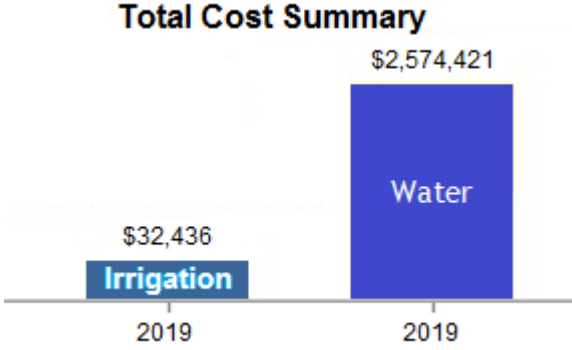
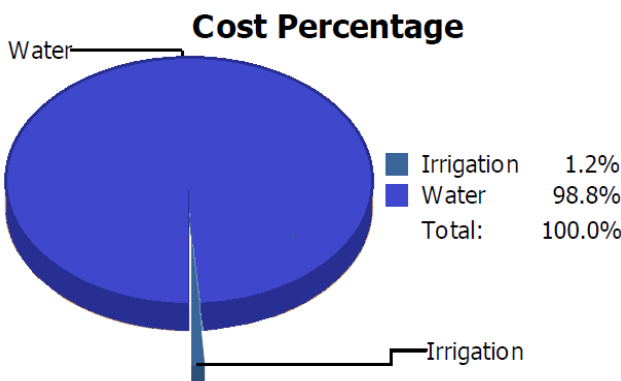


FY 2020 Water Management Plan

Instructions: The FY 2020 Water Management Plan is broken up into multiple sections. This plan represents a comprehensive approach to water reduction.

Agency Specific Information															
<p>Name of Agency/Agency Contact. Include contact info.</p>	<p>Colorado Department of Corrections Facility Management Services P 719.226.4124 F 719.226.4605 1250 Academy Park Loop, Colorado Springs, CO 80910</p>														
<p>Agency participation in water goal: Exempt/Non-Exempt</p>	<p>CDOC is non-exempt.</p>														
<p># of water meters subject to EO.</p>	<p>CDOC has 20 water meters and 2 wells used to supply domestic potable water.</p>														
<p>Total FY 2019 water spend.</p> <p>CDOC used BL-12 to get the total FY 2019 water spend. Due to Bill CAPture setup, Commodity Code “Irrigation” had to be added to get the entire water spend for FY 2019.</p>	<p>Total FY 2019 Water Cost: \$ 2,606,857 Avg FY 2019 Water Unit Cost: \$ 3.12/kGal</p> <div style="text-align: center;"> <p>Total Cost Summary</p>  <table border="1" style="margin: 0 auto; border-collapse: collapse;"> <caption>Total Cost Summary Data</caption> <thead> <tr> <th>Category</th> <th>Cost (\$)</th> </tr> </thead> <tbody> <tr> <td>Irrigation</td> <td>32,436</td> </tr> <tr> <td>Water</td> <td>2,574,421</td> </tr> </tbody> </table> </div> <div style="text-align: center; margin-top: 20px;"> <p>Cost Percentage</p>  <table border="1" style="margin: 0 auto; border-collapse: collapse;"> <caption>Cost Percentage Data</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Irrigation</td> <td>1.2%</td> </tr> <tr> <td>Water</td> <td>98.8%</td> </tr> <tr> <td>Total</td> <td>100.0%</td> </tr> </tbody> </table> </div>	Category	Cost (\$)	Irrigation	32,436	Water	2,574,421	Category	Percentage	Irrigation	1.2%	Water	98.8%	Total	100.0%
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<p>Top 10 buildings with highest water use.</p>	<p>FY 2019 Water Summary Information:</p> <p>Total FY 2019 Floor Area in EnergyCAP: 6,978,479 SF Total FY 2019 Floor Area w/Water Service: 6,462,026 SF Total FY 2019 Usage: 834,282 kGal Avg FY 2019 Use/Floor Area Annualized: 0.129 kGal/SF Avg FY 2019 Cost/Floor Area Annualized: \$ 0.403/SF</p>														

Top 10 buildings with highest water use.	<p><u>Top 10 Facilities with highest water use:</u></p> <table border="0"> <tr><td>Trinidad Correctional Facility</td><td>0.268 kGal/SF</td></tr> <tr><td>Arkansas Valley Correctional Facility</td><td>0.187 kGal/SF</td></tr> <tr><td>Limon Correctional Facility</td><td>0.159 kGal/SF</td></tr> <tr><td>Buena Vista Correctional Complex</td><td>0.156 kGal/SF</td></tr> <tr><td>Sterling Correctional Facility</td><td>0.135 kGal/SF</td></tr> <tr><td>Delta Correctional Facility</td><td>0.134 kGal/SF</td></tr> <tr><td>East Cañon City Prison Complex*</td><td>0.132 kGal/SF</td></tr> <tr><td>Colorado Territorial Correctional Facility</td><td>0.101 kGal/SF</td></tr> <tr><td>Rifle Correctional Facility</td><td>0.093 kGal/SF</td></tr> <tr><td>Denver Receiving & Diagnostic Center**</td><td rowspan="2">} 0.087 kGal/SF</td></tr> <tr><td>Denver Women’s Correctional Facility**</td><td>0.063 kGal/SF</td></tr> </table> <p>Notes: The East Cañon City Prison Complex has a campus-level water service and houses multiple prisons and agricultural water end uses. The Denver Complex Water service can be switched to feed from DRDC or DWCF depending on operational needs.</p>	Trinidad Correctional Facility	0.268 kGal/SF	Arkansas Valley Correctional Facility	0.187 kGal/SF	Limon Correctional Facility	0.159 kGal/SF	Buena Vista Correctional Complex	0.156 kGal/SF	Sterling Correctional Facility	0.135 kGal/SF	Delta Correctional Facility	0.134 kGal/SF	East Cañon City Prison Complex*	0.132 kGal/SF	Colorado Territorial Correctional Facility	0.101 kGal/SF	Rifle Correctional Facility	0.093 kGal/SF	Denver Receiving & Diagnostic Center**	} 0.087 kGal/SF	Denver Women’s Correctional Facility**	0.063 kGal/SF
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FY 2019 Results	
Agency water reduction/increase FY 2019 over FY 2018 Absolute:	9.2% Decrease ↓ Compared to FY18
Agency water reduction/increase FY 2019 over Baseline FY 2015 Absolute:	4.40% Decrease ↓ Compared to FY15

Explain FY 2019 results including strategies and/or issues that influenced the reduction/increase:
CDOC discovered and repaired two leaks in the water distribution on the East Cañon City Prison Complex (ECCPC) in June 2018. The ECCPC has the largest water volume use of all our locations because it serves multiple correctional facilities and programs. Fixing these ECCPC water leaks resulted in a large reduction in CDOC water use. The implementation of the Alternate Water System at ECCPC will begin a downward trend in potable water use at ECCPC, that will be provide a noticeable decrease in overall CDOC potable water use.

List key strategies outlined in FY 2019 plan, progress to date, and lessons learned*

Strategy 1	<p>Strategy1: In FY 2017, our focus was on the first phase of a major project - the East Cañon City Prison Complex (ECCPC) Alternate Water System. The goal of Phase 1, is to put into operation a portion of a non-potable water system that is intended to eventually remove all of the Correctional Industries current agri-business operations off of potable water service. When the Phase 1 portion of the project is complete, it should result in an annual reduction in potable water usage of approximately 7,600 kGal.</p> <p>Progress to Date: Phase 1A, the majority of Phase 1 design of the ECCPC Alternate Water System, has been completed. Phase 1B was completed in FY 2019. Phase 1B included additional design work, and construction of actual infrastructure, which will allow for movement of a portion of the Correctional Industries current agri-business operations off of potable water service on the ECCPC. Construction is almost complete on the initial phase. This should be completed in FY 2020, provided Correctional Industries has the time and funds to install the pipe.</p>
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<p>Strategy 2</p>	<p>Strategy 2: Employee Engagement -- The Department has identified greening government champions that represent each management grouping of our correctional facilities, Correctional Industries, Parole, and support areas. In addition to their other roles, they will be advocates for water conservation measures at each facility, with direction on measures to be considered coming from the Greening Government Leadership Council and the Facility Management Services Utility Management Program.</p> <p>Progress to Date: The Department's Green Team meets periodically to go over Executive Order directives, share ideas, and develop strategies to implement energy efficiency and water conservation initiatives.</p> <p>Lessons Learned: Initial meetings were scheduled once a month. Over the course of a year, we found that spacing out the face-to-face meetings, and moving to a quarterly schedule, allows for greater engagement during the meetings. Interim communication and the sharing of ideas and strategies, is handled through newsletters, phone calls and e-mails.</p>
<p>Strategy 3</p>	<p>Strategy 3: Water Conservation through Maintenance Contingency Projects. Facilities periodically ask that contingency projects be funded to address issues that are not able to be covered under normal physical plant operating funds. In FY2019, we bought water saving flush valves for three locations:</p> <p>Colorado State Penitentiary (CSP): High water consumption fixtures were replaced with water savings fixtures in 29 cells. Water consumption has been measured in housing units both with and without these fixtures. Water savings is approximately 30% with the new fixtures.</p> <p>Fremont Correctional Facility (FCF): Staff installed water savings fixtures in 24 cells.</p> <p>Buena Vista Correctional Complex (BVCC): Water savings fixtures have been ordered for approximately 90 cells. Installation should occur during FY20.</p> <p>Lessons Learned: staffing shortages have hindered installation efforts. Getting commitments for installation timelines is critical before deciding where monies will be spent.</p>

<p>FY 2020: Data Management</p>	
	<p>Notes/Comments</p>
<p>Explain the process your agency uses to manage EnergyCAP data</p>	<p>Starting in FY2019, CDOC used Bill CAPture to upload the majority of CDOC's utility invoices into EnergyCAP. The utility invoice data is uploaded or entered into EnergyCAP on a daily basis. The Utility/Energy Analyst uploads and verifies the majority of the utility data. The Utility Management Engineer, uploads or enters a portion of the utility data. While both input utility/billing data, resolve billing errors, and coordinate with onsite maintenance staff, the Energy Analyst deals mainly with monthly utility invoices while Utility Management Engineer deals with solar photovoltaic contracts, annual water, and energy/utility performance contract (EPC), and other special utility and utility-related invoices.</p>

<p>Explain your process to analyze and act on water data</p>	<p>CDOC receives a copy of the utility invoice via mail or online portal. We save an electronic copy to the local drive. The Energy Analyst or Utility Management Engineer uploads the invoice into Bill CAPture. To process the invoice for payment, we put time and date received stamp on the invoice and review the bill for usage abnormalities and billing errors. Once the data is uploaded into EnergyCAP, we check to see if there is a spike or drop in usage and, if it is deemed to be suspect, we check the weather / temperature pattern the number of days (short, normal, or long month) reflected on the invoice service period. If the usage pattern is deemed to be suspect (usage is outside of regular pattern for the period, or use per day appears abnormal), we escalate further by notifying the onsite building physical plant manager and/or maintenance staff. Onsite staff then checks on problem(s) (such as leaks, meter issues, etc.) and resolves the issue, if at all possible. Facility Physical Plant staff might let us know that there was a change in building usage / occupancy / or operations so that we can notate the account going forward. If, on the other hand, there is a billing / accounting / utility meter issue with the bill, we contact the vendor to research the reason for the error, get it resolved, and have a corrected bill issued. Once all of the billing issues are resolved, we complete the bill markup and approval stamp process within Adobe Pro and save the changes. We email the approved invoice to Accounting Technicians in our Accounts Payable department, who then process the bill for payment.</p>
<p>In this section provide any other information about EnergyCAP, utility data, or water analysis that helps explain your agency's approach to data management. Include any challenges your agency experiences with EnergyCAP or data management.</p>	<p>EnergyCAP's summary graphs and tables provide quick, easy views to assist in analysis to determine if utility cost and use are reasonable.</p> <p>CDOC uses the Utility Budget Module on the installed EnergyCAP client to track and project monthly and annual utility costs, since EnergyCAP data is closer to real time than CORE (the State's financial system).</p>

FY 2020: Capital Improvements	
	Notes/Comments
List planned FY 2020 water efficiency improvements, project budgets, and anticipated water savings.	<p>In FY 2019 CDOC continued work on the alternate water supply project at the East Cañon City Prison Complex. Current FY2020 work includes evaluating well pumping capabilities, (including determining the condition of the well, the pump, and the electrical supply -- wiring, panels, controls) as well as connecting the supply system to the water storage tank and SCADA control system. CDOC is working with a consulting engineer to finalize the design of a new water line to address delivery water loss.</p> <p>The planned FY 2020 Water Conservation valve and fixture measures include:</p> <p>Buena Vista Correctional Complex (BVCC) Buena Vista, CO 20% - 40% Water Savings* \$99,100 Anticipated water savings compared to current use in day halls and units where installed</p> <p>East Canon City Prison Complex (ECCPC) Partially replace improperly bedded, therefore leaking, potable water delivery lines on the campus. The line is over 1 mile long and cannot be completely replaced during FY2020.\$110,000</p>
List prioritized but unfunded water efficiency improvements, budgets, and anticipated water savings.	<p>Un-funded water efficiency improvements include installing water saving appliances, fixtures, and replacement valves in offender areas: showers, sinks, toilets. We predict indoor water use efficiencies will result in an estimated 30% reduction in water use, for each retrofitted fixture. The preliminary water fixture replacement cost for one prison on the potential retrofit list came in at \$650,000. Due to significant costs, without designated funding sources, these types of projects can only be phased in as budgets allow.</p>
Describe your agency's process for identifying, prioritizing, and funding capital improvements.	<p>An ongoing list of proposed planned projects for each Facility are maintained by the Department's Facility Management Services (FMS) Architecture & Planning Group, based upon identified needs and issues that arise throughout the year. The potential solutions are presented to the Department's Executive staff for review, prioritization and approval.</p>
Have any of your buildings/accounts recently undergone a formal water audit or are any planned? If so, for which buildings/accounts?	<p>In FY2019, the Buena Vista Correctional Complex (BVCC) underwent a water and associated wastewater audit. Wastewater flow quantities listed on the invoices from the sanitation district are in excess of well water pumping flow quantities.</p> <p>The East Cañon City Prison Complex is undergoing a campus distribution system water audit necessary for the Alternate Water</p>

	<p>project. CDOC plans to move Agricultural uses from municipal to well and ditch water, where possible.</p> <p>Prior to the two studies currently underway, recent water audits were part of our Energy Performance Contracting (EPC) projects several years ago. EPC projects involving water measures were performed at the following correctional facilities:</p> <ul style="list-style-type: none"> • Territorial (Cañon City, CO) • Arkansas Valley (Crowley, CO) • Sterling (Sterling, CO) • Limon (Limon, CO)
<p>Discuss your agency’s approach to replacing damaged or failing equipment. Is equipment replaced “like for like” or with higher efficiency equipment? Who makes the decision and what criteria is used to make the decision?</p>	<p>Currently, most equipment is replaced like for like at the facility level unless a project is planned to overhaul a system, i.e. low flow toilets. Water (and associated wastewater flow) billing costs combined with equipment/fixture condition will drive decisions to prioritize water savings projects.</p>
<p>What strategies are available to your agency to fund water efficiency improvements?</p>	<p>Most water conservation projects can only be funded as phased projects as utility cost avoidance funds are available.</p>
<p>What other resources are needed to ensure that water efficiency improvements are part of the strategy to reduce water use in your agency?</p>	<p>Funding and ample staffing levels are the greatest barriers.</p> <p>In FY 2018, CDOC initiated the practice of entering Preventive Maintenance Work Orders in the Computerized Maintenance Management Software (Sprocket) to ensure water leak tests are performed on a regular basis. This practice was continued in FY2019, and should be an established, routine, operations and maintenance practice in FY2020. Due to staffing shortages, even when equipment is purchased, installation can be delayed as more urgent maintenance items are prioritized at the facility.</p>
<p>In this section provide any other information about how your agency identifies, plans for, funds, and implements water efficiency improvements.</p>	<p>If water or sewer flow component rates are higher than average, the Department is investigating and planning for low-flow fixture and/or control valve replacements. Water efficiency measures are also evaluated for feasibility if water use has increased or is higher than the average daily use per offender. In addition, water efficiency measures are evaluated during the Audit Phase for all of our Energy Performance Contracting projects.</p>

FY 2020: Operational Improvements	
	Notes/Comments
List planned FY 2020 operational improvements, project budgets, and anticipated water savings.	<p>Location: East Cañon City Prison Complex Project: Alternate Water Phase 1C Preliminary Estimate: \$980,000 <i>(Only a portion of the funds are currently allocated for GF2020)</i> FY 2020 Phase I Construction ~\$350,000 Phase II Design & Planning ~\$ 70,000</p> <p>In FY 2020 CDOC continues to implement the alternate water supply project at the East Cañon City Prison Complex. CDOC will finish installation and connection of the water lines from the source to storage. We will install one thousand (1,000) linear feet of distribution line. We will evaluate well pumping capabilities and the condition of the well. We will install a new pump, add new controls, and refurbish the electrical supply system (wiring and panels).</p> <p>Location: Buena Vista Correctional Complex BVCC Water Conservation Project - Installation of Water-Conserving Toilet, Lavatory, Shower, and Urinal Valves Phase 1 BVCC Water Conservation North Unit Housing \$266,600</p>
List prioritized but unfunded operational improvements, budgets, and anticipated water savings.	<p>Location: Buena Vista Correctional Complex BVCC Water Conservation Project Replacement of Toilet, Lavatory, Shower, and Urinal Valves Total Estimated Cost: \$654,300</p> <p>FY2020 Installation Phase 1 BVCC Water Conservation North Unit Housing \$266,600</p> <p>Future Phases Phase 2 BVCC Water Conservation East Wing \$151,200 Phase 3 BVCC Water Conservation South Unit Receiving \$153,500 Phase 4 BVCC Water Conservation South Unit Receiving \$ 83,000</p> <p>Anticipated Water Savings: The proposed valve replacements will reduce gallons per flush of existing water closets from 3.5, or greater, gallons per flush to approximately 1.6 gallons per flush, without the need to replace the plumbing fixtures. Each time the toilet is flushed, it will provide a prescribed reduction in water, and the corresponding reduction in water and sewer expense will occur. Preliminary estimates indicate that an annual reduction of up to 48,000 kGal may be possible.</p>
Describe your agency's process for identifying and prioritizing operational improvements.	<p>Routine and preventative maintenance is addressed primarily through Capital Outlay (maintenance budget line) funding. Each CDOC facility is designated a maintenance budget, administered by the Facility Management Services' Maintenance and</p>

	<p>Construction Manager, that takes into consideration a number of factors including age of buildings/infrastructure, building square footage, building use and Facility Unique Physical Plant Expenses (FUPPEs). Facility-based projects including preventative maintenance are addressed on an annual basis through the Annual Physical Plant Assessment Process. Appropriations and associated budget allocations for the maintenance line over the past few years are inadequate to fully address routine scheduled maintenance needs. In FY2020, the Maintenance funding line was reduced by \$1.1 million, which hinders maintenance efforts.</p>
<p>Describe your agency’s strategy for transitioning to non-potable water.</p>	<p>As funding allows, CDOC will complete the non-potable water project (switch agricultural uses from our municipal source to well & ditch sources) at the East Cañon City Prison Complex. Upon completion, we expect to investigate the feasibility of a project at the Denver Complex.</p>
<p>Which positions have responsibility for operation of water-using equipment and the role they play in supporting Greening Government goals and directives? Is there regular communication with the GGLC rep?</p>	<p>Watering of landscape and vegetative areas is usually the responsibility of the Physical Plant personnel. Correctional Industries has the responsibility for crop irrigation and animal husbandry. Our facility maintenance staff have the responsibility for operation of water-using equipment. Facility maintenance staff are responsible for the upkeep and proper maintenance of water-using equipment to ensure sustainability measures are met. There is communication between facility maintenance staff and the GGLC representative, as well as the Utility Program Manager who has overall responsibility for the water and wastewater utility systems throughout the Department.</p>
<p>What other resources are needed to ensure that operational improvements are part of your agency’s strategy to reduce water use in your agency?</p>	<p>Funding and staffing, ample and sufficient to evaluate, outline, plan, design, prioritize, procure, and implement operational improvements, are the two largest constraints.</p>
<p>In this section provide any other information about how your agency identifies, plans for, funds, and implements operational improvements.</p>	<p>Many of the Department’s Controlled Maintenance proposed projects have been unfunded for numerous years and result in a Capital Renewal project submittal. Often, this is due to the cost of the project exceeding the \$2 million controlled maintenance top cap and the project requiring a single project phase, as opposed to two, because of the type of critical system improvements that must be completed. This requires reprioritization of the Capital Construction (CC) /Capital Renewal (CR) listing and allows other Controlled Maintenance (CM) projects to move up in priority.</p> <p>All of the CM CC CR projects are ranked based upon loss of use of the Facility and relocation of the offender populations if the systems fail.</p>

FY 2020: Employee Engagement	
	Notes/Comments
Discuss your agency's approach to engaging employees in reducing water use.	Employees of the CDOC are educated through newsletters and Champions throughout the department. Employees are also asked for sustainability ideas relating to their work areas along with active educational offender engagement.
Discuss agency policies that support water reduction including flex time or teleworking.	Given the nature of the Department of Corrections' mission, flex time and teleworking are not programs that the Department includes as options for employees. Therefore they are not available to implement as energy efficiency or water reduction policies.
Discuss resource needs or barriers to greater employee engagement.	CDOC facilities are spread across the state, which sometimes makes the sharing of ideas and engagement with all employees a challenge. Because of our mission, safety and security are generally a higher priority than energy efficiency or water reduction policies.
In this section provide any other information about employee engagement in your agency.	Our Green Team Champions consist of subject matter experts along with correctional staff committed to learning and dedicating time in the CDOC sustainability mission.