. The Department will not be able to make a "Correct & Complete" determination unless the applicable additional addenda are completed with all required information. Application addenda that may be required include:

- Technical Analyses Addendum (606-TAA)
 - Necessary if no preapplication meeting was held (in order to gather information for the technical analyses), or if a preapplication meeting was held and the applicant is proposing to deviate from the previously completed technical analyses or scientific credibility review.
- Historical Water Use Addendum (606-HUA)

- Necessary if the applicant is proposing to deviate from Department standards regarding historical use.
- Change to Instream Flow Addendum (606-IFA)
 - Necessary application is for a change in purpose to instream flow.
- Mitigation Purpose Addendum (600/606-MIT)
 - Necessary if the application is for a project that involves mitigation.
- Non-filed Water Project Addendum (606/634-NFWPA)
 - Necessary if the water use being changed is a non-filed water project.
- Out-of-state Use Addendum (600/606-OSA)
 - Necessary if the project includes out-of-state water use.
- Reasonable Use Addendum (606-B)
 - Necessary if the project involves an appropriation of 4,000 or more AF/year AND 5.5 or more CFS
- Water Marketing Addendum (600/606-WMA)
 - Necessary if the application is for a change in purpose to water marketing.
- Place of Storage Addendum (600/606-SA Storage Addendum)
 - Necessary if the application involves a place of storage.

Some questions to ask oneself when reviewing for a correct and complete application are:

- Are all required parts of the form (and addenda) completed?
- Are all relevant form questions answered in completion?
- Are all required variances requested and approved?
- Is all information required for technical analyses included in the application (if technical analyses are not already completed?)

Common deficiencies with change applications:

- Required addenda are missing or not completed with all requested information
- Supplemental use explanations are not given when requested
- If a representative of the applicant (attorney or consultant) 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

For Applications Received After Jan. 1, 2024:

See the stages of application review table in the Preapplication Meetings section of this manual for a comparison of the different levels of review at each application stage.

Preapplication Meeting Held:

If a preapplication meeting was held, the deficiency review will consist of at least:

- Ensuring consistency between the application as filed and the mandatory sections of the Preapplication Meeting Form and the Technical Analyses Report or Scientific Credibility Review created by the Department;

- If elements of the application as filed misalign with the existing technical analyses/ Preapplication Meeting Form, the application no longer qualifies for the expedited timelines or reduced filing fee.
 - If the application as filed no longer qualifies for the expedited timeline or reduced filing fee:
 - Add the MNEP event (moved to non-expedited pathway)
 - The application will now be subject to the non-preapplication meeting pathway timelines, and the submitted reduced filing fee will now be insufficient for application processing.
- Review of correctness and completeness for elements not contemplated in the mandatory sections of the Preapplication Meeting Form, and any applicable addenda.

If DNRC is doing TA: If any changes have been made to the numbers confirmed in the Department-completed technical analyses, RO should send Form 633 + Aquifer Testing Addendum to WSB immediately for them to review for deficiencies (variances needed). RO should send full application with WSB checklist to WSB only when the WSB checklist numbers are complete and ready for TA. **If no changes were made to the completed technical analyses, WSB does not need to look at the application again.**

If applicant is doing TA: If any changes have been made to the numbers reviewed for credibility in the applicant-completed technical analyses, RO should send entire application and TA to WSB immediately for WSB to review for deficiencies in Form 633 (and assess whether all required TA were submitted) and begin scientific credibility review. WSB does not need to be involved for surface water permits. **If no changes were made to the completed technical analyses, WSB does not need to look at the application again.**

No Preapplication Meeting Held:

If DNRC is doing TA: RO should send Form 633 + Aquifer Testing Addendum to WSB immediately after application receipt for them to review for deficiencies (preapplication meeting was not held and thus TA has not yet been completed). RO should send full application with WSB checklist to WSB only when the WSB checklist numbers are complete and ready for TA.

If applicant is doing TA: RO should send entire application and TA to WSB immediately after application receipt for WSB to review for deficiencies in Form 633 (and assess whether all required TA were submitted) and begin scientific credibility review. WSB does not need to be involved for surface water permits.

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

When an application cannot be deemed correct and complete due to a lack of information, a deficiency letter (Template Letter A1) 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 will 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 within 30 calendar days of deficiency letter response receipt (for applications received on or after Jan. 1, 2024).** Please note, however, that you can contact the applicant or consultant via phone or email and request clarifying information during processing of the application.

The 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 deficiency letter template (Template Letter A1) in the ROCO drive contains the standard necessary information.** 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.

For Applications Received Prior to Jan. 1, 2024:

A deficiency letter identifying all defects of the application must be sent within 180 calendar days of receipt of the application. If the Department does not notify the applicant of any defects within 180 calendar days, the application must be treated as a correct and complete application.

If the applicant does not respond to a deficiency letter with information necessary to determine the application to be correct and complete, **the application must be terminated in 30 calendar days.**

Note: When preparing the letter do not use an automatically updating date field. It may be necessary to review, reprint 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 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. The 120-day response deadline is xx/xx/20xx.

For Applications Received on or After Jan. 1, 2024:

The requirements and timelines for deficiency letters are described in ARM 36.12.1501. A determination of correct and complete application (Template Letter A2) OR a deficiency letter (Template Letter A1) identifying all defects of the application must be sent to the applicant within:

- 15 business days of application receipt if a preapplication meeting **was held**
- 30 business days of application receipt if a preapplication meeting **was not held.**

If the Department does not notify the applicant of any defects in the application within the appropriate time frame, the application must be treated as a correct and complete application (§ 85-2-302(5)(c), MCA).

If no deficiency letter response is received or if the deficiency letter response does not provide all information necessary to determine the application to be correct and complete, **the application must be terminated (Template Letter T1) within 30 calendar days of deficiency response receipt.** Application Termination Guidance can be found in [ROCO](#).

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 not postmarked or submitted within 120 calendar days of the date of the deficiency letter, the application will be terminated, and the fee will not be refunded. The 120-day response deadline is xx/xx/20xx.

Correct & Complete

Administrative Rules of Montana (ARM) [36.12.1601](#) addresses the “correct and 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 and complete” determination. The Department cannot move forward on analysis of the application for statutory criteria until it has been deemed “correct and complete”. It is important to understand that providing information required for a “correct and complete” determination is not 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 to be met by a preponderance of the evidence.

Change application “correct & complete” criteria

The Department will examine applications to determine if all required information under the Administrative Rules below pertinent to the application has been provided. If required information is missing, a deficiency letter (Template Letter A1) will be sent to the applicant identifying the missing information within the following timelines:

- For applications received **prior** to Jan. 1, 2024: 180 calendar days of application receipt.
- For applications received on or **after** Jan. 1, 2024:
 - If a preapplication meeting **was held**, 15 business days of application receipt
 - If a preapplication meeting was **not held**, 30 business days of application receipt.

An existing water right can have certain elements changed without losing its priority date. 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 applications, information required under ARM 36.12.1601 must be submitted and meet the standard of substantial credible information in order to receive a “correct and complete” determination.

For change applications, the Department will calculate the historical consumptive volume of the water right(s) to be changed using Department standard practices unless the applicant provides additional use information on the Historical Water Use Addendum. See the historical use criterion section of the manual for more information.

Administrative Rule 36.12.1601, which addresses the “Correct and Complete” determination of an application, requires that Aquifer Testing requirements of ARM 36.12.121 be met for changes. The Department’s determination of applying this set of rules is that ARM 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 ARM 36.12.121, they will need to apply for a variance from the testing requirements, and the variance must be granted,

in order to proceed to Correct & Complete. If no new groundwater POD is being proposed, then ARM 36.12.121 is not applicable to the Correct and Complete determination of the application.

“Correct & Complete” Letter

Once an application has been deemed “correct and complete” by the Department a letter (Template Letter A2) will be sent out informing the applicant.

For Applications Received Prior to Jan. 1, 2024:

A technical report will accompany the Correct & Complete letter. Once this occurs, the Department has 120 calendar 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 calendar days from the date of the Correct & Complete letter to contact the DNRC and request a meeting. If the Technical Report findings are different from 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 calendar 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 calendar 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.

For Applications Received on or After Jan. 1, 2024:

The correct and complete letter (Template Letter A2) will be sent to the applicant within the following timelines:

- If the application was received and no deficiencies were identified:
 - If a preapplication meeting was held:
 - ≤15 business days
 - If no preapplication meeting was held:
 - ≤30 business days
- If a deficiency letter was sent:
 - ≤30 calendar days of deficiency letter response receipt, regardless of whether or not a preapplication meeting occurred

Once this occurs, the Department has the following timelines to deliver a Draft PD (and technical analyses/scientific credibility review, if no preapplication meeting occurred)

- If a preapplication meeting **was** held: ≤60 calendar days from the date of the correct and complete determination
- If a preapplication meeting **was not** held: ≤120 calendar days from the date of the correct and complete determination. Technical analyses report or scientific credibility review will also be delivered to the applicant at this time.

See the PD Version Types section of the manual for more information on crafting the Draft PD.

Technical Analyses/ Technical Reports

Technical Reports for Applications Received Prior to Jan. 1, 2024

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 Groundwater Report and/or Return Flow 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 upon 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.

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 information contained in the Technical Report into the relevant criterion-related sections of the PD and add a sentence or two that 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 from 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 in ROCO > Technical Reports 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 accordion of the database.

When does the Technical Report go out?

The Technical Report, along with any reports from WSB, should only be sent to applicants after an application has been deemed correct and complete. 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, a summary of the changes and revisions should be sent to the applicant in memo format instead of in a Revised Technical Report prior to completion of a Preliminary Determination.

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 Sciences Bureau (WSB should be contacted with requests for hydrological guidance). Remember, the Water Sciences 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 WSB 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 606HUA 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 WSB figures and reference memos and appendices as necessary.
 - With regard to return flow on irrigation changes, summarize the findings of the report generated by WSB (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.

Technical Analyses & Scientific Credibility Review for Applications Received on or After Jan. 1, 2024

Overview of the Technical Analyses

Technical analyses are required for permit and change applications to provide the minimum information necessary for the Department to complete a criteria assessment under § 85-2-311, MCA for permits, or § 85-2-402, MCA for changes (ARM 36.12.1303). The Technical Analyses report (TA) – which is frequently referred to as the Technical Analyses – is a compilation of technical information and data that the Department will use to consider whether or not the applicant has met the statutory criteria for the application at hand. Criteria are not analyzed in the technical analyses, but the TA will eventually inform the criteria analysis in the decision document. House Bill 114 introduced a new approach to the information used for the criteria analysis. Still required for all change applications, the technical analyses requirements laid out in ARM 36.12.1303 now fully describe which analyses are necessary for a given application type. **The applicant will now choose either the applicant or Department to complete the entirety of the technical analyses for an application.** The Department will deliver either a Technical Analyses report (if applicant opted for the Department to complete the technical analyses) or a Scientific Credibility Review report (if applicant opted to complete their own technical analyses) to the applicant either prior to application submission or with the draft preliminary determination. See sections below for more information on the timelines for each application pathway. **For information about how applicants may complete their own technical analyses for a permit or change application, please see the Technical Analysis Guide document on the Department website's Forms & Resources page.**

When Department- Produced Technical Analyses or Scientific Credibility Review Occur

Preapplication Meeting Held

- **Applicant completes technical analyses:** Technical analyses will be submitted by the applicant with the completed Preapplication Meeting Form and \$500 fee, and the Department will begin a scientific credibility review when the Preapplication Meeting Form and technical analyses are deemed to be adequately completed.
- **Department- completed technical analyses:** Technical analysis will begin when the Preapplication Meeting Form is deemed to be adequately completed.
- The Department's Technical Analyses or Scientific Credibility Review report will be delivered within **45 calendar days** of acceptance of the adequately completed Preapplication Meeting Form and \$500 fee. (Template Letter PA2)

No Preapplication Meeting Held

- **Applicant- completed technical analyses:** Technical analyses will be submitted by the applicant with the Application Form, and the Department will begin a scientific credibility review no later than when the application is deemed to be correct and complete (if the necessary information is provided within the application prior to the correct and complete determination, it may begin earlier).
- **Department- completed technical analyses:** The information necessary for the technical analyses will be provided in the Application Form via the Technical Analyses Addendum. Technical analyses

completed by the Department will begin no later than when the application is deemed to be correct and complete (if the necessary information is provided within the application prior to the correct and complete determination, it may begin earlier).

- The Department's Technical Analyses or Scientific Credibility Review report will be delivered to the applicant with the Draft Preliminary Determination (≤ 120 days from correct and complete determination). (Template Letter A3)

	Preapplication Meeting	No Preapplication Meeting
Department TA	Technical Analyses report delivered ≤ 45 calendar days after completed Preapplication Meeting Form acceptance.	Technical Analyses report delivered with Draft PD (≤ 120 calendar days after C&C).
Applicant TA	Scientific Credibility Review report delivered ≤ 45 calendar days after completed Preapplication Meeting Form (including technical analyses) acceptance.	Scientific Credibility Review report delivered with Draft PD (≤ 120 calendar days after C&C). Technical analyses received with application.

Technical Analyses List - Changes

Depending on application type, the RO and WSB will have differing levels of involvement in the creation of the Technical Analyses report or Scientific Credibility Review report. The following technical analyses list shows what technical analyses are required per rule, and which member of Department staff is responsible for certain aspects of the technical analyses/ scientific credibility review. Note that the Department is delivering one cohesive report to the applicant, with Parts A & B of the reports completed by the different bureaus. Technical Analyses reports for applications that only require analyses from one bureau will only have one part.

Technical Analyses List - Changes (as required in ARM 36.12.1303)				
Source Type	Application Type	Additional Context (if applicable)	Technical Analyses Required	Analysis Owner
SW	Change		historical use analysis	RO
			analysis of impacted surface water sources	RO
		aquifer recharge is proposed for mitigation	analysis of the monthly accretions to affected hydraulically connected surface water(s)	WSB
		irrigation water rights changing POU or purpose	return flow analysis of historical return flows and projected return flows for the amount of water being changed	WSB & RO
GW	Change		historical use analysis	RO
		POD changes only	groundwater analysis	WSB
		POD changes, or place of use* changes, <i>if the proposed change will lead to a change in consumptive use or pumping schedule.</i>	surface water depletion analysis	WSB

		POD changes, or place of use* changes, if there is a change to the location, amount, or timing of the net depletions to surface water.	surface water analysis of depleted surface water**	RO
			area of potential adverse effect analysis of depleted surface water**	RO
		irrigation water rights changing POU or purpose	return flow analysis of historical return flows and projected return flows for the amount of water being changed	WSB & RO

* While rule (ARM 36.12.1303) only requires the surface water depletion analysis for changes to the place of use or POD, it should be noted that a change in **purpose** inherently changes the place of use of a water right, as the place of use is defined by the purpose. **Thus, groundwater changes proposing a new purpose are subject to the same analyses as a place of use change.**

** required under ARM 36.12.1903(2)(f)

Surface Water Change Application - Technical Analyses Overview and Resources

- Historical use analysis
 - Used for analyzing the adverse effect criterion.
 - RO completes technical analysis/ scientific credibility review.
 - See Historical Use for Changes (ARM 36.12.1902) guidance in the “Criteria Based Guidance” section of the manual and corresponding rule for more information.
- Analysis of impacted surface water sources
 - Used for analyzing the adverse effect criterion.
 - RO completes technical analysis/ scientific credibility review
 - See Department Standard Practice for determining Area of Potential Adverse Effect in the Adverse Effect for Change Applications section in the manual and corresponding rule (ARM 36.12.1903) for more information.
- Analysis of the monthly accretions to affected hydraulically connected surface water(s)
 - Only required if aquifer recharge is proposed for mitigation.
 - WSB completes technical analysis/ scientific credibility review
 - See WSB Standard Practices and Adverse Effect for Change Applications (ARM 36.12.1903) rule for more information.
- Return flow analysis
 - Only required for changes to irrigation purpose water rights when the purpose or place of use is being changed.
 - Used for analyzing the adverse effect criterion.
 - WSB completes technical analysis/ scientific credibility review of general analysis. RO will include information from this analysis in the “analysis of impacted surface water sources” (see above).
 - If water rights are identified to be impacted by a change in return flow, RO will complete the portion of the extended return flow technical analysis/ scientific credibility review that evaluates the impacts to the identified rights.

- This evaluation will consist of a compilation of the impacted water rights and a physical and legal availability analysis on the source of the identified water rights for the purpose of analyzing the adverse effect criterion.
- See WSB Standard Practices and Department Standard Practice for Analyzing Return Flows in the Adverse Effect for Change Applications (ARM 36.12.1903) section in the manual for more information. If evaluation of identified water rights is required in the return flow analysis, see Department Standard Practices for Physical Availability of Surface Water (ARM 36.12.1702) and Legal Availability for Permits (ARM 36.12.1704) sections in the permit manual and corresponding rules, for more information.

Groundwater Change Application - Technical Analyses Overview and Resources

- Historical use analysis
 - Used for analyzing the adverse effect criterion.
 - RO completes technical analysis/ scientific credibility review.
 - See Historical Use for Changes (ARM 36.12.1902) guidance in the “Criteria Based Guidance” section of the manual and corresponding rule for more information.
- Groundwater analysis (only required if the POD is being changed), including:
 - (i) aquifer transmissivity and storage coefficient
 - Used for analyzing the adverse effect criterion.
 - WSB completes technical analysis/ scientific credibility review.
 - See WSB Standard Practices and Adverse Effect criterion for Change Applications (ARM 36.12.1903) section in the manual and corresponding rule for more information.
 - (ii) maximum drawdown and remaining available water column in the proposed point of diversion(s)
 - Used for analyzing the adequate means of diversion criteria.
 - WSB completes technical analysis/ scientific credibility review.
 - See WSB Standard Practices, Adequate Means of Diversion for Change Applications, and corresponding rule (ARM 36.12.1904) for more information.
 - (iii) 1-foot drawdown contour, which is based on five years of constant pumping, which is derived from the requested annual volume and apportioned monthly based on the proposed period of diversion
 - Used for analyzing the adverse effect criterion.
 - WSB completes technical analysis/ scientific credibility review.
 - See WSB Standard Practices and Adverse Effect for Change Applications (ARM 36.12.1903) rule for more information.
 - (iv) the distance and location on a map between the proposed point of diversion(s) and the 1-foot drawdown contour
 - Used for analyzing the adverse effect criterion.
 - WSB completes technical analysis/ scientific credibility review.
 - See WSB Standard Practices and Adverse Effect for Change Applications (ARM 36.12.1903) rule for more information.
 - (v) all groundwater rights within the 1-foot drawdown contour
 - Used for analyzing the adverse effect criterion.
 - WSB completes technical analysis/ scientific credibility review.
 - See WSB Standard Practices and Adverse Effect for Change Applications (ARM 36.12.1903) rule for more information.
 - (vi) remaining available water column for each groundwater point of diversion identified in (v)

- Used for analyzing the adverse effect criterion.
- WSB completes technical analysis/ scientific credibility review.
- See WSB Standard Practices and Adverse Effect for Change Applications (ARM 36.12.1903) rule for more information.
- Surface water depletion analysis
 - Only required if the POD or place of use* is changing, **and** if the proposed change will lead to a change in consumptive use or pumping schedule.
 - Used for analyzing the adverse effect criterion.
 - WSB completes technical analysis/ scientific credibility review.
 - See WSB Standard Practices and Adverse Effect for Change Applications (ARM 36.12.1903) rule for more information.

** While rule (ARM 36.12.1303) only requires the surface water depletion analysis for changes to the place of use or POD, it should be noted that a change in **purpose** inherently changes the place of use of a water right, as the place of use is defined by the purpose. **Thus, groundwater changes proposing a new purpose are subject to the same analyses as a place of use change.***

- Surface water analysis of depleted surface water
 - Only required if the POD or place of use* is changing, **and** there is a change to the location, amount, or timing of the net depletions to surface water.
 - Required under ARM 36.12.1903(2)(f)
 - Used for analyzing the adverse effect criterion.
 - RO completes technical analysis/ scientific credibility review, based on the information provided in the surface water depletion analysis.
 - See Adverse Effect for Change Applications (ARM 36.12.1903) manual section and rule for more information.

** While rule (ARM 36.12.1303) only requires the surface water depletion analysis for changes to the place of use or POD, it should be noted that a change in **purpose** inherently changes the place of use of a water right, as the place of use is defined by the purpose. **Thus, groundwater changes proposing a new purpose are subject to the same analyses as a place of use change.***

- Area of potential adverse effect analysis of depleted surface water
 - Only required if the POD or place of use* is changing, **and** there is a change to the location, amount, or timing of the net depletions to surface water.
 - Required under ARM 36.12.1903(2)(f)
 - Used for analyzing the adverse effect criterion.
 - RO completes the technical analysis/ scientific credibility review, based on the information provided in the surface water depletion analysis.
 - See Adverse Effect for Change Applications (ARM 36.12.1903) manual section and rule for more information.

** note that a change in **purpose** inherently changes the place of use of a water right, as the place of use is defined by the purpose. **Thus, groundwater changes in purpose are subject to the same analyses as a place of use change.***

- Return flow analysis
 - Only required for changes to irrigation purpose water rights when the purpose or place of use is being changed.
 - Used for analyzing the adverse effect criterion.

- WSB completes technical analysis/ scientific credibility review of general analysis. RO will include information from this analysis in the “analysis of impacted surface water sources” (see above).
 - If water rights are identified to be impacted by a change in return flow, RO will complete the portion of the technical analysis/ scientific credibility review that evaluates the impacts to the identified rights.
 - This evaluation will consist of a compilation of the impacted water rights and a physical and legal availability analysis on the source of the identified water rights for the purpose of analyzing the adverse effect criterion.
- See WSB Standard Practices and Department Standard Practice for Analyzing Return Flows in the Adverse Effect for Change Applications (ARM 36.12.1903) section in the manual for more information. If an extended return flow analysis including an evaluation of identified water rights is required in the return flow analysis, see Department Standard Practices for Physical Availability of Surface Water (ARM 36.12.1702) and Legal Availability for Permits (ARM 36.12.1704) sections in the permit manual and corresponding rules, for more information.

TA Internal Processing

Internal Timelines

Preapplication Meeting Held

Determination of Adequately Completed Preapplication Meeting Form

For applications that have had a preapplication meeting, the Technical Analyses or Scientific Credibility Review report will be completed and delivered to the applicant prior to application receipt. Once the Preapplication Meeting Form is accepted, the Department has 45 calendar days to complete their technical analyses. The Department reserves the right to return an inadequate Preapplication Meeting Form to an applicant within 5 business days of form receipt. The Department considers the PMF accepted upon determination of being adequately completed. Immediately after PMF receipt, RO staff should send groundwater analysis-related materials to WSB for a review for adequate completion, if not already reviewed during the variance request process. Within the first five business days of PMF receipt, RO staff review submitted materials to ensure the Preapplication Meeting Form is adequately completed to proceed with the technical analyses.

If the Preapplication Meeting Form is deemed to be adequately completed (notification delivered to applicant via Template Letter PA1), the Department will consider the form accepted and begin the 45 calendar days to complete either the technical analyses or the scientific credibility review (if applicant completed their own technical analyses). Internal timelines for this part of the process are the same between the creation of the scientific credibility review and technical analyses, but vary based on application type (depending on what level of involvement WSB has in the technical analyses or scientific credibility review reports). The following internal timelines are suggested to maintain workloads and give both WSB and the ROs enough time to complete their portions of the analyses. *Communication between WSB and the ROs is crucial to produce the reports by the deadline in administrative rule.*

- Day ≤5 after Preapplication Meeting Form Receipt: WSB and RO review for adequate completion, RO accepts and signs PMF if determined to be adequately completed. RO sends WSB Checklist upon determination of adequately completed Preapplication Meeting Form. RO communicates determination of adequate or inadequate PMF to applicant via Template Letter PA1, and the 45 calendar day period for the technical analyses/scientific credibility review begins.

- Day ≤ 45 after Preapplication Meeting Form Acceptance: At or before Day 40, WSB delivers their completed section of the report to RO, and RO compiles report contents and prepares the report for delivery to applicant (delivery included with Template Letter PA2).

No Preapplication Meeting Held

Determination of Correct and Complete Application Form

For applications that have not had a preapplication meeting, Technical Analyses or Scientific Credibility Review report will be completed after the correct & complete determination, and delivered to the applicant with the Draft Preliminary Determination (Template Letter A3). Once the permit or change application form is received, the Department has 30 business days to determine if the application is deficient or can be considered correct and complete. If the application as submitted is deficient, the Department has 30 calendar days from receipt of the deficiency letter response to determine if the application is correct and complete. If the application is not correct and complete after receipt of the deficiency letter response, the Department will terminate the application (and no technical analyses or scientific credibility review will be completed for the application).

If the application is deemed to be correct and complete, the Department will proceed to completion of the technical analyses or scientific credibility review for the application. While the Technical Analyses or Scientific Credibility Review report is not delivered to the applicant until the delivery of the Draft Preliminary determination (≤ 120 calendar days from determination of correct and complete application), the Department will begin the technical analyses or scientific credibility review upon the correct and complete determination. Note that if the application contains all necessary information for the technical analyses or scientific credibility review, then the Department may begin technical analyses prior to the correct and complete determination. The following internal timelines are suggested to maintain workloads and give both WSB and the ROs enough time to complete their portions of the analyses- so, if one step is completed early, try to maintain the allotted timestep to allow for more processing time on the back end. For example, if you are supposed to have 10 days to complete a step in the process (from day 10- day 20), but the materials arrived to you on day 8 instead, aim to complete your step by day 18, maintaining the 10-day timestep for the given step, and pushing the time savings to later in the process. *Communication between WSB and the ROs is crucial to produce the reports by the statutory deadline.*

- Upon application receipt:
 - If DNRC is doing TA, RO should send Form 633 and Aquifer Testing Addendum to WSB immediately for them to review for deficiencies (variances needed).
 - If WSB identified any deficiencies related to Form 633, RO must later send the related deficiency response to WSB ASAP upon receipt so they can determine whether deficiencies are resolved.
 - If applicant is doing TA, RO should send entire application and TA to WSB immediately for WSB to review for deficiencies and begin scientific credibility review (WSB does not need surface water permits or non-irrigation surface water changes as they do not contribute to those reports).
 - If WSB identified any deficiencies (missing pieces of TA), RO must later send deficiency response to WSB ASAP upon receipt so they can determine whether deficiencies are resolved.
- Day ≤ 10 after correct & complete determination:
 - RO will send application and WSB checklist to WSB via HYDRODOCS folder (update database events, and send an email notifying WSB the documents are there)

- RO and WSB will then spend ≤45 calendar days to complete their remaining respective parts of the technical analyses or scientific credibility review.
- Day ≤55 after correct and complete determination:
 - WSB will send their portion of the technical analyses or scientific credibility review to RO- the technical analyses/ scientific credibility review is complete!
 - RO will use the remaining 65 calendar days to write and review the Draft PD.
 - Note the Technical Analyses report/ Scientific Credibility Review report will be delivered to the applicant with the Draft PD (Template Letter A3).

Technical Analyses Report

Overview

The Technical Analyses report (TA) is completed by the Department if an applicant opts for the Department to complete the technical analyses for a given application. The content of the Technical Analyses report is application type dependent and pursuant to ARM 36.12.1303. Within this report, the Department will complete the technical analyses for each section using the Department's standard practice, unless otherwise specified and agreed upon in the Preapplication Meeting Form or Historical Use Addendum.

Please Note: In order to satisfy § 85-2-360, MCA, applicants for groundwater permits in closed basins MUST have a preapplication meeting if they want the Department to conduct the technical analyses. If they do not have a preapplication meeting, they must conduct their own technical analyses.

Scientific Credibility Review

Overview

The scientific credibility review of technical analyses is performed by the Department if an applicant opts to perform their own technical analyses for an application. During the scientific credibility review, the Department analyzes the credibility of the methodology and results of each element of the technical analyses as required in ARM 36.12.1303 to determine if the applicant-submitted technical analyses are eligible to be used in the Department's criteria analysis. If the applicant opts to produce their own technical analyses, they must prove their methodology is scientifically substantial and credible. It's important to note that an applicant may prove their methodology to be scientifically credible while deviating from Department standard practice, though the bar for proving scientific credibility will be higher than if Department standard practices were correctly used (as Department standard practices are considered to be credible by the Department). If applicant-submitted technical analyses are found to be scientifically uncredible by the Department, the statutory criteria cannot be proven using the originally-submitted technical analyses.

Deficiency/ Adequate Completion Review VS Scientific Credibility Review

While performing both the adequate completion review of a Preapplication Meeting Form and the deficiency review of a 600 or 606 application form, it's important to recognize the distinction between those processes and the scientific credibility review. The processes may seem similar on the surface, but the scientific credibility review can only occur once the Department has confirmed that all information needed to conduct the review has been included in either the Preapplication Meeting Form or the Technical Analyses Addendum of the 600/606 application form. Certain components of the credibility review will be addressed within mandatory questions on the Preapplication Meeting Form (if on the preapplication meeting pathway). See the table below and the additional table in the Preapplication Meetings section of this manual for a comparison of the different levels of review at each application stage.

Application Deficiency Review/ Preapplication Meeting Form Adequate Completion Review	Technical Analyses Scientific Credibility Review
Completeness of form & analyses	Credibility of methodologies
Consistency of content on the form & analyses	Quality of analyses and analyses results
Deviation from preapplication meeting discussion	Relevance of the data used
	Adequacy of parameters*
	Department justification for credibility findings

**If a preapplication meeting was held, the adequacy of parameters and data inputs will have been discussed within the mandatory sections of the Preapplication Meeting Form and thus previously evaluated during the adequacy check of the completed Preapplication Meeting Form.*

The review of adequate completion (Preapplication Meeting Form) or deficiency review (600/606 Application Form) will be a review for completion and consistency throughout the respective document. See the Correct & Complete Determination and Deficiency Letters or Preapplication Meeting sections of the manual for more information on these determinations. The scientific credibility review will consist of a credibility analysis of each required technical analysis of a given application, including the methodology and result of each analysis. These documents will be formatting similarly to the technical analyses reports and will walk through the basis of each of the Department's credibility findings.

Assessing Credibility

When evaluating the scientific credibility of the submitted technical analyses, the Department must consider the following criteria of each element of the analyses. If any one component of an analysis is deemed to not meet the criteria listed below, the Department will find the analysis to be incredible in the review.

Per ARM 36.12.1303(8), the Department will evaluate the **methodology, quality of the analysis, and relevance of the data used** for the technical analyses. The following questions can help guide the Department's scientific credibility review of applicant-submitted technical analyses.

Methodology:

- What methodology did the applicant use to complete the analysis?
- How is this methodology scientifically credible or incredible? (e.g., peer reviewed, used by other agencies, etc.)
- Is this methodology appropriate for the subject analysis? (e.g., was the methodology used meant to be used for the analysis it was used for?)

Quality of the analysis:

- Regardless of the credibility of the methodology at hand, was the analysis performed correctly and completely? (e.g., are the numbers right?)
- Why does the Department find the quality of the analysis to be credible or incredible?

Relevance of the data:

- What is the source of the data for the analysis being performed?
- Why is this data acceptable or unacceptable for the subject analysis?
- Do the variables or parameters being submitted for each analysis make sense for the project and water source?

- Is justification provided for variables and/or data inputs being submitted within analyses?

Examples of Scientific Credibility Finding Language:

- *The **analysis of the area of potential impact** is not considered to be scientifically credible by the Department because the quality of the analysis is considered incredible by the Department. The analysis neglected to include water rights downstream of the point of diversion, with no explanation as to why said water rights should not be considered in the area of potential impact.*
- *The **return flow analysis** is not considered to be scientifically credible by the Department because the analysis was inadequate. Per 36.12.1303(iii), "if water rights are identified which will be impacted by a change in return flow, the return flow analysis must include a monthly breakdown of the rate and timing of return flow and evaluate impacts to the identified rights." While the rate and timing of the return flows were identified in your analysis, an evaluation of the impacts to the identified water rights was not included.*

Appealing or Challenging Technical Analyses or Scientific Credibility Review Reports

A process to appeal or challenge a departmental technical analysis or scientific credibility review is not defined by rule or statute. Options do exist, however, to address disputed departmental technical analyses or scientific credibility reviews. Any errors or revisions of technical analyses or scientific credibility reviews should be discussed with CO. Reach out to your Central Office contact if you've noticed an error or an applicant seeks to revise their technical analyses.

WSB Checklists

If you are processing an application type that requires analyses or review from WSB, then you will need to complete a WSB checklist upon determining the information in the application form or Preapplication Meeting Form is final and ready for technical analysis. The following application types require the WSB checklists listed below:

- Groundwater Permit Application (GW 600)
- Groundwater Change Application (GW 606)
- Surface Water Irrigation Change Application (SW 606)

All other application types do not require WSB reports.

Preparing the Report for Delivery

WSB will forward a PDF of their portion of the Technical Analyses report or Scientific Credibility Review report to the RO. RO Staff will complete the appropriate cover letter (either Template PA2 or A3) and describe the contents of the Technical Analyses report/ Scientific Credibility Review report. RO Staff will save the final, merged report in the appropriate Regional Office folder in Hydro Tech Reviews (ROCO/HYDRO DOCS/HYDRO TECH REVIEWS).

ROCO Templates

RO portions of the Technical Analyses report and Scientific Credibility Review report templates are available in ROCO in the HYDRODOCS/ Report Templates Post Jan. 1 Folder.

Criteria Based Guidance for Change Applications

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.

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.

MCA:

The following MCA reference 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](#)

Process:

- 1) Steps that are necessary to conduct an analysis of Adverse Effect are typically common to both surface water and groundwater applications. Compare the historical use to the proposed use: Does the proposed exceed the historical use? In what way (e.g., increase in flow, net depletions to surface water, consumed or diverted volume, etc.)?
 - a. How did the applicant quantify the proposed use?
 - b. Compare the historical use to the proposed use.
 - i. Is the proposed flow rate less than or equal to the historical flow rate?
 - ii. Is the proposed diverted volume less than or equal to the historically diverted volume?
 - iii. Is the proposed consumptive volume less than or equal to the historically consumed volume?
 1. For irrigation changes, the Department does not account for a change in the method of irrigation (and thus on-farm efficiency values or timing of return flows) when considering the proposed consumptive volume on acres that fall within the historically irrigated footprint.
 - a. *For a change in POD only:* If an applicant is only changing their POD and is not increasing or moving the number of acres historically irrigated or changing the historical place of use, then the Department will assume for purposes of the comparison of the historical use to the new use that there is no change in consumption or return flow resulting from a post 1973 change in method of

irrigation. This applies only to the specific 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 b. below).

- b. *For a change to the place of use or purpose:* If an applicant is changing their place of use or purpose, then the Department will only look at a comparison of the historical 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. **For more information on the Department's policy on changes that involve a change in method of irrigation, see the "Change in Method of Irrigation Policy Guidance" in the Specific Concepts Q&A section below.**

- 2. For groundwater changes (POD, purpose, or place of use changes that propose a change to the consumptive use or pumping schedule) the Department must consider any changes to the amount, location, and timing of the depletions to surface water sources and the impacts to existing water rights. If a surface water depletion analysis was included in the technical analyses, did the analysis find a negative net effect to the depleted source as a result of the proposed project?

- a. If no, continue to c).
- b. If yes, evaluate the potential adverse effect to surface water rights by considering the physical availability of the depleted source and the area of potential adverse effect (guidance below). Are any water rights adversely affected by the change in net depletions?

- c. If proposed use does not exceed historical use, proceed to 2).

- d. If proposed use will exceed historical use, has this increase been addressed via the permitting process? The historical use of a water right cannot be exceeded through the authorization of a change.

DNRC STANDARD PRACTICE TO ANALYZE RETURN FLOWS:

- 2) Consider Return Flows: For applications with a historical purpose of irrigation that are changing the purpose or place of use of the water right(s), the Department must assess whether the location and amount of return flow accretion will change as a result of the proposed change. Are other appropriators entitled to continuation of access to historical return flows as a part of their water right? We cannot authorize any increase in consumptive use in the proposed new appropriation. For changes to unperfected irrigation permits, we should not be completing any return flow analysis- our stance has been that on unperfected permits, we do not make findings on the historical use because the permit is not yet completed (unperfected), and the owner can change the full permitted flow rate and volume. The return flow analysis procedure outlined in the following steps was previously described in the April 1, 2016, Department Policy Memorandum: Return Flows. While the policy memo itself has since been decommissioned, Department procedure (a-c, below) remains unchanged from that described in the memo. **Note that an increase in return flows on the source through a change does not count for mitigation.**

- a. Is the current purpose of the water right being changed irrigation?
 - i. No – no return flow analysis is required, per ARM 36.12.1303(3)(c) [or ARM 36.12.1303(5)(d) for groundwater changes]
 - ii. Yes – continue to b.
- b. Is the place of use and/or purpose of the water right being changed?

- i. No – no return flow analysis is required, per ARM 36.12.1303(3)(c) *[or ARM 36.12.1303(5)(d) for groundwater changes]*
- ii. Yes – a return flow analysis of the historical and projected use is required. Per ARM 36.12.1303(3)(c) *[or ARM 36.12.1303(5)(d) for groundwater changes]*, this analysis must include:
 1. Amount of historical and proposed return flows
 - a. Return Flow Volume = Field Applied Volume – Consumed Volume (*including IL*)
 2. Location of historical and proposed return flows
 - a. See WSB Technical Memorandum: Calculating Return Flow for more information.
 3. If water rights are identified which will be impacted by a change in return flow, the return flow analysis must include a monthly breakdown of the rate and timing of return flows (produced by Water Sciences Bureau) and an extended analysis which includes an evaluation of impacts to the identified rights.
 - a. An analysis of the monthly rate and timing of return flows is required when the following conditions are NOT met:
 - i. 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**,
 - ii. Water is left instream so historically diverted flows are available during the historical period of diversion either below the point of diversion or at the site where return flows historically returned to the source.
 - b. If either i. or ii. above are fulfilled, an extended monthly return flow analysis is not required. If either i. or ii. above are not fulfilled, a full return flow analysis is required; the return flow analysis must include a monthly breakdown of the rate and timing of historical and projected return flows, and an evaluation of impacted water rights.
 - i. See WSB Standard Practice Documents for more information on the return flow analysis
 - ii. Proceed to (c) for information on the evaluation of impacted water rights.
 - c. If historical return flows returned to multiple sources, and water is proposed to be left in either stream, an extended monthly analysis is only required for those streams that historically received return flows and will not have water left in stream to account for lack of return flows resulting from the proposed change.
- c. If the return flow analysis required includes a monthly breakdown of the rate and timing of return flows and evaluation of the impacts to the identified water rights, complete a surface water analysis and analysis of the area of potential impact of the affected surface water source as a part of the technical analyses to evaluate potential adverse effects to the identified water rights. See the physical availability analysis standard practices and the legal availability standard practices for more information on how to complete these analyses.

DNRC STANDARD PRACTICE TO ANALYZE AREA OF POTENTIAL ADVERSE EFFECT:

- 3) Determine the area of potential adverse effect.
 - a. For groundwater change applications, the area of potential adverse effect is determined by:
 - i. One-Foot Drawdown Contour, found by the groundwater analysis determination of the groundwater rights in the source aquifer that are predicted to experience drawdown equal to or greater than one foot

- ii. Depleted reach of surface water sources hydraulically connected to the groundwater source (if applicable)
 - iii. Reach of the stream in which return flows historically accrued, downstream of the location return flows historically accrued (if applicable)
 - iv. *Surface water rights within the reaches described in ii. and iii. will be considered as part of the groundwater change technical analyses via the area of potential adverse effect analysis of depleted surface water as required in ARM 36.12.1903(2)(f), only for groundwater changes that are proposing a change in POD or place of use*, when the location, amount, or timing of net depletions to surface water are projected to change. * note that a change in purpose inherently changes the place of use of a water right, as the place of use is defined by the purpose. Thus, groundwater changes proposing a new purpose are subject to the same analyses as a place of use change.*
- b. For surface water change applications, the area of potential adverse effect is determined by:
 - i. The reach of the stream downstream of the proposed point of diversion
 - ii. Reach of the stream in which return flows historically accrued, downstream of the location at which return flows historically accrued (if applicable)
- 4) Are there projected injuries to other appropriations? Consider the potentially impacted water rights, if any expansion is occurring, and if the location and/or timing of return flow accretion is changing. If so, which water rights will be adversely affected, and how? The water rights projected to be impacted by a change must be identified.
- 5) Evaluate the applicant's plan to prevent adverse effect.
- a. How does the applicant's plan to respond to a valid call for water (should water shortages occur)?
 - b. How does the applicant's plan to account for changing in the timing and accretion of return flows, if any changes are projected to occur?
 - c. How does the applicant plan to ensure their access to the source has not been expanded, if applicable? (e.g., by a new POD type or location)
-

Making a Finding

The preliminary determination needs to include a finding of whether the proposed change will cause an adverse effect upon other water users, whether junior or senior in priority date. For irrigation changes, the PD should include a finding explaining why a full return flow analysis was or was not necessary. The adverse effect criterion is not fulfilled if other water users will be adversely affected. If adverse effects **are** found, the Department needs to explain which water right(s) will be adversely affected as a result of the change proposal.

Specific Concepts and Q&A:

Change in Method of Irrigation Policy Guidance

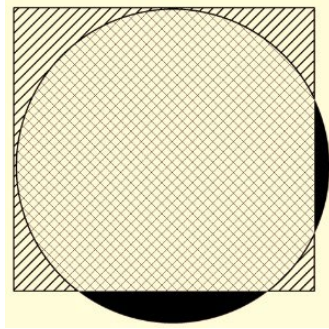
Per MCA 85-2-102(7)(b), a change in appropriation right does not include a change in method of irrigation (method of irrigation is also not an element that can be proposed for change). Thus, when calculating the proposed consumed and diverted volumes for a change, the Department will consider a change in the method of irrigation only on newly irrigated acreage, outside of the historically irrigated footprint. See the information below for an example of how the Department calculates the proposed consumed and diverted volumes considering both historical and modern field efficiency values. This procedure was previously clarified in the Dec. 2, 2015, Department Policy Memorandum: Change in Method of Irrigation. The policy memo has since been since decommissioned and the record of said procedure (remaining unchanged from that of the memo) is now housed in this document, the Change Application Manual.

Historical System

Square = 100 Ac. Flood (ditch)

New System

Circle = 90 Ac. Pivot (pump/pipe)



Irrigation Pattern Key

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.

Example: Using the Historical Consumptive Use Rules - Dillon station (ARM 36.12.1902) and the historical diverted volume memo, the calculations work out as follows:

Flow Rate: 5 CFS proven by applicant.

Total Historical Consumptive Volume (crosshatched + lined):

$$(18.34'' / 12'') * 0.637 \text{ mgmt.} * 100 \text{ Ac.} = 97.35 \text{ AF} + 8.11 \text{ AF} = \underline{105.46 \text{ AF}}$$

(irrecoverable losses: $(97.35 / 60\% \text{ eff} * 5\% = 8.11 \text{ AF})$)

Diverted Volume:

$$(97.35 \text{ AF} / 60\% \text{ eff}) + 50 \text{ AF conveyance loss} = \underline{212.25 \text{ AF}}$$

Adverse Effect

Only run calculations to ensure the solid black (acreage outside historical footprint) consumptive use does NOT exceed the lined area (historical footprint acreage removed). No calculations will be run for the crosshatched land (overlapping historical and new acreage). In most cases, if using ARM 36.12.1902 for historical use, you must use ARM 36.12.1902 for the proposed use. If using the historical use addendum for historical use, one may use the same or different method for the proposed use.

Flow Rate required by pivot is 2 CFS (less than 5 CFS; no adverse effect).

Unchanged Historical Consumptive Volume (crosshatched) (using ARM .1902):

$$(18.34'' / 12'') * 0.637 \text{ mgmt.} * \mathbf{80 \text{ Ac.}} = 77.88 \text{ AF} + 6.49 \text{ AF} = \underline{84.37 \text{ AF}}$$

(irrecoverable losses: $(77.88 \text{ AF} / 60\% \text{ eff} * 5\% = 6.49 \text{ AF})$)

Proposed Retired Flood Historical Consumptive Volume (lined) (using ARM .1902):

$$(18.34'' / 12'') * 0.637 \text{ mgmt.} * \mathbf{20 \text{ Ac.}} = 19.47 \text{ AF} + 1.62 \text{ AF} = \underline{21.09 \text{ AF}}$$

(irrecoverable losses: $(19.47 \text{ AF} / 60\% \text{ eff} * 5\% = 1.62 \text{ AF})$)

Proposed New Pivot Consumptive Volume (black) (using ARM.1902):

$$(20.74'' / 12'') * 0.883 \text{ mgmt.} * \mathbf{10 \text{ Ac.}} = 15.26 \text{ AF} + 1.91 \text{ AF} = \underline{17.17 \text{ AF}}$$

(irrecoverable losses: $(15.26 / 80\% \text{ eff} * 10\% = 1.91 \text{ AF})$)

Total Proposed Consumptive Volume (crosshatched + black): $84.37 \text{ AF} + 17.17 \text{ AF} = \underline{101.54 \text{ AF}}$

Total Proposed Diverted Volume: $(77.88 \text{ AF} / 0.60 \text{ eff.}) + (15.26 \text{ AF} / 0.80 \text{ eff.}) = \underline{148.88 \text{ AF}}$

Consumptive volume of new acreage is less than that of acreage removed—passes the test (if consumed volume of proposed use exceeds consumed volume of historical use, the applicant must reduce the consumption of the proposed use (i.e., reduce solid black acreage, for example))

Beneficial Use

The values considered for beneficial use will be the same volumes associated with the proposed use values in the adverse effect criterion (despite the fact that the volumes for acres in the historical footprint may not reflect the actual consumption of the proposed use). If you have questions about an applicant's ability to meet this criterion while considering the Department's policy on a change in method of irrigation, contact your regional manager or the central office.

Adequate Means of Diversion

The values considered for the adequate means of diversion criterion will be the same volumes associated with the proposed use values on the adverse effect criterion (despite the fact that the volumes for acres in the historical footprint may not reflect the actual consumption of the proposed use). If you have questions about an applicant's ability to meet this criterion while considering the Department's policy on a change in method of irrigation, contact your regional manager or the central office.

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; 105.46 AF consumed volume
- **Current Amounts:** 2 CFS Flow Rate; Pivot AF diverted volume (171.68 AF assuming ARM 36.12.1902); 90 acres
- *The leftover amounts (3 CFS and difference in AF remain on version 1, the applicant does not lose it)

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

Aquifer tests are not required by rule for acceptance of change applications per 36.12.1305 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 to change applications is that 36.12.121 applies to changes only if a new groundwater POD is being proposed. If the application proposes to add a groundwater POD to a water right and that groundwater POD is already listed on another water right, aquifer testing is not required. If an applicant is proposing to deviate from aquifer testing standards in 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.

The minimum aquifer test requirements for a proposed groundwater point of diversion will depend on whether 24- or 72- hour tests have already been performed in that aquifer. If an application proposes to add a well to a Statement of Claim with an existing well that was never subject to aquifer testing, and no other data is available for WSB to determine aquifer properties, a 24- or 72- hour test will likely be required for the new well. Available aquifer data varies greatly around the state, and any questions about testing requirements should be directed to WSB – they will determine the data needed to assess adverse effect and adequacy of diversion for the new groundwater diversion. The Department interprets ARM 36.12.121(3)(f) to mean that if more than one production well is proposed in an application, the second and subsequent proposed new wells are required to

have an 8-hour drawdown and yield test. As mentioned, an applicant can request a variance from these requirements.

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. The Department 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 multiuser 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.

If an applicant on an irrigation change proposes to reduce their annual diverted volume, leave some water in the stream to meet the requirements of the return flow policy (for only needing annual return flow analysis) and to offset what they modeled as a loss of return flows, how should that reduction in proposed diverted volume (and flow rate?) be coded in the database? Can that volume reduction be assigned to a mitigation purpose? Is that water "lost?" And what is the legal demand associated with this water right after the change?

Summary Answer:

The volume being left instream because it is not being put to beneficial use, cannot be assigned a beneficial use in the database. A mitigation purpose is not applicable to that volume being left instream because that volume eliminated the need for an adverse effect analysis on the loss of return flows (because it offset the lost return flows). When coding the change version in the database, reduce the diverted volume by the amount being left instream, but carry the full historical flow rate forward onto this change version. An info remark (II remark) explaining the volume being left instream at the point of diversion is optional, but can be helpful to explain the operation of the water right. The legal demand of a water right is based on the volume assigned to the most recent version. In this case legal demand is as follows: flow rate will be the historical flow rate (which is carried forward); volume will be the reduced diverted volume.

Detailed Answer:

If the applicant proposes to reduce their proposed diverted volume (for whatever reason, including in anticipation of their own modeled loss of return flows), their leaving water instream results in the need for only an annual return flow analysis to be done by the Department. If the proposed reduction in diverted volume also offsets the loss of return flow found by the Department, that eliminates the need for further adverse effect analysis of the reduced return flows. There is no finding of adverse effect to a specific water right(s). Therefore, because there is no adverse effect finding, there is no need to mitigate for an adverse effect.

In this case, the water being left instream at the point of diversion is not being put to a beneficial use. The volume reduction should not be assigned any beneficial use; however, the flow rate should remain the same as the historical flow rate. On a change authorization, water no longer proposed to be beneficially used by the applicant under the changed conditions should not be coded under the purposes on the water right abstract. The water right owner still holds a right to the water as evidenced under the historical use determination (and documented at the top of the change authorization abstract). The water is not “lost” under authorization of the change, it is just no longer needed to satisfy the beneficial use under the change and is no longer a component of the current legal demand of that changed version of the water right. DNRC is not making a determination that the water no longer being diverted has been abandoned. For the purposes of call on the source or an enforcement/distribution project, those actions are based on priority date and flow rate, which remain unchanged on the Change Version.

Historical Use for Changes

Overview

A fundamental tenet of western water law, that an appropriator has a right only to that amount of water historically put to beneficial use, developed in concert with the rationale that each subsequent appropriator is entitled to have the water flow in the same manner as when they located, and those appropriators may insist that prior appropriators do not affect adversely their rights (*Hohenlohe v. State*, 2010 MT 203, H 43, 357 Mont. 348, 240 P.3d 628). In recognition of the finite amount of its water resources, Montana law provides the burden of proof be on those who seek to change their water rights to prove lack of harm to others on a stream (§ 85-2-402(2)(a), MCA (2013); *In the Matter of the Application for Change of Appropriation Water Rights Nos. 101960-41s and 101967-41S by Keith and Alice Royston*, 249 Mont. 425, 428, 816 P.2d 1054, 1057 (1991)).

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 (or whichever evidentiary requirement is applicable to the application). If a change application 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 will 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 without causing adverse effect.

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. An applicant that is proposing to change a Statement of Claim bears the burden of substantiating their historical use, no matter how their water right was described in previous decrees or through adjudication.

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

The following procedures are considered to be the Department’s Standard Practice for the Historical Use Analysis.

Important Note:

The information provided on the water right abstract is not enough to substantiate historical use. Even if it is a decreed Statement of Claim, the applicant must provide substantial credible information regarding their historical use. When Statements of Claim were filed, the evidentiary standard applied was prima-facie. Change applications, however, require the applicant to prove criteria by a preponderance of evidence (or whichever evidentiary requirement is applicable to the application). Because of this higher burden of proof, the DNRC must show a historical use analysis. The historical use analysis has been confirmed through numerous court cases, including in the Supreme Court Opinion of Hohenlohe vs. DNRC, 2010. Please note that evaluation of the historical use is not “re-adjudicating” any claims (see History of the DNRC Change Process Memo, dated Feb. 21, 2017).

Review all 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 ARM 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 within this guidance 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. Examples of evidence that may support historical municipal use include: number of connections, population records/Census records, or a summary of Cadastral records that indicate what homes were built before a certain date, etc.

Memos and Policies

- DNRC Consumptive Use Methodology, updated March 17, 2010 (this is not a policy memo, rather this is a guidance document describing and explaining the origins of IWR inputs and variables)
- Development of standardized methodologies to determine historical Diverted Volume, dated Sept. 13, 2012
- Technical Memorandum: Pond and Wetland Evaporation/Evapotranspiration, dated June 7, 2023
- Assessment of new consumptive use and irrecoverable losses associated with change applications, dated April 15, 2013
- DNRC’s Use of the Irrigation Water Requirements (IWR) Program, dated Feb. 4, 2013
- Technical Memorandum: Distributing Conveyance Loss on Multiple User Ditches, dated Feb. 14, 2020
- Historical diverted volume determinations for changes to existing rights decreed with no volume, dated Aug. 4, 2020

Forms & Addenda

Form 606 Historical Water Use Addendum (HUA) may also be needed. Form 606-HUA will be needed if the applicant does not want the Department to use the consumptive use rules or historically diverted volume rules when considering the historical use of their irrigation water right for the purpose of the technical analyses. It can also be used when the applicant wants to submit additional historical information or new variables/parameters that deviates from the standards or methods in administrative rule to help substantiate historical diverted and consumed volumes. Please note that if the applicant submits Form 606-HUA, you should contact WSB for guidance if there are questions about the credibility applicant-submitted scientific data. If an applicant submits Form 606-HUA, the Department will consider the information submitted and potentially adjust its analysis to account for the information submitted.

36.12.1902(1)

(1) The description of the historical information is related to a date that is dependent on the type of water right being changed. The following dates are applicable for each type of water right:

- (a) historical information for a statement of claim must be described as it was used prior to July 1, 1973, unless the Water Right Claim was subject to a previous change in which case it is the date of completion of the change;
- (b) historical information for a provisional permit must be described as it was used at the filing date of the completion notice;
- (c) historical information for a certificate of water right must be described as it was used at the filing date of the completion notice;
- (d) historical information for an exempt or non-filed water right must be described as it was completed prior to July 1, 1973; and
- (e) when a change application has been granted on or after July 1, 1973, the Department may request additional historical information for a statement of claim as it was used prior to July 1, 1973.

Overview

ARM 36.12.1902(1) frames the historical use analysis process by specifying the date to use, times when the process does not need to be done, and limits for what the Department can find.

"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.

Procedure Steps

- 1) Determine the date to use for the historical use analysis.
 - a. Look at the "Version" accordion in the "View/Edit Water Right" page.
 - i. Is there a "CHANGE AUTHORIZATION" or "CHANGE AUTHORIZATION (SPLIT)" previous to the application at hand?
 1. If so, then:
 - a. Go to the application screen for the most recent active change authorization.
 - b. Go to the "Events" accordion in the "Application" screen.

- c. Look for “PROJECT COMPLETION NOTICE RECEIVED” event and use this date if the event is located.
 - d. If no “PROJECT COMPLETION NOTICE RECEIVED” event, look for the “PROJECT COMPLETION NOTICE DUE” event. If there is no event, then look in the scanned file to see when PCN is due. If it is not due yet, then it is an un-perfected change. Historical use will most likely be as it was assessed in previous change (see more information in step 2 below), and the Department will not reassess historical use of the water right applicant will have to explain if any or all of the project has been completed.
 - e. Is there a “VERIFICATION/CERTIFICATION DATE” event?
 - i. If the project completion notice has been received but verification has not been completed, then the existing change must be verified before the new change authorization is processed.
2. If not, then go to “1b” below.
- b. Which type of water right is being changed? Look at the WRIS “Water Right Type” box at top of “View/Edit Water Right”.
- i. If a “STATEMENT OF 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.
 - ii. If a “PROVISIONAL PERMIT”, then:
 - 1. Go to application screen and to “events” accordion.
 - 2. Look for “PROJECT COMPLETION NOTICE RECEIVED” event and use this date if the event is located.
 - 3. If no “PROJECT COMPLETION NOTICE RECEIVED” event, then this is an unperfected permit and Department will not determine historical use. We need to use what is on the face of the permit.
 - iii. If a “GROUNDWATER CERTIFICATE”, then use the “Enforceable Priority Date”, which is the same as the “FORM RECEIVED” event date.
 - iv. If an “EXEMPT NOTICE” or “NON-FILED WATER PROJECT”, then use July 1, 1973, as the date.
- 2) Determine if a full historical use analysis will need to be completed:
- a. Did you find a previous “Change Authorization” above?
 - i. If so, then assess the accuracy and extent of the existing historical use analysis. Is it partial (only has historical use analysis for acres/purposes that were changed) or full (historical use analysis for entire purpose/place of use)? Are there any errors or red flags in the previously completed historical use analysis?
 - 1. Determining whether to use historical use findings from a previous change authorization is situational and wholly dependent on the timing of the previous authorization and how the previous change was addressed. If an authorization predated 2005, a full historical use analysis may not have been completed for the water right, thus the findings from that authorization may not be able to be used in the current analysis. If the existing findings will not be used for the current application, this needs to be fully explained in the PD. (If there are any questions about the accuracy or relevancy of existing findings, consult your manager or CO.)

- ii. If a historical use analysis has errors or was not completed for the entire purpose/place of use for the previous authorization, a new historical use analysis will need to be conducted.

Making a Finding

Clearly document in PD if a previous historical use analysis will be used and, if not, what date (based on water right type and/or previous change authorizations) will be used for the current historical use analysis. Make sure to document the basis of your decision.

36.12.1902(2)

ARM Cite

(2) Final Water Court approved stipulations and master's reports related to the water right being changed must be referenced with the application; however, this information or an abstract of a water right from the Department or the Montana Water Court by itself is not sufficient to prove the existence or extent of the historical use.

Procedure Steps

Be sure to search the scanned documents for any water court approved stipulations, master's reports, and prior Department decisions related to the water right being changed. Make sure to address them in your findings. Documents referenced may corroborate historical use findings, but do not prove historical use on their own. See guidance on ARM 36.12.1902(7) for more information on historical use analyses.

36.12.1902(3)

ARM Cite

(3) The amount of water being changed for each water right cannot exceed or increase the flow rate or volume historically diverted under the historical use, nor exceed or increase the historical volume consumptively used under the existing use.

(a) The Department may use column H in Table 1 for proposed irrigation to compare the historical consumptive use (HCU) to the amount of water being changed.

Procedure Steps

See ARM 36.12.1902(7) implementation guidance for instructions for corroborating historical place of use, historically diverted and consumed volumes, and historically diverted flow rate.

36.12.1902(4)

ARM Cite

(4) The Department shall compare historical acres irrigated to acres identified as irrigated in the Water Resources Survey, if available for the place of use. If the Water Resources Survey does not support the historical irrigation alleged in the application, the applicant shall explain why. Information from irrigation journals, logs, or old aerial photographs can be submitted for consideration.

Overview

The Montana Water Resources Survey (WRS) is a comprehensive county-by-county assessment of Montana's historical water use. This data was collected and published from 1943 thru 1965 by the State Engineers Office and from 1966 thru 1971 by the Water Conservation Board. Most published surveys consist primarily of two parts: Part I; a known historical account of water use in the county, and Part II; survey maps of current water

use at the time of publishing. The survey data was derived from courthouse records in conjunction with individual contacts with landowners, field investigations and aerial photography. Data collected from various other agencies and resources were also used.

If the water right being changed is a Groundwater Certificate or Provisional Permit, WRS will not be used to corroborate historical use because the date used to corroborate historical use will be later than the date of production of maps and surveys from WRS (some WRS aerial imagery was produced in the 1980s, so *could* be used). It's important to note that even if the water right being changed is a Statement of Claim, the WRS may not have aerial imagery of the place of use. If aerial imagery for the historical place of does exist but does not corroborate the applicant's description of historical use, it is important to explain why applicant testimony is not corroborated by the WRS and whether the Department finds this reasoning to be substantial and credible when proving the criteria by a preponderance of the evidence (or whichever evidentiary requirement is applicable to the application). 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.

Procedure Steps

- 1) Was the water right being changed originally filed for the purpose of irrigation?
 - a. If not, the historical use of the water right will not be recorded in the WRS.
 - b. If yes, continue to 2.
- 2) Is the water right being changed a Statement of Claim?
 - a. If yes, Water Resource Survey (WRS) maps and survey corroboration will either be used or an explanation of why they will NOT be used should be provided in the Application (and decision documents). Continue to 3.
 - b. If no, WRS maps and surveys may not reflect the historical use of the water right (area surveyed before the water right's priority date). Check the date of survey of the WRS maps and surveys of the county of the place of use of the water right being changed. In this case, historical use does not need to be corroborated by the WRS.
- 3) If corroborating historical use of the water right with the WRS, seek the county(s) of the historical place of use and interpret the map and survey for the location and amount of historically irrigated acreage.

Making a Finding

Does the information in the WRS corroborate the historical use described by the applicant? A finding in the decision document should explain whether applicant testimony is corroborated by the WRS, and whether the Department finds this reasoning to be supported by a preponderance of the evidence (or whichever evidentiary requirement is applicable to the application).

36.12.1902(5)

ARM Cite

(5) For an application to change multiple irrigation water rights, the total number of acres for each water right located within the place of use must be identified.

Overview

Per ARM 36.12.1305(6), multiple water rights can be changed in a single application if as a result of the proposed change, the place of use and purpose will be exactly the same for each water right, and all water

rights will share a common conveyance system. Oftentimes, water rights being changed on the same application were historically used in the same if not similar project systems.

A scenario to be mindful of when looking at water rights that were historically used together, or have the same claimed elements, is the case of marshaled rights. Historically, the Water Court encouraged claimants to marshal their water rights. This allowed appropriators to essentially move their priority dates to multiple PODs/ move PODs to multiple places of use for greater access to their water source. It's difficult for DNRC to "untangle" these marshaled rights because historical use must be corroborated independently for each water right (each right's historical use must be stand-alone, but this is difficult to discern/ corroborate when the PODs and places of use have been marshaled by the Water Court). Inaccurate historical analyses of marshaled rights can be cause for adverse effect to other users, as historical use could be expanded (ex., earlier priority date on a POD than may have been actually claimed).

Procedure Steps

- 1) Ensure the Application has described historical use information for EACH water right being changed. If the water rights were historically used supplementally or in conjunction with one another, describe how the water rights were apportioned across the shared historical place of use and/or purpose.
- 2) Will all water rights being changed share a place of use, purpose, and means of conveyance as a result of the proposed change? If not, the water rights cannot be changed on one application, per ARM 36.12.1305(6).
- 3) Use guidance per ARM 36.12.1902(7) to determine the historical use for each water right being changed. If water rights were used supplementally, see guidance for 36.12.1902(6) for analyses of water rights with overlapping places of use.

Making a Finding

Make a finding in the "Change Proposal" section of the PD describing the proposed shared diversion works, place(s) of use, purpose(s), and storage (if applicable) of the water rights being changed.

36.12.1902(6)

ARM Cite

(6) For an application to change water rights that overlap the historical place of use, an applicant shall include those water rights in the change application or shall explain how each of the water rights has been historically used and how the unchanged water rights will be used if the change authorization were granted. If water will continue to be used at the historical place of use, the applicant shall explain how the continued use will not increase the combined historical maximum diverted flow rate, the historical diverted volume, and the historical consumptive volume.

Overview

Overlapping water use needs to be described in an application, so when you are doing the analysis of the place of use consumed volume and diverted volume, overlapping water rights will need to be accounted for. A place of use can only consume so much water, so if multiple water rights are claiming an overlapping place of use (whether an irrigated acreage or a herd of cattle), the specialist needs to ensure the maximum consumptive volume for a given place of use is not exceeded (without condition language, the sum volumes of two water rights for an overlapping place of use may be more than the consumed volume for the place of use). We cannot assign each water right the full consumption (unless a condition is applied) because then we are assigning more water to a place of use than is beneficially consumed by the purpose. This is also applicable to

the use of contract water and irrigation districts. For example, while a share of contract water is not technically supplemental to a water right, if a place of use consumed part of that water, it needs to be explained in the historical use analysis.

If water rights with overlapping places of use are involved in the change application, 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 availability is low.

It's important to note that the applicant must be the person to describe/apportion volumes between water rights with a supplemental nature – the Department cannot make any assumptions about historical use. While we are not making historical use findings on water rights that are not being changed in an application, the apportionment of water rights over a shared historical place of use will be held for future Department decisions. An application is not correct and complete until the supplemental nature of water rights involved in the change are fully described.

Procedure Steps

- 1) Ensure the applicant has described how the historical volume of water consumed by the place of use / shared purpose is apportioned between the water rights involved in the application.
- 2) Use guidance per ARM 36.12.1902(7) to determine the consumed volume for the place(s) of use that is overlapping. Apportion place of use per applicant explanation.

Making a Finding

The supplemental nature of overlapping water rights must be fully described by the applicant prior to the Application being deemed correct and complete. In the decision documents, the specialist must fully describe the described historical apportionment between water rights that have a supplemental nature/ overlapping place of use. If contract water has historically been used on the place of use, the decision documents should make a finding as to whether the purpose was reliant on said contract water. In addition to providing an explanation of apportionment, the specialist should also include tables of *how* the consumed volumes (and diverted volumes, if the conveyance system is also shared by multiple water rights) were historically apportioned (i.e., by flow rate? by split periods of use? by acres?).

36.12.1902(7)

ARM Cite

(7) The Department will corroborate the historical use, including the following of each water right being changed:

- (a) water right number and the priority date;
- (b) most recent year the water right was used;
- (c) historical point of diversion;
- (d) historical period of diversion;
- (e) historical means of diversion;
- (f) typical historical diversion schedule and operation pattern;
- (g) means of conveyance;

- (h) historical ditch capacity;
- (i) maximum historical flow rate diverted from each point of diversion and how the amount was determined;
- (j) historical place of use for each purpose;
- (k) maximum number of acres historically irrigated;
- (l) typical historical period of use for each purpose;
- (m) annual or monthly historical diverted volume and how this amount was determined;
- (n) the annual or monthly historical consumptive volume for each purpose;
- (i) for irrigation, an applicant may choose to use the methodology described in (16); and
- (ii) for irrigation, an applicant who chooses not to use the methodology described in (16), shall provide the factual basis for the historical consumptive volume calculation and why the historical consumptive use is less than or greater than the methodology described in (16);
- (o) the historical efficiency including the diversion, conveyance, and overall system;
- (p) the legal land description of a reservoir;
- (q) the maximum volume in acre-feet of stored water;
- (r) evaporation loss of stored water (evaporation standards can be found in ARM 36.12.1902(16));
- (s) maximum number of times a reservoir was filled during a year; and
- (t) maximum period of time when water was legally collected for storage.

Overview

This subsection of rule defines the elements of historical use to corroborate for each water right being changed. The goal of this subsection is to have a clear picture of historical use to compare to proposed use for the adverse effect analysis.

Background/Context

Historical use analysis has evolved over time. The Administrative Rules concerning historical use analysis that are utilized today were adopted in 2005. Prior to 2005, historical use analysis was not conducted in a quantified or standardized fashion. Two memos helped refine the historical use analysis procedures for consumptive use, “DNRC Consumptive Use Methodology” (March 2010), and diverted volume, “Development of standardized methodologies to determine Historical Diverted Volume” (Sept. 2012). These memos have been incorporated into our current guidance. A major overhaul of forms and processes was undertaken in 2012. Also in 2012 was the decision for Hohenlohe vs. DNRC. This decision caused DNRC to take a deeper look at consumptive volumes for historical use, rather than basing decisions on diverted volume. No major changes to historical use analysis are proposed for the first round of rulemaking associated with HB 114.

Procedure Steps

Corroborate point of diversion (POD)

- a. Goal of corroboration
 - i. Assess data to determine the correct POD type, location, and diversion capacity
 - ii. Assess if a shared diversion
- b. Data sources
 - i. WRS
 - ii. Commissioner records
 - iii. Aerial photos
 - iv. Claim file
 - v. Filing or decree
 - vi. Other sources possible: affidavits

- c. Methods of corroboration
 - i. Confirm the type and location of the POD.
 - 1. Compare the POD included with the Change Application with other sources of information to corroborate type and location. The other sources include:
 - a. Original water right file.
 - b. Water Resources Survey (WRS) for the county where the POD is located.
 - c. Water Court proceedings to resolve point of diversion issue remarks.
 - 2. If the sources of information are all consistent on the type and location of the POD, then the POD location is corroborated. If the sources are inconsistent on the type and location, then more analysis is needed.
 - a. Look at aerial photos for visual evidence of the location of the POD. The photos should be as close as possible to the date of which the historical use analysis is conducted. Types of PODs may include pump, headgate, dike, and dam. Certain types of points of diversion may be harder to see in aerial photos, for example, pumps and headgates compared to a dam.
 - ii. Confirm the name of the POD and conveyance ditch
 - 1. Compare the POD and conveyance ditch included in the Change Application with other sources to corroborate names. The other sources include:
 - a. Water Resources Survey for the ditch name
 - b. USGS topographic maps for the source name
 - 2. Ensure the POD name complies with source name standards, per ARM 36.12.114. When multiple source names exist, defer to the source name found in the DNRC Water Rights Database or the USGS. When multiple conveyance ditch names exist, defer to the Water Resources Survey.
 - iii. Confirm the capacity of the POD and conveyance ditch
 - 1. The methods for confirming the capacity of the POD and conveyance ditch are connected to methods for corroborating flow rate, found below. For this step, look to historical documents for diversion capacity. The WRS may state diversion capacity, which is helpful for when the ditch is no longer in use. Commissioner records can be used to support capacity. More details on calculating POD and conveyance ditch capacity are found in the section for corroborating flow rate.

Corroborate period of diversion

- d. Goal of corroboration
 - i. Check if the period of diversion is as claimed and/or decreed and is reasonable and appropriate for the purpose. The period of diversion is not an element of the water right that can be changed, but it is important to know if diversions were possible throughout the period of use. This information also impacts the historical diverted volume calculation.
- e. For irrigation changes, determine the pattern of use for conveyance loss calculations.
 - i. Data sources
 - 1. Historical documents, e.g., diaries
 - 2. Commissioner records
 - 3. Claim forms
 - 4. Abstracts
 - 5. Decrees
 - 6. Affidavits
- f. Methods of corroboration

- i. Collect information from available data sources
- ii. Compare data sources for consistency
 - 1. If the data sources are not consistent, then the applicant must provide more information. We cannot make assumptions when faced with two equally credible but contradictory sources.
- iii. Determine if period of diversion is reasonable and appropriate for the purpose.
 - 1. Compare the period of diversion with Department standards in ARM 36.12.112 (Period of Diversion and Period of Use Standards) and Department knowledge about what is reasonable and appropriate for the purpose.
 - a. Irrigation – Is the period of diversion within defined standards for the climatic area in ARM 36.12.112?
 - b. Domestic – Is it year-round?
 - c. Stock direct from source – Could be year-round or seasonal if there is a rotation.
 - d. Mining, industrial, and commercial – Based on details found in production records. Could be year-round if indoor use or seasonal if outdoor use or a seasonality to production.
 - 2. For a statement of claim, the period of use is *a priori* so it is what is listed on the water right. There may be issues if claim isn't reasonable, e.g., lawn and garden year-round period of use. Another issue is when the period of diversion on paper is larger than typical operations, e.g., a junior irrigation right with April to November period of diversion that is usually cut off. If a use was diverted through the entire period of diversion thus ever perfected for the entire period, the historical use volumes can reflect the full period. If the water right was never perfected as diverted throughout the entire claimed period of use, the period will remain the same, but the historical use consumptive and diverted volume calculations may reflect the historically perfected period.

Corroborate place of use (POU)

- g. Goal of corroboration
 - i. Validate the actual place of historical water use
 - ii. Confirm ownership of the POU
 - iii. Identify associated, supplemental, or overlapping water rights
- h. Data sources
 - i. Dated aerial photographs
 - ii. WRS
 - iii. Affidavits
 - iv. Topographic maps
 - v. Deeds
- i. Methods of corroboration
 - i. Validate the POU by comparing the historical use as described in the application with other data sources. The process to validate the POU will vary based on the historical purpose.
 - 1. For irrigation and lawn and garden changes, quantify the maximum number and location of irrigated acres.
 - 2. For stock changes, determine the where the herd was watered and/or the carrying capacity of the place of use.
 - 3. For domestic changes, determine the number and location of houses served.
 - 4. For mining, commercial, and industrial changes, determine how water was used in the production process and where these uses occurred.

- ii. Confirm ownership of the POU by deed research to ensure that the place of use is owned by the applicant. In cases where the applicant is filing on behalf of another entity, such as Montana Department of Fish, Wildlife & Parks filing on behalf of a water right holder, then ensure the entity that owns the water rights being changed also owns the POU. Unless the water right(s) being changed have been severed, only the water appurtenant to the POU owned by the applicant (or water right owner) can be included in the change authorization. See ARM 36.12.1902(6) for more information on ownership.
- iii. Determine how much associated, supplemental, or overlapping water rights contribute to historical use.
 - 1. The applicant has the responsibility to fully explain how associated, supplemental, and overlapping water rights were used to serve the purpose. The applicant should provide a map, which clearly shows all water rights historically used on the POU. The applicant should also provide a narrative of how the associated, supplemental, or overlapping water rights contributed to historical use. Generally, the information is *prima-facie* evidence, but other sources can be used to corroborate what is provided by the applicant. For example, commissioner records can be used to double-check when supplemental water rights were generally cutoff in an irrigation seasons applicants may forget to include all associated, supplemental, or overlapping water rights in their map and narrative. A good first step is to search the water rights database and scanned documents to ensure all pertinent water rights were included. If the applicant provides conflicting evidence or supplemental relationships that appear unreasonable, ask the applicant for clarifying information and reach out to a Regional Manager or the Central Office for assistance.

Corroborate purpose of use

- j. Goal of corroboration
 - i. Make sure the water was put to historical beneficial use
 - ii. Know if we have Department standards that refer to that purpose
 - iii. Determine what values to use for historical consumptive and diverted calculations
- k. Data sources
 - i. Water right file
 - ii. Form 606
 - iii. Water Resource Survey
 - iv. Decrees and filings
 - v. Historical records
 - 1. Grazing records
 - 2. Newspaper records
 - 3. Published documentations
- l. Methods of corroboration
 - i. Look to ARM and DNRC Water Calculation Guide (formerly Form 615) to determine if there are Department standards that refer to that purpose. If purpose is outside of the standards, ensure applicant has provided a sufficient explanation.
 - ii. If no standards exist, then compile information presented by applicant to determine if sufficient for historical consumptive and diverted calculations.

Corroborate period of use

- m. Goal of corroboration
 - i. Determine if the same as period of diversion.

- ii. Evaluate whether period of use is reasonable if it differs from period of diversion
 - iii. If different, is storage involved?
- n. Data sources
 - i. Aerial photographs
 - ii. Historical documents, e.g., diaries
 - iii. Commissioner records
 - iv. Claim forms
 - v. Abstracts
 - vi. Decrees
 - vii. Affidavits
 - viii. Reservoir record
- o. Methods of corroboration
 - i. Using the water right record, identify if the period of diversion and period of use differ.
 - ii. If the period of use and period of diversion differ, then look to water right record, scanned documents, and other data sources to see why they differ. The most common scenario will be a place of storage. Ensure the storage is sufficient to justify a longer period of use.

Corroborate flow rate

- p. Goal of corroboration
 - i. Determine if flow rate was historically achievable to create an accurate baseline for comparing the proposed flow rate to ensure expansion of the historical flow rate does not occur.
- q. Data sources
 - i. Commissioner records
 - ii. Decrees
 - iii. Pump curves
 - iv. WRS
 - v. Headgate, ditch, culvert, and other conveyance infrastructure dimensions provided by applicant or from historical sources
 - vi. Topographic map, other elevation source (e.g., Google Earth)
 - vii. Aerial photographs or photographs in the file (to determine Manning's n)
 - viii. Stream gage or other discharge data
- r. Methods of corroboration
 - i. Determine the most appropriate method to use to validate the capacity of the conveyance infrastructure.
 - 1. Headgate
 - a. Capacity can be determined from slope, material, and dimensions using an equation such as the Hazen-Williams Equation
 - 2. Ditch
 - a. Capacity can be determined using a variety of equations. One most commonly used is Manning's equation, which can be solved for Q to determine the capacity using the following inputs: wetted perimeter, channel slope, side slope, bottom base width, Manning's n, and water depth
 - 3. Culvert
 - a. Capacity can be determined from slope, material, and dimensions using an equation such as the Hazen-Williams Equation
 - ii. Select one of the methods to use:
 - 1. applicant- supplied records

2. Manning's equation
3. Blaney-Criddle

Corroborate historical consumed volume

- s. See guidance in the section for 36.12.1902(16).

Corroborate historical diverted volume

- t. See guidance in the section for 36.12.1902(10).

Corroborate place of storage

- u. Goal of corroboration
 - i. Identify the existing storage, capacity, evaporation, and carryover water as of date historical use is analyzed
 - ii. Identify the water rights and purposes using the storage
- v. Data sources
 - i. Reservoir record
 - ii. Aerial photographs
 - iii. Topographic maps
 - iv. Inspection records
 1. Can use more current records if you can show reservoir hasn't changed size
- w. Methods of corroboration
 - i. Confirm the capacity of the place of storage by looking to available data sources. If available, designs, reservoir records, and inspection records are especially useful. Bathymetric data is the most useful for a precise calculation of capacity. See guidance for 36.12.1902(13) for information on how to calculate the capacity of a body of water.
 - ii. Determine how evaporative losses are accounted for by reading the scanned documents for each water right being changed.
 1. If the scanned documents discuss evaporative losses, use that information if it is not unreasonable.
 2. If the scanned documents do not consider evaporative losses, decide how to account for evaporative losses. In the PD we need to include what is found in the abstract and decree, but that is not sufficient to determine volume by itself. We cannot find more than the decreed volume on the abstract regardless of evaporative losses. See guidance for 36.12.1902(13) for information on how to account for evaporative losses.
 - iii. Determine if carryover water is part of the beneficial use by reading the scanned documents for each water right being changed.
 1. 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. The scanned documents should contain a discussion of carryover water if it is included in the beneficial use volume.

Making a Finding

Once the elements of historical use have been corroborated, a finding of flow rate, historical consumptive volume and historical diverted volume is made. These volumes are compared to the proposed beneficial use for the adverse effect analysis.

36.12.1902(8)

ARM Cite

(8) The following information may be used by the Department to establish the requirements under (7):

- (a) aerial photographs depicting irrigated land:
 - (i) 1979, 1997, and 2005 photos showing the irrigated land;
- (b) aerial or other photographs showing diversion or conveyance structures;
- (c) Water Resources Survey book information;
- (d) Water Resources Survey field notes;
- (e) water commissioner field notes;
- (f) Natural Resources Conservation Service (NRCS) information, such as field specific soils information;
- (g) affidavits from persons with firsthand knowledge of historical use;
- (h) calculation of historical ditch capacities;
- (i) description of irrigation equipment, field treatments, means of conveyance, control structures, and other on-site features related to water use;
- (j) description of water supply availability;
- (k) log books or diaries of previous irrigators or farm operations, crop yield records, or diversion records; or
- (l) an evaluation of the seniority of the water right in relation to other users.

Overview

ARM 36.12.1902(8) describes a list of sources that an applicant may use to prove historical use of the water right(s) being changed. The list is not exhaustive, though – if an applicant wishes to use a source outside of this list to prove historical use of a water right, they must explain why that source is substantial and credible.

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.*

Making a Finding

Each element of the water right being corroborated via the historical use analysis will have a data source, which should be described via finding language in the decision documents. If the requirements of 36.12.1902(7) are proven using sources not described above in (8), be sure to make a finding as to why or why not the Department has found the source to be substantial and credible to prove historical use of the water right by a preponderance of the evidence (or whichever evidentiary requirement is applicable to the application).

36.12.1902(9)

ARM Cite

(9) The annual or monthly historical diverted volume must be based on the appropriator's typical historical operation of their diversion, irrigation, and harvest schedule throughout the period of diversion and the period of use. If applicable, in addition to the information required in ARM 36.12.1902(7), if a secondary diversion from a ditch or reservoir exists, an applicant shall identify the diversion means and the typical operation of that secondary diversion.

Overview

The information described in ARM 36.12.1902(9) will be used to calculate the historical diverted volume of the water right being changed per, per ARM 36.12.1902(10). In order to most accurately calculate historical use, secondary means of diversion or storage must also be fully described in the application. The "days irrigated" number in the Department's calculations for historical diverted volume is based on the description of the appropriator's typical historical operation of their diversion, irrigation, and harvest schedule throughout the period of diversion and the period of use, so it is imperative that the application fully describes this historical operation.

Making a Finding

Historical diverted volume findings are made through calculations described in ARM 36.12.1902(10) or via a historical use addendum (see ARM 36.12.1902(11) for more information on historical use addendum). However, it's important that each number used in historical use calculations includes a data source that is described in the finding language.

36.12.1902(10)

ARM Cite

(10) The Department shall calculate the historical diverted volume for water rights with the purpose of irrigation using the following equation: $\text{Historical Diverted Volume} = (\text{Volume}_{\text{historical consumptive use}} / \text{On-farm efficiency}) + \text{Volume}_{\text{conveyance loss}}$.

- (a) "conveyance loss" means 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;
- (b) "seepage loss" means $((\text{flow area}) * (\text{ditch length}) * (\text{loss rate}) * (\text{days})) / 43,560 \text{ ft}^2/\text{ac}$; and
- (c) "on-farm efficiency" refers to the percent of the water delivered to the field that is used by the crop.

Overview

The information described in ARM 36.12.1902(10) will be used to calculate the historical diverted volume of the water right being changed. If multiple water right users historically used the same means of conveyance, apportion the historical conveyance losses from the ditch between water rights.

Procedure Steps

- 1) Methods of corroboration:
 - a) Identify all users on the point of diversion and conveyance system.
 - i) Commissioner records can be used to corroborate historical diversions and capacity (this may be used to support historical use by multiple water rights)
 - ii) Utilize the methods described in b) to apportion conveyance losses between all users that historically shared conveyance.
 - b) If the ditch used to convey water from the primary point of diversion to the secondary point of diversion or place of use serves only the water right(s) being assessed, then proceed to calculate the conveyance losses as outlined in 2). If there are multiple ditch users on one ditch, see ii) below.
 - i) Per the Multiple Ditch User Memorandum, conveyance loss on ditches with several water rights need to be quantified using a tiered calculation method. The proportion of conveyance loss will be allocated to each water right based on flow rate for each ditch sections used.
 - (1) For example, if the ditch being examined has three water rights, with three separate secondary points of diversion, the water right with the highest secondary point of diversion will only have a portion of the conveyance loss for the first section of the ditch, ending when the water for this

water right is pulled from the ditch. For this section the conveyance loss will be split between all three water rights based on flow rate. For the next section, only the two remaining water rights share the conveyance loss until, water servicing the second water right is pulled out of the ditch. This will leave only the third water right in the ditch for the last segment, so it will have to cover the entirety of the conveyance loss.

- (2) The Multiple User Ditch Memo may not be user-friendly for particularly complicated ditch systems. If you feel that alternative methodologies (rather than using the Multiple User Ditch Memo) may be more reasonable to calculate historical conveyance losses for a specific application, consult your Regional Manager or Central Office.

2) Historical Diverted Volume Calculations- Methodology in Rule

- a) To determine the historical diverted volume of a water right via the methodology in rule, the following calculation is used:

$$\text{Historic Diverted Volume} = \frac{\text{Volume}_{\text{historical consumptive use}}}{\text{On Farm Efficiency}} + \text{Conveyance Losses};$$

- b) Conveyance loss (when calculated by ARM 36.12.1902(10)) is the sum of Seepage Loss, Vegetative Loss, and Ditch Evaporation; where:

- i) Seepage Loss (AF) =
$$\frac{\text{ditch wetted perimeter (ft)} \times \text{ditch length (ft)} \times \text{ditch loss rate} \left(\frac{\text{ft}}{\text{day}} \right) \times \text{days}}{43,560 \text{ ft}^2/\text{acre}},$$

- (1) Where ditch wetted perimeter is either calculated by the Department or provided by the applicant, ditch length is provided by the applicant, and ditch loss rate is based on soil type (from [NRCS Web Soil Survey](#)) and Figure 2-50 from NEH 1993 (see Equation Resources- Conveyance Losses in the Appendices).

- ii) Vegetation Loss (AF) =
$$\left(\% \frac{\text{loss}}{\text{mile}} \right) \times \text{flow rate} \left(\frac{\text{ft}^3}{\text{sec}} \right) \times \text{days} \times \text{ditch length (mi)} \times 2,$$

- (1) Where percent loss per mile is 0.75% (NEH standard, 1993), flow rate is the total historical flow rate in the conveyance works, days is the historical period of diversion, and ditch length is provided by the applicant.
- (2) If there are turnouts on a ditch, multiple calculations may need to be made per the Multiple User Ditch Memo for different ditch segments (to accurately represent the changing flow rate and length within each segment)

- iii) Ditch Evaporation =
$$\frac{\text{ditch width} \times \text{ditch length} \times \text{evaporation rate}}{43,560 \text{ ft}^2/\text{acre}}$$

- (1) Where ditch dimensions are provided by the applicant, and the evaporation rate is found using the Gridded Net Monthly Evap layer in Converge.

Making a Finding

Historical diverted volume findings are made through calculations described in ARM 36.12.1902(10) or via a historical use addendum (see ARM 36.12.1902(11)) for more information on historical use addendum). However, it's important that each number used in historical use calculations includes a data source that is described in the PD.

36.12.1902(11)

ARM Cite

(11) If the applicant chooses not to use the methodology in (10), they shall provide additional information on the Historical Water Use Addendum.

Overview

The Historical Water Use Addendum (HUA) was created for applicants to use when deviating from historical use calculations in ARM 36.12.1902(16). The HUA was created to ask specific questions as to what information can be submitted to deviate from Department methodology for historical use calculations in ARM 36.12.1902(10) and (14). The form basically provides a mechanism for the Department to request site specific information for consideration when calculating historical consumptive and diverted volume. The specialist should evaluate the information submitted to determine if it is believable, includes supporting evidence, and if it is sufficient to calculate diverted and consumed volume. Site-specific information that can be used may include or vary from sources as listed in ARM 36.12.1902(8). All information submitted should be thoroughly vetted by the Department to be sure it is substantial creditable evidence.

Making a Finding

Clearly document and explain what evidence was used to calculate historical diverted and consumed volume, and why calculation(s) in ARM were not used.

36.12.1902(12)

ARM Cite

(12) Historical consumptive volume must be based on the acre-feet of water used for the beneficial purpose, such as water transpired by growing vegetation, evaporated from soils or water surfaces, or incorporated into products that do not return to ground or surface water.

Overview

See 36.12.1902(16) for guidance on using Department methodology to calculate historically consumed and field applied volumes.

36.12.1902(13)

ARM Cite

(13) The following may be used to calculate ditch capacity, historical available water supply, and reservoir capacity:

- (a) Manning's equation;
- (b) Orsborn's equation;
- (c) Blaney-Criddle equation; and
- (d) the Department will determine the acceptability of other reports or methods on a case-by-case basis.

Overview

Ditch and reservoir capacity are necessary when determining the historically diverted volume of the water right. Determining historical ditch capacity can also aid in corroborating the flow rate of a water right. The Department shall accept the methodologies listed in (13) and may accept other scientifically credible methodologies provided by the applicant. The Department uses Manning's Equation to calculate ditch capacity. Manning's Equation is a function of channel velocity, flow area, and channel slope. It assumes uniform flow in an open channel. To assess historically available water supply, the Department may use Orsborn's Equation. Orsborn's Equation is a regression equation to find the mean flow rate of a surface water source using drainage basin area and precipitation. To calculate reservoir evapotranspiration, the Department uses a variation of the Blaney-Criddle Equation.

Procedure Steps

- 1) To calculate the maximum flow rate a ditch can carry (ditch capacity), the Department considers Manning's Equation with the following applicant-provided parameters:

$$Q = VA = \left(\frac{1.49}{n} \right) A \left(R^{\frac{2}{3}} \right) \sqrt{S};$$

Where Q = discharge ((ft³)/s),

V = velocity (ft/s),

A = flow area (ft²) = D×W,

D = water depth (ft),

W = channel width (ft),

R = hydraulic radius (ft) = A/(2D+W),

S = channel slope (ft/ft),

n = Manning's Roughness Coefficient.

- 2) To calculate the historically available water on a surface water source, the Department uses Orsborn's Equation via the following process:
 - a. Determine the watershed drainage area in square miles:
 - i. Utilize the delineation tool in USGS StreamStats program to determine the basin area based on the proposed point of diversion.
 - b. Determine the mean basin precipitation:
 - i. The mean basin precipitation can be found using precipitation maps (1941-1970 base period) prepared by the Soil Conservation Service (see Orsborne Method information in the Appendices). When several isohyetal lines occur in a drainage basin, the mean basin precipitation can be a weighted average, but estimate on the high side.
 - c. Determine the correct regional calculation to use based on POD location (See Appendices for EXHIBIT X-14 and the regional map):
 - i. The Orsborn method has five equations which vary slightly based on five hydrologically homogeneous regions in Montana. The five different regions are outlined in Figure 1. If the claim is on a boundary line between two regions, choose the higher numbered region. After the region has been determined, Figure 2 gives the corresponding equation. It should be noted that the Orsborn method has not been tested for eastern Montana.
 1. For applications in eastern Montana, it is recommended to utilize the Technical Memorandum: Estimation of Runoff Volumes for Ephemeral Drainages in Eastern Montana dated Oct. 7, 2019.
- 3) To calculate reservoir capacity and evaporation volumes, the Department uses the following procedures:
 - a. Capacity: The capacity of a pit, pond, or reservoir is determined using surface area and depth information provided by the applicant. Complete the following steps:
 - i. Calculate pond surface area using the corresponding shape equation:

$$\text{Surface Area (acres)(rectangle)} = \frac{\text{length (ft)} \times \text{width (ft)}}{43560 \frac{\text{ft}^2}{\text{acre}}}$$

OR:

$$\text{Surface Area (acres)(circle)} = \frac{\pi \times (\text{radius (ft)})^2}{43560 \frac{\text{ft}^2}{\text{acre}}}$$

- ii. Calculate pond capacity:

$$\text{Capacity (AF)} = SA \text{ (acres)} \times \text{max. depth (ft)} \times 0.5 *$$

*If **average** depth is provided instead of maximum depth, do not use the 0.5 multiplier.

- b. Net Evaporation: If the pit is the primary point of diversion (i.e., not fed by a well or developed spring pumping water into a pond), the Department will calculate the net evaporation from the pond and distribute it among the purposes. If the pond is the secondary point of diversion, we will include net evaporation only as requested by the applicant.
 - i. Use the gridded monthly net evaporation Converge layer to determine the net evaporation over the period of use at the pit or pond (note that this value is in inches), and calculate the total evaporation volume using the following equation:

$$\text{Evaporation (AF)} = SA \text{ (acres)} \times \frac{\text{Net Evaporation (in)}}{12 \text{ (in)}}$$
 - ii. The annual net evaporation value should be used in this equation unless the applicant explicitly says they drain their pond (and the period of pond use is not year-round). In this instance, you may calculate the sum of the months during which evaporation will occur (months that the pond is not drained).

Making a Finding

While the ditch capacity, reservoir capacity, and historically available water are not elements of the water right that need to be analyzed, this information helps the Department corroborate said elements, like historical flow rate and consumed & diverted volume. When making findings for the historical use of a water right, referring to these parameters and how they were determined will solidify the historical use analyses.

36.12.1902(14)

ARM Cite

(14) The historical consumptive use methodology that the Department shall use to determine historical consumptive use for water rights with a purpose of irrigation is based on data from the United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS), and generated using the USDA NRCS Irrigation Water Requirements (IWR) program. If the applicant chooses not to accept the methodology used by the Department, the applicant shall provide additional information on the Historical Water Use Addendum.

Overview

The DNRC Water Management Bureau, now Water Sciences Bureau (WSB), was tasked with producing historical consumptive use guidelines for DNRC rulemaking as it pertains to water rights change applications. The intent of the approach outlined below is to develop a reasonable method for estimating irrigation season historical consumptive use based on a comparison of historical hay production to obtainable yields.

Due to the lack of historical water measurement and production records for individual producers, best available data were used. This section outlines the methods used and how the procedure might be applied. The majority of the data used herein are from the United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS), or generated using the USDA Natural Resources Conservation Service (NRCS) Irrigation Water Requirements (IWR) program.

Available literature suggests that alfalfa requires approximately 5-6 inches of water to produce one ton per acre of dried alfalfa hay and this response is linear. That is, each subsequent ton of hay produced requires another 5-6 inches of water (Smith et al., 1998; Bauder, 1977, 1978, 2001; Irmak, 2007; Hill, 2002; Hanson and

Putnam, 2000). To be conservative, our analysis adopted a State wide value of 6 inches of water to produce each ton per acre of dried alfalfa. This value is similar to data from North Dakota, but slightly lower than the value reported for Kimberly, Idaho (Sammis, 1981; Shewmaker et. al., date unknown).

The estimated obtainable yield at each weather station was determined by dividing the total crop water requirement calculated with the IWR program, by 6 in/ton/acre. The county wide alfalfa hay yields from the NASS data were then divided by the estimated yields for the four analysis periods to obtain a management factor. The management factors give an estimate of what percent of the obtainable yield producers are typically obtaining in the field at a particular area. However, there are problems with calculating a management factor for a specific site when NASS data is a county-wide average.

Making a Finding

If the applicant has opted to find historical use based on the Department methodology, guidance to making a finding on historical consumptive use can be found in 36.12.1902(16) implementation guidance. The decision documents must clearly document and explain what evidence was used to calculate historical consumptive volume, and why calculation(s) in ARM were not used (if the applicant opted to differ from Department methodologies).

36.12.1902(15)

ARM Cite

(15) IWR Data for Seasonal Alfalfa Evapotranspiration County Management Factor are shown in Table 1 and will be used by the Department to identify the historical consumptive volume unless additional information is provided by the applicant on the Historical Water Use Addendum. If this table is used to establish the historical 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.

Overview

The IWR (irrigation water requirement) program was used to calculate both the total irrigation season alfalfa crop water requirement (inches) and that portion of the total crop water requirement (inches) that was supplied by irrigation. IWR program water requirement estimates for alfalfa were made for 180 weather station locations throughout Montana. The period of record used for the 180 weather stations was from 1970-2000 (Figure 1; Table 2 (Equation Resource Appendix)). Evapotranspiration (ET) was computed using the Blaney-Criddle (TR21) method, which is the only IWR methodology applicable to the 180 weather stations used in this analysis. The Blaney-Criddle method was compared with other evapotranspiration methods by United States Geological Survey, and their results indicate Blaney-Criddle produces acceptable predictability (Cruft and Thompson, 1967). The only counties not represented in this analysis were Daniels and Deer Lodge due to the lack of readily available weather data required to run the program. IWR estimates net monthly and seasonal crop irrigation requirements based on crop needs, effective precipitation, and the growing season length. It only estimates the amount of water that the crop needs for evapotranspiration; it does not estimate the amount of water that needs to be delivered to the field, which is the crop irrigation requirement divided by the irrigation efficiency.

The length of the growing season for each weather station was determined by the program based on a mean daily temperature of 50 degrees Fahrenheit as the beginning growing season temperature, and the first day 28 degrees Fahrenheit (killing frost) is reached as the ending growing season temperature. Effective precipitation

was calculated by IWR from the individual weather station data. To simulate center pivot sprinkler irrigation a net application of one inch for each irrigation was used, while a net irrigation application of four inches was used to simulate each flood irrigation. Carryover moisture at the end and the 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 carry-over moisture equal to 25% of the net irrigation application was used in this analysis. The humidity and wind conditions were assumed to be arid with moderate wind. The crop irrigation water requirements reported in this document are based on effective precipitation for a dry year. A dry year is defined by IWR to mean that the effective precipitation calculated will be equaled to or exceeded in 8 out of 10 years.

Making a Finding

If the applicant has opted to find historical use based on the Department methodology, guidance to making a finding on historical consumptive use can be found in 36.12.1902(16) implementation guidance. The decision documents must clearly document and explain what evidence was used to calculate historical consumptive volume, and why calculation(s) in ARM were not used (if the applicant opted to differ from Department methodologies).

36.12.1902(16)

ARM Cite

(16) To determine the historical consumptive volume using the table, the Department will complete the following steps:

(a) determine which weather station (column B) is the most representative for the place of use (column C). The most representative weather station may not be in the county of the place of use, but must be nearby and about the same elevation and climatic conditions as the irrigated acres. A map showing the weather stations is located on the Internet at:

https://dnrc.mt.gov/_docs/water/Water-Rights Forms/IWR_weatherstation_location_map.pdf;

(b) find the evapotranspiration inches based on whether the historical irrigation is flood, wheeline, handline, or center pivot, to estimate the historical IWR (columns D or E);

(c) identify the county in which the irrigated acres are located to determine the county management factor percentage (column F or G);

(d) multiply the IWR estimate found in column D or E by the management factor percentage in column F or G. The result is the number of inches used per irrigated acre;

(e) multiply the number of total acres within the historical place of use by the county adjusted inches used per irrigated acre calculated in (d) above to determine the historical consumptive inches for those acres; and

(f) divide the cumulative historical consumptive inches from (e) by 12 to determine the cumulative historical consumptive acre-feet for the total acres.

(g) If the historical consumptive volume determined by this methodology exceeds the historical diverted amount, the Department may request additional information in order to resolve the discrepancy. This may result in a reduction of the consumptive volume.

Overview

For irrigation water rights, historical consumptive volume is determined by the evapotranspiration rate, management factor, on-farm efficiency, irrecoverable losses, and number of acres irrigated on the historical place of use. The basic Departmental procedure for determining the historical consumptive volume for an irrigation right is described in (16). For irrigation changes in which the historical method of irrigation has changed over the years, the Department will not consider any historical changes in the method of irrigation,

because a change in method of irrigation does not constitute a change in purpose. For more information on this, consult the Change in Method of Irrigation Policy Guidance in the Adverse Effect criterion section of the manual.

It is important to note that for Statements of Claim with a stock purpose, 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 proposed uses.

Procedure Steps

1. The Department has issued an irrigation calculator tool that can be used to calculate the historical consumed, field applied, and diverted volumes per ARM 36.12.1902. Follow this [link](#) or see ROCO > HydroDocs for access or consult your regional office.
2. The basic Departmental procedure for determining the historical consumptive volume for an irrigation right is described in (16), using values found in the Application and Table 1: Montana County Weather Station IWR Data for Seasonal Alfalfa Evapotranspiration and Montana County Management Factor (see Appendix Section 36.12.1902(15)):

$$a. \text{ HCV}(\text{without IL})(AF) = \frac{\text{County Seasonal Evapotranspiration} \left(\frac{\text{in}}{\text{acre}}\right)}{\text{County Management Factor} \times \text{Historic Acres} \times 12 \left(\frac{\text{in}}{\text{ft}}\right)}$$

3. If the water right being changed is a stock water right, a historical consumptive use calculation is not necessary because the Department considers stock use to be 100% consumptive (thus, the historically consumed volume = historically diverted volume).
4. If the water right being changed involves storage or use on a pond/ reservoir/ wetland, see Technical Memo: Pond & Wetland Evaporation/ Evapotranspiration.

Making a Finding

When making findings in decision documents, it’s important to describe the source of the information (and validity, if straying from methodologies described in ARM) and display every parameter that was considered when calculating the historically consumed volume. Incorporation of tables aid in the display of information.

36.12.1902(17)

ARM Cite

(17) In addition to the amount determined by the methodology described in (14) and (15), the Department will add the following consumptive loss components to account for irrecoverable losses at the field:

- (a) 5% of the volume applied to the field for flood systems; and
- (b) 10% of the volume applied to the field for sprinkler systems.

Overview

There are evaporative losses associated with irrigation systems that are not accounted for in the other ARM 36.12.1902 rules. These losses are referred to as irrecoverable losses because they represent water not used by the crop, and yet are removed from the system. An applicant has the opportunity to submit evidence pertaining to irrecoverable losses with the Historical Use Addendum.

Procedure Steps

1. Determine the historically consumed volume of the irrigation water right(s) being changed via either 36.12.1902(16) or via Department- approved methodology submitted by the applicant.
2. Add either 5% (historically flood irrigated acres) or 10% (historically sprinkler irrigated acres) of the calculated historical field application volume, depending on the irrigation method used on the historical place of use, to calculate the total historically consumed volume (including irrecoverable losses).
 - a. $\text{Historical Irrecoverable Losses} = \frac{\text{Volume}_{\text{historical consumptive use}}}{\text{On Farm Efficiency}} \times (5\% \text{ or } 10\%)$
 - b. If a historical place of use was irrigated by both flood and sprinkler irrigation, find the apportioned consumptive use and field application volume for each irrigation method on the historically irrigated acres and repeat the process for each resulting volume.

Making a Finding

In the decision documents, it's important to make a distinction between the historically consumed volume *including* irrecoverable losses (this is the volume that is coded as the HCV in the database), and the historically consumed volume *not including* irrecoverable losses (this is the volume that is used to calculate the historical field applied volume and the historically diverted volume via Department methodology, per ARM 36.12.1902(10)). The incorporation of tables aid in displaying this information.

Specific Concepts and Q&A:

Livestock Direct Flow Rate Calculations for Historical Use

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

1. Query WRQS for the stretch of creek using the advanced search. Use the purpose index as it will return the number of animal units, (AUs). Beware of multiple files for the same water right.
2. The following use rates should be considered when calculating the annual volume (per DNRC Water Calculation Guide):
 - a. Statement of Claim = 0.034 AF x #AU (30 GPD/AU)
 - b. Permit = 0.017 AF x #AU (15 GPD/AU)
3. 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 by considering the use rates of 15 or 30 GPD per AU during the authorized period of use is recommended. To calculate a flow rate in GPM or CFS from GPD, use the following calculation:

a. $X \frac{\text{gallons}}{\text{day}} \times \frac{\text{day}}{1440 \text{ minutes}} = \text{GPM}$

b. $X \text{ GPM} \div 448.8 = \text{CFS}$

Examples:

Tenmile Creek, (Basin 41I)

- (3,713.9 AU)(.017)=63 AF/YR.
- 63AF/YR. = 39 GPM

S. Fork Smith River, (Basin 41J)

- (16569.5 AU)(.017)=282 AF/YR.
- 282AF/YR.=174.5 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 Historical diverted volume determinations for changes to existing rights decreed with no volume, Aug. 4, 2020, memo for information on how to proceed with claims where volume was not decreed.

If a person changes only irrigation methods (e.g., 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 location of the POD does not change, a change application 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 § 85-2-402 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 statutes in MCA and rules in ARM that should ultimately be acting as your guide when analyzing the diversion means.

The new diversion works must be capable of diverting and delivering the amount of water requested to accomplish the proposed use without unreasonable loss through design or operation. If historical diversion works will still be utilized, system will need to be described as a whole. Fulfillment of the Adequacy of

Diversion criteria ensures the applicant can divert and convey water to the place of use, using the flow rate and timing proposed in the Application.

MCA:

The following MCA provides the basis for why we analyze adequate means of diversion. MCA [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](#)

Background/Context

In 2023, ARM 36.12.1904 was revised to include the following information in the change application criteria:

(4) Wells must be constructed according to ARM Title 36, chapter 21, subchapter 6.

(5) For developed springs an explanation of how the spring will be developed must be included in the application.

(6) For groundwater wells, the Department will compare the drawdown projected for the proposed period of diversion to the height of the water column above the bottom of the proposed production well to determine if the well design is adequate for the proposed appropriation.

These revisions were included to add consistency to the Adequacy of Diversion criteria for both the permit and change application process, and additional requirements for developed spring diversions to better analyze the capacity of the diversion.

Process:

STEP 1: Examine POD design plans.

Well POD design plans:

1) Was the well drilled by a licensed well driller?

a. NO

i. Requires further review of construction.

ii. See Board of Water Well Contractors (ARM Chapter 36.21).

b. YES

i. What is the driller's license number?

2) Was a well log submitted with application?

a. NO

i. Need applicant-provided well depth and static water level

ii. If possible, determine source aquifer

b. YES

i. GWIC number from Bureau of Mines and Geology

3) Was aquifer testing completed per ARM 36.12.121?

a. YES

i. Refer to groundwater report produced by water sciences bureau.

b. NO

i. Was a variance granted per WSB?

1. YES

a. Did the variance refer to adequacy of diversion? Consult WSB for further information.

2. NO

- a. Why not? This may mean that the diversion works cannot be considered adequate. Consult WSB for further information.
- 4) Compare drawdown to available water column (data from WSB groundwater analysis in technical analyses report)
- 5) Is pump capable of diverting flow?
 - a. Refer to applicant-provided pump curve or pump specifications
 - b. Does the well naturally flow?
 - i. How will the flow rate be controlled?
- 6) Are all components of the system listed reasonable?

Developed spring POD design plans:

- 1) How was it developed?
- 2) Was the flow rate of the developed spring measured in accordance with ARM 36.12.1703?
- 3) How will the flow rate be controlled?

Groundwater Pit POD design plans:

- 1) How was it developed?
- 2) How will the flow rate be controlled?
- 3) What is the capacity of the diversion works?
- 4) What was the physical availability of water modeled by WSB?

Surface water POD design plans:

- 1) What does the diversion consist of (i.e., a pump, headgate, or dam)?
- 2) Is the diversion capable of diverting the full amount requested through period of diversion?
 - a. Pump curves
 - b. Headgate dimensions
 - c. Dike or dam height and length
 - d. For storage dams, did the application meet the requirements of 36.12.113(3) & (4)?
- 3) Have diversion specifications been provided and are they reasonable?
 - a. Was the diversion designed by a professional and were those designs provided?

STEP 2: Examine Conveyance design plans

- 1) What does the proposed conveyance consist of?
 - a. Was the proposed conveyance system designed by a professional and were those designs provided in the application?
- 2) Are there losses related to the proposed means of conveyance?
 - a. Evaluating Conveyance Design Plans –
 - i. In the context of proposed design plans, does the system conform to current design, construction, and operation standards?
 - ii. If the means of conveyance is not being changed, we will not deny a change application due to historically-used diversion works not adhering to current operational standards.
 - b. Evaluating Conveyance Operation Plans–
 - i. What is the pattern and timing of diversion included in the applicant's operation plan?
 - ii. For example, does the applicant plan to run the system 24/7?
 - 1. Whether or not this is acceptable depends on the applicant's plan for beneficial use of the 24/7 diverted water

- a. Ok Example – A stock tank system operates 24/7 during winter months to prevent icing up of both the tanks and lines. During summer months, the system is controlled by shut of valves.
 - b. Not OK Example– To save money, a stock system has a solar pump and no shut-off valve. Water is diverted whenever the sun is out. The only reason this is done this way is because it was cheaper and easier than installing shut off valves.
- 3) Is the proposed conveyance capable of providing the required flow and volume and any losses?
- 4) Does proposed conveyance require easements and have they been explained?
 - a. Although easements are not required to be in place before an application is granted, they are an important element of conveyance and should be explained.

STEP 3: Examine place of use design plans

- 1) Is the water delivery system capable of providing the proposed beneficial use (both flow rate, consumptive volume, and diverted volume)?
- 2) Are adequate specifications of the delivery and operation plans provided?
 - a. Was the system designed by a professional and were those designs provided?
 - i. Sprinkler charts
 - ii. Dam “as-built” plans
 - iii. Fish hatchery Design plans
 - iv. Stock Systems
 - v. Subdivision plans

STEP 4: Examine discharge, if applicable

- 1) Is water discharged from the project?
 - a. Where and how?
 - b. Have the necessary permits been obtained?
 - c. Although discharge permits are not required to be in place before an application is granted, they are an important element of discharge and should be explained if applicable per MCA.
 - i. § 85-2-362(1)(h), MCA: Statute requires that DNRC have evidence that the appropriate water quality permits have been granted prior to approval of a mitigation plan or aquifer recharge plan.
 - ii. If the abovementioned statute is applicable to the application at hand, what evidence can you provide to show that appropriate water quality permitting is in place?

STEP 5: Examine the plan of operation

- 1) Is a plan of operations provided?
 - a. Does it seem reasonable? If not, why not?
- 2) Can the plan of operations deliver the flow rate and volume for the beneficial use being requested?
 - a. How many hours per day does the diversion need to operate to achieve the volume?
 - b. How many days within the period of use does the system need to operate to achieve the volume?

STEP 6: Examine the entire systems designs plans as a whole; does it makes sense?

- 1) Is the operation feasible as described?
- 2) If yes, and Steps 1-5 have been answered “yes”, the means of diversion are considered to be adequate.

Making a Finding

An explanation describing how the means of diversion, from source of water through to the application of the beneficial use, should be included in the PD based on the above information provided by the applicant. Ensure the applicant has researched and has decided on a plan of operation and has provided adequate design plans to accomplish the beneficial use of the application, and that all elements of the criteria are reasonable, and all water being diverted is accountable in such operations. If the requested flow rate can be achieved and the requested water volume can be conveyed adequately to satisfy the beneficial use, the means of diversion and conveyance are adequate.

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 June 7, 2023
- [Assessment of new consumptive use and irrecoverable losses associated with change applications](#), dated April 15, 2013

Background/Context

As with all criteria, the level of proof has evolved through history. Beneficial use is generally straightforward and has evolved more for change authorizations than it has for permits. The objective of the beneficial use analysis is to assure that there is a benefit to an individual, group, or the public in general. For example, instream flow to support a fishery benefits the public in general. In addition to the use itself, the flow rate and volume must be proven to be reasonably needed. What is reasonably needed can be difficult to define, but general considerations exist. The applicant must provide a convincing proposal and it is up to you as the

decision maker to review and determine if the use is reasonably needed. If the applicant proposes a volume that falls within standards in ARM 36.12.115, then it is automatically deemed reasonable, and that portion of the criteria is met in most cases. If the proposed volume doesn't fall within standards or no standards exist, the applicant must show through their plan that the proposed use is not wasteful. Because assessment of the beneficial use criterion is not always black and white, establishing a single standard level of proof required is nearly impossible. Our standard is to prove the beneficial use by preponderance of the evidence (more believable than not) and common sense will need to be employed. If you are not certain that proven by a preponderance of the evidence, consult with another specialist, your manager, or CO for additional opinions/discussion.

Process:

1. Beneficial Purpose: The applicant must explain how this use provides a benefit to the applicant, other users, or the general public.
 - a. Most purposes are considered beneficial. See § 85-2-102(5), MCA for the definition of beneficial use and the most standard examples of beneficial uses of water.
 - b. Some examples of purposes that have special considerations:
 - i. Wildlife: Individuals cannot obtain a water right for wildlife use. FWP, FWS, or other entities responsible for wildlife may be able to obtain a permit or change for wildlife purposes, however, it'll need to provide species lists and expected usage.
 - ii. Domestic: If domestic from a surface source, the applicant must provide the most recent COSA (Certificate of Subdivision Approval) for their property, if one exists. If the COSA states that potable water cannot be from a surface source, you will need to **deny** the application.
 - iii. Water Marketing: An individual may obtain a permit or change for marketing water to others. The applicant must provide contracts showing that the full requested amount of water is already spoken for. An applicant may not contract to themselves or their owned entities (Winston Scott may not contract with Winston Scott Enterprises and so forth). See § 85-2-310(8)(c)(v)(D), MCA.
 - iv. Marketing for Mitigation: the beneficial use section of a change for Marketing for Mitigation is exempt from the requirements of final marketing contracts, per § 85-2-310(9) MCA.
 - c. Commonly requested purposes that are not considered beneficial or require further investigation:
 - i. Aesthetics: a commonly requested purpose that is NOT considered a beneficial use.
 - ii. If the purpose requested is not standard and you question its validity or are unsure of statutory requirements, consult CO.
2. Justification of the Proposed Volume: The applicant must show that the volume requested is reasonable.
 - a. The applicant may choose to base their proposal on volumes or use rates outlined in ARM 36.12.115 (including any number within the range for irrigation) for a permit or change. The applicant may also choose to use modern management factors and efficiencies outlined in ARM 36.12.1902 to calculate proposed use volumes for a change application. Volumes and use rates that appear on the DNRC Water Calculation Guide (formerly Form 615) should be accepted as reasonable. If Department standards are used, no further justification is necessary- accept the proposed volume.
 - b. If the applicant proposes a volume outside of Department standards or there are no applicable standards listed within ARM 36.12.115 or ARM 36.12.1902, the applicant must provide documentation and justification of their requested volume. Some examples include IWR

calculations for irrigation, DEQ or county regulations for in-house domestic use (250 or 350 gallons per day, for example), or other scientifically- based numbers.

- c. In some cases, using less water than is typically required is acceptable. For example, if 2.5 AF per acre is required for full-service irrigation, the applicant can make a case that using half as much water will still provide for a single hay cutting or to allow forage for stock. The applicant must fully explain the plan of operation and describe how the amount of water proposed will be sufficient to provide for the proposed beneficial use.
 - d. If there is a pond involved, be sure to evaluate the purpose volume specifically in the beneficial use section (as opposed to the entire capacity of the pond). See Pond Guidance for purpose-specific considerations in relation to ponds and pits.
 - e. If this application represents a supplemental use to another application:
 - i. The full purpose volume can be requested from a different source than the existing supplemental right. A measurement condition may be warranted in this context to ensure the applicant is not diverting water for full-service irrigation from both sources.
 - ii. If the source is the same, only the additionally required amount should be applied for. For example, if four acres of lawn is already covered and the applicant is requesting an additional acre, then they can only request 2.5 AF (at a 2.5 AF/ acre allotment) unless the original right was filed for a smaller volume than the Department standard.
3. Justification of the Proposed Flow Rate: The applicant must show that the flow rate requested is reasonable.
- a. There are no standard flow rates in administrative rule. The applicant may choose to use volumes outlined in 36.12.115, which may include any number within the range for irrigation. If standards are used, then no explanation is necessary. Accept the proposed flow rate.
 - b. Some questions to think about when considering the proposed flow rate:
 - i. Was the system designed by an engineer?
 - ii. Is there a minimum flow rate required by DEQ? (i.e., for public water supply systems)
 - c. In many cases, water users will not install a larger pump or dig a larger ditch than is required. However, the applicant must show that the proposed flow rate and volume are reasonable for the beneficial use.
4. Additional Department Considerations: Condition Language
- a. Measurement conditions may be required to prove that the amount requested is the amount needed. The measurement condition must help to meet one or more criteria and should not be applied simply because you'd like to have the information, or the applicant is willing to provide measurements. Examples where conditions are warranted include:
 - i. A proposal for less than full-service irrigation on a permit or change.
 - ii. A request for less than 0.28 AF per year per household on a permit for domestic use; in the case an applicant has received a deviation from DEQ for domestic volume.

Special Considerations for Change Applications:

Using an Apples-to-Apples approach:

The main consideration outside the process outlined above is that we must follow an apples-to-apples approach. If the original water right allowed for 30 gallons per day per AU (this is the Adjudication standard), then the new proposed use must also allow for 30 gallons per day per AU (instead of the modern New Appropriations standard of 15 GPD per AU). If the original water right allowed for 1 AF for a single domestic use, so must the new proposed use. A user cannot say that they were originally permitted for 100 thirsty AU and now want to have 200 less thirsty AU; or originally, they asked for 10 houses with DNRC standards (at 1 AF

per household) but now want to use the DEQ standard and get 35.7 houses (at 0.28 AF per household). It is widely known that DNRC standards for domestic use significantly exceeds actual domestic use but once a standard is used, it cannot be replaced with a different standard via a change application. For more information on Stock Changes, see the "Stock" subsection in the Purpose-Specific Consideration section of the manual.

Leaving water instream to account for return flows:

For proposals to leave water in the source that historically received irrigation return flows, the water left in said source will be left unassociated with the change version of a water right.

If the applicant is opting to leave a portion of the historically diverted volume of water instream at or upstream of the next downstream appropriator in order to meet the conditions listed in the DNRC Standard Practice to Analyze Return Flows (see the Adverse Effect Criterion Section of this document), this volume will not be considered a coded beneficial use.

Not changing the Place of Use:

If the applicant is not changing their place of use (POU) or historical purpose, then the beneficial use is also not changing and is therefore not evaluated using new guidelines. For example, if the applicant is simply moving their pump, no new evaluation is needed. Furthermore, if the applicant is changing their method of irrigation (i.e., going from flood to sprinkler irrigation), the area of the POU that remains in the historically irrigated footprint will not be assessed with the new information- any area proposed to be irrigated that falls outside the original footprint will be evaluated as new acreage, and a new beneficial use (see guidance in the Adverse Effect criterion section for more information on DNRC policy for a change in method of irrigation).

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, oxygen content requirements, 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 all cited literature or documentation 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 contact the CO 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 to issue a permit under MCA 85-2-311 or 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 600 or 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](#)

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 a 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. 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.

Examine Affidavit and Certification Section on the Application:

- 1) Is there a printed name and matching original signature?
 - a. If no, doesn't meet Acceptance Criteria – Return to applicant
 - b. If yes, continue on to Step 2
- 2) Is the applicant a corporation, business, or trust?
 - a. If yes, make sure the signer has legal authority to sign. This should include title of individual (Trustee, President, etc.)
 - i. Allowed for request for documentation for a compelling reason.
 - b. If no, continue to Step 3
- 3) Is the property/water right owned by more than one owner?
 - a. If yes, all owner signatures are required. Split of the water right may be needed.
 - b. If no, Continue to Step 4.
- 4) Does the applicant match the owner of the proposed and/or existing Place of Use?

- a. If no, applicant will need to provide written consent of the person having Possessory interest.
- b. If yes, Possessory Interest addressed.

Special Possessory Interest Considerations

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.

Conservation Districts

Conservation Districts (CDs) cannot apply for a permit unless their water reservation has been fully utilized. If that's the case, the CD can apply for either irrigation or marketing. If applying for marketing, they will need contracts to prove they have people ready and waiting for the water. This may allow for a longer completion deadline. If they apply for irrigation, the "municipal supply" possessory interest language from ARM 36.12.1802 should be used in the decision document as noted below:

- (1) An applicant or a representative shall sign the application affidavit to affirm the following:
- (a) the statements on the application and all information submitted with the application are true and correct; and
 - (b) except in cases of an instream flow application, or where the application is for sale, rental, distribution, or is a municipal use, or in any other context in which water is being supplied to another and it is clear that the ultimate user will not accept the supply without consenting to the use of water on the user's place of use, the applicant has possessory interest in the property where the water is to be put to beneficial use or has the written consent of the person having the possessory interest.

Making a finding:

Finding of fact example (standard language that does not require editing to use in a PD):

The Applicant signed the affidavit on the application form affirming the Applicant has possessory interest, or the written consent of the person with the possessory interest, in the property where the water is to be put to beneficial use.

Conclusion of Law example (standard language that does not require editing to use in a PD):

The Applicants have proven by a preponderance of the evidence that it has a possessory interest, or the written consent of the person with the possessory interest, in the property where the water is to be put to beneficial use.
(FOF No. XX)

Procedural Considerations

Projects Involving Multiple Applications

While a project may involve multiple applications submitted by an applicant (e.g., two permit applications or a permit application with a change application), the only time they should be processed as a "combined application" is in a closed basin when a groundwater permit application is accompanied by a mitigation

change application, as called for in § 85-2-360, MCA. In the case of a true “combined application”, you should still complete two separate Technical Reports, but you can complete a single PD using the Combined PD Template. The Combined PD Template includes Conclusions of Law referencing § 85-2-360, MCA.

For all other cases where two or more applications may be viewed as part of the same project, including a groundwater permit application and a mitigation change application in an open basin, you should complete a separate PD for each application. Doing so will prevent any confusion in the event that an objection is received to one application that is part of a larger project. Each PD should make clear whether it is related to or affected by other applications. Be especially clear with conditions, where the granting of one application may be conditioned on the granting of another, e.g., in the case of a groundwater permit in an open basin where mitigation is found to be necessary. For projects that involve temporary and permanent changes, refer to the Temporary and Permanent Change Application Processing section.

Amendments

For Applications Received Prior to Jan. 1, 2024:

Modifications to an Application

(ARM 36.12.1401) Anytime an applicant changes their original application; it is considered an amendment. An amendment to an application can be made only before a PD is completed. If there is a need to amend the application, you can direct 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 current application, then a formal amendment to the application is not necessary. That is not to say that the applicant would not need to submit a Waiver of Timelines (Form 639) after the application has been deemed Correct & Complete should the situation warrant such an action.

Per ARM 36.12.1401, amendments include the following types of modifications:

- (a) the flow rate is increased;
- (b) the volume is increased;
- (c) the acreage is increased;
- (d) the period of diversion is expanded;
- (e) the source of supply is changed;
- (f) the point of diversion is changed;
- (g) the place of use is changed;
- (h) the purpose is changed;
- (i) the period of use is expanded, unless the application involves a use from a reservoir and the impact would not change; and
- (j) any modification where the effect on the source of supply or its tributaries changes the impact described from the originally submitted information.

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

Amendments **may** reset our timelines for review and the form receipt date. If an applicant submits a major amendment, timelines will be reset. This includes the ability to send out a new deficiency letter. 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 on the analyses being conducted for the application.

Database Entry:

Depending on the category and scale of the amendment, different documentation should occur in the database. See the table below for each scenario.

Amendment Type	Event Code	Event Name	Note
Minor Amendment	AME1	AMENDMENT TO APPLICATION RECEIVED (MINOR)	
Major Amendment	AME3	AMENDMENT TO APPLICATION RECEIVED (TIMELINES RESET)	Enter this event for the date an Application Amendment Form (Form 655) is received for a permit or change application. When you add this 'TIMELINES RESET' event, also manually change the date on the Form Received event to be the date of amendment receipt. Leave a comment for the Form Received event with the original date the form was received.
	AME2	AMENDMENT TO APPLICATION RECEIVED (PRIORITY DATE RESET)	Enter this event for the date an Application Amendment Form (Form 655) is received for a permit application IF the amendment changes the nature or scope of the application. This event changes the priority date on the water right but does not change the Form Received date for the application.
	FRMR	FORM RECEIVED	When you add the AME2 or AME3 event, also manually change the date on the Form Received event to be the date of amendment receipt. Leave a comment for the Form Received event with the original date the form was received.
	P114	PRE - HB114 APPLICATION	Add this event when either the AME2 or AME3 events are added to document that the original form receipt date was prior to 1/1/24.

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.

Undisputed Technical Reports

Note that if a Department Technical Report contains calculations that are based on less than what was proposed (acres, flow rate, volume etc.) and the applicant does not request a meeting and dispute the findings, the Application is assumed to be amended in line with the Technical Report. The Department needs to make the applicant aware that this is the case, so be sure to include the applicable language in your Correct and Complete letter (template found in ROCO > Technical Reports). If the Application is amended in this way and

the applicant does not dispute the findings, the decision can move forward to a grant, and not a grant in modified form. This does not prevent the decision from being a grant in modified form for other reasons.

For Applications Received on or After Jan. 1, 2024:

(ARM 36.12.1401) Anytime an applicant changes their original application; it is considered an amendment. An amendment to an application can be made only before a PD is completed, except for if the Draft PD is to deny or grant with modifications, in which case the applicant may modify their application only if they have been granted an extension of time under §85-2-307(3), MCA. If there is a need to amend the application, you can direct the applicant use the Amendment to Application form (Form 655) which is located on the Forms & Resources page of the Department website. This form is required for applications received on or after Jan. 1, 2024.

If the applicant is simply supplying additional clarifying information within the nature and scope of the current application, then a formal amendment to the application is not necessary. The priority date of a permit application will be changed to the date the last modification was made if a modification changes the nature or scope of the permit application information.

Per ARM 36.12.1401, a change to the nature or scope of the application includes the following types of modifications:

- (a) the flow rate is increased;
- (b) the volume is increased;
- (c) the acreage is increased;
- (d) the period of diversion is expanded;
- (e) the source of supply is changed;
- (f) the point of diversion is changed;
- (g) the place of use is changed;
- (h) the purpose is changed;
- (i) the period of use is expanded, unless the application involves a use from a reservoir and the impact would not change; and
- (j) any modification where the effect on the source of supply or its tributaries changes the impact described from the originally submitted information.

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

For applications received on or after Jan. 1, 2024, **all amendments will reset the statutory timelines for an application.** This includes the ability to send out a new deficiency letter. If the applicant completed a preapplication meeting and the modification does not require the Department to update its technical analyses or scientific credibility review, the reduced filing fee and expedited application timelines shall still apply. If the applicant completed a preapplication meeting and the modification requires the Department to update any of its technical analyses or scientific credibility review, the reduced filing fee and expedited application timelines shall no longer apply. If the modification only requires the Department to update summary information within the “front end” of the technical analyses or scientific credibility review, this will not constitute a modification that changes the technical analyses. The Department will add a memo to the file providing clarification for the discrepancies between the application and the summary information in the technical analyses or scientific

credibility review. (An example of this would be if the proposed flow rate or volume is reduced for a surface water permit application.)

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 an amendment constitutes the need for a new application. In this situation, the Department may transfer the initial application fee to the new application.

If a preapplication meeting was held, and the amendment changes the nature or scope of the application, or changes the application in a way that the technical analyses or scientific credibility review will need to be redone, the application is treated as if no preapplication meeting occurred (discounted filing fee and expedited timeline will no longer apply). In the post- amendment deficiency review process, the now-insufficient filing fee can be addressed. See the database entry below for the applicable events to enter in this scenario.

Database Entry:

Depending on the scale of the amendment, different documentation should occur in the database. See the table below for each scenario.

Event Code	Event Name	Note
AME3	AMENDMENT TO APPLICATION RECEIVED (TIMELINES RESET)	Enter this event for the date an Application Amendment Form (Form 655) is received for a permit or change application.
AME2	AMENDMENT TO APPLICATION RECEIVED (PRIORITY DATE RESET)	Enter this event for the date an Application Amendment Form (Form 655) is received for a permit application IF the amendment changes the nature or scope of the application. This event changes the priority date on the water right but does not change the Form Received date for the application.
FRMR	FORM RECEIVED	When you add the AME2 or AME3 event, also manually change the date on the Form Received event to be the date of amendment receipt. Leave a comment for the Form Received event with the original date the form was received.
MNEP	MOVED TO NON-EXPEDITED PATHWAY	Add this event if a preapplication meeting was held, but the Department has moved the application to the non- expedited timeline. (For example, if the application was received and is different than the preapplication meeting form (ARM 36.12.1302(6)(a)), or if an amendment is received that causes the Department to update its technical analyses (ARM 36.12.1401(3)(b).)

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 (important information) 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.
- Add conditions only when they are necessary to meet the criteria. The PD should clearly state why the condition is being added and to which criterion the condition relates.
- Conditions can be anything you believe is needed to meet the criteria

- Use an II (important information) Remark if no formatted remark exists and no specific placement of the remark on the water right abstract is needed; be sure to distinguish between remarks that are purely informational and remarks that are conditions
- 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.
 - Within the PD, the condition language must be included in the section for the criterion it is addressing, and also in the final preliminary determination section of the document.
 - The processing RO has the discretion to discuss conditions with applicants prior to final PD drafting and allow them an opportunity to collaborate on the condition(s) that may best suit their proposed project. Ultimately, it is up to the Department to determine final language of a condition.
- 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.

Environmental Assessments should be completed after correct and complete determination and prior to the completion of the Draft PD.

Because the MEPA process requires full public disclosure of any environmental impacts, all environmental assessments must be posted on the internet. **Submit EAs to the intranet via the [DNRC MEPA Submission Form](#).**

Full EA instructions for EA processing, posting, and templates are contained on the ROCO drive in PROCESSES > EA- ENVIRONMENTAL ASSESSMENTS.

Variances

For Applications received Prior to Jan. 1, 2024

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.

For Applications received on or After Jan. 1, 2024

What’s a Variance?

Per ARM 36.12.123 (Variance Request Rules), the Department can grant a variance for requirements in ARM 36.12.121 (aquifer testing requirements) and 36.12.1702 (measurement requirements for physical availability of surface water). **If an applicant seeks a variance from the requirements in rule, a Variance Request Form (available on the Department website) is required by the Department.** An application cannot be deemed correct and complete without meeting the requirements of rule or being granted a variance from rule requirements (if applicable).

How are Variance Requests Processed?

If a preapplication meeting is held, the Variance Request Form must be received by the deadline established in the preapplication meeting. This deadline should be at least 30 business days prior the date the applicant shall submit the completed Preapplication Meeting Form, because the Department shall grant or deny the Variance Request within 30 business days of Variance Request Form receipt. The variance request must be granted or denied prior to the Preapplication Meeting Form being deemed complete, because the result of the variance grant or denial will impact the technical analyses completed for the application. The Department may receive Variance Request Forms prior to the preapplication meeting only if the Department has all of the necessary information regarding the application to process said request within 30 business days. It may be beneficial to both the applicant and the Department to have at least a scoping meeting prior to Variance Request Form submission to ensure all relevant information is discussed and included on the Variance Request Form.

If a preapplication meeting is not held, the Variance Request Form may be submitted with the application or as a deficiency response.

For permit or change applications for groundwater with a means of diversion that is a well or pumping pit, variance requests (Form 653) from ARM 36.12.121 must be accompanied by the following associated information:

- Aquifer Test Data Form (Form 633), or alternative methods, models or data for aquifer characteristics;
- Aquifer Testing Addendum (Form 600/606 ATA).

General time frames for requesting a variance (for submitting Form 653)

The deadline for variance request submission can vary somewhat, depending on whether a preapplication meeting was held.

For applications submitted and no preapplication meeting was held, variance requests (Form 653) and necessary associated information (including Aquifer Test Data Form (Form 633) and Aquifer Testing Addendum (Form 600/606 ATA)) must be submitted with the application or as part of a deficiency response pursuant to ARM 36.12.1501.

For applications submitted after Jan. 1, 2024 and a preapplication meeting was held, variance requests must be submitted during the span of the 180 days between when the preapplication meeting is held and before the Preapplication Meeting Form must be submitted. Variance requests (Form 653) must be submitted on or before Day 138 of 180. The specific date by which a variance request must be submitted will be determined at the preapplication meeting (ARM 36.12.123(1)(a)). See the [Variance Request Timeline](#) (below) for a visual representation of the deadlines for submitting Form 653 and related materials when a preapplication meeting was held.

Why Day 138?

For permit or change applications for which a preapplication meeting was held, compliance with ARM 36.12.121 (aquifer testing requirements) and/or ARM 36.12.1702 (measurement requirements for the surface water physical availability criterion) is necessary by the time the Preapplication Meeting Form is determined to be adequately completed. In some cases, applicants may attempt to comply with these rules by requesting a variance from the aquifer testing or measurement requirements.

The Day 138 deadline for submittal of Form 653 and associated information makes it possible for the Department to grant or deny the variance within the required 30 business days (ARM 36.12.123(3)), while maintaining the administrative deadlines for the Preapplication Meeting Form as described in ARM 36.12.1302(4) and (5), which requires the applicant to include their granted variance(s) with their completed Preapplication Meeting Form (which must be submitted 180 days after the preapplication meeting). Thirty business days is equivalent to approximately 6 weeks or 42 calendar days (including weekends and depending on public holidays). Day 138 is 42 calendar days (30 business days) before the 180-day deadline for submitting the Preapplication Meeting Form.

During the preapplication meeting, the Department will establish an actual date for the Day 138 variance request deadline (ARM 36.12.123(1)). For example, if a preapplication meeting was held on 12/11/2024, the Department would establish 4/28/2025 as the variance request deadline (April 28, 2025, is 138 days after 12/11/2024). The established deadline date will be documented on the Preapplication Meeting Form.

The Applicant is welcome and encouraged to submit a variance request (Form 653) and associated information at any point prior to Day 138, and the Department will grant or deny the variance within 30 business days of receiving the request (ARM 36.12.123(3)).

Best practices and key considerations for requests for variances:

1. **Submitting Form 653 on Day 138 gives the applicant zero turnaround time to make corresponding adjustments to the Preapplication Meeting Form. Therefore, it is strongly recommended that applicants submit Form 653 (and associated information) early (before Day 138):** In order to consider and/ or

recommend requests for variances from requirements of ARM 36.12.121 or ARM 36.12.1702(1)(b) or (4), the Department must have sufficient information. For example, for variances from ARM 36.12.12,1 this would include Form 633 (or alternative methods, data or models) and Form 600/606 ATA (Aquifer Testing Addendum). Applicants should be aware that if they wait until Day 138 to submit their Form 653 and associated information, the Department may use the full 30 business days available to them to consider the variance request or recommend additional variances. In such a scenario, there may be very little, or even zero, time for applicants to update their Preapplication Meeting Form based on the Department's decision to grant, deny, or recommend the variance. For this reason, it is strongly recommended that applicants submit their Form 653 and associated information before the Day 138 variance request deadline.

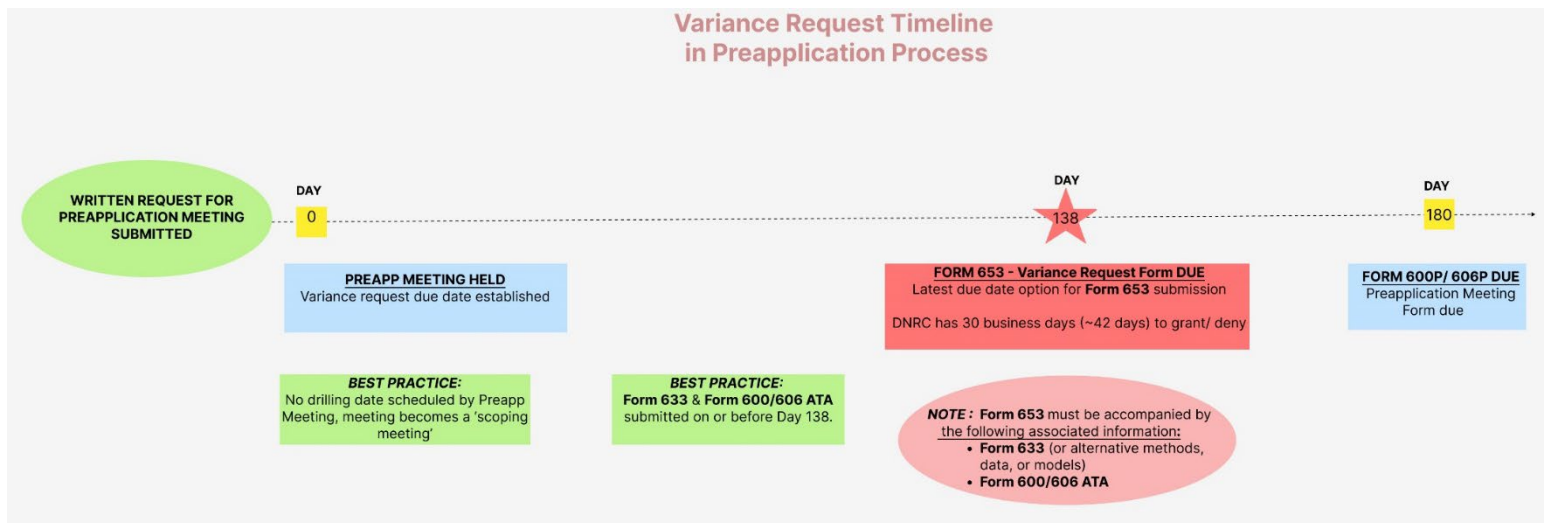
2. **Applicants should be aware that the Department may take 30 business days to decide whether to grant or deny the variance, per ARM 36.12.123(3):** If an applicant wants a decision on their variance request earlier (so that they can submit their completed Preapplication Meeting Form early), they may submit Form 653 and associated information early. The applicant should be aware, however, that following early submission of the Form 653, the Department will make the decision to grant or deny the variance request within 30 business days of receipt of Form 653 (and associated information) (ARM 36.12.123). Following the submission of an initial variance request on or before Day 138, in the event that additional variance requests are necessary (recommended by the Department), the Department will consider these requests in a timely fashion. The applicant should keep in mind that all variances must be approved for the Preapplication Meeting Form to be adequate AND that the Department will need time to consider each variance request.

Variances from aquifer testing requirements (ARM 36.12.121).

3. **By the time the preapplication meeting is held, applicants should have a drilling date scheduled:** If it is determined that no drilling date is scheduled, it is strongly advised that the preapplication meeting be changed to a scoping meeting. The timing of submittal of Form 653 and associated information should be discussed, and a new preapplication meeting should be scheduled.
4. **Even when no variances are expected, submit the information associated with variance requests – *Aquifer Test Data (Form 633) and (Form 600/606 ATA) – as far in advance of the variance request deadline as possible:*** There are cases where an applicant may assume that they do not need a variance, when, in fact, following review of an adequately completed Form 633, the Department recommends that they do request a variance to meet the requirements of ARM 36.12.121. Submitting Form 633 and Form 600/606 ATA far in advance of Day 138 will allow the Department to provide guidance on which variances the applicant may need to request while also leaving the applicant with adequate time to submit Form 653 on or before Day 138. *Ideally, applicants should submit Form 633 and Form 600/606 ATA as far in advance as possible of the Day 138 variance request deadline.*

Variances from surface water measurement requirements (ARM 36.12.1702).

5. During preapplication meetings for proposed surface water appropriations, the need for measurements in order to comply with ARM 36.12.1702 should be made clear by the Department and a plan for gathering measurements should be discussed with the applicant, including a discussion of methods necessary to ensure that submitted measurements will be usable for the Department technical analyses or scientific credibility review. If applicants need measurements, they may use the 180 days following the preapplication meeting to gather these measurements. If during preapplication meeting it becomes clear that the 180 days *will not be sufficient time* to gather the required measurements, the meeting should be changed to a scoping meeting and/or, as appropriate, options for variances from ARM 32.12.1702 should be discussed, as should the Day 138 variance request deadline.



Application Termination

See the Termination Guidance in ROCO for processing instructions on the application termination process.

For Applications received Prior to Jan. 1, 2024

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 calendar 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.

Relevant Statutes and Rules

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

For Applications received on or After Jan. 1, 2024

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 calendar 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 (Template Letter T1) is available in the ROCO Folder. **The termination must be processed within 30 calendar days of the deficiency letter response deadline, as it will otherwise default to correct and complete (§ 85-2-302(6)).**

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.

Relevant Statutes and Rules

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

PD Writing Tips & Guidance

PD Document Naming Standards

When you send your PD to the Central Office, please save it using the following standard:

- Form Number_[GW/SW]_PD_[Grant/Deny/ModifiedGrant]_Basin & Number_Last Name (of Applicant)
- Example: 606-IR_SW_PD_Grant_38H 30105555_Jackson

PD Review Period

For Applications Received Prior to Jan. 1, 2024

When you have completed a Draft PD, be sure to send it to your Regional Manager for their thorough review before you send your draft to the Central Office (CC your Regional Manager, the rest of the CO NA staff, and Regional Operations Manager). Once your manager has completed their review, you must send the PD to your CO contact for review a minimum of three weeks before the 120-day deadline for PDs to Grant, and at least five weeks prior to the 120-day deadline for PDs to Deny or PDs to Grant in Modified Form (since Draft PDs to Deny or Grant in Modified Form are sent to the applicant 15 calendar days before the 120-day deadline). Be sure to include the 120-day deadline in the body of your email. Once you have sent your Draft PD to CO, add the 'PD Sent to CO for Review' event to the database. See the guidance in the "PD Decision Types" section of this manual for additional considerations with PDs to Deny or to Grant in Modified Form.

Your CO contact will likely reach out to you for clarification/with any questions regarding the decision that cannot be readily addressed as a comment in the PD. The CO will then send you your draft PD with any comments, concerns, suggestions, or questions that are intended to highlight procedural or policy inconsistencies, decision red or yellow flags, and to ensure the decision is clear enough to go out to Public Notice. CO staff will add the 'PD Returned to RO After Review' event when they send your PD back to you. When you have finished incorporating and addressing CO's comments, questions, and/or concerns:

1. Print a final copy of the PD/ draft PD and prepare a cover letter based on the template in ROCO.
2. Have your manager sign the Preliminary Determination page. The dates on both the Preliminary Determination and Certificate of Service pages need to reflect the date the envelope is postmarked by the USPS (might be the next day if you missed the mail pickup).
3. Sign the Certificate of Service page.
4. Mail the original signed PD to the applicant (or the applicant's legal representative) along with the original signed cover letter. Send copies of the PD and cover letter to any consultants or non-legal representatives. Also put a copy of the PD in the application file.
5. Enter the correct "(draft) PD to [X] completed" event in the database. The Date/Time entered for this event must also reflect the actual date the PD was completed *and* postmarked to be sent to the applicant.

For Applications Received on or After Jan. 1, 2024

When you have completed a draft Draft PD, be sure to send it to your Regional Manager for their thorough review before you send your draft to the Central Office (CC your Regional Manager, the rest of the CO NA staff, and Regional Operations Manager). Once your manager has completed their review, you must send the PD to your CO contact for review a **minimum of 15 calendar days before the 60 or 120-day deadline**. Be sure to include the PD deadline in the body of your email. Once you have sent your draft PD to CO, add the 'PD Sent to CO for Review' event to the database. See the guidance in the "PD Decision Types" section of this manual for additional considerations with PDs to Deny or to Grant in Modified Form.

Your CO contact will likely reach out to you for clarification/with any questions regarding the decision that cannot be readily addressed as a comment in the PD. The CO will then send you your draft PD with any comments, concerns, suggestions, or questions that are intended to highlight procedural or policy inconsistencies, decision red or yellow flags, and to ensure the decision is clear enough to go out to Public Notice. CO staff will add the 'PD Returned to RO After Review' event when they send your PD back to you.

When you have finished incorporating and addressing CO's comments, questions, and/or concerns:

1. Print a final copy of the PD/ Draft PD and prepare a cover letter based on the template in ROCO.
2. Have your manager sign the Preliminary Determination page. The dates on both the Preliminary Determination and Certificate of Service pages need to reflect the date the envelope is postmarked by the USPS (might be the next day if you missed the mail pickup)
3. Sign the Certificate of Service page.
4. Mail the original signed PD to the applicant (or the applicant's legal representative) along with the original signed cover letter. Send copies of the PD and cover letter to any consultants or non-legal representatives. Also put a copy of the PD in the application file.
5. Enter the correct "(draft) PD to [X] completed" event in the database. The Date/Time entered for this event must also reflect the actual date the PD was completed *and* postmarked to be sent to the applicant.

PD Writing Dos and Don'ts

DO:

- Write with conviction—the findings are yours, embrace them! For instance, we are making findings that a proposed use of water *will not*, rather than *should not* or *is not expected to* cause adverse effect to other water users
- Include all information on which the decision is based
- Be sure to address all elements of the application materials, especially in cases where the Department's findings differ from what the applicant asserts
- 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 of the information summarized in the table. Be sure tables are also included within the Findings of Fact it's related to!
- 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 section below

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
- Discuss what is being proposed within the Historical Use section
- Use ambiguous/subjective terms (lots, should, is expected to)
- Use descriptions of amounts instead of the actual amounts (e.g., "A small amount of water will be consumed in the pond" vs. "3.5 AF of water will be consumed in the pond")
- Include percentage statements instead of actual amounts, 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 (COLs) from the Template unless it has been vetted by Legal. The Conclusions of Law written in blue in the Template can be added as necessary depending on the specifics of the decision. Optional COL are labeled as such in the PD templates and should only be removed when not applicable to the application at hand.
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 referred to 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. An applicant may state in their application that based on their system specifications, they are applying to use a flow rate of 674 GPM. Because 674 GPM is greater than 1 CFS, the Department will convert this flow rate to CFS and round to the nearest tenth, therefore coding this flow rate in the database as 1.5 CFS. GPM is more precise than CFS, and if you convert 1.5 CFS back to GPM, the flow rate would be only 673.2 GPM, which is less than 674 GPM. To make clear that our coding of 1.5 CFS does equate to the requested 674 GPM, the first time the requested flow rate is mentioned in the PD, write the requested flow rate as 1.5 CFS (674 GPM).
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 proposed use 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. For example, write "The Department finds the applicant's proposed use of water will not cause adverse effect to other water users on the source."
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. Be sure the information under each section is applicable. There shouldn't be a need to duplicate information, however it is okay to restate information that is directly relevant to different sections.
17. Don't put the Project Completion Notice deadline in a PD. The applicant cannot request a hearing on the deadline date.
18. When the Department finds something different from what the applicant asserts in their application, be sure to provide a thorough explanation in the PD for why the applicant's assertion was deemed invalid and not used by the Department in the criteria analysis. Since it is the applicant's burden to prove the permit criteria, we must address validity of any criteria-based argument made by the applicant.
19. The first time you refer to a water right, always use the full name of its type, e.g., "Statement of Claim 41G 123-00" or "Provisional Permit 41G 123-00". Moving forward through a PD, use the full name or a shorter type identifier, such as "Claim 41G 123-00" or "Permit 41G 123-00". Be consistent throughout the PD. Never refer to water rights as only "Water Right 41G 123-00"; it is helpful to know the types of water rights being discussed, described, or assessed.
20. 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 and a change in the place of use is proposed. What changes to return flows will occur as a result of the proposed change(s)?
21. 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 only 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.

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 as they are not specific amounts. 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.

PD Writing Standardization Table:

Statute Cite	§ 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 - Space between '§' and title '85'
Rule Cite	ARM 36.12.1702
Statute and Rule Cite	§ 2-4-611, MCA, and ARM 36.12.211 (statute first)
Findings	Use "the Department finds", however, if the finding is constructed as a statement, then neither phrase has to be used. 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 ...
Abbreviate	- AF - CFS - GPM - Township/Range – T6N R10W
Always put a comma after a year	The hearing will be held on May 4, 2005, at ...
One Word	- Groundwater - Instream - Prestream - Unperfected
Capitalize	- Department - Applicant - Objector - Montana Water Court
Don't Use <i>If you write the phrase, "the applicant ...", then there must be a finding stating what the Department finds about the information. ("The Department finds ...") It's easier to state the factual information.</i>	- 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	- Department hydrogeologists - Mitigate, not augment

Hyphens & Apostrophes	▪ No apostrophe in years (1970s) ▪ Use hyphen in modifiers (24-hour pump test) ▪ No hyphen - Nonconsumptive
Adverse effect - noun	"The appropriation causes adverse effect"
Adverse effect - adverb	"The water rights will be adversely affected"
Domestic Use	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 a separate "lawn and garden" purpose. 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.

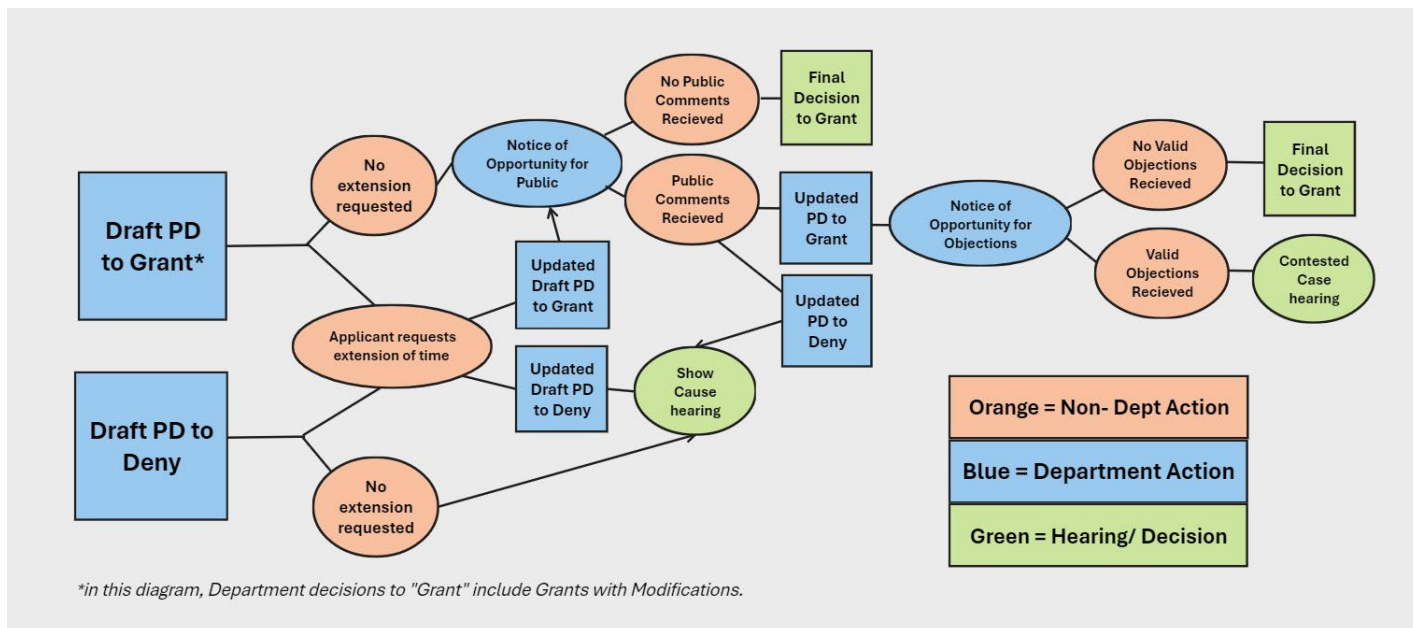
PD Process Updates

Overview

For Applications Received on or After Jan. 1, 2024:

The Department may complete between one and three decision documents for a given application, if either the applicant submits additional information following the receipt of a Draft PD, and/or if the Department receives public comments on a decision. The flow chart and sections below are a guide to which type of decision document is applicable to a given stage of the process.

Below is a simplified flow chart of the preliminary determination process for applications received Jan. 1, 2024 or later, from the point of completion of a Draft PD to final decision or hearing. At this point of the application process, there are no more expedited timelines for applications that had a preapplication meeting. Note that any box labeled as "PD to Grant" or "Final Decision to Grant" includes both decisions to grant and to grant with modifications.



PD Versions

The following PD version types are applicable to applications **received on or after Jan. 1, 2024**. If an application is received prior to Jan. 1, 2024, the application will only have one PD, unless the decision is to deny or grant in modified form, in which case a draft PD will be completed prior to authorization. **Note that all PD versions will be addressed to the applicant with the appropriate template letter, on or before the completion/issuance date.** See the "PD Decision Types" section at the beginning of the manual for more information on what constitutes a PD to Grant, Grant with Modifications, or Deny.

Draft PD

- The Draft PD is the first decision document completed by the Department for an application.
- Sent to applicant/lawyer (and consultant, if applicable) only, with Template Letter A3.
- Following the delivery of the Draft PD, the applicant has **15 business days** to request an extension of time to submit additional information. (MCA 85-2-307(2)(b), -307(3)(a))
 - If a request is received and the Department grants the extension and additional information is submitted, the Department will update the Draft PD considering the new information within **60 calendar days** (see guidance for "Updated Draft PD" below).
 - If no extension of time is requested by the applicant:
 - The specialist will send a Draft PD to grant/grant with modifications to the CO CT for public notice for public comment within **5 business days** of the 15-day period closing. (Internal timeline, timeline is triggered by the DRAFT PD TO GRANT/ GRANT WITH MODIFICATIONS SENT TO APPLICANT event; 5 business days is **20 business days** after this event.)
 - If **no** public comments are received, the Draft PD is adopted as the final decision, and the specialist authorizes the permit or change within **10 business days** of the public comment period closing. (Internal timeline, timeline is triggered by the PUBLIC COMMENT DEADLINE event.)
 - If public comments **are** received, the specialist will update the Draft PD to reflect the DNRC's consideration of the comments within **30 calendar days** of the public comment deadline, and the specialist will send a PD (non-draft) to CO CT for the public notice for objection period within **5 business days** of the closing of the 30-day deadline to update the Draft PD considering public comments. (Internal

timeline, timeline is triggered by the PD TO GRANT/ GRANT WITH MODIFICATIONS COMPLETED event.) (see “PD (non-draft)” guidance below).

- The specialist will send a Draft PD to deny to the Hearings Unit legal secretary (currently Jamie Price) to schedule a show-cause hearing with the applicant within **10 business days** of the 15-day period closing. (Internal timeline, timeline is triggered by the DRAFT PD TO DENY SENT TO APPLICANT event; the deadline is **25 business days** after this event.) In this instance, refer to the Finalizing the Change Application File section of this manual for instructions on scanning the application file, uploading to FileNet, and sending an email to the Hearings Unit staff.

Updated Draft PD

- If the applicant submitted a request for extension of time (via Form 607), the Department may grant the applicant, in writing (Template Letter A4), up to 180 calendar days to submit additional information for the Department to consider in the decision (MCA 85-2-307(3)(a)). If DNRC granted the request for extension of time, the Department shall issue an updated Draft PD (with Template Letter A5) within 60 calendar days of the earliest date of either:
 - The extension of deadline set (up to 180 calendar days granted by DNRC upon request of the applicant)
 - DNRC’s receipt of written notice from applicant saying all information has been submitted. (MCA 85-2-307(3)(b))
- This PD may be revised from the Draft PD based upon the newly submitted additional information.
- Regardless of whether or not we have changed our decision based on the new information submitted by the applicant, the new PD is an updated Draft PD (so that the additional information submitted can be recorded in the decision document).
- An updated Draft PD to deny is sent to the Hearings Unit legal secretary (currently Jamie Price) to schedule a show-cause hearing with the applicant within **10 business days** of the 15-day period closing. (Internal timeline, timeline is triggered by the DRAFT PD TO DENY SENT TO APPLICANT event; the deadline is **25 business days** after this event.) In this instance, refer to the Finalizing the Change Application File section of this manual for instructions on scanning the application file, uploading to FileNet, and sending an email to the Hearings Unit staff.
- An updated Draft PD to grant or grant with modifications is sent to CO CT for public notice for opportunity to make public comment within **5 business days** of the PD being sent to the applicant. (Internal timeline, timeline is triggered by the second issuance of the DRAFT PD TO GRANT/ GRANT WITH MODIFICATIONS SENT TO APPLICANT event)
 - If **no** public comments are received, the updated Draft PD is adopted as the final decision (Template Letter A7), and the specialist will authorize the permit or change within **10 business days** of the public comment period closing. (Internal timeline, timeline is triggered by the PUBLIC COMMENT DEADLINE event.)
 - If public comments **are** received, the specialist will update the updated Draft PD to reflect the Department’s consideration of the comments, and the specialist will send a PD (non-draft) to the CO CT for public notice for objections within **5 business days** of the closing of the 30-day deadline to update the PD considering public comments. (Internal timeline, timeline is triggered by the PD TO GRANT/ GRANT WITH MODIFICATIONS COMPLETED event) (see “PD (non-draft)” guidance below).

PD (non-draft)

- If public comments are received, the Department will complete a non-draft PD (with Template Letter A6) within 30 calendar days of the public comment period ending to consider the public comments submitted.
- This is the PD version type that goes to public notice for objections (MCA 85-2-307(5)).
- The specialist will send the PD to public notice for objections within **5 business days** of the closing of the 30-day deadline to update the PD considering public comments. (Internal timeline, timeline is triggered by the PD TO GRANT/ GRANT WITH MODIFICATIONS COMPLETED event.)
 - *Note that if any objections were received, CO must first determine if objections are valid (this can take a while as there is a deficiency review/response process for objections).*
 - If no valid objections are received, the Department adopts the PD as the final decision. (MCA 85-2-307(5)(c))
 - The Department will authorize the permit or change within **15 business days** of the objection public notice being mailed to the RO from CO. (Internal timeline, timeline is triggered by the PUBLIC NOTICE INFO RETURNED TO RO event.)
 - If valid objections are received, the DNRC shall hold a contested case hearing and issue a final determination within **90 calendar days** of the administrative record closing for a contested case hearing.
 - The specialist will upload the scanned file to FileNet and email the Hearings Unit within **15 business days** of the objection public notice being mailed to the RO from CO. (Internal timeline, timeline is triggered by the PUBLIC NOTICE INFO RETURNED TO RO event.)

Updating the PD

Incorporating Additional Information (submitted by applicant)

If additional information is submitted by the applicant within the granted timeline after submitting a request for extension of time, the Department may update the PD to reflect the additional information if the additional information does not impact the nature, scope, or technical analyses of the Application. If the nature, scope, or technical analyses of the application would be altered by the additional information submitted, this constitutes as a modification to the application and will be treated as such. See the Amendment section of the manual for guidance on determining what is a modification and how to process a modified application.

Incorporating Public Comment

The public comment period serves as an opportunity for members of the public to voice concerns about the Department's decision prior to objecting to an application, and in turn an opportunity for the Department to explain their decision more fully if not addressed clearly in the Draft PDs. An updated PD (non-draft) will be issued within 30 calendar days of the public comment period ending, considering all public comments submitted (regardless of their content).

How will the Department update PDs to incorporate public comments?

- An updated PD will be issued considering public comments regardless of their content.
- In the information section of the updated PD, add a description of the comments received.
- In the criteria section(s) that were raised in public comment, make a finding and discuss how the public comments were addressed and how/if the Department decision or criteria analyses were at all changed as a result.

What if a public comment does not raise a concern to the Department?

- We will consider all public comments regardless of their validity. (e.g., if a water right holder is commenting simply because they do not like their neighbor, we will still consider the comment- though we will not change the content of our PD because of this argument.)

What if multiple comments raise the same issue?

- While we need to consider all public comments, we can address them in bulk as long as they pertain to the same discrete issue (and not only just the same criteria!).

Criteria sections that receive public comments should get further review by the Department and be improved to include more detail to either modify our decision or further explain/ justify the Department's decision- & decision-making process (and maybe avoid a hearing!). Ultimately, it's up to the discretion of the RO to modify any criteria analysis. When revising the decision and decision document, **do not change values that were produced or would impact any technical analyses or WSB reports without consulting the Central Office or WSB.** If a comment is arguing our standard procedures or analyses, this needs to be addressed in a hearing.

The Central Office is developing more comprehensive guidance for the internal timelines and procedural guidelines to update the PD and respond to public comments.

Public Notice

This section covers the part of the Public Notice process that is done within the Regional Office while processing an application. Prior to sending an application to public notice, all elements of the water right should be entered into the database exactly how we are proposing to grant it, so that they appear correctly on the Public Notice reports. Any conditions should also be entered into the database prior to sending to public notice (required by § 85-2-307(2)(b), MCA). The only events left for the RO to enter into the database once the application has been through all public notice processes should be an "Issued" event and a "Project Completion Notice Due" event (and "Temporary Change Expiration Date" event, for temporary changes only).

Pending Application Website Posting

DNRC updates the [Application Status and Environmental Assessments](#) page on the Department website at distinct points in the Permit & Change Application process, depending on when the application was received, in conjunction with the Water Right Notification Tool (WRNT). This public notification process via the WRNT will occur (along with the action of sub-bullets below) when the following events are added to the application record in the database:

- APPLICATION POSTED TO WEBSITE
 - Notice of Receipt is posted to website
- APPLICATION DEEMED CORRECT & COMPLETE
 - Pending application file is posted to website for applications received after Jan. 1, 2024
 - Correct and Complete date is added to website
- PUBLIC NOTICE PUBLIC COMMENT PERIOD (PUBLISHED)
 - Draft/updated Draft PD is posted to website
 - Pending application file is updated & reposted to website (if material pertinent to the Department's decision has been added to the application file) for applications received after Jan. 1, 2024
- PUBLIC NOTICE OBJECTION PERIOD (PUBLISHED)
 - Non-draft PD is posted to website

- Pending application file is updated and reposted to website (see below for additions to file at this stage) for applications received after Jan. 1, 2024
- AUTHORIZATION ISSUED
 - Application is taken down from website 2 weeks after issue date, as it will be available in WRQS via the scanned documents in the database

Pending application files received after Jan. 1, 2024 are also posted to the DNRC website at distinct points in the application process. At the determination of a correct and complete application, the Department will post a PDF of the pending application file to the Department website under the [Application Status and Environmental Assessments](#) page. From the point of correct & complete determination to permit or change authorization or application termination, the Department will update the pending application file on the website at each step of the public notice process, if material pertinent to the Department's decision has been added to the application file (such as additional information provided by the applicant, public comment files, or updated PDs). When the updated pending application file is sent to the CO CT Public Notice Reps, they will take down the previous pending application file and replace it with the newly updated version. The same process occurs for the PDs: If the application is going to public notice for objections, the CO CTs will remove the Draft PD from the website and post the non-draft PD to the website (thus why the Draft PD(s) need to be added to the updated pending application file at each point in the process).

The application processor should have the pending application scanned and sent to CO CT Public Notice Reps before the "APPLICATION DEEMED CORRECT & COMPLETE" event is added, because the following day the Water Rights Notification Tool (WRNT) will notify the public that the pending application is correct and complete and available on the website via a GovDelivery message.

Instructions for ROs:

1. Scan pending application file contents upon sending the relevant template letter to the applicant.
2. Name the scanned application file PDF with the following convention:
 - a. [600/606]_[BB-#####]_PendingApplication-[V1/V2/V3]
 - b. [600/606]_[BB-#####]_[DRAFT/NONDRAFT]-PD
3. QAQC the pending application file PDF contents, per the most recent record scanning guidance. For example,
 - a. Arrange the file using the file organization flags in ROCO > FILE ORG & FLAGS, organizing each section in reverse chronological order (earliest dated document on the bottom, most recent dated document on top)
 - b. Ensure all pages are included
 - c. Remove all blank pages
 - d. Orient pages correctly
 - e. Redact all personal information (bank account information, social security numbers, Realty Transfer Certificate Information)
4. Send pending application file to CO CT Public Notice Reps **via Teams, a OneDrive link to the file, or the State of Montana [File Transfer Service](#)**. (Sending the file as a standard attachment via email may be impractical due to large file size.)
 - a. In the Teams message, be sure to include:
 - i. File to be posted to the website
 - ii. Application Number
 - iii. Applicant Name
 - b. In the event that a file is too large to share via Teams, coordinate with CO CT Public Notice Reps to either create a OneDrive link, use the file transfer service, or create in ROCO a temporary folder containing the large file(s).
5. CO CT Rep will post application file on the website & send confirmation email to RO.

6. After receiving confirmation from the CO CT Rep that the files have been posted, check the website for a final quality check.
7. Add the applicable event once the pending application file is sent to CO CT Rep and the appropriate notice letter is sent to the applicant. (Example: Template Letter A2 [Correct & Complete Letter] is sent to the applicant, the application file is scanned, and "APPLICATION DEEMED CORRECT & COMPLETE" event is added in the database.) Repeat these steps for all points of the application in which updates to the application are to be posted to the website.

The lists below describe the minimum contents of the pending application file at each update and the format to deliver the pending application file PDF updates to the CO CTs.

File flags are used as helpful placeholders and may aid as an organizational tool while compiling the file. **If the pending application file contains excel files, include an Excel File Flag in the location of the excel file as a placeholder** to direct the reader to request the file from the regional office (for pending application files scanned to the website), or if the file is in records, to search within a different tab. See the File Organization section below for more information on Flags and how to use them.

For **Correct & Complete** web posting, include in **one file**:

1. Pending Application File (in reverse chronological order):
 - a. Correct & complete determination letter
 - b. Deficiency letter response & any attachments (if applicable)
 - c. Deficiency letter (if applicable)
 - d. Application as filed
 - e. Technical analyses (if applicable at this stage)
 - f. Preapplication Meeting Form and attachments (if applicable)
 - g. Any other relevant materials or correspondence

For **Draft PD or Updated Draft PD** (whichever version is going to public comment, if the application is being noticed for public comment period) web posting, include in **two files**:

1. Updated Pending Application File, as posted at determination of correct & complete (in reverse chronological order):
 - a. Public Notice for Public Comment map & notice list
 - b. Updated Draft PD cover letter (if applicable)
 - c. Additional information submitted by applicant following issuance of Draft PD (if applicable)
 - d. Draft PD (only if updated Draft PD is going to public notice for public comment)
 - e. Draft PD cover letter
 - f. Environmental Assessment
 - g. Correct & complete determination letter
 - h. Deficiency letter response & any attachments (if applicable)
 - i. Deficiency letter (if applicable)
 - j. Application as filed
 - k. Technical analyses (if applicable at this stage)
 - l. Preapplication Meeting Form and attachments (if applicable)
 - m. Any other relevant materials or correspondence
2. Draft PD or Updated Draft PD

For **PD (non-draft)** web posting (if the application is being noticed for objection period), include in **two files**:

1. Updated Pending Application File (as posted at determination of correct & complete; in reverse chronological order):
 - a. Public Notice for Objections map & notice list
 - b. Public Comment package (notice report and files)

- c. Public Notice for Public Comment map & notice list
 - d. Updated Draft PD (if applicable)
 - e. Updated Draft PD cover letter (if applicable)
 - f. Additional information submitted by applicant following issuance of Draft PD (if applicable)
 - g. Draft PD
 - h. Draft PD cover letter
 - i. Environmental Assessment
 - j. Correct & complete determination letter
 - k. Deficiency letter response & any attachments (if applicable)
 - l. Deficiency letter (if applicable)
 - m. Application as filed
 - n. Technical analyses (if applicable at this stage)
 - o. Preapplication Meeting Form and attachments (if applicable)
 - p. Any other relevant materials or correspondence
2. PD (non-draft)

Preparing the Application for Public Notice

Database Entry-Change Description for Public Notice

The change description under the Proposed Change field of the Change Description accordion in the Application 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 tab 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, T14N R9W. THIS RIGHT WAS USED ON 63 ACRES IN SEC. 14, T14N R9W. 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, T14N R9W. 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.

Additional Information field in Change Description Accordion

If a change authorization is subject to any conditions, those conditions should be included in the Public Notice report. To do this, add the exact condition language in the Additional Information field.

Water Rights Summary Information for Public Notice

On the Water Rights accordion within the Application in the database, the Water Rights Summary section has fields for Flow Rate, Volume, and Acres. Information entered in these fields will appear under the Proposed Change section in the Public Notice Report. Add up the post-change total flow rate, volume, and acres on the change versions for all water rights proposed for change; enter the total numbers in the Water Rights Summary fields. For change applications involving multiple water rights, only the flow rates and volumes for the water rights being changed are additive; for supplemental irrigation water rights, the acres are not. For example, if two water rights being used on 300 acres are being changed on one application and one water right lists 2 CFS and a volume of 100 AF while the other lists 3 CFS and a volume of 200 AF, the flow rate field would show 5 CFS, the volume field would show 300 AF, and the acres field would show 300 acres.

There may be exceptions to including Water Right Summary information. If you think it is unnecessary to include information in these fields because it may be confusing to the reader, it will be important to provide a more detailed explanation for how the water right(s) being changed will be used upon issuance in the Proposed Change field within the Change Description section in the database.

Notice Area Document

When preparing to send your application to public notice, you will create a public notice map and a public notice list (details below). Both the map and the list should be incorporated into a Public Notice Area document, for which a template is available in ROCO > Public Notice. 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 at a minimum the list should include the following:

- All water rights considered in the area of potential adverse effect (MCA 85-2-307(4)(f)(i))
- Any purchaser under contract for deed of a property that may be affected by the proposed appropriation
- Any public agency that has reserved waters in the source pursuant to MCA 85-2-316.

In excess of the water rights, individuals, and agencies included in the notice requirements above, there are certain scenarios in which considerations that should be included in deciding on a list extent:

- 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.
- 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. Contact information for consultants or other application representatives must be updated in the database prior to public notice to ensure they receive notice of the application. Each regional office has a list of standard parties of interest for your region (also known as 'standards') - consult with your regional manager if you are unsure of which "standards" to include.

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 with the appropriate Mail Job Type ("PUBLIC COMMENT" or "OBJECTION"). The Mailing Job Number will be used to print labels for the public notice mailing. If you have a long list of water rights to include in the mailing job, you can import an

Excel sheet of the water rights. The sheet must have a specific format – the basin code in column A, the water right number in column B, and the extension in column C. No additional formatting can exist in the Excel sheet, and the columns must not have headers.

For Applications Received on or After Jan. 1, 2024:

Note that if your application is going to public notice for objections, a second mailing job should be created to include both the contacts in the original mailing job (that went to public notice for public comment) plus any contacts who made a public comment but were not on the original public notice mailing list. A second mailing job should always be created for the objection period, even if there is no change to the contents of the original mailing job.

Check the Public Notice Report in the Database

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/in the database mailing job created for the application.

A copy of the Public Notice report must be included with the Public Notice Area document in the application file. Have another Specialist or a Regional Manager review the Public Notice Area document and Public Notice report to ensure the following:

1. All the required information is included and correct (including conditions and all appropriate database coding)
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 and mailing job are finalized
3. The proposed change description is entered in the database
4. The past use of water description is entered into 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 and remarks are entered into the database

Once all these steps are completed, email the **Application Number**, the **PD, and the mailing job number** 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 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 if 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 number, or applicant's name.

Data Entry

Under the **Events Tab** add a **PUBLIC NOTICE-SENT TO CO (PUBLIC COMMENT PERIOD)** event and the date sent.

Notice of Opportunity for Public Comment

The notice of opportunity to provide public comment on an application applies only to applications received **after** Jan. 1, 2024.

A Draft PD or updated Draft PD is sent to public notice of opportunity for public comment when:

- The applicant did not request an extension of time to submit additional information
- If the applicant did request an extension of time to submit additional information and the Draft PD is updated, within 60 calendar days of either:
 - the extension deadline set, or
 - DNRC's receipt of written notice from applicant saying all information has been submitted.

The public comment period is 30 calendar days. There is no "validity ruling" for public comments, the only requirements per § 85-2-307(4), MCA, are:

- (d) A public comment must identify how one or more criteria for the issuance of a permit of a change in appropriation right is not adequately addressed in a draft preliminary determination issued for the application. The Department may adopt additional rules for public comments.
- (e) A person has standing to file a public comment pursuant to this section if the property, water rights, or interests of the person would be adversely affected by the proposed appropriation.

Public comments may be submitted by the public via Form 654: Public Comment on Application, and must be received by the Department on or before the deadline specified in the public notice. The above requirements should be met by correctly completing the Form 654. If public comments are received on an application, the Department will consider the public comments received and update the PD to incorporate and address the issues raised.

Public Comment Storage and Processing Sequence

1. Public Comment is received by NA Central Office in Helena.
2. CO CT Public Notice Reps input "Public Comment Received" event to the application, and adds the public comment into the public comment accordion, including basic comment information (date, name, identified criteria) into the database.
3. During the public comment period, the CO CT scans submitted public comment files and sends them to the RO electronically for consideration in the updated PD. CO will store the physical copies of the public comment files, and will mail them to the regional office only if a valid objection is later received.
4. After the public comment period ends, CO sends the RO the scanned public comment packet to add to the application file.

- a. Note that sometimes there is a lag with the newspapers, so the affidavit and tear sheet does not need to be included in the scanned application file until it is received by the regional office.
5. Prior to sending the non-draft PD to the applicant, the RO will add an issue description to each comment criterion of each public comment. **Each issue description should be 1-3 sentences in length.**

Notice of Opportunity to Object

For Applications Received Prior to Jan. 1, 2024:

All applications received prior to Jan. 1, 2024 go to public notice of opportunity to object. The standard public notice period for objections for pre- HB114 applications is 45 calendar days. A member of the public with standing to object pursuant to § 85-2-308(3) can object to an application via the submission of a correct and complete Objection Form (Form 611). The Central Office processes objections.

For Applications Received on or After Jan. 1, 2024:

Public notice of opportunity to object to an application is sent out after the public comment period ends if public comments were received, per § 85-2307(5)(b), MCA. After receiving public comments, the Department has 30 calendar days to consider and incorporate public comments that were received on an application's Draft or Updated Draft PD, and issue a non-draft PD to go to public notice for objections. See the "Updating the PD" section above for more information on updating the PD.

The public notice period for objections is 30 calendar days. A member of the public with standing to object pursuant to § 85-2-308(3), MCA can object to an application on the criteria for which public comments were received during the public comment period, via the submission of a correct and complete Objection Form (Form 611). For example, if an application received public comments on the adverse effect and beneficial use criteria, an objection could not be filed related to the possessory interest criterion. The criteria commented on and specific issues raised will be described in the updated PD and the public comment accordion of the database (for internal records). The Central Office processes objections. If no public comments were received, the application does not go to public notice of opportunity to object.

Finalizing the Change Application File

After an application has gone through Public Notice, the Change Authorization either needs to be issued or the file needs to be transferred to the Hearings Unit if valid objections were received. Follow the relevant steps below:

1. 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. This delay is to account for potential lag time in objection receipt. Alternatively, if objections are received, the CO CT will let you know that the deficiency review process is beginning on those objections. Once the objections are through the validity ruling, the CO CT will contact the RO specialist to pass along the relevant documents for the specialist to compile the scanned file, for the specialist to then either issue the authorization or transfer the file to Hearings. If a valid objection is received, the CO CT will send the public notice packet through physical mail. Otherwise, the packet will be sent digitally only.
2. Double check the database to be sure the coding corresponds with the decision document, including any conditions or measurement requirements.
3. If no valid objections are received, the RO needs to adopt the PD and issue the authorization. Prepare the Final Order adopting the Preliminary Determination. The Final Order template letter (A7) is located

in G:\WATER_RT\ROCO FOLDER\#HB114\Application Template Letters. Make a copy of the signed Final Order for the file.

- a. 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). That is, 'authorization' vs. 'application', 'appropriator' vs. 'applicant'.
 - b. In the Events accordion of the application page, make sure all applicable events have been entered. Also, enter the Issued event and the Project Completion Notice Due date. For temporary changes, remember to add the Temporary Change/Permit Expiration event. Generally, review the Events to ensure they are accurate. See the Standard Application Processing Events Table at the end of this document for reference.
 - c. Print the original Change Authorization on legal size (ivory) paper for the applicant and make a copy for the file (and copies for any consultants). Send the original to the applicant with a cover letter which includes a statement about when the project completion notice (Form 618) is due, and enclose a copy of Form 618. A cover letter template can be found in ROCO.
4. Whether or not valid objections were received, compile the final PDF for the application and place in your office's network drive for the Records Unit to upload the file to FileNet.
 - a. For applications received after 1/1/24, regional offices must transfer files digitally only and cannot send physical files to Records for scanning/uploading.
 - b. For applications received prior to 1/1/24, digital transfer of files is also expected, however regional offices can send a file to Records physically if for some reason the file needs extra scanning attention. In this instance, the regional office must alert the Records Unit in advance and let them know why this file needs their scanning attention.
5. For general instructions about the process for scanning and uploading, refer to the Digital Transfer of Records instructions maintained by the Data Quality & Standards Program. Refer to the File Organization list below to arrange your files in the standard order. If your application file includes a Form 633 or other Excel file, separately save this document to the network drive and have it uploaded under the "File" index. Make sure that the PDF for the main application file includes the Excel File Placeholder, alerting viewers to the fact that the Excel file exists and is associated with the application.
 - a. As with all files you are transferring for Records to upload, pay close attention to the file naming conventions.
 - i. For a change application, use the "File" index, the "Change Authorization" water right type, and the application number (rather than the water right number of the water right being changed). The resulting file name should follow the convention: FILE^CHANGE AUTHORIZATION^BASIN^APPLICATION NUMBER^^.pdf
 - ii. Note that scanned documents for a change application (both in WRIS and the WRQS) do not appear under the scanned documents for the main water file(s) being changed, and instead are viewable as a separate set of scanned documents for all water right versions attached to the change application.
 - b. If your application was received on or after 1/1/24, then you have already been compiling the PDF for the purposes of uploading the pending application to our website (see the Pending Application Website Posting section of this document). You should only need to add a few final documents to the PDF before it is ready to be uploaded.
 - c. If your application was received on or after 1/1/24, then you may need to scan the entire application file at this point.
 - d. As with scanning other types of applications, it is the responsibility of the regional office to ensure their compiled PDF is accurate, complete, and of good viewable quality. The Records

Unit will not review the PDF for scanning quality. At least one other person in the regional office should review the final PDF for quality assurance purposes before you transfer it to the network drive to be uploaded.

6. If the application did not receive valid objections and you don't need to transfer it to the Hearings Unit, you can recycle any physical files for the application once you confirm the file is uploaded and is accurate on FileNet.
7. If the application received valid objections and you need to transfer the application to the Hearings Unit, compile the PDF and have it uploaded to FileNet (along with the separate Excel file(s), if necessary). Once you confirm the file is uploaded and accurate on FileNet, send an email to Jamie Price alerting her that this file is available and you are transferring it to her. Retain any physical parts of the file in the regional office until the hearings process is complete. Note that any documentation from the Hearings process will be separately uploaded to FileNet by the Hearings Unit and will be categorized under the "Hearings" index.

Note: If your Application required a letter from the Sage Grouse Habitat Program, notify the program of the issuance of the change by emailing Therese Hartman (SGHP Program Manager) @ thartman@mt.gov.

File Organization and Documentation

File Organization

Please keep in mind that you can review and organize files (applications and materials) in whatever manner you like while you are working on them. It may be the case that some of the files associated with the application will start as digital files that do not need to be printed. In this case, you may be compiling both physical and digital files associated with the application. Having an effective organizational method to track the various documents is essential.

All files should ultimately be organized in the same manner to aid in consistency. When the public or Department staff is looking at the scanned documents it 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 logical order. Organization should not be changing from one scanned document to the next. The standard file order for a permit or change application is listed below. Follow this order as best you can, using your judgment to place non-standard files in an order that makes sense. Note that this order is consistent with and builds on the order from the Pending Application Website Posting section of this document.

File Order

- Permit or Change Authorization
- Final Order adopting the PD
- Public Notice for Objections package (including objections received, any associated deficiency correspondence, PN affidavit & tear sheet)
- Public Notice for Objections map & notice list
- PD (non-draft)
- PD cover letter
- Public Comment package (notice report and files)
- Public Notice for Public Comment map & notice list
- Updated Draft PD (if applicable)
- Updated Draft PD cover letter (if applicable)

- Additional information submitted by applicant following issuance of Draft PD (if applicable)
- Draft PD
- Draft PD cover letter
- Environmental Assessment
- Correct & complete determination letter
- Deficiency letter response & any attachments (if applicable)
- Deficiency letter (if applicable)
- Application as filed and attachments
- Technical analyses (if applicable at this stage)
- Preapplication Meeting Form and attachments (if applicable)
- Any other relevant materials or correspondence

Flags

File flags are used to divide application content for ease in file navigation. The standard permit & change application file flags for applications received after Jan. 1, 2024 is described below. Additional flags may be used at the processor's discretion to best organize the file. You can find all of the flags that are available to be used on the ROCO (N:) drive.

- Excel File Placeholder
 - Add this document in the scanned application file as a placeholder in the location of excel files. (e.g., aquifer test data, list of legal demands, etc.)
- Preapplication Materials
 - Preapplication Meeting Request
 - Preapplication Meeting Form (Parts A & B)
 - All attachments
 - All correspondence prior to application receipt
- Variance Request
 - Variance Request Form
 - WSB Variance Justification
 - Approval or Denial of Request
- Technical Analyses/ Scientific Credibility Review
 - Departmental Technical Analysis or Scientific Credibility Review
 - Any correspondence related to the TA/SC (i.e., challenging/ appealing the TA/SC review, error resolution, etc.)
- Application Materials
 - Application form & all addenda & attachments
- Existing Rights
 - Abstracts of Supplemental, Associated, or "in Conjunction with" water rights
- Processing Materials
 - Work copies of any applicant-submitted information
 - Deficiency Letter
 - Deficiency response
 - Correct & complete determination
 - Any other correspondence with the applicant prior to completion of Draft PD
- Draft Preliminary Determinations
 - Draft PD
 - Draft PD cover letter
 - Updated Draft PD
 - Updated Draft PD cover letter
- Public Notice for Public Comment & Environmental Documents
 - Environmental Assessment & supporting documents

- Public Notice for Public Comment Package
 - Notice Area Map
 - Notice Area List
 - Public Comment Letter to Applicant
 - Public Comment Letter to Editor
 - Public Comment Certificate of Service
 - Public Comment Invoice & tear sheet
 - Public Comment return mail
 - Public Comment files and associated documents
- PD (non-draft) Flag
 - PD
 - PD cover letter
- Public Notice for Objections Flag
 - Public Notice for Objections Package
 - Notice Area Map
 - Notice Area List
 - Public Notice for Objections letter to applicant
 - Public Notice for Objections letter to editor
 - Public Notice for Objections certificate of service
 - Public Notice for Objections invoice and tear sheet
 - Public Notice for Objections return mail
 - Objection files and associated documents
- Hearings (if applicable)
- Authorization
 - Permit or change authorization
 - Final Adoption

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 (you) 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.

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 purpose 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 (DNRC Water Calculation Guide, formerly 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 (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 MCA, 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 ¼ 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)
- [DNRC Water Calculation Guide](#) (formerly 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 0.1 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 person may use water for a temporary emergency appropriation necessary to protect lives or property without prior approval from the department, but the appropriation must cease immediately when the water is no longer required to meet the emergency.

...

(3) 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 emergency fire protection, emergency fire training, and/or emergency fire-related operations (must be via well or enclosed storage). See the form and form guidance 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 catchall 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.

- Depending on the project proposal details and source conditions, an applicant may either apply for a new permit independent of other existing water rights, a new permit conditioned upon existing water rights, or file a change application to add or change a purpose on an existing water right to account for a new nonconsumptive use.
- 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 conditioned on operation in accordance with the preexisting water right. 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.

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. A project completion notice is required for all temporary changes. The project completion notice due date must be no later than the expiration date of the temporary change. 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 nonprofit (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 four 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
- 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.

Historically 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 reentered 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 return flow report.

Historically 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 return flow report. 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 nonuse 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. WSB will complete a return flow analysis for instream flow change applications. If the applicant provides a return flow analysis of their own, WSB 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) Nonuse (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 nonuse, new users since nonuse, 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, creditable 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.](#)

Lawn and Garden Irrigation

Multiple methods have been used over the years to calculate the amount of water needed for the lawn and garden purpose on a water right. For the purposes of calculating historical use (diverted and consumed volume) for the lawn and garden purpose on a water right, the following methodology should be applied:

Historical Consumptive Use

First, determine the total area of lawn and garden irrigation. Next, using the DNRC Consumptive Use Methodology-Turf Grass memo, calculate the IWR dry year requirement using the appropriate weather station relative to the location of the water use. Convert the calculated dry year requirement for turf grass to feet and multiply that number by the number of acres found to calculate historical consumptive use for the lawn and garden irrigation. No management factor will be included in the consumptive use calculation; it has been determined that lawn and garden irrigation is more likely to have a higher consumptive use than the management factor would suggest because people are more likely to keep their grass very green. Department practice has been to not consider irrecoverable losses in these cases, to overcome a potential overestimation in consumptive use caused by not using a management factor. It is important to note that if the water right was issued with a volume for lawn and garden use, the consumptive use found cannot exceed the issued amount on the right.

Historical Diverted Volume

To calculate the historical diverted volume, a 70% sprinkler field application efficiency will be applied to the calculated consumed volume. It is important to note that if the water right was issued with a volume for lawn and garden use, the diverted volume found cannot exceed the issued amount on the right.

*If an applicant wishes the Department to consider a diverted or consumed volume that differs from that determined using the Department's methodology, they may submit a HUA with their change application form and provide additional facts and data which the Department should consider when evaluating historical use.

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(8)(c)(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, except for marketing for mitigation.** 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 (§ 85-2-402(6), 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; see the PD templates and consult Central Office for more information.

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. Enter a place of use information remark listing the service area for record keeping. 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 Aug. 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 for a project completion deadline, the facility must be built, and water use measurements must be provided, regardless of when the water marketing 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 toward 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 appropriator 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.

As with the Marketing purpose, Marketing for Mitigation/Aquifer Recharge requires water to be marketed by the applicant to other users. An applicant or water right owner cannot enter into a valid contract for Marketing for Mitigation water with themselves (See 12/15/2022 Memo addressing question: Marketing for Mitigation Contract with Oneself).

*Per the HB24 Implementation Memo, the Water Sciences Bureau needs to assess the proposed marketing for mitigation reach for its reasonableness. This assessment is a necessary contribution to the Department's finding that the proposed marketing for mitigation reach can generally provide "effective mitigation." If you receive an application for a Marketing for Mitigation change, be in touch with the Central Office.

*Marketing for Mitigation PDs may need review by legal or extra time to review in Central Office, so please leave ample review time and maintain communication with CO.

Helpful References:

- [HB 24 Implementation Document](#)
- [12/15/2022 Memo addressing question: Marketing for Mitigation Contract with Oneself](#)

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 from using water for a municipal beneficial use. "[Municipality](#)" means an incorporated city or town organized and incorporated under Title 7, Chapter 2 of MCA. 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.

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 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.

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
- town houses
- 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 Water Calculation Guide, formerly 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.

Stock 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.

Ponds and Reservoirs

**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 June 7, 2023. Evaporation from a pond/reservoir is always considered consumptive.

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:

Technical Memorandum: Pond and Wetland Evaporation/Evapotranspiration

[USDA Field Manual, Chapter 11 Ponds and Reservoirs](#)

Appendices

Standard Application Events List

Pre-HB 114	Post-HB 114	Event Name	Response Due Days	Notes
PAMH	PAMH	PREAPPLICATION MEETING HELD	180	The database automatically adds this event when you create a 600P or 606P.
	PMFR	PREAPPLICATION MEETING FORM RECEIVED		Enter this event for the date you receive the completed preapplication meeting form from the applicant. Staff should also manually enter the PMF acceptance or rejection deadline (5 business days after PMF receipt) into the "response due" section.
	PMFA	PREAPPLICATION MEETING FORM ACCEPTED	45	Enter this event for the date you determined the preapplication meeting form is adequate for technical analyses. Staff should also manually enter the Technical Analyses Report/ Scientific Credibility Review deadline (45 days after PMF acceptance) into the "response due" section.
	PMFX	PREAPPLICATION MEETING FORM RETURNED		Enter this event if you return the preapplication meeting form to the applicant. When you add this event, delete the Preapplication Meeting Form Received event, and leave a comment with this 'Returned' event noting the original date the form was received.
CWSB	CWSB	CHECKLIST SUBMITTED TO WSB		Enter this event for the date you send the checklist to WSB (to be used whether or not a preapplication meeting occurs).
	TARW	TECHNICAL ANALYSES RECEIVED FROM WSB		Enter this event for the date you receive the technical analyses from WSB (to be used whether or not a preapplication meeting occurs).
	TASA	TECHNICAL ANALYSES SENT TO APPLICANT		Enter this event for the date you send the technical analyses to the applicant (to be used whether or not a preapplication meeting occurs. If no preapplication meeting occurs, send the technical analyses to applicant with draft PD.)
	SCRS	SCIENTIFIC CREDIBILITY REVIEW SENT TO APPLICANT		Enter this event for the date you send the scientific credibility review to the applicant (to be used whether or not a preapplication meeting occurs. If no preapplication meeting occurs, send the credibility review to applicant with draft PD.)
PAME	PAME	PREAPPLICATION MEETING EXPIRED		The database will automatically add this event if either of the following occurs: -The preapplication meeting was held 180+ days ago AND the preapplication meeting form has not been received. -A preapplication meeting was held AND the technical analyses or scientific credibility review were sent to the applicant 180+ days ago AND the application form has not been received.
	TDOR	TERMINATED / DENIED / REVOKED / EXPIRED		Enter this event if the applicant withdraws their preapplication meeting form (decides to not continue the preapplication process).
FRMR	FRMR	FORM RECEIVED		The database will automatically add this event when you change the application type from 600P to 600 or 606P to 606 OR when you create a 600 or 606 (if no preapplication meeting occurred).

	MNEP	MOVED TO NON-EXPEDITED PATHWAY		Add this event if a preapplication meeting was held, but the Department has moved the application to the non-expedited timeline, for example if the application was received and is different from the preapplication meeting form (ARM 36.12.1302(6)(a)), or if an amendment is received that causes the Department to update its technical analyses (ARM 36.12.1401(3)(b)).
HB40	HB40	POSTED TO WEBSITE		CO will add this event when they post the Notice of Receipt online.
HYDR		SENT TO DEPARTMENT HYDROGEOLOGIST/HYDROLOGIST		No longer use this event for permit and change applications, use the CHECKLIST SUBMITTED TO WSB event instead.
DELS	DELS	DEFICIENCY LETTER SENT (FIRST)		Enter this event for the date you send a deficiency letter.
DEFR	DEFR	DEFICIENCY RESPONSE RECEIVED		Enter this event for the date a response to your deficiency letter is received.
VRRR	VRRR	VARIANCE REQUEST RECEIVED		Enter this event for the date a variance request (Form 653) is received.
ACAC	ACAC	APPLICATION DEEMED CORRECT & COMPLETE		Enter this event for the date an application is correct and complete.
TDOR	TDOR	TERMINATED / DENIED / REVOKED / EXPIRED		Enter this event for the date an application is terminated, revoked, or expires.
WTIM		WAIVER OF TIMELINE FORM RECEIVED		The option to waive timelines no longer exists for applications received on or after 1/1/24.
PDRE	PDRE	PD SENT TO CO FOR REVIEW		Enter this event for the date you send your PD (or draft PD for post-HB 114 applications) to CO for review.
PDRR	PDRR	PD RETURNED TO RO AFTER REVIEW		CO will enter this event when they return the PD (or draft PD for post-HB 114 applications) to you after their review.
AME1		AMENDMENT TO APPLICATION RECEIVED (MINOR)		The option for a minor amendment exists only for pre-HB 114 applications.
AME2	AME2	AMENDMENT TO APPLICATION RECEIVED (PRIORITY DATE RESET)		Enter this event for the date an Application Amendment Form (Form 655) is received for a permit application IF the amendment changes the nature or scope of the application. This event changes the priority date on the water right but does not change the Form Received date for the application. When you add this event, also manually change the date on the Form Received event to be the date of amendment receipt. Leave a comment for the Form Received event with the original date the form was received. If an Application Amendment Form is received for a permit application but the amendment does NOT change the nature or scope of the application, instead use the event APPLICATION AMENDMENT FORM RECEIVED (TIMELINES RESET). Consider whether you also need to add the P114 or MNEP events.

	AME3	APPLICATION AMENDMENT FORM RECEIVED (TIMELINES RESET)		Enter this event for the date an Application Amendment Form (Form 655) is received for a permit or change application. If the amendment is for a permit application and the amendment also changes the nature or scope of the application, instead use the event AMENDMENT TO APPLICATION RECEIVED (PRIORITY DATE RESET). When you add this 'TIMELINES RESET' event, also manually change the date on the Form Received event to be the date of amendment receipt. Leave a comment for the Form Received event with the original date the form was received. Consider whether you also need to add the P114 or MNEP events.
	P114	PRE - HB 114 APPLICATION		Enter this event if the application was received prior to 1/1/24 and an amendment on the application is received after 1/1/24. Adding this event will document that the application should be treated as a pre-HB 114 application, even though the Form Received event date is now after 1/1/24 (because you changed it when the amendment was received).
	DPDA	DRAFT PD TO GRANT SENT TO APPLICANT		Enter this event for the date you send a Draft PD to Grant to the applicant.
DPDG	DPDG	DRAFT PD TO GRANT WITH MODIFICATIONS SENT TO APPLICANT	-	Enter this event for the date you send a Draft PD to Grant with Modifications to the applicant.
DPDD	DPDD	DRAFT PD TO DENY SENT TO APPLICANT	-	Enter this event for the date you send a Draft PD to Deny to the applicant.
EACS	EACS	EA COMPLETED & EMAILED		Enter this event for the date your EA will be posted online.
EXTR	EXTR	EXTENSION REQUESTED AFTER DRAFT PD		Enter this event for the date an applicant requests an extension of time after you send them a Draft PD.
EXTY	EXTY	EXTENSION GRANTED AFTER DRAFT PD		Enter this event for the date you grant an applicant's request for an extension (after you sent them a Draft PD). This event is used with the EXDL event. The EXDL event date is the extension deadline.
EXDL	EXDL	EXTENSION DEADLINE		Enter this event when you grant an extension; enter the event date as the deadline you establish by which an applicant must submit additional information. This event is used with the EXTY event. The EXTY event date is used to track the date you granted the extension.
EXIR	EXIR	EXTENSION INFORMATION RECEIVED		Enter this event to document the Department has received written notice from the applicant that all additional information has been received during the granted extension period.
UDPD	UDPD	UPDATED DRAFT PD SENT TO APPLICANT AFTER EXTENSION		Enter this event for the date the Department sends an updated Draft PD to the applicant after considering new information received during the granted extension period.
	SFPC	PUBLIC NOTICE-SENT TO CO (PUBLIC COMMENT PERIOD)		Enter this event for the date you send public notice information to CO for the public comment period.
	PNCS	PUBLIC NOTICE SENT TO NEWSPAPER (PUBLIC COMMENT PERIOD)		CO will enter this event when they send public notice information to the newspaper for the public comment period.
	PCWV	PUBLIC NOTICE PUBLIC COMMENT PERIOD (PUBLISHED)	30	CO will enter this event to document the date the public notice for public comment will be published in the newspaper.
	PCDL	PUBLIC COMMENT DEADLINE		CO will enter this event to document the public comment deadline (30 days after the published date).

	PCRR	PUBLIC COMMENT RECEIVED		CO will enter this event if one or more public comments is received.
	PCIR	PUBLIC NOTICE COMMENT PERIOD INFO RETURNED TO RO		CO will enter this event when all public comments and associated public notice documentation (affidavit, tear sheet, invoice) have been sent to the RO. CO will digitally send comments to RO as they are received, this event will document when all comments and documentation have been physically sent to the RO at the end of the comment period.
PDGC	PDGC	PD TO GRANT COMPLETED		Enter this event for the date you send a PD to Grant (non-draft) to the applicant.
PDGM	PDGM	PD TO GRANT WITH MODIFICATIONS COMPLETED		Enter this event for the date you send a PD to Grant (non-draft) with Modifications to the applicant.
PDDC	PDDC	PD TO DENY COMPLETED		Enter this event for the date you send a PD to Deny (non-draft) to the applicant.
SFPN	SFPN	PUBLIC NOTICE-SENT TO CO (OBJECTION PERIOD)		Enter this event for the date you send public notice information to CO for the objection period.
PNSN	PNSN	PUBLIC NOTICE SENT TO NEWSPAPER (OBJECTION PERIOD)		CO will enter this event when they sent public notice information to the newspaper for the objection period.
OBDL	OBDL	OBJECTION DEADLINE		CO will enter this event to document the objection deadline (30 days after the published date).
PNWV	PNWV	PUBLIC NOTICE OBJECTION PERIOD (PUBLISHED)		CO will enter this event to document the date the public notice for objections will be published in the newspaper.
OBRR	OBRR	OBJECTION RECEIVED		CO will enter this event if one or more objections are received.
OBIV	OBIV	OBJECTION INVALID		CO will enter this event if objections were received but all are invalid.
OBRC	OBRC	PUBLIC NOTICE OBJECTION PERIOD INFO RETURNED TO RO		CO will enter this event when they mail the objection period public notice packet to the regional office.
ISSU	ISSU	ISSUED		Enter this event for the date you issue an application.
PDDA	PDDA	PD TO DENY ADOPTED		Enter this event for the date you adopt the PD.
PDGA	PDGA	PD TO GRANT ADOPTED		Enter this event for the date you adopt the PD (at same time as Issued event).
PDMA	PDMA	PD TO GRANT WITH MODIFICATIONS ADOPTED		Enter this event for the date you adopt the PD (at same time as Issued event).
PCND	PCND	PROJECT COMPLETION NOTICE DUE		Enter this event for the date the Project Completion Notice will be due (make sure you enter this event before you print the authorization so that the due date will appear on the document).
PCNR	PCNR	PROJECT COMPLETION NOTICE RECEIVED		Enter this event when the Project Completion Notice is received.

RACI Diagram: Permit & Change Application Processing

What's a RACI diagram?

The RACI diagram system is a management tool used to define roles & responsibilities within a process or project, labeling specific roles as being “responsible”, “accountable”, “consulted”, or “informed” for a given task.

Letter	Word	Meaning
R	Responsible	The responsible person is the one who does the work to complete the task or create the deliverable. Every task should have at least one responsible person and could have several.
A	Accountable	The accountable person in the RACI equation delegates and reviews the work involved in a project. Their job is to make sure the responsible person or team knows the expectations of the project and completes work on time. Every task should have only one accountable person and no more. The accountable person needs to make sure timelines for the specific task are being met.
C	Consulted	Consulted people provide input and feedback on the work being done in a project. They have a stake in the outcomes of a project because it could affect their current or future work.
I	Informed	Informed folks need to be looped into the progress of a project but not consulted or overwhelmed with the details of every task. They need to know what's going on because it could affect their work, but they're not decision makers in the process.

Permit and Change RACI Diagram

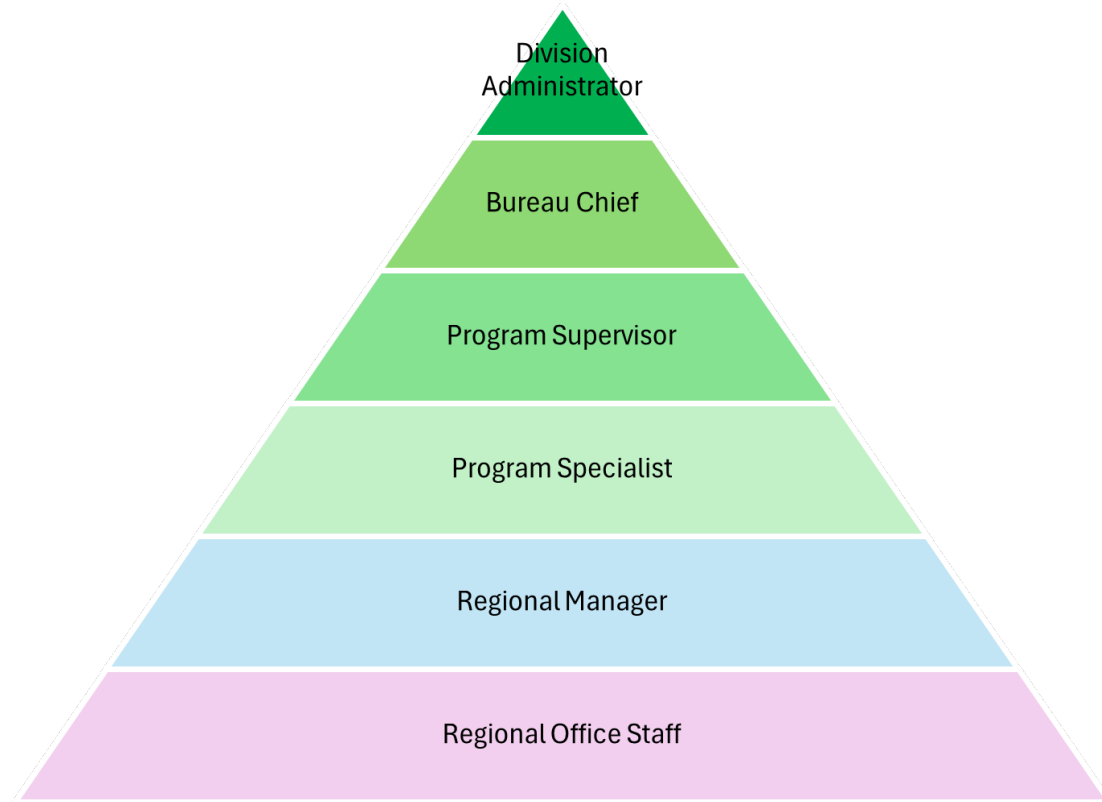
Process Section	Step in Process	Applicant	RO Specialist	RO Manager	NA Prog. Specialist	NA Prog. Sup.	Regional Operations Manager	WSB Hydrologist	WSB GW Sec. Sup.	CO CT	DQS Prog. Sup.	WRB BC	Notes
Scoping	Scoping Meeting	A	R	R	C			I					
Pre-application	Preapplication Meeting	A	R	R	C			R					
	Adequacy Review		R	A				R					
	RO Technical Analyses	I	R	A									Regional Manager accountable for Technical Analyses completed by RO
	WSB Technical Analyses	I	I	I				R	A				WSB GW Section Supervisor accountable for Technical Analyses completed by WSB
	Scientific Credibility Review	I	I	I				R	A				Scientific credibility review completed by RO specialist and/or WSB Hydrologist. Regional Manager track for ensuring scientific credibility review completed on time.
	Review of Tech Analyses & Scientific credibility review for consistency with Department standards			R			A						
Application received	Form Acceptance	I	R	A									Regional manager accountable for ensuring RO staff and WSB hydrologist know application has been received

Application received	Deficiency review	I	R	A	C (as requested by the RO)			C (as needed)					
	Deficiency letter	I	R	A	C (as requested by the RO)								
	Review of deficiency response		R	A	C (as requested by the RO)			C (as needed)					
	Correct & complete letter (includes scanning step)	I	R	A									
	Composing draft PD		R	A	C (as requested by the RO)								
	RO Review of Draft PD			R	C (as requested by the RO)		A						
	CO Review of Draft PD				R	A		C (as needed)				I (as needed)	
	Escalate PD review to Legal			I	I	R						A	NA program supervisor and WRB BC coordinate as needed
	Resolution of CO/RO decision document disagreement			R		R	A					A	Manager and Program Supervisor escalate to Regional Ops Manager and Bureau Chief for resolution. If still can't resolve, escalate to Div. Admin.
	Environmental Assessment		R	A									
	All materials scanned		R	A									
	Issuance/ mailing draft PD	I	R	A									
	Extension of time review (if applicable)		C	A, R									

Application received	Updated draft PD (if extension granted)	I	R	A	C								
	Database coding of application		R	A									
	Preparation of public notice list		R	A	C (as needed)								
Public comment period	Notice to CO that app ready for public comment		R	A						I			
	Issue public comment notice		I	I						R	A		
	Database entry/ scanning of public comment		I	I						R	A		
	Review/ evaluation of public comment		R	A	C								
	Preliminary Determination (based on public comment)		R	A	C								
Objection period	Notice to CO that app ready for objection period		R	A						I			
	Database entry/ scanning of objection									R	A		
	Review objection for validity											A, R	
	Send application to hearings unit (if valid objection)	I	I	I						R		A	
Issuance of Permit/ Change	Preliminary Determination Adoption	I	R	A									

Question Escalation

The pyramid below represents how procedure and policy questions should be answered for water right permitting. If an individual in one of the below-mentioned roles cannot answer the question with certainty, they escalate to the level above them.



Equation Resources

Conveyance Losses 36.12.1902(10)

Figure 2-50 Method to estimate seepage losses from irrigation delivery systems (adapted from USDA 1985)

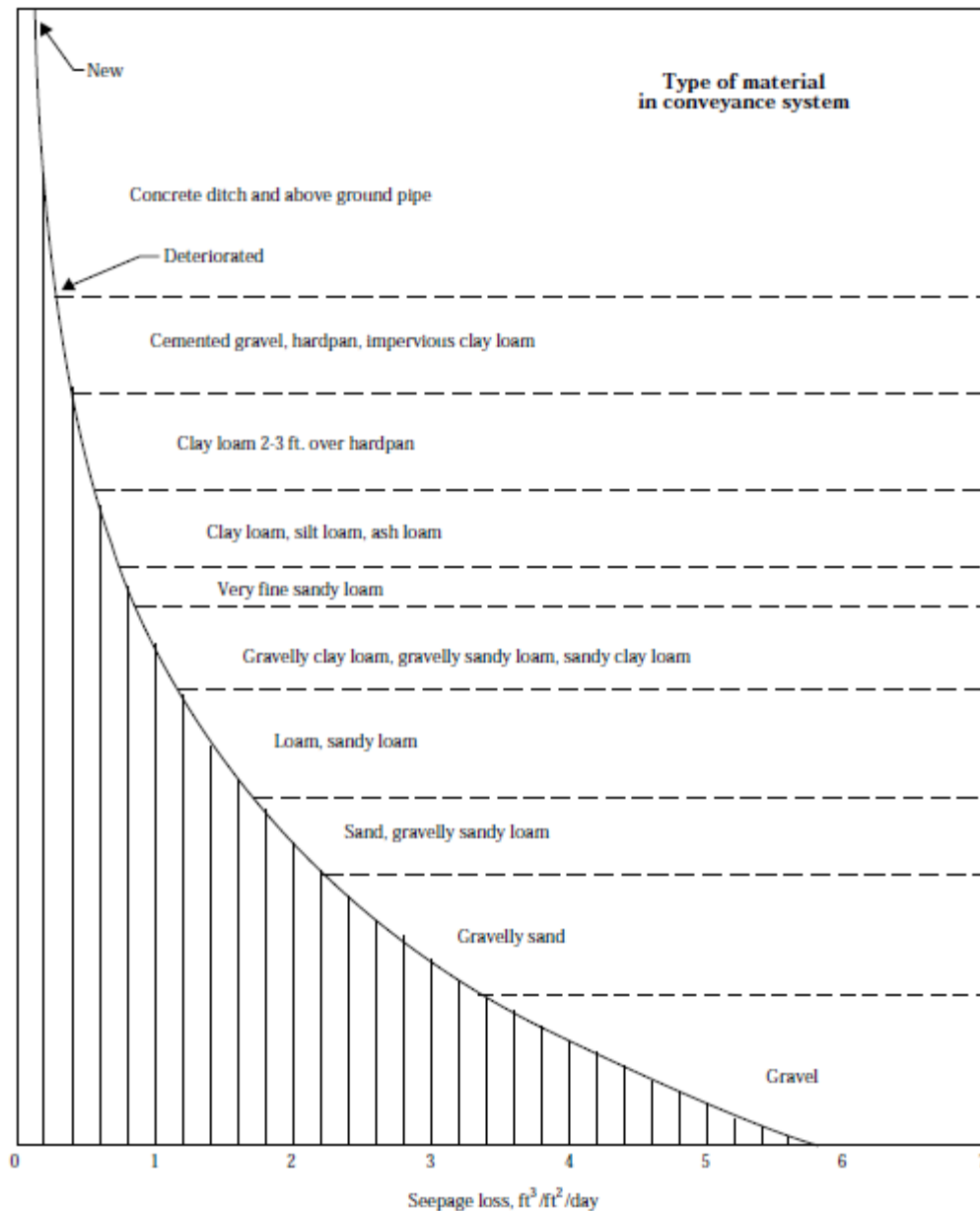


Figure 2-50. Method to estimate seepage losses from irrigation delivery systems (adapted from USDA 1985)

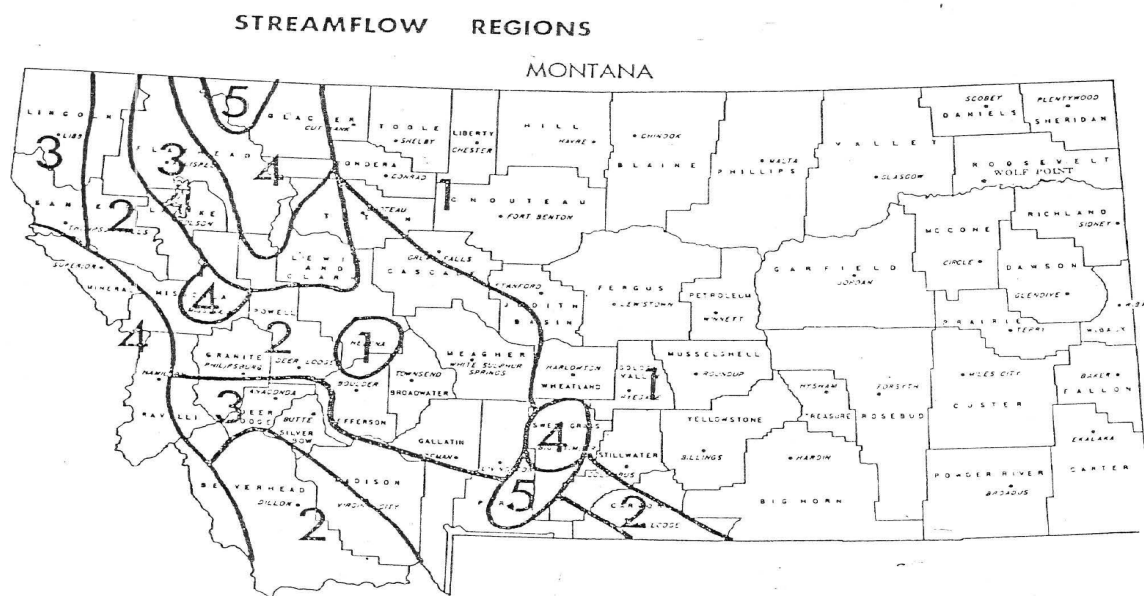


EXHIBIT X-14 (cont.)

Figure 1: Streamflow Regions of Montana for Orsborn's Equation

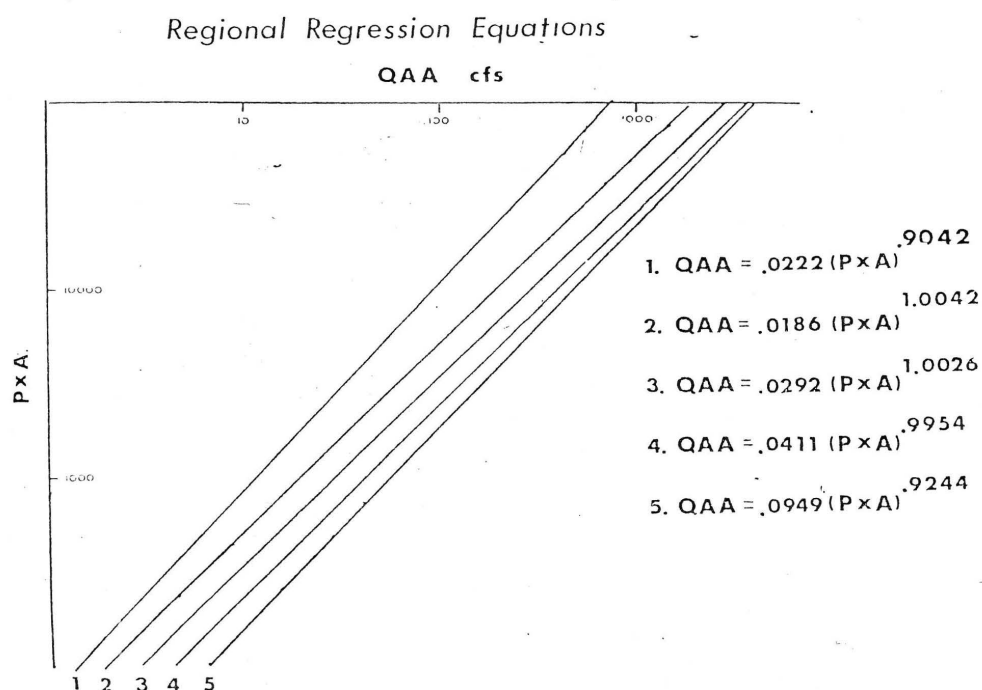


EXHIBIT X-14 (cont.)

Figure 2: Regional Regression Equations

Irrigation Climatic Areas

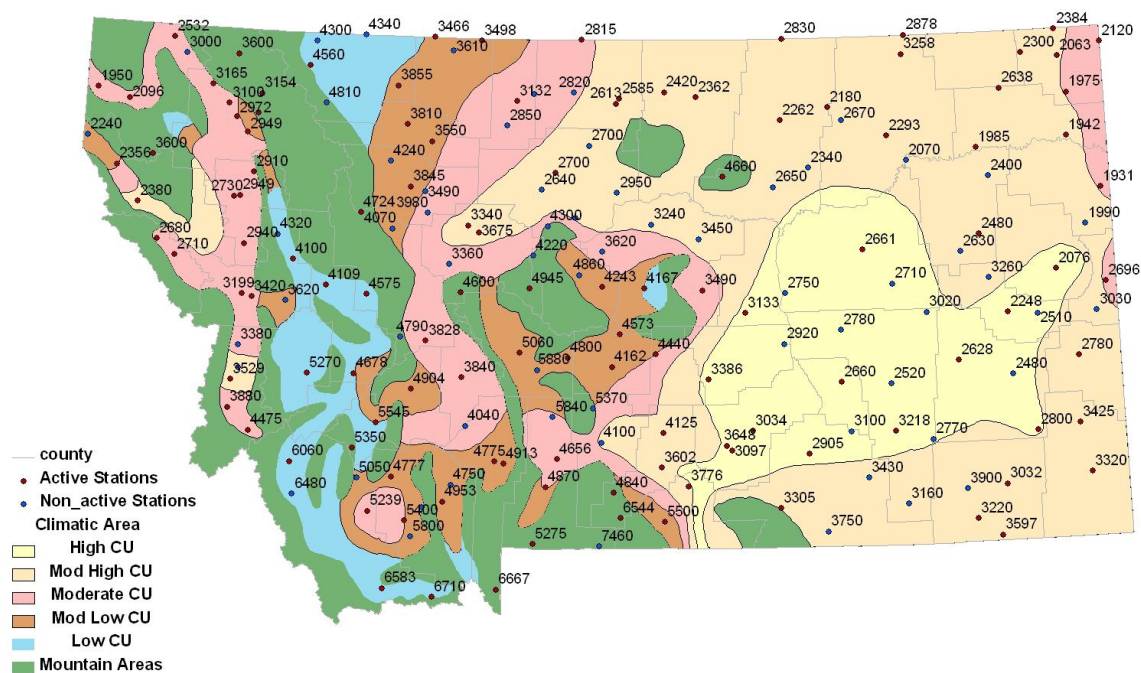


Figure 1: Irrigation Climatic Areas of Montana

Table 1: NASS county data broken into four time periods.

Ag-Stats (County) Average Irr. Yield (tons/ac)

	1964- 1973	1964- 2006	1973- 2006	1997- 2006
Beaverhead	2.54	3.14	3.30	3.52
Big Horn	2.45	3.26	3.48	3.90
Blaine	2.76	2.94	2.99	3.10
Broadwater	3.15	3.52	3.61	3.96
Carbon	2.84	3.17	3.26	3.45
Carter	1.74	2.32	2.48	2.45
Cascade	2.56	3.00	3.13	3.52
Chouteau	2.53	3.02	3.14	3.77
Custer	2.80	3.49	3.70	4.17
Dawson	3.21	3.49	3.59	4.07
Fallon	2.37	2.38	2.38	2.37
Fergus	1.88	2.40	2.53	2.63
Flathead	3.32	3.53	3.58	3.66
Gallatin	2.90	3.47	3.63	3.89
Garfield	2.21	2.49	2.57	2.34
Glacier	2.22	2.64	2.74	2.75
Golden Valley	2.49	2.57	2.61	2.57
Granite	2.64	2.68	2.67	2.95
Hill	2.66	2.87	2.94	2.97
Jefferson	2.30	2.81	2.94	3.06
Judith Basin	1.95	2.53	2.69	2.72
Lake	2.53	3.04	3.17	3.15
Lewis & Clark	2.40	2.99	3.15	3.18
Liberty	2.29	2.66	2.75	2.67
Lincoln	2.13	2.47	2.55	2.66
Madison	2.53	2.94	3.06	3.23
McCone	2.37	2.85	2.98	3.28
Meagher	2.13	2.52	2.61	2.91
Mineral	2.65	2.92	2.98	3.00
Missoula	2.94	2.88	2.86	2.94
Musselshell	2.60	2.96	3.05	2.92
Park	2.26	2.55	2.62	2.68
Petroleum	2.14	2.37	2.43	2.10
Phillips	2.62	2.62	2.62	2.63
Pondera	2.72	3.01	3.09	3.19
Powder River	1.90	2.32	2.44	2.63
Powell	2.31	2.61	2.68	3.07
Prairie	2.92	3.46	3.61	4.13
Ravalli	3.33	3.62	3.71	4.02
Richland	2.94	3.64	3.83	4.64
Roosevelt	2.45	3.23	3.42	3.93
Rosebud	2.43	3.23	3.44	3.70
Sanders	2.33	2.66	2.74	2.49

Sheridan	2.09	2.97	3.19	3.76
Silverbow	2.36	2.95	3.09	3.21
Stillwater	2.11	2.72	2.85	3.29
Sweet Grass	2.09	2.42	2.51	2.31
Teton	2.95	3.34	3.44	3.79
Toole	2.26	2.77	2.90	3.09
Treasure	2.85	3.77	4.01	4.89
Valley	2.90	3.23	3.34	3.75
Wheatland	1.92	2.32	2.42	2.24
Yellowstone	3.29	3.80	3.95	4.30
State wide average	2.5	2.9	3.0	3.2

Table 2: IWR data for seasonal alfalfa evapotranspiration.

County	Climate Station	Elevation	IWR	IWR	IWR
			Total Seasonal ET(in)	Center Pivot Irrigation Seasonal ET (in)	Flood/Sprinkler Irrigation Seasonal ET(in)
Beaverhead	Dillon	5239	23.92	20.74	18.34
	Wisdom	6060	11.12	9.29	7.34
	Jackson	6480	12.12	10.30	8.35
	Lakeview	6710	13.49	10.67	8.39
	Lima	6583	18.76	16.01	13.75
Big Horn	Busby	3430	26.55	22.88	20.32
	Hardin	2905	33.45	29.96	27.46
	Hysham 25	3100	26.65	22.86	20.25
	Wyola	3750	25.95	21.89	19.19
	Yellowtail Dam	3305	36.97	31.30	28.07
Blaine	Chinook	2420	27.86	23.57	20.80
	Harlem	2362	28.18	24.27	21.62
Broadwater	Townsend	3840	25.24	21.88	19.42
	Trident	4040	27.29	23.31	20.64
Carbon	Joliet	3776	29.24	25.12	22.41
	Red Lodge	5500	22.89	18.41	15.57
Carter	Ekalaka	3425	28.14	23.14	20.13
	Ridgeway	3320	27.18	23.01	20.28
Cascade	Cascade 20	4600	20.16	16.63	14.12
	Cascade 5	3360	25.25	20.75	17.90
	Great Falls	3675	26.81	22.55	19.78
	Neihart	4945	19.80	15.08	12.17
	Sun River	3340	24.27	20.65	18.10
Chouteau	Big Sandy	2700	28.90	24.37	21.52
	Fort Benton	2640	29.05	24.75	21.98
	Geraldine	3130	28.12	23.27	20.30
	Iliad	2950	28.43	24.27	21.55
	Loma	2700	29.54	25.37	22.64
Custer	Shonkin	4300	22.78	16.70	13.32
	Miles City	2628	34.12	29.55	26.68
	Mizpah	2480	30.84	26.57	23.80
	Powderville	2800	32.20	27.68	24.83
Dawson	Glendive	2076	33.90	28.99	26.01
Fallon	Plevna	2780	29.87	25.34	22.48
Fergus	Denton	3620	22.26	18.12	15.39
	Grass Range	3490	26.88	21.93	18.93
	Lewistown	4167	23.10	18.44	15.54
	Roy	3450	27.28	22.78	19.94
	Winifred	3240	25.38	20.75	17.86
Flathead	Creston	2949	22.31	17.81	14.97
	Hungry Horse Dam	3160	24.21	18.06	14.66
	Kalispell	2972	22.73	19.03	16.45

	Olney	3165	19.10	15.16	12.50
	Polebridge	3600	15.39	12.50	10.20
	West Glacier	3154	21.85	16.78	13.74
	Whitefish	3100	23.18	18.61	15.74
Gallatin	Bozeman Exp Farm	4775	23.66	19.55	16.84
	Bozeman MT State	4913	26.26	21.39	18.42
	Hebgen Dam	6667	16.78	12.77	10.09
Garfield	Cohagen	2710	28.83	24.99	22.36
	Jordan	2661	30.52	26.32	23.58
	Mosby	2750	31.79	27.34	24.51
Glacier	Babb	4300	19.07	14.87	12.12
	Cut Bank	3855	22.33	18.60	16.01
	Del Bonita	4340	21.37	17.30	14.61
	East Glacier	4810	17.23	13.26	10.60
	St Mary	4560	21.43	16.60	13.64
Golden Valley	Ryegate	4440	23.87	20.17	17.60
Granite	Philipsburg Ranger	5270	18.32	15.26	12.90
Hill	Fort Assiniboine	2613	29.50	25.20	22.42
	Guilford	2820	25.60	22.06	19.54
	Havre	2585	26.99	23.46	20.94
	Simpson	2815	25.50	22.13	19.67
Jefferson	Boulder	4904	22.64	19.47	17.08
Judith Basin	Moccasin Exp Stn	4243	23.71	19.06	16.17
	Raynesford	4220	23.78	19.05	16.14
	Stanford	4860	24.49	19.69	16.74
Lake	Bigfork	2910	26.26	20.61	17.37
	Polson	2949	27.51	23.23	20.46
	Polson Kerr Dam	2730	28.20	24.08	21.37
	St Ignatius	2940	26.68	22.33	19.53
Lewis & Clark	Augusta	4070	23.95	20.13	17.51
	Austin	4790	21.56	17.96	15.41
	Helena	3828	26.03	22.69	20.23
	Holter Dam	3490	30.80	26.61	23.88
	Lincoln Ranger Stn	4575	18.23	15.22	12.87
Liberty	Chester	3132	25.09	21.74	19.28
	Joplin	3300	24.55	21.40	19.01
	Tiber Dam	2850	28.88	25.46	22.98
Lincoln	Eureka Ranger Stn	2532	27.13	23.26	20.63
	Fortine	3000	22.46	18.69	16.09
	Libby Ranger Stn	2096	27.22	23.71	21.20
	Libby	3600	16.25	13.36	11.06
	Troy	1950	26.97	22.68	19.90
Madison	Alder	5800	19.99	16.75	14.33

McCone	Ennis	4953	23.26	19.71	17.19
	Glen	5050	22.61	20.01	17.81
	Norris	4750	29.19	23.97	20.88
	Twin Bridges	4777	21.94	19.22	16.98
	Virginia City	5770	21.77	18.13	15.57
	Brockway	2630	27.15	23.35	20.74
	Circle	2480	29.30	25.01	22.23
	Fort Peck Power Plnt	2070	32.50	28.16	25.37
		2400	29.34	24.65	21.74
Meagher	Vida				
	Lennepe	5880	17.71	14.38	11.93
	Martinsdale	4800	21.34	17.73	15.19
Mineral	White Sulphur Spr	5060	22.30	18.89	16.41
	St Regis Ranger Stn	2680	23.36	20.05	17.61
	Superior	2710	28.31	24.54	21.94
Missoula	Lindbergh Lake	4320	20.94	17.22	14.63
	Missoula	3420	25.40	21.49	18.85
	Missoula WSO AP	3199	25.20	21.89	19.45
Musselshell	Potomac	3620	18.85	16.26	14.05
	Seeley Lake Ranger	4100	20.64	17.31	14.86
	Melstone	2920	32.00	27.17	24.22
Park	Roundup	3386	31.17	26.79	23.98
	Cooke City	7460	16.43	11.63	8.68
	Gardiner	5275	27.39	24.70	22.46
Petroleum	Livingston	4870	23.83	19.41	16.59
	Livingston FAA AP	4656	25.62	21.39	18.63
	Wilsall	5840	20.38	16.01	13.20
Phillips	Flatwillow	3133	29.20	25.01	22.27
	Content	2340	28.39	23.97	21.15
	Malta 35	2650	27.10	22.99	20.28
Pondera	Malta 7	2262	28.73	24.39	21.61
	Port of Morgan	2830	26.42	22.72	20.15
	Saco	2180	26.39	22.70	20.13
Powder River	Zortman	4660	22.41	17.40	14.38
	Conrad	3550	22.87	19.42	16.93
	Valier	3810	24.88	20.96	18.31
Powell	Biddle	3597	29.01	24.66	21.87
	Broadus	3032	29.63	25.69	23.03
	Moorhead	3220	30.47	26.42	23.72
Prairie	Sonnette	3900	24.86	20.96	18.32
	Deer Lodge	4678	17.85	15.32	13.14
	Ovando	4109	16.86	14.43	12.28
	Mildred	2510	29.55	25.58	22.92

	Terry	2248	29.38	25.47	22.82
	Terry 21	3260	25.38	21.34	18.65
Ravalli	Darby	3880	25.00	21.44	18.91
	Hamilton	3529	25.55	22.34	19.93
	Stevensville	3380	24.19	21.44	19.19
	Sula	4475	17.39	14.42	12.09
	Western Ag Research	3600	25.11	22.15	19.82
Richland	Savage	1990	31.51	26.59	23.61
	Sidney	1931	30.29	25.45	22.49
Roosevelt	Bredette	2638	27.42	22.86	19.99
	Culbertson	1942	28.38	23.73	20.84
	Wolf Point	1985	31.62	27.03	24.16
Rosebud	Birney	3160	31.40	27.29	24.57
	Brandenberg	2770	30.54	26.52	23.83
	Colstrip	3218	30.40	26.10	23.32
	Forsythe	2520	32.61	28.04	25.17
	Ingomar	2780	29.74	25.83	23.18
	Rock Springs	3020	27.64	23.93	21.35
Sanders	Heron	2240	22.55	17.76	14.82

	Thompson Falls				
	Power	2380	29.95	25.36	22.49
	Trout Cr Ranger Sta	2356	23.78	19.40	16.60
Sheridan	Medicine Lake	1975	29.03	24.49	21.64
	Plentywood	2063	27.97	23.48	20.64
	Raymond Border Sta	2384	26.71	22.04	19.13
	Redstone	2300	24.72	20.58	17.86
	Westby	2120	25.77	21.03	18.10
Silverbow	Butte FAA AP	5545	20.04	17.06	14.73
	Divide	5350	20.57	17.58	15.25
Stillwater	Columbus	3602	29.39	25.09	22.31
	Mystic Lake	6544	21.55	16.57	13.57
	Nye	4840	22.69	17.93	15.00
	Rapelje	4125	27.21	23.07	20.35
Sweet Grass	Big Timber	4100	28.06	23.47	20.60
	Melville	5370	19.45	15.49	12.83
Teton	Blackleaf	4240	21.12	17.34	14.74
	Choteau Airport	3845	26.67	23.07	20.53
	Fairfield	3980	25.72	21.76	19.10
	Gibson Dam	4724	20.16	16.22	13.57
Toole	Goldbutte	3498	22.91	18.96	16.30
	Sunburst	3610	25.61	21.46	18.74
	Sweetgrass	3466	26.18	21.22	18.22
Treasure	Hysham	2660	32.05	27.78	25.01
Valley	Glasgow WSO AP	2293	30.03	26.12	23.48
	Hinsdale	2670	30.42	25.25	22.18
	Opheim 10	2878	22.85	18.86	16.19
	Opheim 16	3258	23.15	19.34	16.73
Wheatland	Harlowton	4162	24.72	20.56	17.83
	Judith Gap	4573	20.28	16.40	13.77
Wibaux	Carlyle	3030	27.35	22.75	19.87
	Wibaux	2696	25.89	21.50	18.69
Yellowstone	Billings Water Plant	3097	33.17	28.92	26.16
	Billings WSO	3648	32.39	28.22	25.49
	Huntley Exp Station	3034	28.68	24.61	21.92
Averages			25.4	21.4	18.7

Table 3: Obtainable yield and management factor for all weather stations.

County	Climate Station	IWR Total Seasonal ET (in)	Inches Required per Ton Alfalfa	Obtainable Yield (tons/ac)	Management Factor - % of Obtainable Yield			
					1964-1973	1964-2006	1973-2006	1997-2006
Beaverhead	Dillon	23.92	6	3.99	63.7	78.8	82.8	88.3
	Wisdom	11.12	6	1.85	137.1	169.4	178.2	189.9
	Jackson	12.12	6	2.02	125.7	155.4	163.5	174.3
	Lakeview	13.49	6	2.25	113.0	139.6	146.9	156.6
	Lima	18.76	6	3.13	81.2	100.4	105.6	112.6
Big Horn	Busby	26.55	6	4.43	55.4	73.7	78.7	88.1
	Hardin	33.45	6	5.58	43.9	58.5	62.5	70.0
	Hysham 25	26.65	6	4.44	55.2	73.4	78.4	87.8
	Wyola	25.95	6	4.33	56.6	75.4	80.5	90.2
	Yellowtail Dam	36.97	6	6.16	39.8	52.9	56.5	63.3
Blaine	Chinook	27.86	6	4.64	59.4	63.3	64.3	66.8
	Harlem	28.18	6	4.70	58.8	62.6	63.6	66.0
Broadwater	Townsend	25.24	6	4.21	74.9	83.6	85.9	94.1
	Trident	27.29	6	4.55	69.3	77.4	79.5	87.1
Carbon	Joliet	29.24	6	4.87	58.3	65.0	66.8	70.8
	Red Lodge	22.89	6	3.82	74.4	83.0	85.3	90.4
Carter	Ekalaka	28.14	6	4.69	37.1	49.5	52.9	52.2
	Ridgeway	27.18	6	4.53	38.4	51.3	54.7	54.1
Cascade	Cascade 20	20.16	6	3.36	76.2	89.3	93.0	104.8
	Cascade 5	25.25	6	4.21	60.8	71.3	74.3	83.6
	Great Falls	26.81	6	4.47	57.3	67.1	70.0	78.8
	Neihart	19.80	6	3.30	77.6	90.9	94.7	106.7
	Sun River	24.27	6	4.05	63.3	74.2	77.3	87.0
Chouteau	Big Sandy	28.90	6	4.82	52.5	62.6	65.3	78.3
	Fort Benton	29.05	6	4.84	52.3	62.3	64.9	77.9
	Geraldine	28.12	6	4.69	54.0	64.4	67.1	80.4
	Iliad	28.43	6	4.74	53.4	63.7	66.4	79.6
	Loma	29.54	6	4.92	51.4	61.3	63.9	76.6
Custer	Shonkin	22.78	6	3.80	66.6	79.4	82.8	99.3
	Miles City	34.12	6	5.69	49.2	61.4	65.1	73.3
	Mizpah	30.84	6	5.14	54.5	67.9	72.0	81.1

	Powderville	32.20	6	5.37	52.2	65.0	68.9	77.7
Dawson	Glendive	33.90	6	5.65	56.8	61.8	63.6	72.0
Fallon	Plevna	29.87	6	4.98	47.6	47.7	47.8	47.6
Fergus	Denton	22.26	6	3.71	50.7	64.6	68.3	70.9
	Grass Range	26.88	6	4.48	42.0	53.5	56.5	58.7
	Lewistown	23.10	6	3.85	48.8	62.3	65.8	68.3
	Roy	27.28	6	4.55	41.3	52.7	55.7	57.8
	Winifred	25.38	6	4.23	44.4	56.7	59.9	62.2
Flathead	Creston	22.31	6	3.72	89.3	95.0	96.3	98.4
	Hungry Horse Dam	24.21	6	4.04	82.3	87.5	88.7	90.7
	Kalispell	22.73	6	3.79	87.6	93.2	94.5	96.6
	Olney	19.10	6	3.18	104.3	111.0	112.4	115.0
	Polebridge	15.39	6	2.57	129.4	137.7	139.5	142.7
	West Glacier	21.85	6	3.64	91.2	97.0	98.3	100.5
	Whitefish	23.18	6	3.86	85.9	91.4	92.7	94.7
Gallatin	Bozeman Exp Farm	23.66	6	3.94	73.5	88.0	92.1	98.6
	Bozeman MT State Univ	26.26	6	4.38	66.3	79.3	83.0	88.9
	Hebgen Dam	16.78	6	2.80	103.7	124.1	129.9	139.1
Garfield	Cohagen	28.83	6	4.81	46.0	51.8	53.5	48.8
	Jordan	30.52	6	5.09	43.4	49.0	50.6	46.1
	Mosby	31.79	6	5.30	41.7	47.0	48.6	44.2
Glacier	Babb	19.07	6	3.18	69.8	83.0	86.2	86.5
	Cut Bank	22.33	6	3.72	59.7	70.9	73.6	73.9
	Del Bonita	21.37	6	3.56	62.3	74.1	76.9	77.2
	East Glacier	17.23	6	2.87	77.3	91.9	95.4	95.8
	St Mary	21.43	6	3.57	62.2	73.9	76.7	77.0
Golden Valley	Ryegate	23.87	6	3.98	62.6	64.7	65.5	64.6
Granite Hill	Philipsburg Ranger Stn	18.32	6	3.05	86.5	87.7	87.4	96.6
	Fort Assiniboine	29.50	6	4.92	54.1	58.5	59.8	60.4
	Guilford	25.60	6	4.27	62.3	67.4	68.9	69.6
	Havre	26.99	6	4.50	59.1	63.9	65.3	66.0
	Simpson	25.50	6	4.25	62.6	67.6	69.1	69.9
Jefferson	Boulder	22.64	6	3.77	61.0	74.4	77.9	81.1
Judith Basin	Moccasin Exp Stn	23.71	6	3.95	49.3	64.0	68.0	68.8
	Raynesford	23.78	6	3.96	49.2	63.8	67.8	68.6
	Stanford	24.49	6	4.08	47.8	61.9	65.8	66.6
Lake	Bigfork	26.26	6	4.38	57.8	69.4	72.4	72.0
	Polson	27.51	6	4.59	55.2	66.2	69.2	68.7

Lewis & Clark	Polson Kerr Dam	28.20	6	4.70	53.8	64.6	67.5	67.0
	St Ignatius	26.68	6	4.45	56.9	68.3	71.3	70.8
	Augusta	23.95	6	3.99	60.1	75.0	79.0	79.7
Liberty	Austin	21.56	6	3.59	66.8	83.3	87.7	88.5
	Helena	26.03	6	4.34	55.3	69.0	72.7	73.3
	Holter Dam	30.80	6	5.13	46.8	58.3	61.4	61.9
	Lincoln Ranger Stn	18.23	6	3.04	79.0	98.5	103.8	104.7
	Chester	25.09	6	4.18	54.8	63.6	65.7	63.9
Lincoln	Joplin	24.55	6	4.09	56.0	65.0	67.1	65.3
	Tiber Dam	28.88	6	4.81	47.6	55.2	57.1	55.5
	Eureka Ranger Stn	27.13	6	4.52	47.1	54.7	56.3	58.8
	Fortine	22.46	6	3.74	56.9	66.1	68.0	71.1
	Libby Ranger Stn	27.22	6	4.54	47.0	54.5	56.1	58.6
Madison	Libby	16.25	6	2.71	78.6	91.4	94.0	98.2
	Troy	26.97	6	4.50	47.4	55.0	56.7	59.2
	Alder	19.99	6	3.33	75.9	88.3	91.9	96.9
	Ennis	23.26	6	3.88	65.3	75.9	79.0	83.3
	Glen	22.61	6	3.77	67.1	78.1	81.2	85.7
McCone	Norris	29.19	6	4.87	52.0	60.5	62.9	66.4
	Twin Bridges	21.94	6	3.66	69.2	80.5	83.7	88.3
	Virginia City	21.77	6	3.63	69.7	81.1	84.4	89.0
	Brockway	27.15	6	4.53	52.4	63.1	65.8	72.5
	Circle	29.30	6	4.88	48.5	58.4	61.0	67.2
Meagher	Fort Peck Power Plnt	32.50	6	5.42	43.8	52.7	55.0	60.6
	Vida	29.34	6	4.89	48.5	58.4	60.9	67.1
	Lennep	17.71	6	2.95	72.2	85.3	88.6	98.6
	Martinsdale	21.34	6	3.56	59.9	70.8	73.5	81.8
	White Sulphur Spr	22.30	6	3.72	57.3	67.8	70.4	78.3
Mineral	St Regis Ranger Stn	23.36	6	3.89	68.1	75.1	76.7	77.1
	Superior	28.31	6	4.72	56.2	61.9	63.3	63.6
Missoula	Lindbergh Lake	20.94	6	3.49	84.2	82.6	81.8	84.2
	Missoula	25.40	6	4.23	69.4	68.1	67.5	69.4
	Missoula WSO AP	25.20	6	4.20	70.0	68.7	68.0	70.0
	Potomac	18.85	6	3.14	93.6	91.8	90.9	93.6
	Seeley Lake Ranger Stn	20.64	6	3.44	85.5	83.8	83.0	85.5
Musselshell	Melstone	32.00	6	5.33	48.8	55.4	57.2	54.8
	Roundup	31.17	6	5.20	50.0	56.9	58.7	56.2
	Cooke City	16.43	6	2.74	82.5	93.0	95.8	97.9

	Gardiner	27.39	6	4.57	49.5	55.8	57.5	58.7
	Livingston	23.83	6	3.97	56.9	64.1	66.1	67.5
	Livingston FAA AP	25.62	6	4.27	52.9	59.6	61.4	62.8
	Wilsall	20.38	6	3.40	66.5	75.0	77.2	78.9
Petroleum	Flatwillow	29.20	6	4.87	44.0	48.7	50.0	43.2
Phillips	Content	28.39	6	4.73	55.4	55.3	55.3	55.6
	Malta 35	27.10	6	4.52	58.0	57.9	58.0	58.2
	Malta 7	28.73	6	4.79	54.7	54.6	54.7	54.9
	Port of Morgan	26.42	6	4.40	59.5	59.4	59.4	59.7
	Saco	26.39	6	4.40	59.6	59.5	59.5	59.8
	Zortman	22.41	6	3.74	70.1	70.0	70.1	70.4
Pondera	Conrad	22.87	6	3.81	71.4	79.1	81.0	83.7
	Valier	24.88	6	4.15	65.6	72.7	74.5	76.9
Powder River	Biddle	29.01	6	4.84	39.3	47.9	50.4	54.4
	Broadus	29.63	6	4.94	38.5	46.9	49.3	53.3
	Moorhead	30.47	6	5.08	37.4	45.6	48.0	51.8
	Sonnette	24.86	6	4.14	45.9	55.9	58.8	63.5
Powell	Deer Lodge	17.85	6	2.98	77.6	87.8	90.0	103.2
	Ovando	16.86	6	2.81	82.2	92.9	95.2	109.3
Prairie	Mildred	29.55	6	4.93	59.3	70.3	73.2	83.9
	Terry	29.38	6	4.90	59.6	70.7	73.6	84.3
	Terry 21	25.38	6	4.23	69.0	81.9	85.2	97.6
Ravalli	Darby	25.00	6	4.17	79.9	87.0	89.0	96.5
	Hamilton	25.55	6	4.26	78.2	85.1	87.1	94.4
	Stevensville	24.19	6	4.03	82.6	89.9	92.0	99.7
	Sula	17.39	6	2.90	114.9	125.0	128.0	138.7
	Western Ag Research	25.11	6	4.19	79.6	86.6	88.6	96.1
Richland	Savage	31.51	6	5.25	56.0	69.3	72.9	88.4
	Sidney	30.29	6	5.05	58.2	72.0	75.9	91.9
Roosevelt	Bredette	27.42	6	4.57	53.6	70.6	74.8	86.0
	Culbertson	28.38	6	4.73	51.8	68.2	72.3	83.1
	Wolf Point	31.62	6	5.27	46.5	61.3	64.9	74.6
Rosebud	Birney	31.40	6	5.23	46.4	61.7	65.8	70.7
	Brandenberg	30.54	6	5.09	47.7	63.5	67.7	72.7
	Colstrip	30.40	6	5.07	48.0	63.8	68.0	73.0
	Forsythe	32.61	6	5.44	44.7	59.4	63.4	68.1
	Ingomar	29.74	6	4.96	49.0	65.2	69.5	74.6
	Rock Springs	27.64	6	4.61	52.7	70.1	74.8	80.3

Sanders	Heron	22.55	6	3.76	62.0	70.9	72.9	66.3
	Thompson Falls Power	29.95	6	4.99	46.7	53.3	54.9	49.9
	Trout Cr Ranger Sta	23.78	6	3.96	58.8	67.2	69.1	62.8
Sheridan	Medicine Lake	29.03	6	4.84	43.2	61.3	66.0	77.7
	Plentywood	27.97	6	4.66	44.8	63.7	68.5	80.7
	Raymond Border Sta	26.71	6	4.45	46.9	66.7	71.7	84.5
	Redstone	24.72	6	4.12	50.7	72.0	77.5	91.3
Silverbow	Westby	25.77	6	4.30	48.7	69.1	74.3	87.5
	Butte FAA AP	20.04	6	3.34	70.7	88.2	92.6	96.1
	Divide	20.57	6	3.43	68.8	85.9	90.3	93.6
Stillwater	Columbus	29.39	6	4.90	43.1	55.5	58.2	67.2
	Mystic Lake	21.55	6	3.59	58.7	75.6	79.4	91.6
	Nye	22.69	6	3.78	55.8	71.8	75.4	87.0
	Rapelje	27.21	6	4.54	46.5	59.9	62.9	72.5
Sweet Grass	Big Timber	28.06	6	4.68	44.7	51.7	53.6	49.4
	Melville	19.45	6	3.24	64.5	74.6	77.4	71.3
Teton	Blackleaf	21.12	6	3.52	83.8	94.8	97.7	107.7
	Choteau Airport	26.67	6	4.45	66.4	75.1	77.4	85.3
	Fairfield	25.72	6	4.29	68.8	77.9	80.2	88.4
	Gibson Dam	20.16	6	3.36	87.8	99.3	102.3	112.8
Toole	Goldbutte	22.91	6	3.82	59.2	72.6	76.0	80.9
	Sunburst	25.61	6	4.27	52.9	64.9	68.0	72.4
	Sweetgrass	26.18	6	4.36	51.8	63.5	66.5	70.8
Treasure Valley	Hysham	32.05	6	5.34	53.4	70.6	75.2	91.5
	Glasgow WSO AP	30.03	6	5.01	57.9	64.5	66.6	74.9
	Hinsdale	30.42	6	5.07	57.2	63.7	65.8	74.0
	Opheim 10	22.85	6	3.81	76.1	84.8	87.6	98.5
	Opheim 16	23.15	6	3.86	75.2	83.7	86.4	97.2
Wheatland	Harlowton	24.72	6	4.12	46.6	56.3	58.7	54.4
	Judith Gap	20.28	6	3.38	56.8	68.7	71.5	66.3
Wibaux	Carlyle	27.35	6	4.56	54.6	54.3	54.5	57.9
	Wibaux	25.89	6	4.32	57.6	57.4	57.5	61.2
Yellowstone	Billings Water Plant	33.17	6	5.53	59.5	68.7	71.4	77.8
	Billings WSO	32.39	6	5.40	60.9	70.4	73.1	79.7
	Huntley Exp Station	28.68	6	4.78	68.8	79.5	82.6	90.0
Averages		25.4		4.2	61.9	72.2	74.9	79.7

Table 4: County management factors based on most representative weather station.

County	Mean Elevation <u>Irrigated Lands</u>	Mean Latitude	Mean Longitude	Obtainable <u>Yield</u>	County Ag-stats 1964- 1973 (ton/acre)	Management Factor <u>1964-1973</u>
Beaverhead	5710	45.24	-112.66	4.0	2.54	63.7
Big Horn	3142	45.66	-107.59	4.4	2.45	55.4
Blaine	2512	48.54	-108.97	4.7	2.76	58.7
Broadwater	4051	46.24	-111.49	4.6	3.15	69.2
Carbon	4198	45.39	-108.99	4.9	2.84	58.3
Carter	3362	45.65	-104.40	4.5	1.74	38.4
Cascade	3651	47.37	-111.40	4.5	2.56	57.3
Chouteau	2791	47.88	-110.32	4.8	2.53	52.5
Custer	2447	46.43	-105.83	5.1	2.80	54.5
Dawson	2122	47.23	-104.87	5.7	3.21	56.8
Fallon	2818	46.42	-104.47	5.0	2.37	47.6
Fergus	3969	47.11	-109.56	3.9	1.88	48.8
Flathead	3008	48.22	-114.23	3.8	3.32	87.6
Gallatin	4648	45.81	-111.24	3.9	2.90	73.5
Garfield	2385	47.24	-106.94	5.1	2.21	43.4
Glacier	3910	48.77	-112.62	3.7	2.22	59.7
Golden Valley	3818	46.31	-109.14	4.0	2.49	62.6
Granite	4694	46.47	-113.28	3.1	2.64	86.5
Hill	2693	48.63	-110.17	4.9	2.66	54.1
Jefferson	4553	45.90	-112.00	3.8	2.30	61.0
Judith Basin	4264	47.11	-110.17	4.0	1.95	49.3
Lake	3027	47.49	-114.14	4.6	2.53	55.0
Lewis & Clark	4008	47.37	-111.40	4.0	2.40	60.1
Liberty	3070	48.56	-111.04	4.2	2.29	54.8
Lincoln	2752	48.38	-115.41	4.5	2.13	47.1
Madison	4992	45.46	-112.24	3.9	2.53	65.2
McCone	2109	47.60	-105.60	5.4	2.37	43.7
Meagher	5133	46.54	-110.97	3.7	2.13	57.3
Mineral	2932	47.14	-114.82	4.7	2.65	56.1
Missoula	3500	46.88	-114.06	4.2	2.94	69.5
Musselshell	3549	46.50	-108.42	5.2	2.60	50.0
Park	5081	45.71	-110.46	4.0	2.26	56.9
Petroleum	2883	46.97	-108.21	4.9	2.14	44.0
Phillips	2273	48.37	-107.88	4.8	2.62	54.7
Pondera	3674	48.30	-112.15	3.8	2.72	71.4
Powder River	3083	45.56	-105.79	4.9	1.90	38.5
Powell	4674	46.60	-112.85	3.0	2.31	77.6
Prairie	2260	46.81	-105.29	4.9	2.92	59.6

Ravalli	3697	46.39	-114.12	4.2	3.33	79.5
Richland	1968	47.78	-104.46	5.3	2.94	56.0
Roosevelt	1981	48.31	-105.01	5.3	2.45	46.5
Rosebud	2647	46.28	-106.59	5.1	2.43	47.7
Sanders	2854	47.63	-115.37	4.0	2.33	58.8
Sheridan	2027	48.70	-104.48	4.7	2.09	44.8
Silverbow	5389	45.92	-112.67	3.4	2.36	68.8
Stillwater	4054	45.83	-109.07	4.5	2.11	46.5
Sweet Grass	4638	45.86	-109.91	4.7	2.09	44.7
Teton	3933	47.91	-112.19	4.3	2.95	68.8
Toole	3434	48.71	-111.78	4.4	2.26	51.8
Treasure	2650	46.28	-107.27	5.3	2.85	53.4
Valley	2162	48.16	-106.59	5.0	2.90	57.9
Wheatland	4477	46.44	-109.85	4.1	1.92	46.6
Yellowstone	3096	45.82	-108.46	5.5	3.29	59.5

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".

History of DNRC Change Process

HB24 Implementation Oct. 2011

Memorandum: Assessment of new consumptive use and irrecoverable losses

Consumptive Use Methodology – Turf Grass (New Projects)

Memorandum: DNRC's Use of the Irrigation Water Requirements (IWR) Program

Memorandum: Development of standardized methodologies to determine Historical Diverted Volume

Memorandum: Historically diverted volume determinations for existing rights decreed with no volume

Ditch Rights General Information

Technical Memorandum: Distributing Conveyance Loss on Multiple User Ditches

Technical Memorandum: Calculating Return Flow

Technical Memorandum: Pond and Wetland Evaporation/ Evapotranspiration

Technical Memorandum: Net Surface Water Depletion from Ground Water Pumping

Technical Memorandum: Surface Water Depletion for Regional Bedrock Aquifers

Infiltration Gallery Policy

HB52 Summary Information

Private Fish & Wildlife Appropriations under the Montana Water Use Act

Memorandum: Changes for Instream Flow Rights

Memorandum: Imported Water

Memorandum: Mitigating Adverse Effect

Memorandum: Marketing for Mitigation Contract with Oneself

Memorandum: Salvage Water Memo 2011

Guidance for Landowners and Practitioners Engaged in Stream and Wetland Restoration Activities

Thompson Falls Lumber Co. Memos (Clark Fork)

Madison Aquifer Guidance

Technical Memorandum: Variance- Yellowstone River Terrace Level 3 Aquifer Properties

Variance – Evergreen Aquifer Geothermal/ Heat Exchange Wells

Historical Background of the Law of Changing a Water Right in Montana

For over a hundred years in Montana if someone wanted to change their water right, all they had to do was change it. If no one took them to court, the change would remain in effect. Essentially, the only limitation to a change was that it not adversely affect other water users.¹ There was no burden on the person changing their water right; the burden was on all those existing water users who alleged adverse effect to their water rights to bring a court action in district court and to prove to the court that they had been adversely affected by the change.² That change process, if it could be called a process, remained in effect until June 30, 1973. On July 1, 1973, the Montana Use Act went into effect, and that law ushered in the new era of having to administratively obtain a change authorization from the DNRC before a change could occur. Most importantly, and deliberately, that act ultimately switched the burden of proof to the person proposing a change of water right.³ The new default in water rights was the *status quo*; if a person could not prove to the DNRC in advance by a preponderance of the evidence that their proposed change would not adversely affect other water users (junior and senior), then no change could take place – the *status quo* that other water users were used to and reliant upon would remain in effect. The Water Use Act was structured to protect existing water users. When the new change process and the new burden on change applicants were challenged, they were upheld by the Montana Supreme Court.⁴ The prior appropriation doctrine can be seen as a conservative doctrine protecting prior property investments, protecting the *status quo* and providing certainty; anyone who now wants a new water right or wants to change a water right has to prove beforehand that they will not upset the priorities that exist on a stream.

In addition to revising change law, the legislature in enacting the Water Use Act of 1973 simultaneously provided for a new process for adjudicating streams.⁵ For years University of Montana School of Law Professor Al Stone had repeatedly pointed out the follies of Montana's archaic water rights records system and the many non-comprehensive, non-binding water court decrees.⁶ Streams

¹ See Hutchins, *The Montana Law of Water Rights*, pp. 75-76 (1958); *Holmstrom Land Co. v. Newlan Creek Water District*, 185 Mont. 409, 435, 605 P.2d 1060, 1075 (1979); *Quigley v. McIntosh*, 110 Mont. 495, 506, 103 P.2d 1067, 1072 (1940); *Hansen v. Larsen*, 44 Mont. 350, 353, 120 P. 229, 231 (1911); *Lokowich v. City of Helena*, 46 Mont. 575, 577, 129 P. 1063, 1063 (1913); *Head v. Hale*, 38 Mont. 302, 308, 100 P. 222, 224 (1909); see § 89-803, R.C.M. 1947; § 7095, R.C.M. 1921.

² *Holmstrom Land Co. v. Newlan Creek Water District*, 185 Mont. 409, 435, 605 P.2d 1060, 1075 (1979); *Thompson v. Harvey*, 164 Mont. 133, 136, 519 P.2d 963, 965 (1974); *McIntosh v. Graveley*, 159 Mont. 72, 83, 495 P.2d 186, 192 (1972); *Thrasher v. Mannix & Wilson*, 95 Mont. 273, 276, 26 P.2d 370, 371 (1933); *Lokowich v. City of Helena*, 46 Mont. 575, 577, 129 P. 1063, 1063 (1913); *Hansen v. Larsen*, 44 Mont. 350, 353, 120 P. 229, 231 (1911).

³ 1973 Mont. Laws 452, § 28; 1985 Mont. Laws 573, § 7; § 85-2-402(2)(a)(2013), MCA; *In the Matter of the Application for Change of Appropriation Water Rights Nos. 101960-41s and 101967-41s by Keith and Alice Royston*, 249 Mont. 425, 432, 816 P.2d 1054, 1060 (1991) (“Prior to adoption of the Water Use Act of 1973 and amendment of § 85-2-402, MCA, in 1985, parties objecting to the change had the burden of demonstrating adverse impact to their water rights.”)

⁴ *In the Matter of the Application for Change of Appropriation Water Rights Nos. 101960-41s and 101967-41s by Keith and Alice Royston*, 249 Mont. 425, 432, 816 P.2d 1054, 1060 (1991) (“The application was properly denied because the evidence in the record does not sustain a conclusion of no adverse affect [sic] to others and it cannot be concluded from the record that the means of diversion and operation of the appropriation works are adequate.”); see also *Castillo v. Kunneman*, 197 Mont. 190, 199-200, 642 P.2d 1019, 1026 (1982) (“In commenting upon the new provision, Montana's noted water law authority, Albert Stone said: ‘The 1973 Water Use Act, R.C.M., section 89-892, continues the policy of the repealed section 89-803, only adding that any change must have the approval of the Department of Natural Resources and Conservation. So the case law developed under the prior code section should remain applicable to the new section.’ Selected Aspects of Montana Water Law, p. 40.”).

⁵ 1973 Mont. Laws 452, §§ 6-15.

⁶ Albert W. Stone, *Montana Water Rights—A New Opportunity*, 34 Mont. L. Rev. 57 (1973);

Albert W. Stone, *The Long Count on Dempsey Creek: No Final Decision on Water Right Adjudication*, 31 Mont. L. Rev. 1 (1969);

Albert W. Stone, *Are There Any Adjudicated Streams in Montana?* 19 Mont. L. Rev. 19 (1957).

had previously been adjudicated, some many times, with fewer than all water right holders.⁷ Consequently, each decree was binding only on those who had been served in the proceedings so as to bring them personally before the court.⁸ The new law provided for the filing of declarations of all water rights on a stream by order of the DNRC for a comprehensive adjudication of that stream.⁹ Essentially, streams could, as needed, one-by-one “where the need for a determination is most urgent,”¹⁰ be comprehensively adjudicated. The Powder River adjudication was undertaken under that law.¹¹ For a variety of reasons, including federal lawsuits for adjudication of federal reserved rights in federal courts, fear by some that Montana’s adjudication might be seen as an impermissible administrative adjudication in violation of the McCarran Amendment¹², and after allegations that the Powder River process was too slow¹³, the legislature in 1979 revised the adjudication statutes that resulted in today’s present mandatory statewide general adjudication process,¹⁴ and created the Montana Water Court.¹⁵ The Water Court will be busy adjudicating water rights until 2028.¹⁶

Thus, the legislature in 1973 and with further refinements in 1979 created two processes side-by-side that were in parallel and without conflict: the DNRC would preside over post July 1, 1973, changes of water rights,¹⁷ and the Water Court would adjudicate pre-July 1, 1973 water rights.¹⁸ The DNRC’s change process was a science-based process evaluating site specific facts whereby the DNRC as an agency of expertise was set up to judge whether a change proponent, who had the burden of proof, had proven by a preponderance of the evidence that the water rights of others would not be adversely affected by a proposed change.¹⁹ In contrast, the Water Court’s adjudication process was an historical inquiry involving the cataloging, mapping and decreeing of pre-1973 water right claims that had been given *prima facie* status²⁰ by the legislature – water right claimants without their claims being objected

⁷ Albert W. Stone, *The Long Count on Dempsey Creek: No Final Decision on Water Right Adjudication*, 31 Mont. L. Rev. 1 (1969).

⁸ Albert W. Stone, *Are There Any Adjudicated Streams in Montana?* 19 Mont. L. Rev. 19, 21-22 (1957); *Woodward v. Perkins*, 116 Mont. 46, 51, 147 P.2d 1016, 1017-18 (1944).

⁹ See 1973 Mont. Laws 452, § 8.

¹⁰ *Id.* at § 6(2).

¹¹ See also § 85-2-222(1) (2013), MCA.

¹² 43 U.S.C. § 666.

¹³ Donald Duncan MacIntyre, *The Adjudication of Montana’s Waters – A Blueprint for Improving the Judicial Structure*, 49 Mont. L. Rev. 211, 221-234 (1988)(there were also allegations that the DNRC was seeking too much on-the-ground detail of claimed water rights).

¹⁴ 1979 Mont. Laws 697 (often referred to as “S.B. 76”).

¹⁵ *Id.* at §§ 1-9; see §§ 3-7-101 to -225, MCA (2013).

¹⁶ *Water Rights Adjudication*, Performance Audit, A Report to the Montana Legislature (June 2010), at 28.

¹⁷ See Albert Stone, “Seminar on Water Law,” given to the Subcommittee on Water Rights in 1977: “For the future under the 1973 Water Use Act, for any change of use you have to get the permission of the Department of Natural Resources.” *Id.* at 30.

¹⁸ See *In re Adjudication of Water Rights of Clark Fork River*, 254 Mont. 11, 17, 833 P.2d 1120, 1124 (1992) (“...the clear purpose of statewide adjudication is to adjudicate water rights as they existed on July 1, 1973.”); see also Water Court Order of August 5, 1988, in Case No. 40A-B at 4-5 (Chief Water Judge W.W. Lessley in a remedies discussion involving permits and changes clearly describes the role of the Water Court, the district court, and the DNRC).

¹⁹ See § 85-2-402(2), MCA (2013); see Admin. R. M. 36.12.1801 to 1802; 36.12.1901 to 1904.

²⁰ § 85-2-227(1), MCA (2013)(“prima facie proof of its content”); Rule 19, W.R.Adju.R. [Water Court Practice and Procedures]: “A properly filed Statement of Claim for Existing Water Right is prima facie proof of its content pursuant to § 85-2-227, MCA. This prima facie proof may be contradicted and overcome by other evidence that proves, by a preponderance of the evidence, that the elements of the claim do not accurately reflect the beneficial use of the water right as it existed prior to July 1, 1973. This is the burden of proof for every assertion that a claim is incorrect including for claimants objecting to their own claims.” See *Memorandum Opinion*, Water Court Case No. 40G-2 at pp. 6, 12-13 (March 11, 1997)(After a review of over 100 Montana Supreme Court opinions the Water Court ruled in part, “A prima facie claim meets the minimum threshold of evidence necessary to establish the facts alleged and shifts the burden of production to an objector to overcome that threshold.”); Water Court Case No. WC-2000-07 at pp. 3, 4-5 (*prima facie* statement of claim contradicted and overcome by testimony and evidence presented by the objectors; the burden of production of evidence then shifted to the claimants to rebut the objector’s

to or otherwise being called into question essentially did not have a burden of proof regarding their historic water rights.²¹ It is important to remember that the adjudication was never set up as a water availability study – the Water Court does not need to determine how much water is actually in a stream to adjudicate the water rights on that stream. The DNRC, however, in a change proceeding has to scientifically analyze whether the change of a water right would injure other water users on a stream²² (and in permit proceedings has to scientifically analyze water availability for new water right applications)²³. A fundamental tenet of western water law, that an appropriator has a right only to that amount of water historically put to beneficial use, developed in concert with the rationale that each subsequent appropriator is entitled to have the water flow in the same manner as when they located, and those appropriators may insist that prior appropriators do not affect adversely their rights.²⁴ The Montana Supreme Court recently reiterated that it does not dispute the “interrelationship between historic consumptive use, return flow, and the amount of water to which an appropriator is entitled as limited by his past beneficial use.”²⁵ The calculation of the historic *consumptive* use of the water right to be changed is critical in a change proceeding in order to protect other water users.²⁶ And in order to protect other water users on the stream a proposed change can be conditioned so that it is granted in a way to not adversely affect other water right holders.²⁷ So in contrast to the adjudication of the existence and priority of the water rights on a stream by the Water Court regardless of the amount of water in a stream (and with claims having *prima facie* status with a limited analysis of actual historic use), and regardless of what happens to other water rights on that stream resulting from the adjudication, the DNRC change process involves a detailed analysis of actual historic use and a scientific analysis of historic consumptive use in order to assess whether other water users would be harmed by the proposed change.

case and the prove the validity of their claim, which the claimants did not successfully do); Water Court Case No. 96-2 at 9 (“This *prima facie* proof may be contradicted and overcome by other evidence that proves an element of the *prima facie* claim is incorrect.”); see also Water Court Case No. WC-92-3 (*On Motion Case*).

²¹ Historically in water rights litigation, a party asserting a water right had the burden of proving by satisfactory evidence that such a water right had been appropriated. *Woodward v. Perkins*, 116 Mont. 46, 51, 147 P.2d 1016, 1018 (1944).

²² § 85-2-402, MCA (2013).

²³ See § 85-2-311, MCA (2013); see Admin. R. M. 36.12.1701 to -07; 36.12.1801 to -02.

²⁴ *Hohenlohe v. State*, 2010 MT 203, ¶ 43, 357 Mont. 348, 240 P.3d 628.

²⁵ *Id.* at ¶ 45.

²⁶ See *Town of Manhattan v. DNRC*, 2012 MT 81, ¶¶ 10-12, 364 Mont. 450, 276 P.3d 920; 1 *Water and Water Rights* (Robert E. Beck 3d ed., 2010) at § 14.04(c)(1) :

Perhaps the most common issue in a reallocation [change] dispute is whether other appropriators will be injured because of an increase in the consumptive use of water. Consumptive use has been defined as “diversions less returns, the difference being the amount of water physically removed (depleted) from the stream through evapotranspiration by irrigated crops or consumed by industrial processes, manufacturing, power generation, or municipal use;” [i]rrigation consumptive use is the amount of consumptive use supplied by irrigation water applied in addition to the natural precipitation which is effectively available to the plant.

An appropriator may not increase, through reallocation [changes] or otherwise, the actual historic consumptive use of water to the injury of other appropriators. In general, any act that increases the quantity of water taken from and not returned to the source of supply constitutes an increase in historic consumptive use. As a limitation on the right of reallocation [changes], historic consumptive use is an application of the principle that appropriators have a vested right to the continuation of stream conditions as they existed at the time of their initial appropriation.

(emphasis added); see Admin. R. M. 36.12.101: “(15) ‘Consumptive use’ means the annual volume of water used for a beneficial purpose, such as water transpired by growing vegetation, evaporated from soils or water surfaces, or incorporated into products that does not return to ground or surface water.”; *Spokane Ranch & Water Co. v. Beatty*, 37 Mont. 342, 351, 96 P. 727, 731 (1908).

²⁷ § 85-2-310, MCA (2013); § 85-2-402(8), MCA (2013).

In recognition of the finite amount of its water resources, Montana law provides the burden of proof be on those who seek to change their water rights to prove lack of harm to others on a stream²⁸. The importance of the DNRC's change process (and permit process) as to pre-1973 water rights took on a new significance in the 1980s in light of legal challenges to the accuracy of Water Court decrees.²⁹ To address the issues of the accuracy of Montana's adjudication, the legislature in 1987 commissioned a study by a Denver water law firm³⁰, and its resulting report to the legislature became known as the "Ross Report."³¹ Responding to the issue of the accuracy of Montana's water right decrees, that report recognized the difference between adjudicating historic claims in the present as compared to the accuracy needed to evaluate proposed enlarged or expanded uses in the future.³² Remedial mechanisms were suggested "which can be used if and when necessary to avoid the mischief which could result from someone attempting to expand the use of water in the exercise of a right decreed in excess of what actually historically has been beneficially used."³³ Essentially, the remedial mechanisms required permits from the DNRC (with the burden on the decreed water user) for enlarged uses in excess of decreed rights and prohibited changes from the DNRC if the decreed water user could not prove the proposed change in appropriation right would not result in "a stream depletion in excess of the stream depletion caused by the historical beneficial use of water made in the exercise of the appropriation right."³⁴ In regard to new permits being needed for enlarged uses, the Ross Report recognized the need to be wary of expansions of water rights beyond historic use despite how the water right was set out in the decree:

Such a mechanism could prevent the expansion of water use under such a senior right and require the appropriator to secure a new permit for a junior right to his expansion. With such a mechanism in place, a prospective purchaser would be on notice that he could acquire only the right to the historic level of depletion resulting from the use under that senior right, regardless of the rate of flow or volume set out in the decree evidencing it.³⁵

The Ross Report clearly recognized the difference in detail between decreeing uses that continued to be used as decreed and the detail needed to examine enlargements beyond historical use:

We suggest this remedial mechanism option to the Committee as a practical way to prevent decrees which may not be "sufficiently accurate" from being used to the injury of other water rights. One of its advantages is that it avoids wholesale costly field verification at the expense of the State of Montana during the present process while recognizing that expanded uses may never be pervasively attempted. It also recognizes that unless and until actual expansion and use under such senior rights are attempted, no real injury to junior rights can occur. Finally, it casts the burden of proving the right to receive such a permit on the appropriator who seeks to

²⁸ § 85-2-402(2)(a), MCA (2013); *In the Matter of the Application for Change of Appropriation Water Rights Nos. 101960-41s and 101967-41s by Keith and Alice Royston*, 249 Mont. 425, 428, 816 P.2d 1054, 1057 (1991).

²⁹ *Montana Department of Fish, Wildlife & Parks v. Water Court of the State of Montana and the Judges of that Courts*, Montana Supreme Court Cause No. 85-345 (Filed July 17, 1985) ("FWP writ of supervisory control"); *United States of America, v. Water Court of the State of Montana and the Judges of that Court*, Montana Supreme Court Cause No. 85-493; *see McDonald v. State*, 220 Mont. 519, 522, 722 P.2d 598, 600 (1986).

³⁰ Saunders, Snyder, Ross and Dickson, P.C., Denver, Colorado.

³¹ *Evaluation of Montana's Water Rights Adjudication Process*, prepared for the Water Policy Committee of the Legislature of the State of Montana (September 30, 1988).

³² *Id.* at 60-61.

³³ *Id.* at 60.

³⁴ *Id.*, Appendix IV, p. 10.

³⁵ *Id.* at 60-61. (emphasis added).

benefit from the terms of a decree which is not “sufficiently accurate,” rather than on the State of Montana.³⁶

The Ross Report is significant because it recognized that decreed water users in the future could not hide behind their water rights as decreed by the Water Court to expand their actual historic uses. Although its remedial mechanism language was not specifically enacted, it turns out that it really didn’t need to be – Montana law already provides for permits needed for new uses of water³⁷, and change statutory³⁸ and case law³⁹ prevent expansion of historic use. The Water Court does not adjudicate post-1973 changes of water rights.⁴⁰ Former Chief Water Judge Loble in a 2000 ruling very clearly recognized the jurisdictional differences between the Water Court and the DNRC in Case No. WC-90-1, where the Water Court questioned and did not accept a settlement stipulation between the parties that it said represented “a judicial admission that they neglected in 1981 to comply with ...85-2-402(1)[changes of use]...” and ruled “the Water Court will not knowingly make decisions which intrude on the DNRC’s jurisdiction over post June 1973 water usage, make findings which could lead to circumvention of the Water Use Act of 1973, or sanction the unlawful use of water.” *Memorandum on Anderson and Harms Amended Stipulation* at 17. After reciting how the Supreme Court had ruled the Water Use Act of 1973 was meant to protect senior water users, the Chief Water Judge ruled:

Accordingly, the Montana Legislature has established a **clear line between the jurisdiction of the Water Court and that of the DNRC**. The Supreme Court has expressed the public policy of the state with respect to post June 1973 appropriations *and changes* in the use of water right claims. *The Water Court should not knowingly adopt private agreements and thereby judicially recognize and sanction the allocation of a public resource that does not comply with the law that existed prior to July 1, 1973 or that may circumvent the Water Use Act of 1973.*

Id. at 20. (emphasis added).

Chief Water Judge Loble worried that the Water Court’s acceptance of incorrect stipulations of alleged pre-1973 water use “might be interpreted by the DNRC as an inoculation of the Andersons from the consequences of any potential criminal prosecution arising from their apparent violation of the Water Use Act of 1973 or, at least, provide Andersons with plausible deniability.” *Id.* at 17.

³⁶ *Id.* at 61. (emphasis added).

³⁷ §§ 85-2-302, -311, MCA (2013).

³⁸ § 85-2-402, MCA (2013).

³⁹ *Hohenlohe*, 2010 MT 203, ¶¶43, 45, ; *Town of Manhattan*, 2012 MT 81, ¶ 10; *Quigley v. McIntosh*, 110 Mont. 495, 506-07, 103 P.2d 1067, 1072 (1940); *Spokane Ranch & Water Co. v. Beatty*, 37 Mont. 342, 351, 96 P. 727, 731 (1908); *see also* Albert Stone, “Seminar on Water Law,” pp.30-31, responding to a question from a legislator about “reuse”: “It seems to me that there is a change. You are not using it as you were before. I think you described the change. Instead of returning water to the stream where others might use it, you have decided to recapture it and make more intensified use of the water. I think that is a change that the Department of Natural Resources would say you needed permission to do, and then it is my guess that they are going to say that you had an appropriation for a particular purpose and you are trying to change the purpose of your appropriation. What you need is a new appropriation – an additional one – as of 1977.”

⁴⁰ *Memorandum on Anderson and Harms Amended Stipulation*, pp. 16-19, Water Court Case No. WC-90-1 (September 7, 2000)(Chief Water Judge Loble); *see also* Rule 39(b), (c)(2)(i), Montana Supreme Court Water Right Claim Examination Rules (W.R.C.E.R.).

The importance of proving historic use in change proceedings (and historic *consumptive use*, which the Water Court does not decree) has only been accentuated by subsequent Montana Supreme Court⁴¹ and Colorado Supreme Court rulings.⁴²

At the time of the 1985 writs of supervisory control challenging the accuracy of Water Court decrees, the adjudication statutes, in regard to volume, provided only for the claiming of the “amount of water appropriated,”⁴³ and the decreeing of “the amount of water included in the right....”⁴⁴ The Water Court adjudicated only *diverted* volumes, as claimed under the guidance of an arithmetic calculation based on the time of diversion at a certain flow rate.⁴⁵ Even so, at the time, the Water Court’s decreeing of *diverted* volumes created an uproar among water users who were used to having decrees with only flow rates describing their water rights, and the constitutionality of diverted volumes was challenged directly in the Montana Supreme Court.⁴⁶ Even though the Supreme Court upheld the constitutionality of *diverted* volumes in decrees⁴⁷, the legislature promptly amended the law to require no volume for direct flow irrigation claims.⁴⁸ Thus, the Water Court, since 1987, has not been required on direct flow irrigation claims to decree historic diverted volumes.⁴⁹ The DNRC’s change process, however, involves the evaluation of both the historic diverted and *consumptive use* volume of a water right, a site-specific, scientific evaluation.⁵⁰ The Water Court did not then, and does not now, decree historic *consumptive use* volumes on direct flow irrigation rights. Historic use is an indispensable piece of information needed for a DNRC change proceeding.⁵¹ Keep in mind that water users are entitled to the maintenance of

⁴¹ *Hohenlohe*, 2010 MT 203, ¶¶43, 45; *Town of Manhattan*, 2012 MT 81, ¶ 10; Admin. R. M. 36.12.1801-02.

⁴² *In re Application for Water Rights in Rio Grande*, 53 P.3d 1165, 1170 (Colo. 2002) (en banc); *Santa Fe Trail Ranches Property Owners Ass’n v. Simpson*, 990 P.2d 46, 55-57 (Colo. 1999); *Orr v. Arapahoe Water and Sanitation Dist.*, 753 P.2d 1217, 1223 (Colo. 1988).

⁴³ 1973 Mont. Laws 452, § 8(2).

⁴⁴ *Id.* at § 13(4)(b).

⁴⁵ The present adjudication claim examination rules clearly define volume as *diverted*, not *consumptive*: “‘Volume’ means the amount of water which has been *diverted*, impounded, or withdrawn from the source over a period of time for beneficial use, usually measured in acre-feet per year.” Rule 2(a)(72), W.R.C.E.R. (amended by the Montana Supreme Court, effective December 5, 2006) (emphasis added). See also Rule 15(c), W.R.C.E.R.: “**Direct flow irrigation claims.** For direct flow irrigation claims, except for water spreading systems and irrigation systems involving reservoirs, a volume will not be decreed. A remark shall be added to the abstract of direct flow irrigation rights. Example: THE TOTAL VOLUME OF THIS RIGHT SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE.” See also DNRC Claims Examination Manual (May 2013), Ch. 7 Irrigation, C. Volume at p.24: “Irrigation volume is the amount of water which has been *diverted*....[emphasis added.] **Most water rights for irrigation will not be decreed a volume.**” (original emphasis).

⁴⁶ *McDonald v. State*, 220 Mont. 519, 722 P.2d 598 (1986).

⁴⁷ *Id.* at 532, 722 P.2d at 606.

⁴⁸ 1987 Mont Laws 438, § 1(5)(b)(i).

⁴⁹ Exceptions exist for water spreading systems and irrigation systems involving reservoirs, § 85.2.234(6)(b)(ii), MCA (2013); Rule 15(c), W.R.C.E.R.; and for direct flow irrigation claims decreed by volume in prior decrees, Rule 15(d), *id.*

⁵⁰ Admin. R. M. 36.12.1902; see *Town of Manhattan v. DNRC*, 2012 MT 81, ¶ 12; see n. 22, *supra*.

⁵¹ Admin. R. M. 36.12.1902; see *Hohenlohe*, 2010 MT 203, ¶¶43, 45. In *Town of Manhattan*, 2012 MT 81, ¶ 10, the Supreme Court stated:

As provided by § 85-2-402(14), MCA, the DNRC has adopted rules to implement the statutory requirements for approval of a change in a water right, including Admin. R. M. 36.12.1902. That rule requires that for pre-July 1, 1973 existing rights, the applicant for approval of a change must provide “historic information” on the underlying water right “as it was used prior to July 1, 1973.” Admin. R. M. 36.12.1902(1)(a). The required details of historic use are set forth in Admin. R. M. 36.12.1902(7), and they relate to the DNRC’s obligation to ensure that a change will not adversely affect other water rights, § 85-2-402(2), MCA. Further, it is an established tenet of Montana water law that an appropriator’s right attaches to “waters actually taken and beneficially applied.” *Quigley v. McIntosh*, 110 Mont. 495, 509, 103 P.2d 1067, 1074 (1940); *Hohenlohe*, ¶ 43. Existing (pre-July 1, 1973) rights entitle the user to “such an amount of water as, by pattern of use and means of use, the owners or their predecessors put to beneficial use.” *McDonald v. State*, 220 Mont. 519, 529, 722 P.2d 598, 604 (1986).

stream conditions that existed at the time of their appropriation.⁵² Consequently, appropriators on a stream are entitled to rely on return flows⁵³ (and thus are entitled to protection against expansions of water rights), and the analysis of return flows is required in DNRC change proceedings.⁵⁴ The analysis of return flows is also a scientific, site specific undertaking⁵⁵, and in contrast to what the DNRC is required to analyze, the Water Court decrees do not determine the return flows of water rights. Therefore, there is nothing in Water Court decrees that the DNRC disrespects or ignores in conducting its return flow and adverse effect analysis in DNRC change proceedings.

As the Supreme Court recently ruled in *Town of Manhattan v. DNRC*, 2012 MT 81, ¶ 8, 364 Mont. 450, 452-53, 276 P.3d 920, 921:

Even though the Montana Constitution recognizes and protects existing rights, it does not exempt them from the requirement of DNRC approval of a proposed change. *Royston*, 249 Mont. at 429, 816 P.2d at 1057. The Act requires that the applicant for approval of a change must prove by a preponderance of the evidence that the change will not adversely affect other water users....

Additionally, as the Montana Supreme Court reiterated in *Manhattan*: “Further, it is an established tenet of Montana water law that an appropriator's right attaches to ‘waters actually taken and beneficially applied.’ *Quigley v. McIntosh*, 110 Mont. 495, 509, 103 P.2d 1067, 1074 (1940); *Hohenlohe*, ¶ 43.” 2012 MT 81, ¶ 10, 364 Mont. 450, 276 P.3d 920. It also held: “Based upon established Montana law and the applicable regulations, the DNRC was within its lawful authority to request that the Town provide information on its use of water prior to July 1, 1973 as part of its application for approval of its proposed changes.” *Id.* at ¶ 12.

And as the Supreme Court reiterated in *Hohenlohe*:

An appropriator historically has been entitled to the greatest quantity of water he can put to use. *Sayre v. Johnson*, 33 Mont. 15, 18, 81 P. 389, 390 (1905). The requirement that the use be both beneficial and reasonable, however, proscribes this tenet. *In re Adjudication of Existing Rights to the Use of All Water*, 2002 MT 216, P 56, 311 Mont. 327, 55 P.3d 396; *see also* § 85-2-311(1)(d), MCA. This limitation springs from a fundamental tenet of western water law--that an

⁵² *Spokane Ranch & Water Co. v. Beatty*, 37 Mont. 342, 351, 96 P. 727, 731 (1908); *Hohenlohe*, 2010 MT 203, ¶43.

⁵³ An appropriator is not entitled to return flows in a change in appropriation where others depend on those return flows. It is well settled in Montana and western water law, that once water leaves the control of the appropriator whether through seepage, percolating, surface, or waste waters, and reaches a water course, it is subject to appropriation. *E.g. Rock Creek Ditch & Flume Co. v. Miller*, 93 Mont. 248, 260, 17 P.2d 1074, 1077 (1933); *Bitterroot River Protective Ass'n, Inc. v. Bitterroot Conservation Dist.*, 2008 MT 377, ¶¶22, 31, 43, 346 Mont. 508, ¶¶22, 31, 43, 198 P.3d 219, ¶¶22, 31, 43, *citing Hidden Hollow Ranch v. Fields*, 2004 MT 153, 321 Mont. 505, 92 P.3d 1185 (Court acknowledged that the Mitchell's flows are fed by irrigation return flows available for appropriation); *see also* Wyo. Stat. § 41-3-104 (2014):

When an owner of a water right wishes to change a water right ... he shall file a petition requesting permission to make such a change The change ... may be allowed provided that the quantity of water ... 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).

⁵⁴ *Hohenlohe*, 2010 MT 203, ¶¶43–71; Admin. R. M. 36.12.1902.

⁵⁵ The “amount of return flow analysis required will vary, however, with the facts of a particular case and the potential for adverse impact to downstream users.” *Hohenlohe*, 2010 MT 203, ¶ 45; “The [return flow] analysis will vary from one application and accompanying set of facts to the next.” *Id.* at ¶ 61.

appropriator has a right only to that amount of water historically put to beneficial use-- developed in concert with the rationale that each subsequent appropriator "is entitled to have the water flow in the same manner as when he located," and the appropriator may insist that prior appropriators do not affect adversely his rights. *Spokane Ranch & Water Co. v. Beatty*, 37 Mont. 342, 351, 96 P. 727, 731 (1908).

Hohenlohe, 2012 MT 81, at ¶ 43 (emphasis added).

So it is replete throughout Montana water law that appropriators have a vested right to have the stream conditions maintained substantially as they existed at the time of their appropriations. *Spokane Ranch & Water Co. v. Beatty* (1908), 37 Mont. 342, 96 P. 727; 1 Waters and Water Rights § 14.04(c)(1) (Robert E. Beck 3d ed., 2010); W. Hutchins, Selected Problems in the Law of Water Rights in the West 378 (1942).

As one treatise describes it, in a change proceeding, the *consumptive* use of the historical right has to be determined:

In a reallocation [a change] proceeding, both the actual historic consumptive use and the expected consumptive use resulting from the reallocation [a change] are estimated. Engineers usually make these estimates.

With respect to a reallocation [a change], the engineer conducts an investigation to determine the historic diversions and the historic consumptive use of the water subject to reallocation [a change]. This investigation involves an examination of historic use over a period that may range from 10 years to several decades, depending on the value of the water right being reallocated [changed].

....

When reallocating [changing] an irrigation water right, the quantity and timing of historic consumptive use must be determined in light of the crops that were irrigated, the relative priority of the right, and the amount of natural rainfall available to and consumed by the growing crop.

....

Expected consumptive use after a reallocation [a change] may not exceed historic *consumptive* use if, as would typically be the case, other appropriators would be harmed. Accordingly, if an increase in consumptive use is expected, the quantity or flow of reallocated [changed] water is decreased so that actual historic consumptive use is not increased.

1 Water and Water Rights at § 14.04(c)(1)(Robert E. Beck 3d ed., 2010).

In *In re Application for Water Rights in Rio Grande County*, 53 P.3d 1165, 1170 (Colo. 2002) (*en banc*), the full Colorado Supreme Court explained the importance of the calculation of historic consumptive use in the change process:

An absolute decree, whether expressed in terms of a flow rate or a volumetric measurement, is itself not an adjudication of actual historic use but implicitly is further limited to actual historic use. In order to determine that a requested change of a water right is merely that, and will not amount to an enlargement of the original appropriation, actual historic use must therefore, in some fashion and to some degree of precision, be quantified.

Id. at 1170 (emphasis added); see FN9, “The term ‘historic use’ refers to the ‘historic consumptive use’....”). *Id.* at 1169 (emphasis added).

Colorado is adopting its first state water plan (Final to be submitted no later than December 10, 2015), and it summarized its change process as follows:

Changes of water rights

The right to use water in Colorado is usufructory. As such, it is limited to the location of diversion, place of use, manner of use, and type of use allowed by a water court decree. A water right may be conveyed to another water user or, with appropriate water court approval, changed to another location of diversion, place of use, manner of use, or type of use, while retaining its priority. However, changes of water rights are subject to terms and conditions that prevent injury to existing water rights.

The engineering analysis in a change of water right proceeding establishes the time, place, and amount of decreed and historical consumptive use, which serves as the volumetric limitation on any new consumptive use. In addition to establishing historical consumptive use, an analysis must establish the timing, location, and amount of historical return flows (the non-consumed portion of the diversion), which must be replaced in the stream so that water users senior to the date of the change in use may continue to enjoy stream conditions in place at the time of their appropriation.¹⁴ A full analysis considering time, place, and amount of historical use on a stream is generally referred to as a “net stream depletion” analysis.

The goal of the net stream depletion assessment, including historical beneficial consumptive use, is

to ensure that the amount of water removed from the stream system and consumptively used is equal to the amount returned to the stream at a particular time and place. Maintaining flows after a change of water right ensures that water users who established their rights prior to the date of the change in use receive the water that they are entitled to, and do not suffer an injury to their water rights as a result of the change.

Colorado’s Water Plan /DRAFT Chapter 2.1: Colorado water law & administration at p.9 (Prepared by the Colorado Water Conservation Board, December 10, 2014).

It is no wonder, then, that a recent University of Montana School of Law study could not help but acknowledge in regard to the change processes of western states that “[a]ll state agencies are examining consumptive use during the change process....”⁵⁶ Clearly, then, what the DNRC does in change proceedings is within the norm of what all other western states do in change proceedings. The UM study also recognized the difference between what the Water Court decrees, and the difference in the information the DNRC needs in a change proceeding, acknowledging that “[f]rom a practical standpoint, water users may thus have to provide additional evidence in the DNRC change proceeding beyond that required in the Water Court.”⁵⁷

⁵⁶ *Water Rights in Montana*, Report for the Montana Supreme Court, Prepared by the Land Use & Natural Resources Clinic, University of Montana School of Law, Spring 2014, at 28.

⁵⁷ *Id.* at 12.

So the adjudication process is inherently more general, and was never designed to pinpoint with precision actual historic water use.⁵⁸ It was built around general standards and guidelines to judge the “reasonableness” of a claim of water use.⁵⁹ As such, the margin of error can be significant. The margin of error is a function of conducting a mammoth statewide adjudication and is found in the Montana Supreme Court Water Right Claim Examination Rules;⁶⁰ only if the examination reveals a potential problem, or issue, outside of a margin of error is the claimant contacted and an “issue remark”⁶¹ placed on the claim.⁶² For example, below are the claimant contact ranges for irrigation parcels of 100-500 acres and the “claimant contact range”:⁶³

<u>Claimed</u>	<u>Claimant Contact Range</u>
100 acres	112.68 – 87.32
200	219.22 – 180.78
300	324.51 – 275.49
400	429.13 – 370.87
500	533.3 – 466.7

Pursuant to the Montana Supreme Court Water Right Claim Examination Rules, if the DNRC adjudication claim examination finds irrigated acres within a certain “range” of error, the claimant will not be contacted and the claim will proceed through the process without an issue remark. The margin of error is generally called the “claimant contact range.” For example, in the DNRC’s adjudication examination of a claimed water right, if an irrigator claimed a place of use of 200 acres, yet actually only irrigated about 181 acres (and DNRC found 181 acres through the examination process), then DNRC’s research and investigation ends. No further questions are asked of the irrigator because the claim is within the examination rules’ accepted margin of error. That particular claim is likely to go through the adjudication process and be decreed by the Water Court with a place of use at 200 acres because there is no issue remark related to the place of use. As long as the irrigator’s claimed flow rate is within the

⁵⁸ Former Chief Water Judge Loble in 2000 expressed some his frustrations with the magnitude of the adjudication task as follows:

And so, what you’ve got is a sort of doubling up or tripling up of water rights. And, we know very well that when that water rights are enforced, that in all likelihood there are going to be some decreed water users who are going to just scream when they find out that they had, their priority date was number five and now they are going to be number ten. And so we struggle with that at the Water Court, just on a daily basis, trying to figure out what to do about it. Frankly, when we went to the On Motion decision, we pulled back from all those on motions. We have taken the position that by and large, that’s not our problem.

....

The issue remarks, I don’t know what to do with the issue remarks. Whether we leave them on or take them off, I’m not concerned about that. I don’t even know what that effect has if you leave the issue remarks on. I don’t know.

Meeting on Water Court Rules, November 21, 2000, C. Bruce Loble, Chief Water Judge, Presiding (Recorded by: Lori M. Burnham Beck, Clerk of Court). The legislature subsequently enacted legislation requiring the Water Court to resolve all issue remarks prior to final decree. 2005 Mont. Laws 526, § 85-2-248, MCA.

⁵⁹ See e.g. Rule 14(b), W.R.C.E.R. (“The *guideline* for irrigation within a basin or subbasin will be the flow rate necessary to *reasonably* irrigate one acre of crop.”)(emphasis added); Rule 14(c)(1), W.R.C.E.R. (where the claimed flow rate exceeds the *guideline* using the acreage identified by the DNRC)(emphasis added); Rule 29(e)(2), W.R.C.E.R. (the claimed flow rate or claimed volume exceeds the *guideline*...)(emphasis added).

⁶⁰ Exhibit B, W.R.C.E.R (logarithmic scale regarding claimed acreage providing for DNRC claimant contact).

⁶¹ Issue remarks are the mechanism that alerts other water users to a potential problem with a claim, and are a key element for quality control in the adjudication; see Rules 12(e)(6)(i); 2(a)(57), W.R.C.E.R.; § 85-2-248, MCA (2013).

⁶² Rule 12(b)(2), W.R.C.E.R (“Acreage differences exceeding the amount defined in Exhibit B will require claimant contact....”; see also Rule 28 (a)(2), 44, W.R.C.E.R.; see 2()(57) Rule W.R.C.E.R. (definition of “remark”).

⁶³ Exhibit B, W.R.C.E.R.

standard provided in rule⁶⁴, then no further questions are asked. The result can be a decreed flow rate of 300 miners inches⁶⁵ (200 acres X 1.5 MI = 300 MI), based on general flow rate standards applied in the process, which may not reflect reality on the ground.

However, what if in reality the above irrigator truly only diverted 1.0 MI/acre (the per-acre flow rate often decreed in historic District Court decrees⁶⁶), and under the example above only irrigated 181 acres, not the 200 acres he was decreed due to examination standards? In that case, the irrigator's true, historic appropriation of water was only 181 MI, yet through the adjudication process he was decreed 300 MI. There is a substantial difference between 181 MI and 300 MI (enough of a difference to operate a 200-acre irrigation system under modern equipment), which could lead to adverse effects to other users if no check and balance were instituted. All in all, if one considers the myriad of standards applied in the adjudication process, it is clear the adjudication is not always defining *actual historic* water use (and never adjudicating the historic *consumptive* water use).⁶⁷ The Master's Report dated August 1, 1990, on claim number 40A-W-207277-00 is an example of this "rounding" of "historic use" process on a smaller scale:

MASTER'S REPORT FINDINGS OF FACT

1. This claim is a direct flow irrigation claim.
2. In this basin, a 7.00% or greater difference between claimed and verified acres triggered the input of a gray area remark into the claim abstract as it appears in the Temporary Preliminary Decree.
3. The Montana Department of Natural Resources and Conservation verified 13.10 acres of 15 acres claimed, a variance of less than 13.00%.
4. This claim was called in On Motion of the Water Court for acres irrigated, volume and flow rate.
5. The margin of verification error between 6.90% and 13.00% on a tract of land this small is less than one acre.
6. The standard of 1.5 miner's inches per acre would convert to 0.49 for 13.10 acres.
7. The claimant claimed 0.38 CFS for 15.00 acres, or 1.00 miner's inch per acre.
8. A variance of less than 13.00% between claimed and verified acreage on a tract of land this small combined with the low flow rate claimed does not warrant this claim to be further reviewed as the differences are trifling and insignificant.

CONCLUSIONS OF LAW

....

⁶⁴ The Montana Supreme Court Water Right Claim Examination Rules provide a general standard of 17 gpm/acre (1.5 MI/acre) to generally judge the claimed flow rate for flood irrigation. Rule 14(b)(1), W.R.C.E.R. Some irrigation claims may have substantially higher flow rates.

⁶⁵ § 85-2-103(2), MCA (2013): 100 miner's inches (MI) equals 2.5 cfs.

⁶⁶ See e.g. *Bagnell v. Lemery*, 202 Mont. 238, 246, 657 P.2d 608, 612 (1983) ("This Court generally allows one miner's inch to irrigate each acre of land unless 'evidence discloses that a greater or lesser amount is required.' *Conrow v. Huffine* (1914), 48 Mont. 437, 138 P. 1094.").

⁶⁷ Irrigators who understand the adjudication process can take advantage of the system *by amending their acreage upward* to more than they have historically irrigated, *but just below the "claimant contact" cutoff*. For example, if an irrigator claimed 150 acres of irrigation, yet truly irrigated *only* 100 acres, that irrigator could amend their claim to 112 acres (and therefore still be under "claimant contact" range), and then can be decreed 12 acres of "historic" irrigation that has never taken place, as well the associated amount of water (at least 17 gpm/acre) to irrigate that acreage. Exhibit B, W.R.C.E.R.; Rules 14; 12(e)(6)(i); 2(a)(57), W.R.C.E.R.

V.

Further review of this claim would be trifling and the law disregards trifles. Mont. Code Ann. section 1-3-224.

VI.

No changes should be made to the abstract of the Claim 40A-W-207277-00 as it appears in the Temporary Preliminary Decree of the Musselshell River Above Roundup Basin (40A).

As shown above, on both a larger scale and a smaller scale, and in between, if the DNRC simply accepted the paper or adjudicated right “as is” in its change proceeding, it would risk reallocating property rights from one water user to another.⁶⁸ That’s not what the Water Use Act is about. *See MPC v. Carey*, 211 Mont. 91, 98, 685 P.2d 336, 340 (“the Water Use Act was designed to protect senior water rights holders....”). *That’s why the DNRC takes its role in the change process seriously - because property rights are on the line. Its decisions are important to the long-standing property rights of existing water users who have built their operations for generations around a certain set of stream conditions.*

As unappropriated water in Montana has become increasingly scarce, and as more basins have been closed⁶⁹, changes of existing water rights have increased and the review process for changes has become increasingly important. The importance and increasing scrutiny that would accompany changes as the West became more settled was noted over 100 years ago by Samuel C. Wiel in his classic, *Water Rights in the Western States* (1911):

§ 499. Right of Change Chiefly a Matter upon Public Lands.- These rules, having arisen with the doctrine of appropriation itself, must be understood in the light of the origin of that doctrine, as having arisen upon the public domain. When the region is a new one, and the lands are largely public, and there are few appropriators of water, there is practically no one to be injured. The government is alone concerned, and under the act of 1866 acquiesces in the utmost freedom to the appropriator so far as the government is concerned (the doctrine of "free development"); and the only question being as to continuance of the right, the right continues and its priority is not lost by the change. But as the lands become settled and appropriations also increase, the government is no longer the only one concerned. Private rights of others are now also concerned. Hence, while in the early days the chief consideration was the freedom of change without loss of priority, in latter days the prohibition of injury is becoming the more important;

⁶⁸ Professor Al Stone in his July 1977 address to the Subcommittee on Water Rights, “Seminar on Water Law,” at p.19 pointed out the inaccuracy of water right claims and old decrees:

What you had before the 1973 Water Use Act is what you will be decreed after the 1973 Water Use Act, but it very well may not be what you think you had.

I have some interesting cases that you who think you have such definitive, certain rights should know about. The early appropriators declared excessive amounts of water and early decrees were clearly erroneous. They were very generous.

....

In cases coming up since 1930, the Montana Supreme Court has been fairly skeptical with respect to early inflated decrees. In one way or another, the court has attempted to limit the amount of water to which a person is entitled.

⁶⁹ § 85-2-336, MCA (2013) (Upper Clark Fork River Basin Closure); § 85-2-344, MCA, (2013) (Bitterroot River Basin Closure); § 85-2-321, MCA (2013)(Milk River Mainstem and Southern Tributaries Closures by DNRC order); § 85-2-343, MCA (2013) (Upper Missouri River Basin Closure); § 85-2-341, MCA (2013)(Jefferson River and Madison River Basins Closure); § 85-2-330, MCA (2013)(Teton River Basin Closure); Grant Creek Basin Closure, Admin. R. M. 36.12.1010; Rock Creek Basin Closure, Admin. R. M. 36.12.1013; Walker Creek Basin Closure, Admin. R. M. 36.12.1014, Towhead Gulch Basin Closure, Admin. R. M. 36.12.1015; Musselshell River Closure, Admin. R. M. 36.12.1016; Sharrott Creek Basin Closure, Admin. R. M. 36.12.1017; Willow Creek Basin Closure, Admin. R. M. 36.12.1018; Truman Creek Basin Closure, Admin. R. M. 36.12.1019; Sixmile Creek Basin Closure, Admin. R. M. 36.12.1020; Houle Creek Basin Closure, Admin. R. M. 36.12.1021.

as settlement advances, will become the most important, and in time practically prohibit change altogether.

Nonetheless, recognizing the challenge change applicants face, the DNRC change process has legislatively⁷⁰ and administratively⁷¹ been made more efficient. Today, as a result:

- 1) The DNRC holds informal meetings with applicants prior to submission of an application, so both the applicant and the DNRC can understand a proposed project. The DNRC can also take the opportunity to head off potential problems in an application at this informal stage.
- 2) More certainty exists for an applicant up front in the process (e.g. the DNRC makes its preliminary determination before public notice, and the determination stands unless changed through an administrative hearing).
- 3) The process is more user-friendly for an applicant; the DNRC collects and synthesizes much of the publicly-available information for the applicant now, where previously the burden was much heavier on an applicant. It works well for other water uses, too, because if an application is denied up front potential objectors have not had to spend time and money to get involved.
- 4) The cost of the process for a change has been reduced. There are a greater number of applicants who can now navigate the process without spending money on consulting services. The DNRC heeded comments that the process was too costly and cumbersome.
- 5) Processing times for change decisions have been reduced.

In sum, the DNRC change process today is much less contentious and litigious than it previously was. The DNRC, since the improvements to the change process, has had no change cases appealed to district court.

In order to cut down on the time and expense of applying for a change, the DNRC also in 2009 promulgated consumptive use rules that allow an irrigator to *opt* to use the consumptive use amounts set forth in those rules rather than hiring a water right consultant to calculate their historic consumptive use amount.⁷²

It also has to be noted that an administrative determination in a change proceeding is not an adjudication. The grant or denial of an application for a change does not determine the existence or nonexistence of vested rights in others, *U.S. v. District Court of Fourth Judicial Dist. in and for Utah County*, 121 Utah 1, 238 P.2d 1132 (1951), so that a grant of permission for the change does not adjudicate priority rights but merely allows the applicant to make the requested change as long as he does not interfere with the prior rights of others. *Whitmore v. Murray City*, 107 Utah 445, 154 P.2d 748 (1944).⁷³ Although a water user in a change proceeding who obtains a change of their entire historic consumptive use may argue that their water right was given a “haircut” by the DNRC change, and seemingly got a change for less than what is in a decree, in fact they have changed all they had a right to change.

⁷⁰ HB 40, 61st Legislative Session (effective July 1, 2009), 2009 Mont. Laws 251; see §§ 85-2-307 to -310, MCA (2013); § 85-2-402, MCA (2013); Admin. R. M. 36.12.1801 to -02; 1901 to -04.

⁷¹ *Id.*

⁷² Admin. R. M. 1902(2) – (10).

⁷³ See *Manhattan*, 2012 MT 81, ¶ 8.

As detailed above, there are differences in the degree of examination of historic water use between the Water Court and DNRC processes, and each is functioning as it was structured by the legislature. The two processes were never designed to be the same, and they serve differing purposes. One example is the fact there are no historic *consumptive* use amounts in Water Court decrees for the DNRC to ignore. And certification⁷⁴ of certain matters of water rights to the Water Court will not answer historic consumptive use questions - the Water Court is not tasked with adjudicating historic *consumptive* volumes. Any argument that the DNRC ignores Water Court decrees or disrespects the Water Court in its change proceedings overlooks the difference between what the DNRC is charged with doing with its expertise, and what the Water Court is charged with doing with its expertise.⁷⁵ Changes of water rights are critical to future water use in the State of Montana. It is also important for water users, prospective water users, the courts, and the legislature to understand the historical background of the law of changing a water right in Montana.

⁷⁴ § 85-2-309(2), MCA (2013).

⁷⁵ It should also be noted that the issuance of final decrees will still not alter the need of the DNRC in the change process to evaluate the historic use and historic *consumptive* use of water rights in change proceedings in order to protect other appropriators.

**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.

**DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION
Water Resources Division**



STEVE BULLOCK, GOVERNOR

1424 NINTH AVENUE

STATE OF MONTANA

PHONE: (406) 444-6601
FAX: (406) 444-5918

P.O. BOX 201601
HELENA, MONTANA 59620

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.

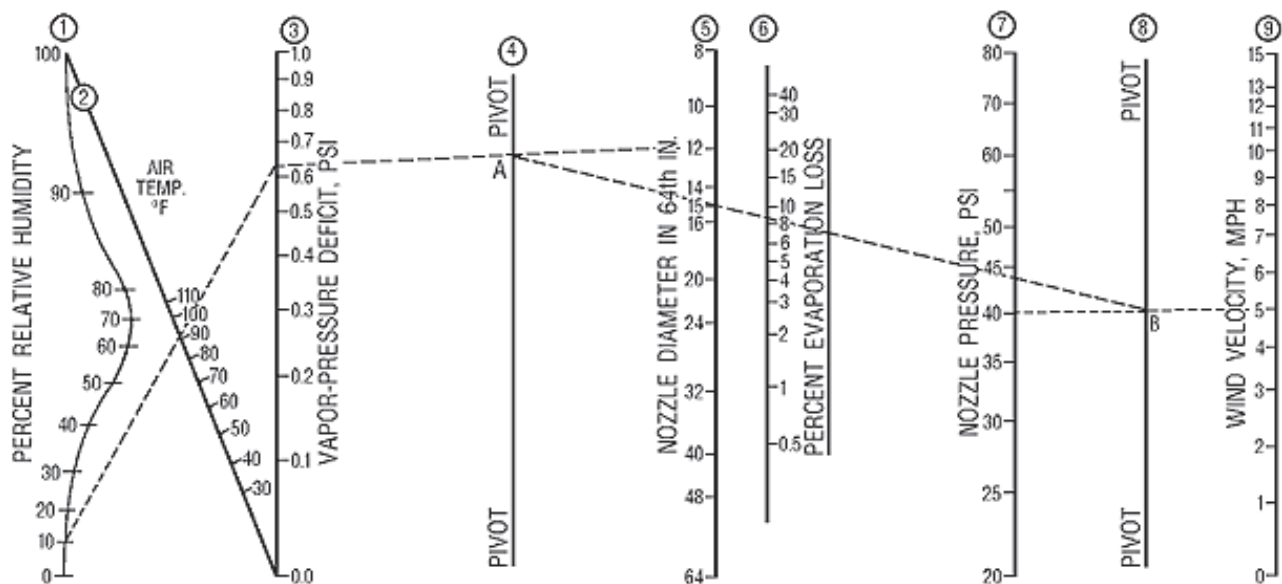
With regard to these studies, there are a few issues to keep in mind:

- 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 of 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		
	Yellowtail Dam	3305	28.07	31.30		
Blaine	Chinook	2420	20.80	23.57	58.7%	66.0%
	Harlem	2362	21.62	24.27		
Broadwater	Townsend	3840	19.42	21.88	69.2%	87.1%
	Trident	4040	20.64	23.31		
Carbon	Joliet	3776	22.41	25.12	58.3%	70.8%
	Red Lodge	5500	15.57	18.41		
Carter	Ekalaka	3425	20.13	23.14	38.4%	54.1%
	Ridgeway	3320	20.28	23.01		
Cascade	Cascade 20	4600	14.12	16.63	57.3%	78.8%
	Cascade 5	3360	17.90	20.75		
	Great Falls	3675	19.78	22.55		
	Neihart	4945	12.17	15.08		
	Sun River	3340	18.10	20.65		
Chouteau	Big Sandy	2700	21.52	24.37	52.5%	78.3%
	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		
	Shonkin	4300	13.32	16.70		
Custer	Miles City	2628	26.68	29.55	54.5%	81.1%
	Mizpah	2480	23.80	26.57		
	Powderville	2800	24.83	27.68		
Dawson	Glendive	2076	26.01	28.99	56.8%	72.0%

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 Sulphur 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	Birney	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	Hysham	2660	25.01	27.78	53.4%	91.5%
Valley	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

DNRC Consumptive Use Methodology – Turf Grass (New Projects)

March 23, 2010

Introduction

Insofar as new groundwater appropriations, an area of continued confusion and potential disparity is the estimation of consumptive use for turf grass. Estimates for turf grass are seldom available for ready use by applicants and are not currently consistent across all jurisdictions. The only known estimates directly provided can be found in the Montana Irrigation Guide. However, this information relies upon an older precipitation dataset, and is only available at a few stations. Given this, applicants have frequently attempted to use pasture grass estimates as a proxy for turf grass. Historically, the Water Management Bureau has not accepted this, noting that the management and species composition of pasture and turf grass are not necessarily interchangeable. As a result, applicants have frequently adjusted pasture grass estimates upward by the average difference in net irrigation requirements required for each crop (approximately 3 inches). This accounted for, at least in the case of the Irrigation Guide, differences in net irrigation application and carryover moisture. With the advent of IWR and its expanded use by the department and applicants, this upward adjustment was frequently carried over to IWR pasture grass estimates. However, much of the disparities between the management assumptions in the Irrigation Guide are not present in most uses of IWR (net irrigation application, carryover moisture).

A second area of confusion has also existed over the use of “dry year” or “normal year” estimates. Historically (recent) the Water Management Bureau has provided guidance that “normal year” estimates be utilized. However, with the recent adoption of the historic consumptive use rules (which utilize IWR “dry year” estimates), any new consumptive use estimates for turf grass should likewise utilize “dry year” estimates for consistency.

Given this, the Water Management Bureau is accepting the use of IWR pasture grass estimates as a proxy for turf grass under the following conditions:

1. Applicants use dry year estimates
2. Applicants do not use the default start and end dates, but re-calculate these dates using the default temperature and grow data in the IWR database (45 degrees F)
3. Applicants use the default 1” net irrigation application
4. Applicants apply 0.5 inches of carryover moisture (0.25 inches applied at the beginning, and 0.25 inches applied at the end of the season)

Ultimately, it is anticipated that rules similar to those for historic consumptive use will be proposed, with a similar table of acceptable values made available for applicants. In the interim, recognizing that there are active applications that were initiated using normal-year, upward adjusted pasture grass estimates, a comparison between existing and proposed methodologies will be provided to the regional offices for their use.

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
<http://www.dnrc.mt.gov>

1424 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

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

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).

Irrigation Water Requirements Summary

Job: **Memo Demo**
Location: **Mike's Office**
By: **MR**
Weather Station: **DILLON WMCE**
Latitude: **4512** Longitude: **11238**
Computation Method: **Blaney Criddle (TR21)**
Crop Curve: **Blaney Criddle Perennial Crop**
Begin Growth: **5/9** End Growth: **9/19**

Crop: **Alfalfa Hay**
County: **Beaverhead, MT**
Date: **12/18/12**
Sta No: **MT2409**
Elevation: **5230**
Net irrigation application: **4** inches
Estimated carryover moisture used at season:
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, Wheeline, 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.

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DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



BRIAN SCHWEITZER
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
<http://www.dnrc.mt.gov>

1424 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

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

- 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))

$$\text{Vegetation Loss} = (\% \text{ loss/mile})(\text{flow})(\text{days})(\text{ditch length}) * 2 \text{ (unit conversion constant)}$$

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)

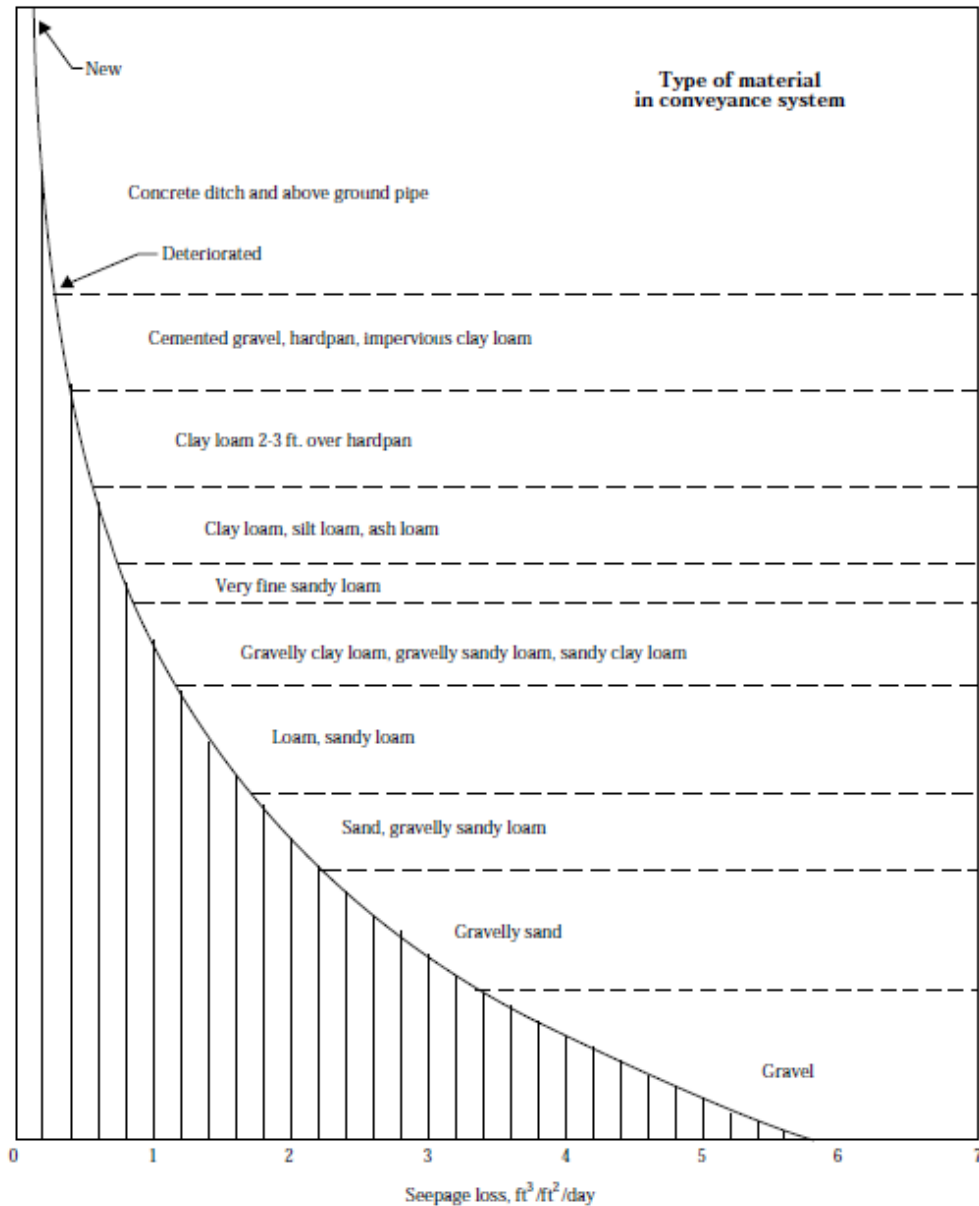
Ditch length: Distance from headgate to field (miles)

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:

$$\begin{aligned}
 &= (20.23 \text{ in}) * (1 \text{ ft} / 12 \text{ in}) * (0.601) * (150 \text{ acres}) \\
 &= \mathbf{152 \text{ acre-feet}} \quad (\text{ARM 36.12.1902})
 \end{aligned}$$

(2) Historic diverted volume:

$$\text{historic consumptive volume} = \text{Vol.}_{\text{historic consumptive use}} / \text{On-farm effic.} + \text{Vol.}_{\text{conveyance loss}}$$

$$\text{historic consumptive volume} = 152 \text{ acre feet}$$

$$\text{on-farm efficiency} = 0.6$$

$$\text{seasonal conveyance loss} = \text{seepage loss} + \text{vegetation loss} + \text{ditch evaporation}$$

$$\begin{aligned}
 \text{seepage loss} &= \frac{(\text{wetted perimeter})(\text{ditch length})(\text{loss rate})(\text{days})}{43,560 \text{ ft}^2/\text{acre}}
 \end{aligned}$$

$$\text{wetted perimeter} = 8.5 \text{ ft}$$

$$\text{ditch length} = 3000 \text{ feet} \quad (\text{determined from map})$$

$$\text{loss rate} = 1.2 \text{ ft}^3/\text{ft}^2/\text{day} \quad (\text{based on web soil survey dominant soil type and Figure 2-50})$$

$$\text{days irrigated} = 100 \quad (\text{applicant supplied, Form 606})$$

$$\begin{aligned}
 \text{seepage loss} &= \frac{(8.5 \text{ ft})(3000 \text{ ft})(1.2 \text{ ft}^3/\text{ft}^2/\text{day})(100 \text{ days})}{43,560 \text{ ft}^2/\text{acre}} = 70.3 \text{ acre-feet}
 \end{aligned}$$

$$\text{vegetation loss} = (\% \text{ loss/mile})(\text{flow})(\text{days})(\text{ditch length})(2 \text{ ft}^3/\text{s}/\text{d})$$

$$\% \text{ loss/mile} = 0.0075 \quad (\text{NEH standard, 1993})$$

$$\text{est. flow rate} = 6 \text{ ft}^3/\text{s} \quad (\text{estimated from applicant or water right})$$

$$\text{days irrigated} = 100 \quad (\text{applicant supplied, Form 606})$$

$$\text{ditch length} = 0.57 \text{ miles} \quad (\text{converted to miles})$$

$$\text{vegetation loss} = (0.0075)(6 \text{ ft}^3/\text{s})(0.57 \text{ mi})(100 \text{ days})(2 \text{ ft}/\text{ft}^3/\text{s}/\text{d}) = 5.13 \text{ acre-feet}$$

$$\text{ditch evaporation} = (\text{surface area})(\text{evaporation rate})/43,560 \text{ ft}^2/\text{acre}$$

$$\text{ditch evaporation} = (7 \text{ ft} \times 3000 \text{ ft})(3.2 \text{ ft})/43,560 \text{ ft}^2/\text{acre} = 1.54 \text{ acre-feet}$$

$$\begin{aligned} \text{seasonal conveyance loss} &= (70.3 \text{ acre-feet}) + (5.13 \text{ acre-feet}) + (1.54 \text{ acre-feet}) \\ &= 77.0 \text{ acre-feet} \end{aligned}$$

$$\begin{aligned} \text{Historic diverted volume} &= (152 \text{ acre-feet}/0.6) + (77 \text{ acre-feet}) \\ &= \mathbf{330.3 \text{ acre-feet}} \end{aligned}$$

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 WSO		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		
	Yellowtail Dam	3305	28.07	31.30		
Blaine	Chinook	2420	20.80	23.57	58.7%	63.6%
	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		
	Sun River	3340	18.10	20.65		
Chouteau	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		
	Shonkin	4300	13.32	16.70		
Custer	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	Hysham	2660	25.01	27.78	53.4%	75.2%
Valley	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
AND CONSERVATION



STEVE BULLOCK, GOVERNOR

1539 ELEVENTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-2074
FAX: (406) 444-2684

PO BOX 201601
HELENA, MONTANA 59620-1601

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 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.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



BRIAN SCHWEITZER, GOVERNOR

DIRECTOR'S OFFICE 406-444-2074

TELEFAX NUMBER 406-444-2684

WATER RESOURCES DIVISION

PHONE: 406-444-6601

FAX: 406-444-0533

WATER RIGHTS BUREAU

PHONE: 406-444-6610

FAX: 406-444-0533

1424 9TH AVENUE

PO BOX 201601

HELENA MONTANA 59620-1601

<http://www.dnrc.mt.gov/wrd/>

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
Water Rights New Appropriations Program Manager
406.444.9754
jellis@mt.gov

**DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION**
Water Resources Division



STEVE BULLOCK, GOVERNOR

1424 NINTH AVENUE

STATE OF MONTANA

PHONE: (406) 444-6601
FAX: (406) 444-0533

P.O. BOX 201601
HELENA, MONTANA 59620

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

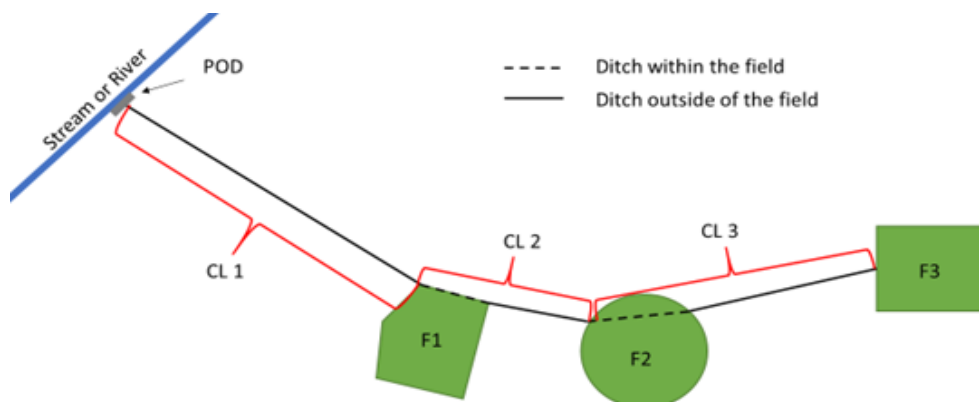


Figure 1. Example of multiple fields served by one irrigation ditch.

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.

**DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION
Water Resources Division**



STEVE BULLOCK, GOVERNOR

1424 NINTH AVENUE

STATE OF MONTANA

PHONE: (406) 444-6601
FAX: (406) 444-0533

P.O. BOX 201601
HELENA, MONTANA 59620

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.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



GREG GIANFORTE, GOVERNOR

STATE OF MONTANA

DIRECTOR'S OFFICE: (406) 444-2074
<http://dnrc.mt.gov>

PO BOX 201601
HELENA, MONTANA 59620-1601

Technical Memorandum: Pond and Wetland Evaporation/Evapotranspiration

Date: June 7, 2023

To: Administrator, Water Resources Division

From: Water Sciences Bureau

The DNRC published a memorandum on November 18, 2019, outlining standard practices followed by the DNRC to estimate evaporation and evapotranspiration from ponds and wetlands for water right administrative purposes (DNRC, 2019). This memorandum replaces the 2019 publication and includes updated weather/site considerations, climate data, and estimation procedures.

Net Evaporation (Open Water)

When administering all water rights, evaporation from ponds and evapotranspiration from wetlands should be evaluated using net evaporation (accounting for precipitation). 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 and periods of record.

Evaporation Data Sources

Evaporation from shallow, open bodies of water such as ponds and wetlands should be calculated using methods found in Potts (1988) or SCS (1974). If using Potts (1988), the adjusted Penman-Linacre (P/L), which is 75% of the P/L estimates should be used. 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. As such, not all methods are appropriate for estimating pond and wetland net evaporation. Evaporation data collected by a standard USGS evaporation pan is an acceptable yet less reliable

alternative to the methods provided in Potts (1988) or SCS (1974). Pan evaporation 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 (1998) and the Meyer's (1942) document are not recommended for use on ponds or wetlands as they provide evaporation standards for large reservoirs.

Gridded Monthly Net Evaporation

The DNRC utilized gridded climate data to produce a 4km by 5km gridded polygon shapefile of net evaporation statewide. 30-year monthly gridded climate normals for the period from 1991 to 2020 were downloaded from the NOAA National Centers for Environmental Information. Gridded monthly average temperature, gridded monthly minimum temperature, elevation (64m DEM), and latitude were used to calculate gross evaporation using the adjusted P/L method and the Raster Calculator tool in ESRI ArcGIS Pro. Monthly gridded precipitation data was subtracted from the gridded gross evaporation data to produce monthly net evaporation. Grid cells with negative monthly net evaporation (precipitation exceeds gross evaporation) were set to zero following DNRC standards.

The gridded net evaporation dataset was calculated using the same DNRC method previously applied to individual weather stations (adjusted P/L procedure), but produces a site-specific evaporation estimate for a waterbody of interest rather than extrapolating a value from regional weather station data. The gridded net evaporation dataset varies slightly from values calculated at individual weather stations due to differences in elevation, latitude, and precipitation as well as the interpolation methods used to derive the input data. Therefore, the gridded net evaporation dataset should be used instead of individual weather stations to maintain consistency and standardization of the estimation method.

Other Net Evaporation Considerations

Annual net evaporation for ponds and wetlands that dry up outside the irrigation season can be calculated from the gridded net evaporation dataset for the months where the NRCS Irrigation Water Requirements (IWR) NIR value is non-zero (NRCS, 2003). Annual evaporation from the SCS (1974) report can be apportioned by month according to the monthly percentages produced by the gridded net evaporation dataset.

Monthly net evaporation for ponds and wetlands that ice over should be calculated from the gridded net evaporation dataset until permanent icing occurs. Annual evaporation from the SCS (1974) report can be apportioned to ice-free months according to monthly percentages produced by the gridded net evaporation dataset.

Freezing degree days (FDD) can be used to corroborate when ice over conditions occur on ponds and wetlands. FDD is calculated from weather station data by subtracting the average daily temperature from the freezing temperature (32 °F)(NWS, 2022). The average daily temperature for each Montana weather station was derived from the daily high and low values from 30-years of Western Regional Climate Center Data. FDD start when the average daily temperature drops below 32 °F (positive FDD value) and ends when the average daily temperature is 32 °F or warmer (negative FDD value). The

FDD value indicates the departure from freezing on that day, while the sum of positive FDD values over a season is the magnitude of below freezing conditions for that location. The ice-over period for each weather station is the start and end of positive FDD rounded to the nearest month.

Wetland Evapotranspiration

Wetland evapotranspiration estimates should be calculated using the NIR for alfalfa as calculated by IWR (NRCS, 2003) and an appropriate coefficient from Allen, et al. (1994). The estimates for alfalfa should correspond to a NIR estimate from IWR for flood irrigation systems, consistent with the methods described in the DNRC's Historic Consumptive Use Methodology Memorandum (DNRC, 2010) and Use of the IWR Program Memorandum (DNRC, 2013). NIR values should not be reduced by management factors.

When wetlands contain both wetland vegetation and open water, both wetland evapotranspiration values and surface water net evaporation values are additively used to determine consumptive use.

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**DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION
Water Resources Division**



STEVE BULLOCK, GOVERNOR

1424 NINTH AVENUE

STATE OF MONTANA

PHONE: (406) 444-6601
FAX: (406) 444-0533

P.O. BOX 201601
HELENA, MONTANA 59620

Technical Memorandum: Net Surface Water Depletion from Ground Water Pumping

Date: July 6, 2018

To: Water Rights Bureau Chief

From: Water Sciences 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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DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

Water Resources Division



STEVE BULLOCK, GOVERNOR

1424 NINTH AVENUE

STATE OF MONTANA

PHONE: (406) 444-6601

FAX: (406) 444-0533

P.O. BOX 201601

HELENA, MONTANA 59620

Technical Memorandum: Surface Water Depletion for Regional Bedrock Aquifers

Date: September 16, 2019

To: Millie Heffner, Water Rights Bureau Chief

From: Attila Felnagy, Ground Water Hydrologist, Water Management Bureau
Todd Netto, Water Resource Specialist, Glasgow Water Resources Office
Mark Elison, Deputy Manager, Billings Water Resources Office

The purpose of this technical memorandum is to describe procedures for determining where appropriations under §85-2-311, MCA for ground water permits and §85-2-402, MCA for ground water changes from regional bedrock aquifers have the potential to deplete surface water sources and adversely affect existing water rights. The following discussion clarifies where the Department will consider surface water depletions from ground water pumping in consolidated bedrock aquifers as part of a standard evaluation of a ground water appropriation. Aquifers considered in this memorandum include all consolidated bedrock aquifers stratigraphically below the Bear Paw Shale. The standard practices DNRC follows to calculate net depletion from ground water pumping are described in a separate technical memorandum. This standard practice for regional bedrock aquifers also incorporates the results from the Madison Group Aquifer Guidance Memo which identifies surface water depletion from ground water pumping in the Madison Group Aquifer.

Net Depletion Background

Net depletion of surface water resulting from ground water pumping described in a related technical memorandum is the calculated volume, rate, timing, and location of reductions to surface water flow resulting from a ground water pumping. Net depletion is calculated by DNRC by:

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

Note: The Madison Group Aquifer Guidance Memo cited here contains identical text as the document previously cited in the Aquifer Test Reports under the "Draft Madison Group Aquifer" moniker. The latter, incorrectly cited as published in 2014, contained a "DRAFT" watermark on the first page. The Madison Group Aquifer Guidance Memo does not have this watermark, but is otherwise identical.

The information presented in the following sections describes the general hydrogeologic conceptual model and procedures for identifying potentially affected surface waters for ground water pumping from regional aquifers in consolidated bedrock, primarily in central and eastern Montana.

Exclusions to this Guidance

This technical memorandum does not apply when regional bedrock aquifers are at or near the surface and may potentially impact local surface water sources. This technical memorandum does not supersede restrictions related to closed basins, controlled ground water areas, compacts, and/or administrative actions.

Determining Surface Water Depletion

To determine where surface water depletions are likely to occur due to withdrawal from a regional bedrock aquifer, a buffer region is drawn around formation outcrops of the source aquifer and around geologic structures that are likely to provide preferential flow pathways within the aquifer (Figure 1). The procedures described in this memorandum are similar to those in the Madison Group Aquifer Guidance Memo which identifies buffers around outcrop areas in which the Madison Group Aquifer is not considered hydraulically connected to surface water. Buffers delineated in this memorandum identify regions in central and eastern Montana where ground water appropriations in regional bedrock aquifers are considered to have no surface water connection for the purpose of standard evaluations of ground water appropriations conducted by the Department. If a new appropriation is located within a buffered area, new ground water appropriations will continue to be evaluated under the standard practices found in the related technical memorandum. New ground water appropriations outside the buffer are not considered to deplete surface waters unless there is information suggesting otherwise, including but not limited to hydrogeologic studies and geologic mapping in the area of interest. Site specific evaluations will be confirmed by a Department ground water hydrologist using the best available geologic structure information for the region.

Buffers Around Outcrops

In areas where an aquifer crops out at the surface, it is likely that ground water appropriations will result in decreased discharge from the aquifer to surface water. This probability decreases with distance from the outcrop as the aquifer lies deeper beneath overlying units. An outcrop buffer of 10 miles is based on the buffer distance used by the Department in the Madison Group Aquifer Guidance Memo. In areas greater than 10 miles from an aquifer outcrop, ground water pumping from regional bedrock aquifers are not considered to deplete surface waters unless there is evidence to the contrary.

Buffers Around Geologic Structures

Regional-scale geological structures have the potential to provide preferential pathways for propagation of drawdown to surface water due to ground water pumping. In general, increasing confining pressure at depth compresses fractures and reduces the hydraulic conductivity of geologic structures and, consequently, constrains propagation of drawdown to areas near outcrops. At shallower depths, pore pressures are less, fractures are more open, and hydraulic conductivities of geologic structures are much higher. Furthermore, regional-scale geologic structures are interconnected with more local scale geologic structures, creating fracture zones. A buffer of 10 miles is to be used for geologic structures. In areas greater than the buffer distance from a regionally significant geologic structure, barring any evidence to the contrary, the Department would not consider surface water depletions from ground water appropriations from that regional bedrock aquifer as part of a standard evaluation of applications for ground water appropriation.

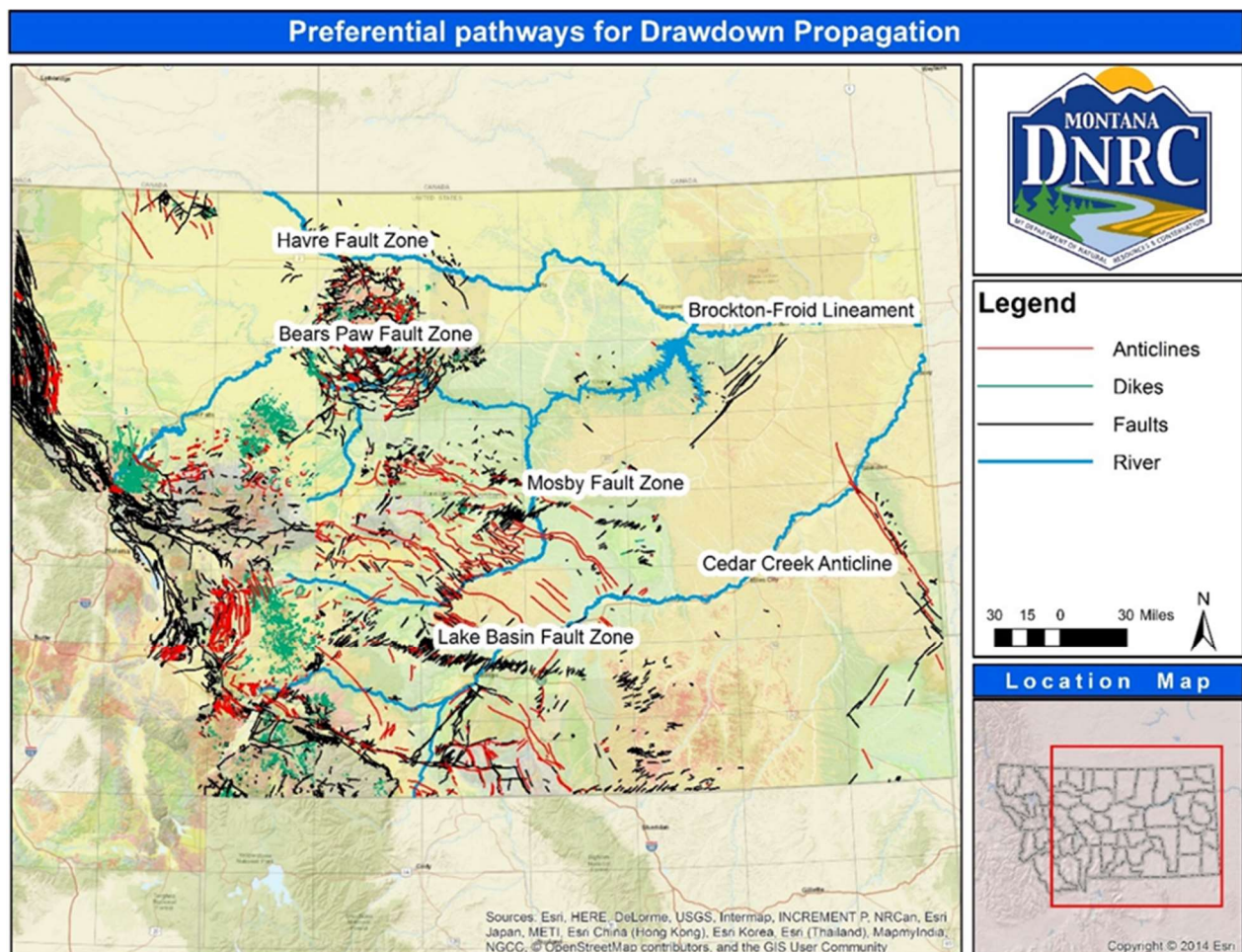


Figure 1: Preferential pathways for drawdown propagation (from geologic map 1:100,000 scale).

Additional information the applicant or objector can provide

If an applicant or objector disagrees with the Department's determination potentially affected surface waters for an appropriation of ground water from a regional bedrock aquifer, they have the option to provide the Department with additional information and analysis. The new data and analysis should include a hydrogeologic conceptual model of geologic structural control of ground water flow and discharge, and propagation of drawdown from the applicant's proposed well including a map showing where depletions to surface water are expected to occur.

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DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
WATER RIGHTS BUREAU
NEW APPROPRIATIONS PROGRAM

ADMINISTRATIVE

POLICY NO. 11

☒

PROPOSED, DATE 3/31/82

☐

FINAL, DATE _____

APPROVED: Ronald A. Luse
New Appropriations Program Mgr.

APPROVED: Thurman Lick
Chief, Water Rights Bureau

INFILTRATION GALLERY POLICY

Montana Water Law statutes defines the following terms as follows:

- 1.) "Groundwater" - means any water beneath the land surface or beneath the bed of a stream, lake, or reservoir, or other body of surface water, and which is not a part of that surface water. (It is unclear what "which is not a part of that surface water, " means.) Section 85-2-102 (8) M.C.A.
- 2.) "Well" - means any artificial opening or excavation in the ground, however made, by which groundwater is sought or can be obtained or through which it flows under natural pressures or is artificially withdrawn. Section 85-2-102 (18) M.C.A.

An infiltration gallery for purposes of this administrative policy is a screen or series of screens, a perforated or open-ended pipe or series of pipes, or any combination of the former, installed in a natural or man-made gravel filter pack in a bed of a lake, stream or river, or along the shore of a lake or bank of a stream or river, whereby surface water is being appropriated.

~~The primary application of an infiltration gallery is in a situation~~
where there is an adequate saturated thickness (shallow aquifer) to support a well or well field to provide sufficient quantities of water for the beneficial use. A second common application of an infiltration gallery would be in a situation where a barrier, such as an impermeable rock formation which would greatly affect well efficiency or in other situations where a well or well field is not feasible.

The decision to place the infiltration gallery in a bed or a lake, stream or river, or along the shore of a lake or bank of a stream or river is dictated largely by characteristics of the site selected for the gallery. Obviously each location offers certain advantages and disadvantages with respect to the other.

The classical argument of defining the terms "surface" and "ground-water" is virtually endless. What is surface water today, may be ground-water tomorrow, or vice versa, is a fact in the study of hydrology and an unending problem in administering Montana's water right permit system.

In order to consistently administer the water laws of Montana, the following policy will be followed when infiltration galleries are encountered, as defined previously.

- 1.) Water users proposing or presently appropriating water for a beneficial use by means of an infiltration gallery, as previously defined, must file an Application for Beneficial Water Use Permit (Form No. 600), since surface water is directly being appropriated. (The less than 100 gpm exclusion for groundwater - Form No. 602, doesn't apply in this situation.)
- 2.) Obviously in some situations it may be unclear if in fact the applicant is or will be appropriating surface water by means of an infiltration gallery, as defined herein. If the available facts are not clear cut advise the applicant of the impact of the situation, document your discussion in the file and accept either the 600 or 602 Form.
- 3.) This problem should be addressed, if and when possible, before a 600 or 602 Form is filed with the Department. We will not return 602 Forms that have been filed unless facts obviously show the Applicant should have properly filed a Form 600.

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.

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.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

ALLAN

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CD
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mjm
JP
me*



TED SCHWINDEN, GOVERNOR

1520 EAST SIXTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-6699

HELENA, MONTANA 59620

RECEIVED

MEMORANDUM

MAR 24 1986

TO: Gary Fritz, Administrator
Water Resources Division

FROM: James M. Madden *mjm*
Legal Counsel

APPROVED: Tim D. Hall *TDH*
Legal Counsel

Post-It® Fax Note 7671		Date	# of pages
To	<i>Kim D.</i>	From	<i>Scott A.</i>
Co./Dept.		Co.	
Phone #		Phone #	
Fax #		Fax #	

SUBJECT: Private Fish and Wildlife Appropriations under the
Water Use Act.

DATE: January 22, 1986

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.

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, Toohey 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, 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 AND CONSERVATION



BRIAN SCHWEITZER
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
<http://www.dnrc.mt.gov>

1424 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

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 ($1 \text{ cfs} = 1.98 \text{ af/day}$; $4.34 \text{ cfs} \times 1.98 \text{ af/cfs/day} = 8.59 \text{ af}$; $78.41 \text{ af} / 8.59 \text{ af} = 9.1 \text{ days}$). 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

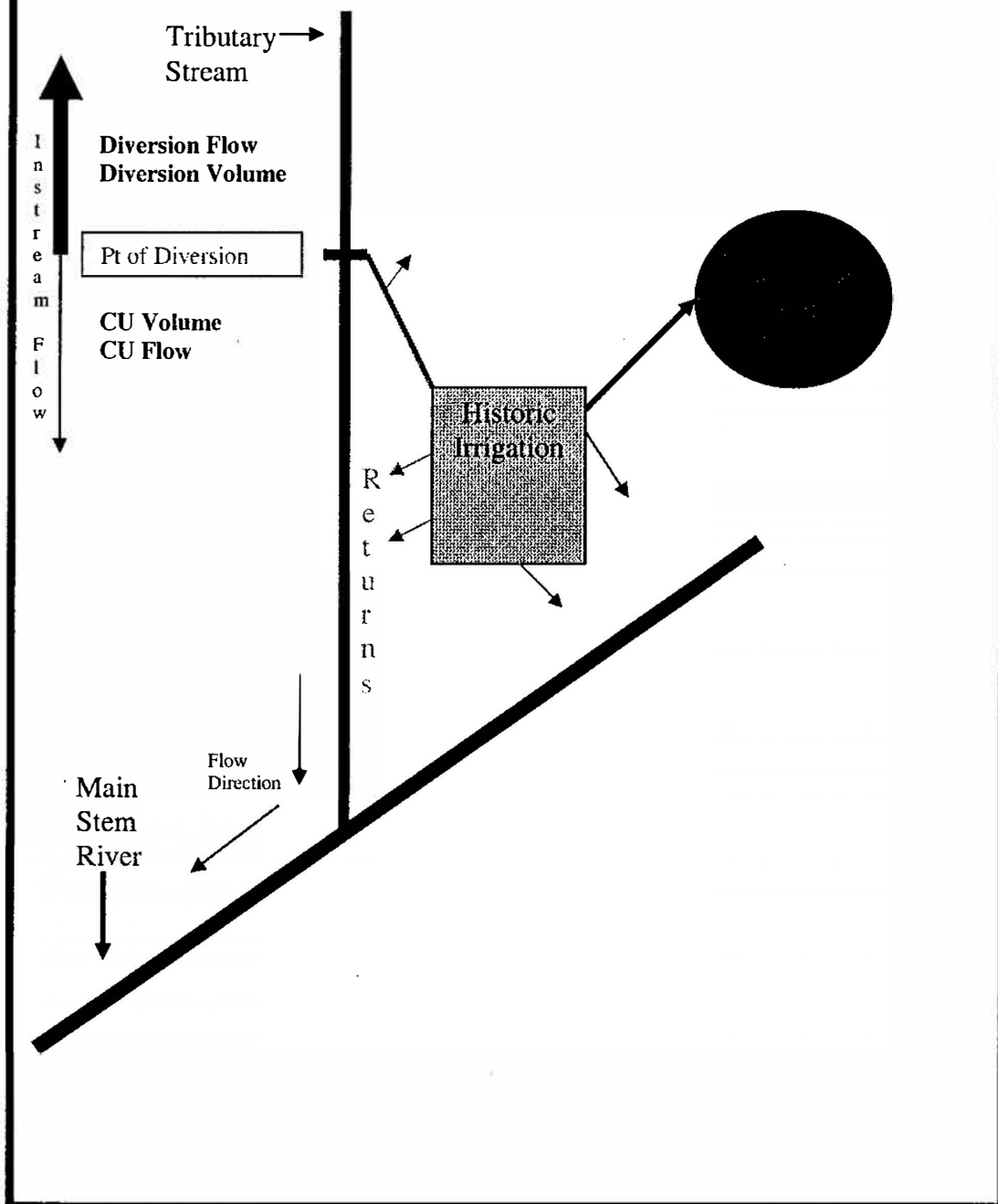
of the historic diversion is not an issue on the tributary stream. I assume that no protection is afforded to the main stem. I worked with Mike Roberts to assure that I was using defensible figures as to consumptive use and return flows in the example. Mike provided the analysis using two approaches: 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

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION



BRIAN SCHWEITZER, GOVERNOR

1625 ELEVENTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-2074
FAX NUMBER (406) 444-2684

PO BOX 201601
HELENA, MONTANA 59620-1601

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.

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. Eg. 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 of 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) it 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.

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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 appropriators 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, 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 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 positing 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.

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.

To: Water Resources Division
From: Joslyn Hunt
Re: Marketing for Mitigation to Oneself

Jim Nave posed a question related to Missoula County's change of use application it seeks. As will become apparent, his question is broader than Missoula County's situation. For context, however, the facts concern Missoula County's application for a change of its water right to offset depletions. The change Missoula County seeks, however, results in a water remainder because the consumable water has a greater volume than Missoula County can put to beneficial use.

The question posed is whether Missoula County can market the remainder for mitigation in the future to itself?

The answer to that question is no.

Section 85-2-310(9)(c)(v), MCA (emphasis added), allows one to appropriate water for marketing, subject to satisfaction of special requirements:

(v) except as provided in subsection (10), if the water applied for is to be appropriated **above that which will be used solely by the applicant** or if it will be **marketed by the applicant to other users**, information detailing:

- (A) each person who will use the water and the amount of water each person will use;
- (B) the proposed place of use of all water by each person;
- (C) the nature of the relationship between the applicant and each person using the water; and
- (D) each **firm contractual agreement** for the specified amount of water for each person using the water[.]

The plain language of this provision clearly contemplates that "marketing" is for water above that amount "used solely by the applicant" to be used by "other users."

Section 85-2-310(10), MCA (emphasis added), likewise contemplates that marketing for mitigation is limited to mitigation by third parties: "If water applied for is to be marketed by the applicant **to other users for the purpose of aquifer recharge or mitigation**, the applicant is exempt from the provisions of subsection (9)(c)(v)."

To the extent a contract is required for marketing for mitigation, the requirements of a contract provide additional support for the proposition that Missoula cannot market water to itself.

A legally enforceable contract requires (1) identifiable parties capable of contracting; (2) the parties' consent; (3) a lawful object; and (4) sufficient cause or consideration. Section 28-2-102, MCA. The parties' consent must be free, mutual, and communicated. Section 28-2-301, MCA. Consent is not determined by the subjective, undisclosed intent of the parties. *Miller v. Walter*, 165 Mont. 221, 226, 527 P.2d 240, 243 (1974). Consent is determined by the parties' outward, objective manifestations. *Bitterroot Intern. Systems, Ltd. v. Western Star Trucks, Inc.*, 2007 MT 48, ¶ 33, 336 Mont. 145, 153 P.3d 627; *Miller*, 165 Mont. at 226, 527 P.2d at 243.

Parties usually give mutual consent in the form of offer and acceptance. *Bitterroot Int'l Sys.*, ¶ 33. "An offer is a promise; it is a statement made by the offeror of what he will give in return for some promise or act of the offeree." *City of Bozeman v. Taylen*, 2007 MT 256, ¶ 19, 339 Mont.

274, 170 P.3d 939 (quotation omitted). Acceptance communicated to the offeror complete the mutual consent between the parties. An offeree may communicate her acceptance in any reasonable and usual manner. Section 28-2-512(2), MCA. The offeror, however, as master of the offer may limit the time, place, or manner in which the offeree may accept. Section 28-2-501(2), MCA; *Miller*, 165 Mont. at 227, 527 P.2d at 244.

Here, Missoula County—or any party similarly situated—seeks to contract with itself. Contracting with oneself cannot occur because a legally valid contract requires parties' consent which, in turn, requires offer and acceptance. Effectively Missoula County is making itself an offer that it then accepts. That offer and acceptance does not have consideration because Missoula County will not be paying itself for the water it seeks to market.

Missoula County, and other parties similarly situated, must find another solution to the remainder problem since marketing for mitigation to oneself cannot occur.

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.

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 beavery 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 0.1acre-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 DNRC office. Projects that pool or pond more than 0.1acre-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.

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION



BRIAN SCHWEITZER
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
<http://www.dnrc.mt.gov>

1424 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

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)

- 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

- 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.
- 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.

Ground Water Sources

- 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.
- 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.

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION



BRIAN SCHWEITZER
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
<http://www.dnrc.mt.gov>

1424 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

MEMORANDUM

To: Bill Schultz, Missoula Regional Office Manager
Terri Eccles, Kalispell Regional Office Manager
Terry McLaughlin, Water Rights Bureau Chief
Kim Overcast, New Appropriations Supervisor

From: John E. Tubbs, Administrator

Re: Permitting in the open Clark Fork and Flathead basins.

Date: June 9, 2008

Over the last year-and-a-half the Missoula and Kalispell Regional Offices have been instructed to review each new water permit application on a case-by case basis relative to the Thompson Falls Lumber Company (TFLC) decision. Discussions between our technical and legal staff have been ongoing. As indicated by memorandum documenting various meetings, the case-by-case process is not proving to be effective for field staff. Added to this, the Bostwick case focuses the agency in a direction to make criteria decisions early in the process rather than at the end, in certain areas of the State.

The receipt of a letter from Avista Corporation (June 4, 2008) confirmed a direction that I have been moving toward over the last four months. That position being that the TFLC is precedent setting, but did not close the basin to further appropriations. This is the first permit application that Avista Corp. objected to under the Water Use Act in the Clark Fork basin, and the objection prevailed. It is precedent setting to the extent that the facts brought to the case by Avista Corp. proved that the 250 gallon per minute, 400 acre-feet per year, use of surface water in the lower Clark Fork would adversely affect their senior hydropower rights. Avista clarified their concerns regarding new appropriations to the Department. The lower Clark Fork and Flathead River basins remain open to appropriations.

The TFLC case specifically addresses the effects of a new surface water diversion just upstream of the City of Thompson Falls and within 10 miles of Noxon Reservoirs upper shores. As mentioned above, the facts in the case demonstrate that a diversion near the reservoir causes adverse affect. The letter from Avista Corp. identifies the specific issues with the TFLC application that concerned the objector.

However, the letter also indicates areas where Avista, at this time, does not believe new uses will cause adverse effect. In part this may be due to the mitigating effect of storage behind Kerr Dam in Flathead Lake and behind Hungry Horse Dam. These two large storage facilities are managed based on specific rule curves and flow regimes. In other words, stream flows at Noxon Rapids are in large part managed flows (without regard to natural flow), except during high flow events. As a result, the impacts attributed to new diversions upstream of the confluence of the Clark Fork and the Flathead Rivers are diminished by the off-setting effect of storage.

For these reasons, regional offices should limit their use of the TFLC case as precedent to: new applications for surface water in the open Clark Fork River and tributaries, excluding the Flathead River and its tributaries upstream of the Flathead Indian Reservation Boundary. Again these basins are open. All appropriations must still be evaluated based on the requisite criteria, including ground water appropriations that may have an adverse effect on the ability of surface water right holders to exercise their rights.

The Department is precluded from issuing any permits within the Reservation. On-going negotiations with the Salish and Kootenai Tribes will define the availability of water in the lower Flathead Basin.

Finally, TFLC should be seen in context with the efforts the State is undertaking to seek 100,000 acre-feet of stored water in Hungry Horse Reservoir. This is a forward-looking effort but speaks to the commitment to protect all senior water rights, including hydropower. Ultimately, future water uses could have Hungry Horse storage available for mitigation water in the Clark Fork Basin.

The State constitution requires protection of senior water rights but it also recognizes the 'use of all water' (Article IX, Section 3 (2), MCA). The approach outlined in this memo represents the balance of these two provisions based upon the information available. All applications must meet the 85-2-311 criteria; however, only a subset, as described above, are directly impacted by TRLC.

The Department is also issuing a new rule confirming that mitigation of surface water depletions is an acceptable method of preventing adverse affect associated with new uses. Not all water uses will fit within the sideboards that this memo provides. Either internal to a watershed, or for larger uses along the lower Clark Fork River, mitigation remains a viable method to overcome impacts to senior water right holders. This is standard operating procedure for the Department; the new rule will make it clear to the public that mitigation is a viable option.

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

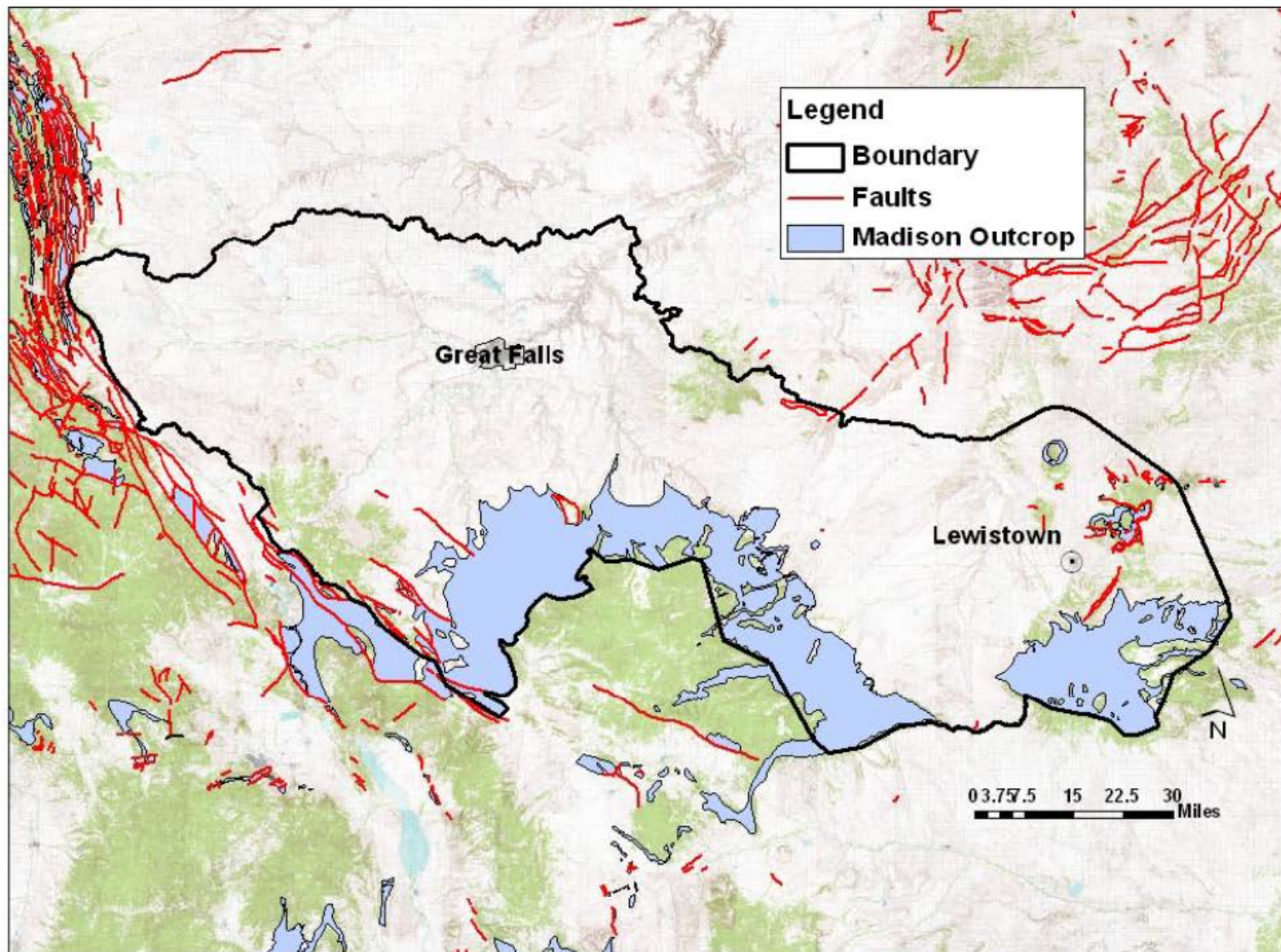
Applicants for wells in the Madison Group aquifer located south of the Yellowstone River are excluded from this guidance until conditions in the Madison near the Bighorn and Pryor Mountains are evaluated more closely. Applicants for wells south of the Yellowstone River must evaluate hydraulic connection 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.

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- Huntoon P.W., 1993, The influence of Laramide foreland structures on modern groundwater 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.

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Area outside of which DNRC has determined that pumping from the Madison is unlikely to deplete surface water.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



GREG GIANFORTE
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
FAX (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
FAX: (406) 444-0533
www.dnrc.mt.gov

1424 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

Technical Memorandum: Variance - Yellowstone River Terrace Level 3 Aquifer Properties

Date: March 1, 2022
To: Administrator, Water Resources Division
From: Water Management Bureau

The purpose of this memorandum is to establish a streamlined approval of variance requests from aquifer testing requirements (ARM 36.12.121) where the proposed beneficial use is less than or equal to 200 acre-feet per annum and diverted from the source aquifer mapped as Yellowstone River Terrace Level 3 (Qat3) by Lopez (2000) and Olson and Reiten (2002) (**Figure 1**). The Water Management Bureau (WMB) recommends that applicants be allowed to forgo a 24-hour, or 72-hour aquifer test typically required, if the applicant agrees to use the following Department established aquifer properties in subsequent evaluations of the criteria:

Transmissivity – 6,000 ft²/day, Specific yield – 0.10.

Rationale:

- 1) Qat3 has been studied extensively and sufficient documentation exists for reasonable estimates of aquifer properties that have been derived from previous water right permit applications.
- 2) The use of a regional transmissivity value representative of the source aquifer (i.e., the low end of transmissivity values estimated from existing aquifer tests) in a groundwater model results in larger drawdown near a proposed groundwater diversion and this allows for an adequate evaluation of the potential for adverse effect to nearby groundwater rights.
- 3) In cases where the specific yield cannot be estimated from an aquifer test, the Department typically utilizes and accepts an assumed specific yield of 0.10 from Lohman (1972) for modeling unconfined sand and gravel aquifers.

Applicants will still need to perform limited duration testing to address short-term physical availability/adequacy of diversion. This can be done through completion of an 8-hour duration drawdown and yield test whose data is required to be submitted to the Department on Form 633. Longer-term physical availability/adequacy of diversion and adverse effect will be addressed by the Department via analytical or numerical groundwater models using a transmissivity of 6,000 ft²/day and specific yield of 0.10, though the burden of proof is on the applicant.

Applicants will still need to submit the variance request to the Regional Manager. If the variance request is consistent with the parameters described above, the request can be granted by the Regional Manager without further review from WMB Hydrologists. Variance requests along the edge Qat3 may not fit the purpose of the memo and will acquire additional review. Applicants are not limited to the aquifer properties above and may submit a formal variance request if they wish to use other local information available or use an aquifer test that conforms to the aquifer testing requirements (ARM 36.12.121).

ADJUDICATION
BUREAU
(406) 444-0560

COMPACT
IMPLEMENTATION
PROGRAM
(406) 444-5700

STATE WATER
PROJECTS
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(406) 444-6646

WATER
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(406) 444-6637

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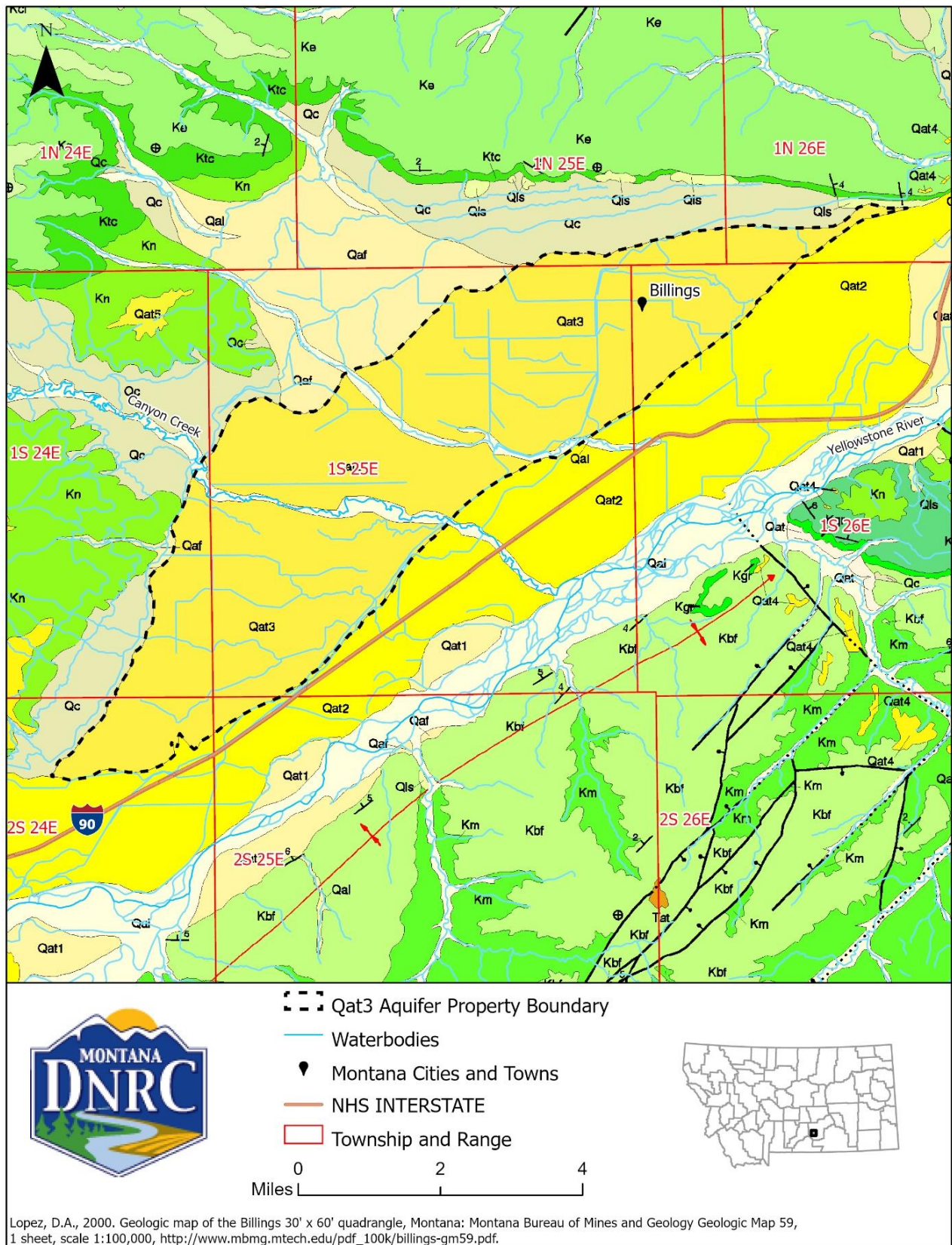


Figure 1: Extent of aquifer property boundary (Qat3) and geologic map by Lopez (2000).

Review

This document has been reviewed in accordance with Category 2 of [DNRC's Water Management Bureau's Minimum Standards of Review](#), Version 1, March 2021.

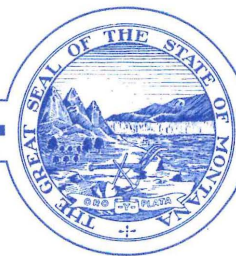
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DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



BRIAN SCHWEITZER
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
<http://www.dnrc.mt.gov>

1424 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

To: Kalispell Water Resources Unit Office

From: James Heffner, Hydrogeologist
Water Management Bureau

Date: March 12, 2010

RE: Variance – Evergreen Aquifer Geothermal/Heat Exchange Wells

In regard to future requests that you receive for variance from aquifer testing requirements (ARM 36.12.121) where the proposed use is for non-consumptive geothermal/heat exchange wells in the Evergreen Aquifer, which extract and re-inject water to the same aquifer; I recommend that applicants be allowed to forgo the more rigorous aquifer testing and analysis typically required, if they use the following aquifer properties in subsequent evaluations of the criteria:

Transmissivity – 92,000 ft²/day, Specific yield – 0.10.

Rationale:

- 1) While site-specific data is limited with regard to the Evergreen aquifer (Kalispell Area), existing information currently available indicates transmissivities ranging from ~92,000 ft²/day (King, 1988) to 241,000 ft²/day (Noble and Stanford, 1986).
- 2) Aquifer testing at flow rates typically utilized by geothermal/heat exchange systems are usually not sufficient to evaluate aquifer properties at the local scale.
- 3) The primary concern with geothermal/heat exchange wells are interference effects to nearby wells. The use of a conservative transmissivity value (the low end of values appearing in the published literature) will allow for an adequate evaluation of the potential for adverse effect to nearby groundwater rights.
- 4) In cases where the specific yield cannot be estimated from an aquifer test, the Department typically utilizes and accepts an assumed specific yield of 0.10 for modeling unconfined systems.

Applicants will still need to perform limited duration testing to address short-term physical availability/adequacy of diversion. This can be either through the completion of an 8-hour yield drawdown test or comparable well performance testing (step-tests). Longer-term physical availability/adequacy of diversion will need to be addressed via analytical model, including an estimate of well loss.

Applicants will still need to submit the variance request to the Unit Manager. If the variance request is consistent with the parameters described above, the request can be granted without further review from WRD Hydrogeologists. Applicants are not limited to the aquifer properties above, and may submit a formal variance request if they wish to use other local information available, or use an aquifer test that conforms to the aquifer testing requirements (ARM 36.12.121).