ANNUAL REPORT
OF ACTIVITIES PERFORMED BY
THE STATE ENGINEER'S OFFICE
2020

To Satisfy Requirements
of Senate Bill 89-181
Regarding Water Quality

COLORADO
Division of Water Resources
Department of Natural Resources

INTRODUCTION

According to the provisions of Senate Bill 89-181 (SB-181), the Colorado Division of Water Resources/State Engineer's Office (DWR/SEO), has been assigned as one of the agencies responsible for implementing the water quality standards and classifications adopted by the Colorado Water Quality Control Commission (WQCC). The SEO will implement water quality standards and classifications only where water quality statutes other than the Water Quality Act require the SEO's involvement. This report provides an update on the activities undertaken by the SEO and its Division offices to accomplish its responsibilities pursuant to the provisions of SB-181 in calendar year 2020.

The SEO takes a proactive stance in this matter by cooperating with other agencies and organizations in the development of comprehensive and practical solutions for managing the quantity and quality of the state's waters.

There are three major areas where the SEO exercises its authority in implementing water quality standards and classifications. These are:

- Adoption of points of compliance for discharges to groundwater
- Approval of substitute water supply plans and non-decreed water exchanges
- Adjudication process of plans for augmentation including water exchanges

A. Points of Compliance for Discharges to Groundwater

The SEO ensures that well construction activities do not result in a pollution discharge to state waters through well permitting activities. All wells must be constructed in accordance with the rules and regulations established by the State Board of Examiners of Water Well Construction and Pump Installation Contractors (BOE). Domestic and commercial water wells are constructed by licensed well drillers. Monitoring and recovery wells can be constructed either by licensed drillers or under the supervision of a professional engineer or professional geologist if the well does not penetrate a confining layer. The BOE takes corrective actions against licensed drillers or pump installers who violate the rules for proper well construction, including fines and suspension or revocation of their licenses. In the case of unlicensed contractors performing well construction activities, legal proceedings are initiated, which usually conclude in significant monetary judgements. Well owners have the ultimate responsibility to bring an improperly constructed well into compliance. Otherwise, the BOE, State Engineer, or both may order the well plugged and abandoned to prevent contamination of groundwater.

The SEO annual well permitting summary is captured in Table 1. After dropping roughly 10% in 2019, “permits issued” increase by 3% in 2020. Monitoring hole notice-of-intent to drill (NOI) forms received by the SEO were up about 6%. These also include NOIs for temporary dewatering wells. Monitoring *holes* (in contrast to monitoring *wells*) are used for temporary monitoring (<18 months) of groundwater quality at environmental remediation sites. The SEO can request water quality data from applicants if necessary.

Table 1 –SEO Annual Well Permitting Summary

SEO Permitting Activity	2017	2018	2019	2020
1. Permits Issued	5609	6264	5621	5791
2. Monitoring Hole Notice-of-Intent	862	1028	921	973

Table 2 summarizes annual BOE activities (through the Well Inspection Program) for the last four years. In 2020, we continue to see the positive effects of implementing the recommendations of the State Auditor's Well Inspection Program review (described on page 3). The 2019 jump in total fines was a direct result of eliminating the use of a first-offense warning letter for late well construction reports. In 2020, late filing of well construction reports was down significantly. Well construction variances in 2020 bounced up 25% from an unusually low number in 2019. The Board licensed 244 contractors in 2020, just two more than in 2019. All licensed contractors are required to obtain at least eight hours of continuing education annually for license renewal. Because of the COVID-19 pandemic, rules were amended to allow this continuing education to be obtained online.

Table 2 –Board of Examiners Annual Activity Summary

BOE Activity	2017	2018	2019	2020
1. Complaints Investigated	29	39	99	33
2. Resolved Complaints	21	29	68	52
3. Stipulate Settlements (total dollars)	15 ($8995)	19 ($7600)	51 ($45,600)	26 ($13,800)
4. Licenses suspended or revoked	0	0	0	0
5. Letter of admonition/reprimand	22	24	15	8
6. Inspections	855	722	705	1202
7. Well Construction Variances	122	155	85	107
8. Licensed Contractors	239	234	242	244

The *Well Inspection Program* was authorized by the legislature in Senate Bill 03-45 and funded by a $40 increase in well permit application fees. Presently, the program consists of a Chief Well Inspector headquartered in Denver and two additional well inspectors who perform inspections throughout the state. The Chief Well Inspector coordinates the activities of the program and supports the BOE. The primary objective of the program is to assist the Board with the enforcement of its rules and regulations for well construction and pump installation. A key focus of the well inspectors and the inspection

program is to locate and initiate action against unlicensed contractors working illegally in the state. Well inspections increased markedly (70%) because this was the first fully staffed year since 2017 and due to an increased number of advance notifications of well construction, as recommended by the audit.

In 2018, the Colorado Water Well Contractors Association requested a financial and performance audit of the Well Inspection Program. The Office of the State Auditor started the audit in July 2018 and the final report, *Water Well Inspection Program, Performance Audit*, was released in late May 2019.

In summary, the audit found deficits in the program and detailed areas that need improvement. The program needs to

- effectively use a risk-based inspection program to focus inspections on wells that present the highest risk to public health and contamination of the aquifers;
- focus well inspectors time on key phases of well construction;
- more systematically use well construction work reports to verify compliance with the well construction requirements (i.e. rules and permit conditions);
- improve institutional controls on allocation of the well inspection cash fund's resources.

In 2020, the BOE and DWR staff are continuing to work on effective implementation of the audit recommendations. To do so, several new data analytics processes are being devised and automated with the resulting timely data used by the BOE, DWR staff, and well inspection staff to improve well construction and well inspection. DWR met with the Legislative Audit Committee in June and December of 2020 to report on our progress in implementing the audit recommendations.

Another significant accomplishment in the realm of well construction groundwater discharge compliance is the new BOE Policy 2020-3 addressing *Short-Term Discharges to Groundwater from Water Well Activities*. The policy and its attendant *Guidance on Non-Compliant (Contaminated) Groundwater Locations* addresses a long-term need for clarity -- specifically for water well contractors — on the situation of these well construction discharges in relation to the larger water discharge permitting regulations. These documents are included in this report as Attachment A. The SEO is thankful for the extensive consultation and review by WQCD and HMWMD staff to improve these documents.

B. Substitute Water Supply Plans and Non-Decreed Water Exchanges

Substitute water supply plans (SWSP) provide water users the flexibility of exchanging and replacing out-of-priority depletions on an interim basis or, if the applicant was to continue such operation permanently, until a court approved plan for augmentation is obtained. For approval of substitute water supply plans, the State Engineer requires that the quality of the substituted water meet the use requirements to which the senior appropriators have normally put the water. The SEO reviewed and approved 214 SWSPs total in 2020. Of these SWSPs, 65 were related to gravel pits. The 2020 SWSP total was a

16% increase from the 2019 total of 184 approved plans. The majority of substitute supply plans use river water as the source of substituted water.

Non-decreed water exchanges generally do not involve written approval. They are limited to daily or seasonal timeframes and require the local water commissioner's approval prior to the exchange occurring. The water commissioners keep records of these exchanges in the diversion records for the structures involved. The substitute supply water usually comes from reservoirs or from bypassing stream diversions. Seldom has an applicant used treated wastewater or other supplies with water quality concerns in a non-decreed exchange. Therefore, the water used in these exchanges generally does not create water quality problems.

C. Decreed Exchanges and Plans for Augmentation

The SEO may oppose applications to Water Court for augmentation plans and exchanges in which the substituted water does not meet the use requirements to which the senior appropriators have normally put the water. The SEO generally does not participate in Water Court cases where the parties who are directly impacted can be expected to raise concerns with respect to water quality issues. However, the SEO will become involved in two instances: First, where there are exchanges involving treated wastewater, the SEO requires the exchanged water be of a quality that meets the requirements of use to which other vested water rights have normally been put or that exchanged water meet the existing water quality standards for discharges to the receiving stream. Second, the SEO, in administering water decrees, will become involved with issues of water quality where the Water Judge makes water quality monitoring a part of the decree. The Water Judge has the ultimate responsibility to determine the adequacy of water quality when approving new water right applications, plans for augmentation, or exchange plans.

D. Other Issues and Activities

Every year, staff at the SEO and its Division offices cooperate with public and private agencies and participate in various forums where water quality and quantity issues are considered. Staff at the SEO play an important role by providing input and advice on the impacts of proposed water policies and regulations on the water-using community.

The SEO and WQCD staff met quarterly to discuss water quantity and water quality topics of common interest.

As required by the Colorado Water Quality Control Act (25-8-104 C.R.S.), SEO staff members respond to referrals from the Water Quality Control Commission (WQCC) to comment on the potential for injury to water rights from actions related to discharge permit applications. These referrals stem from the Act’s declaration that no provision of Article 8 of Title 25 will injure rights to put water to beneficial use. A memorandum of understanding outlining the procedures and scope of consultation between the WQCC, SEO

and Colorado Water Conservation Board (CWCB) under 25-8-104(2)(d) C.R.S. was updated and signed in January 2017.

Specific DWR activities around the state involving water quality issues are described in the sections below:

South Platte River Basin (Division 1):

Wildfires in the headwaters of the Cache La Poudre River resulted in many municipalities trying to move water into reservoirs lower in the basin that were not at risk of the wildfires. DWR helped shepherd water to appropriate reservoirs and administer the necessary exchanges. This was a necessary precaution to ensure an adequate water supply was available this winter. The municipalities and water providers are continuing to assess the damage from the Cameron Peak wildfire and to mitigate short and long-term risks to drinking water supplies. There is much concern around how streams will be impacted by ash, sediment, and debris loads this coming runoff season and for many years into the future.

On or around August 17, 2020, Left Hand Ditch Company released water from Left Hand Park Reservoir that, according to the EPA, was in excess of the culvert capacity and washed out the access road to the Captain Jack Mill Superfund site. The agencies involved with this issue were DWR, EPA, and CDPHE. After the incident, the ditch company and EPA remained in communication about releases from the reservoir, to coordinate on reconstructing the site access and to avoid any future potential issues.

Rio Grande Basin (Division 3)

In 2018, the SEO notified both the CDPHE and the CPW of potential water quality issues, as required under our MOU, due to the proposed draining of Rio Grande Reservoir for a large, multi-year dam rehabilitation project. The multiple drawdowns for construction purposes continued through 2019 and into 2020. Dam rehabilitation work was completed in the spring of 2020.

Colorado River Basin (Division 5)

With near average peak streamflow, there was not much flushing done at the Shoshone and Cameo dams, minimizing any sediment load issues. There were a few operational drawdowns for repairs at Shoshone dam, but no sediment issues arose. These activities are regularly coordinated with CDPHE and CPW.

Stream sediment issues are expected in 2021 due to the Troublesome wildfire, but no issues occurred during 2020.

Yampa River Basin (Division 6)

DWR protected releases from Stagecoach Reservoir to the City of Steamboat Springs wastewater discharge point on the Yampa River. Releases from the reservoir were needed to meet the Yampa River stream temperature standards. When the Yampa River has very low streamflow, water temperatures can rise significantly. As such, water is released from Stagecoach Reservoir in an effort to keep the temperature down in the River. DWR protects

these releases to ensure the increased streamflow is not diverted by water rights holders between the reservoir and the Steamboat Springs wastewater discharge location.

San Juan and Dolores River Basins (Division 7)

DWR's Division office continues to work with EPA to keep water users informed of water quality issues related to the Bonita Peak Mining District Superfund site. The Division is on EPA's "Situational Awareness" email list and they keep water diversion operators informed of any potential water-quality issues associated with the Superfund work. In 2020, these were mostly minor discoloration issues.

The above information completes the Senate Bill 89-181 report from the SEO to the WQCC for calendar year 2020.

Attachment A

Board of Examiners Policy 2020-3
Short-Term Discharges to Groundwater from Water Well Activities

and

Guidance on Non-Compliant (Contaminated) Groundwater Locations

COLORADO
Division of Water Resources
Department of Natural Resources

Board of Examiners of Water Well Construction
and Pump Installation Contractors

February 3, 2020

Policy 2020-3

SHORT-TERM DISCHARGES TO GROUNDWATER FROM WATER WELL ACTIVITIES

Definitions

1) **Hazardous Materials and Waste Management Division (HMWMD)**: The Hazardous Materials and Waste Management Division within the Colorado Department of Public Health and Environment (CDPHE).
2) **Water Quality Control Division (WQCD):** The Water Quality Control Division within the CDPHE.
3) **Potentially Contaminated Discharge** is any of the following:

- Groundwater pumped from a formation identified by a state or federal agency as non-compliant with water quality standards.
    - The Division of Water Resources does not have complete information about the locations of such non-compliant groundwater in Colorado. A list of non-compliant groundwater location data sources, provided by state and federal agencies, is contained in a separate document titled, "Guidance on Non-Compliant Groundwater Locations" with instructions on how to access the information.

or

- Fluid mixed with additives that are not included on the Board of Examiners (BOE) lists of "Approved Drilling Fluid Additives" and "Approved Well Development and Rehabilitation Chemicals" (Approved Lists). The BOE will include on these lists only chemicals certified as meeting the *NSF/ANSI/CAN Standard 60: Drinking Water Treatment Chemicals - Health Effects*, or those that have received separate written approval from the WQCD to be included on these lists.

or

- Fluid mixed with additives on the Approved Lists in concentrations or otherwise handled contrary to the guidance in the NSF/ANSI/CAN Standard 60.

or

- Any discharge from well cleaning and rehabilitation operations with the use of additives to dissolve scale, even if such additives are on the Approved Lists. Such operations can result in high concentrations of dissolved elements and compounds in discharge water.

Objective

Establish under what conditions short-term discharges to groundwater are authorized to occur by land application of fluid from water wells during water well construction, development, testing, disinfection, and rehabilitation.[1] This policy does not apply to discharges to surface water.

Background

Senate Bill 1989-181 was enacted to recognize the relationship between agencies that regulate and administer water quality in Colorado and to require that State agencies with water quality responsibilities avoid duplicative and inconsistent regulations. The State Engineer is classified as an "implementing agency" in section 25-8-202(7), C.R.S. In recognizing the State Engineer, which includes the BOE, as an implementing agency, the WQCD may not require permits for or otherwise regulate activities that are subject to the jurisdiction of the implementing agency unless certain conditions are met, including a public hearing. No such hearing has occurred for activities under the jurisdiction of the State Engineer.

The State Engineer has authority to issue water well construction and use permits and the BOE has authority to regulate the safe construction of water wells. The State Engineer's Senate Bill 1989-181 Rules describe the State Engineer's well permitting and the BOE's well construction requirements as activities where the State Engineer has water quality authority under a statute other than the Water Quality Control Act, citing the following statutes and rules: 37-90-137(2), 37-91-101, 37-91-104(1), and 37-91-110, C.R.S, and the Water Well Construction Rules (2 CCR 402-7).

This policy was developed with the concurrence of CDPHE staff. BOE staff will continue to meet with CDPHE staff pursuant to Senate Bill 1989-181 and will propose policy modifications to the BOE in the future as necessary.

Policy

Contractors must investigate mapping and data sources listed in the Guidance on Non-Compliant Groundwater Locations. Please note this guidance is not comprehensive and licensed contractors must reasonably investigate whether groundwater might be contaminated as required by Rule 10.1.2, even if potential contamination is not shown on the provided maps. Licensed contractors are solely responsible for determining when fluid contains Potentially Contaminated Discharge.

For fluids containing Potentially Contaminated Discharge, licensed contractors must determine proper means of disposal, consistent with the Water Well Construction Rules (Rule 6.8). Contractors seeking to dispose of Potentially Contaminated Discharge to land must obtain written permission from HMWMD or another appropriate division of CDPHE.

[1] This policy does not cover discharges to groundwater via land application from general construction dewatering, groundwater remediation, and structure and foundation dewatering, which are regulated activities by WQCD as part of their Dewatering General Permit Program.

Discharges of fluid to groundwater via land application that occur during water well construction, development, testing, disinfection, and rehabilitation are authorized when all of the following provisions are adhered to:

- The discharge of fluid does not contain Potentially Contaminated Discharge.

  and

- The discharge is to groundwater only by land-application and does not have the potential to reach water conveyance systems or surface waters. Conveyance systems include curbs and gutters, streets, storm sewers, open channels, or ditches.

  and

- The discharge of fluid must be controlled to prevent erosion of the land surface such that there is no present or subsequent potential for pollution of surface water. Signs of visible erosion that have the potential to cause pollution without downstream control measures implemented include the formation of rills or gullies on the land surface. Energy dissipation devices designed to protect downstream areas from erosion by reducing flow velocity (such as hose attachments and erosion controls) may be necessary to prevent erosion.

  and

- No contaminants are added to the water through intervening processes prior to discharge.

Nothing in this Policy affects licensed contractors' requirements pursuant to Water Well Construction Rules 6.9.2, 10.1.2, and 10.2, which each include contractor requirements related to contaminated water.

Approval

This policy may only be modified or revoked in writing by the Board of Examiners of Water Well Construction and Pump Installation Contractors.

Approved 2-3-2020

Keith Branstetter, Chairperson
Board of Examiners of Water Well Construction
and Pump Installation Contractors

COLORADO
Division of Water Resources
Department of Natural Resources

Board of Examiners of Water Well Construction
and Pump Installation Contractors

GUIDANCE ON NON-COMPLIANT (CONTAMINATED) GROUNDWATER LOCATIONS
Updated April 2020

This guidance document pertains to the Board of Examiners Policy 2020-3 and explains the data sources available to water well contractors to identify locations where groundwater is not compliant with water quality standards. This is key information to determine whether a proposed well location is in the vicinity of contaminated groundwater and to appropriately plan to handle that groundwater during water well construction, development, testing, and rehabilitation.

Colorado Division of Water Resources (DWR)

Map Viewer contains contaminated groundwater spatial information within a layer titled **"Potentially Contaminated Groundwater Locations"**. It contains sub-layers obtained from the Colorado Department of Public Health and Environment (CDPHE) Hazardous Materials and Waste Management Division (HMWMD), the Colorado Division of Oil and Public Safety (OPS), and the Tri-County Health Department, each described in more detail below.

The metadata for a particular layer can be viewed by clicking on the ">" to the right of the layer name. Information on the use of the DWR Map Viewer tool is available on the DWR website.

As a courtesy to contractors and well owners, well construction permits may include a notice that the well is located within an area where groundwater contamination may exist. This notice is only included if the well is to be located within one of the polygon contamination layers in Map Viewer. Information about contamination identified by point data layers is not considered in the notices. Licensed contractors should **not** rely on the absence of such a note on a well construction permit to determine if non-compliant groundwater exists at the permit location.

Colorado Department of Public Health and Environment (CDPHE)

The primary source of data for known locations of contaminated (non-compliant) soils and groundwater is the CDPHE. The CDPHE HMWMD manages several map-based datasets containing information on contaminated groundwater locations. The datasets can be found on the HMWMD website, Maps and GIS for Environment.

Water well contractors should avail themselves of the following map-based datasets provided by HMWMD, and available in both Map Viewer and the Groundwater Vulnerability Atlas to determine whether they are working on or near a site that could contain contaminated groundwater:

- Brownfield sites (sites noted as "active")
- Covenants and institutional controls sites
- Superfund sites

- Uranium and mill tailings remedial action sites
- Voluntary cleanup and redevelopment program

Colorado Division of Oil and Public Safety (OPS)

OPS (a division of the Department of Labor and Employment), tracks petroleum releases at storage tank sites. These sites generally are locations of shallow soil and groundwater contamination. Location and overview data are accessible on the OPS Petroleum Releases webpage. Map-based data on all petroleum releases in their dataset, whether they are "closed" (inactive) or "open" (active) remediation sites are found at Active and Closed OPS Petroleum Release Events in Colorado.

Tri-County Health Department

The Tri-County Health Department has provided a layer for contamination related to the Rocky Mountain Arsenal.

Important Information about the Data Sources

Please note that although the contamination layers show location information, they may not describe the aquifer(s) involved. Aquifer information may be available by contacting the mapping source agency directly. Often, the surface unconsolidated material and the shallowest aquifer are involved in the contaminant release, but other deeper aquifers may also be contaminated.

Be aware that maps and information provided by the sources identified in the guidance document are helpful tools, but are not perfect. There is no guarantee the data published is 100% accurate, correct, current, or complete. It remains the responsibility of the well contractor to conduct a complete due diligence process to identify contamination at the well location and the aquifers penetrated by the well.