CITY AUDITOR'S OFFICE

TGTF Construction Project Management

April 1, 2025 AUDIT NO. 2204

April 1, 2025

Honorable Mayor and Members of the City Council:

Enclosed is the audit report for *Thomas Groundwater Treatment Facility (TGTF) Construction Project Management,* which was included on the Council-approved FY 2024/25 Audit Plan as *Selected Construction Contract*. This audit was conducted to review contract administration, compliance, and cost-effectiveness for the project.

The audit found that the project had insufficient evaluation of the GMP proposal and monitoring of the subcontract selection results, which can increase the risk of paying higher costs. As well, the contract payment terms need to be more clearly established and cost-benefit evaluations should be conducted when establishing these terms. Internal controls over invoice payment and change orders need to be strengthened to reduce risk of errors, budget overruns, and duplicate payments. Additionally, delays, final inspections, and facility commissioning were not adequately documented, potentially leading to higher costs for the City.

If you need additional information or have any questions, please contact me at (480) 312-7851.

Sincerely,

Lai Cluff

Lai Cluff, CIA
Acting City Auditor

Audit Team:

Travis Attkisson, CISA – Sr. Auditor
Elizabeth Brandt, CIA, CGAP, CPM – Sr. Auditor

CITY OF SCOTTSDALE

AUDIT HIGHLIGHTS
April 2025

TGTF Construction Project Management

Audit No. 2204

WHY WE DID THIS AUDIT

This audit of TGTF Construction Project Management was included in the Council-approved Audit Plan as part of our routinely scheduled audits of construction projects. The audit objective was to review contract administration, compliance, and cost-effectiveness for the project.

BACKGROUND

Located on the corner of Thomas and Pima roads, the Thomas Groundwater Treatment Facility (TGTF) is a reverse osmosis treatment plant adjacent to the existing Central Groundwater Treatment Facility (CGTF). The new facility also houses administrative offices and meeting space.

The project was managed by the Capital Project Management department and used a Construction Manager at Risk (CMAR) delivery method.

The sitework and construction of the administrative building was completed in February 2022. The water treatment equipment was completed in February 2023. Project costs totaled about $32 million.

WHAT WE FOUND

Insufficient evaluation of the GMP proposal and monitoring of subcontract selection results increased the risk of paying higher construction costs.

- An independent estimate or review of the Guaranteed Maximum Price (GMP) cost proposal was not conducted and competitive subcontractor bids only covered about 24% of the direct construction costs when the GMP was negotiated. The GMP was later applied as a fixed price rather than a price ceiling.
- About $364,000 of direct construction costs were not supported by the cost proposal attached to the contract and a breakdown of the $1.9 million General Conditions cost for GMP 2 was not included in the proposal.

Contract language for payment terms are too broad, allowing terms to be decided informally. Payment terms need to be evaluated for cost-benefit.

- The selected payment terms were not clearly stated in the CMAR contract, leading to differences in how payment amounts were determined.
- Paying a GMP contract as lump sum (or fixed price) is not advantageous in a project with limited pricing competition and likelihood of design changes.

Internal controls over invoice payment and change orders are inadequate, increasing the risk of errors, including budget overruns and duplicate payments. Implementing construction management software could help.

- The Schedule of Values did not align with GMP proposal and contained some errors. About a third of pay applications were missing backup documents.
- A contract change order covering 31 change requests was submitted at the end of the project, after work was performed, for design changes and modifications that required additional funds.
- Along with other minor entry errors, 2 duplicate payments were issued that had to be corrected later on.

Delays, final inspections, and facility commissioning were not adequately documented, potentially leading to higher costs for the City.

- Causes for schedule delays were not documented and a contract time extension was issued at the completion of the project, 2 years later.

WHAT WE RECOMMEND

We recommend the City Engineer:

- Require detailed support of approved costs and evaluation of the GMP proposal. Monitor subcontractor selection and final costs.
- Develop guidelines for establishing contract payment terms and ensure those terms are clearly stated.
- Establish stronger controls over the invoice payment process and change order management. Evaluate software solutions to improve controls and efficiency.
- Ensure construction delays are properly documented, and project files are complete.

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OBJECTIVE & SCOPE

An audit of Thomas Groundwater Treatment Facility (TGTF) Construction was included on the Council-approved FY 2024/25 Audit Plan as Selected Construction Contract. The audit was conducted to review contract administration, compliance, and cost-effectiveness for the project. This project included an engineering and design contract and Construction Manager at Risk preconstruction and construction contracts, all managed by Capital Project Management, a department within the Public Works Division.

This audit was initiated in September of 2022, but postponed due to limited availability of project records while pending project close-out. The project did not fully close out until 2023. Audit work was resumed in June 2024; however, as further detailed in the audit findings, limited project documentation reduced our ability to verify some aspects of project management.

Project Contracts

Design Services, Contract No. 2016-008-COS, Waterworks Engineers

CMAR Preconstruction Phase Services, Contract 2019-031-COS, Archer Western Construction

CMAR Construction Services, Contract No. 2019-038-COS and 2019-038-COS A1, Archer Western Construction

BACKGROUND

Located in the corner of Thomas and Pima roads, the Thomas Groundwater Treatment Facility (TGTF) is a reverse osmosis treatment plant adjacent to the existing Central Groundwater Treatment Facility (CGTF). The project was initiated to address scale formation due to hardness in the groundwater in the southern area of the City, which can lead to inaccurate water meter readings and costly meter replacement. The reverse osmosis system is designed to receive and treat a side stream of product water from the adjacent CGTF, which is then blended with the remaining CGTF product water to achieve the desired finished water quality. The new facility also houses administrative offices and meeting space.

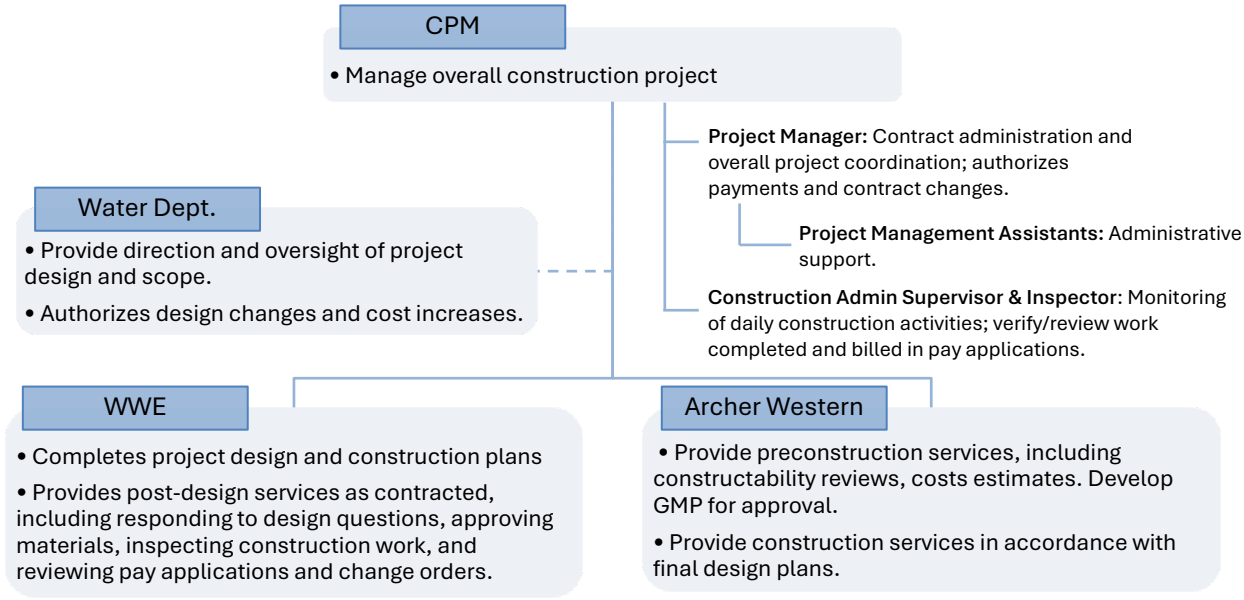
SOURCE: Images from project photos.

Full project costs totaled about $32 million and was funded by Water Resources through their water rates, with about 40% from the issuance of MPC Bonds.

Design and Construction

Project management of the TGTF construction was performed by a project manager within the Capital Project Management (CPM) department. Water Resources' Engineering and Planning staff provided additional oversight and direction on the treatment plant design process, including review and approval of design and change orders. Figure 1 below outlines the project organization and provides a brief summary of key roles/responsibilities.

Figure 1. Project organization and summary of roles/responsibilities.



SOURCE: Auditor-generated graphic of project roles based on staff interviews, department policies, and related contracts.

Project Delivery Method - For this project, Water Resources elected to use a ***Construction Manager at Risk (CMAR) delivery method.*** With this method, the City contracts with an architectural or engineering firm to produce the project design and separately contracts for a general contractor that also acts as construction manager (the CMAR contractor). In addition to construction, the CMAR provides preconstruction services that include constructability reviews and cost estimates.

Advantages to using a CMAR delivery method include potentially shorter construction timeline and control of the design, which are critical for more complex projects. Figure 2 on page 3, illustrates the key differences between a traditional Design – Bid – Build delivery method and the CMAR delivery method.

Figure 2. Key elements of Design-Bid-Build vs. Construction Manager delivery methods.

	D-B-B *(Design – Bid - Build)*	CMAR *(Construction Manager at Risk)*
What is it?	The "traditional" delivery method. ➢ Design: Owner hires an architect/ engineer to design the project. ➢ Bid: Design is used to obtain construction bids. ➢ Build: General contractor is selected based on the bids.	Alternative delivery method. ➢ Design: Owner hires an architect/ engineer to design the project. ➢ A CMAR contractor is hired to provide pre-construction services during design phase. ➢ The CMAR submits a proposal to perform the construction work. ➢ If accepted, a fixed price or GMP construction contract may be awarded. (ARS 34-605)
Best suited when:	➢ Projects with well-defined scopes and completed construction plans. ➢ Competitive pricing is desired. ➢ Minimal design changes are anticipated. ➢ Separation of design and construction responsibilities.	➢ Project is complex and contractor input during design is desired. ➢ Faster completion time or phased work is a priority. ➢ More collaboration between design and construction teams.

SOURCE: Auditor summary based on industry practices and City procurement processes.

Design Services – The design and engineering services contract was awarded to Waterworks Engineers in April 2016. Final design was completed in August 2018. As shown in Table 1 below, the original contract price was approximately $1.8 million, with $1.9 million in change orders for additional design services and post-design construction administration services resulting in total design costs of about $3.7 million.

Table 1. Summary of Design/Engineering Costs.

		Amount
Basic and Special Services:		
Project Management	220,736	
Site Planning Conceptual Design	34,918	
Reverse Osmosis Facility Design	1,083,800	
Post Design Engineering Support (permitting, coordination, bidding, etc.)	84,214	
Special Services (modeling, planning, evaluations, etc.)	263,942	
Construction Phase Services (administration, inspections, etc.)	34,150	
Other (copying, courier, allowances, etc.)	58,900	
Contract Price		**$1,780,660**
Change Orders		
Addt'l design services	739,455	
Construction administrative services (inspections, review work, etc.)	1,181,228	
Change Orders		**$1,920,683**
Less: hours not billed		**($14,584)**
Final Design and Engineering Cost		**$3,686,759**

SOURCE: Engineering Services Contract 2016-008-COS, Fee Summary, and executed change orders.

Preconstruction Services – A CMAR preconstruction services contract is procured through a Request for Qualifications (RFQ) process, where firms are evaluated on their qualifications for the project and a contract price for preconstruction is negotiated with the final candidate. Preconstruction services include review of the construction design for constructability and value engineering, cost estimating throughout the design process, and development of the Guaranteed Maximum Price (GMP) cost proposal(s). A preconstruction services contract (2019-031-COS) totaling $348,622 was awarded to Archer Western Construction in February 2019. Final preconstruction costs were approximately $323,200.

Construction Services – Once the GMP proposal is accepted by the City, with Council approval the CMAR contractor is awarded the construction services contract (if not accepted, a separate procurement for construction services would be conducted, typically using a priced-based competitive bidding process). Under CMAR contract with a GMP, after a contract is awarded the contractor assumes the risk of delivering the construction project on-time and within an agreed-upon GMP.

In April 2019, Archer Western was awarded the CMAR construction contract for Phase 1 of construction (i.e. GMP 1). GMP 1 totaled about $5 million and included initial costs to begin construction as the CMAR continued to obtain quotes and pricing for the remainder of the project. GMP 2, for an additional $20 million was approved in July 2019. Including a City contingency of $750,000, the total contract price was about $26.1 million, as shown in Table 2 below. Final construction costs totaled approximately $27.1 million, after subsequent contract change orders requiring additional funds of $973,100.

Table 2. Summary of CMAR Preconstruction and Construction Costs.

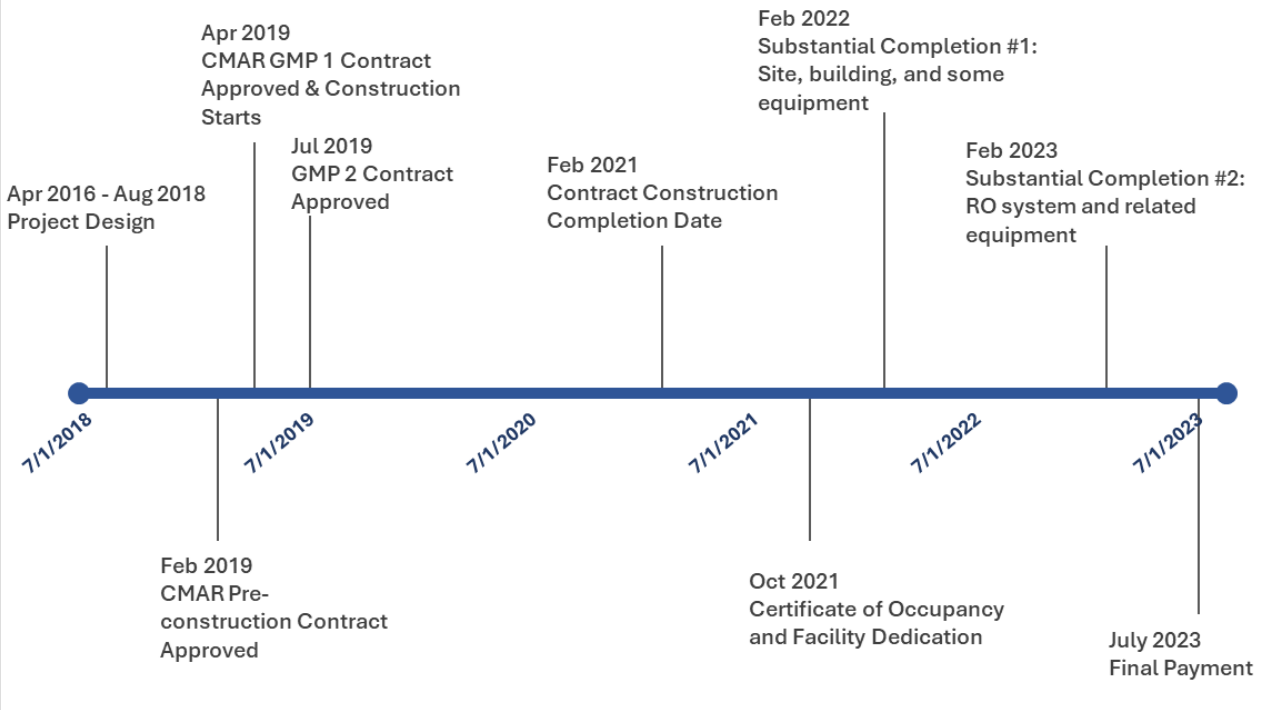
		Amount
Preconstruction Services (Final costs)		**$323,199**
Construction Services (GMP 1 and 2):		
Cost of Work (Direct labor, materials, subcontracts)	18,932,429	
General Conditions (supervision, temporary facilities, project indirect costs, etc.)	2,753,222	
Bonds and Insurance	353,349	
Construction Fee (profit and overhead)	2,197,202	
Taxes	1,110,085	
Orig. GMP	***$25,346,287***	
City Contingency	$750,000	
Orig. Contract Price	***$26,096,287***	
Contract Change Order	$973,100	
Total Construction Cost	***$27,069,387***	
Final CMAR Cost		**$27,392,586**

SOURCE: Auditor summary of Contracts 2019-031-COS, 2019-038-COS, related contract modifications and change orders, and project accounting reports.

Project Timeline – The design phase began in 2016 and construction final close out was completed in 2023. Figure 3 summarizes the timing of major project milestones during the design and construction phases.

While the administrative building was completed and opened for occupancy in October 2021, testing of the reverse osmosis treatment equipment identified several issues that had to be corrected before the plant was put into operations, including breakdown of pumps and corrosion of steel pipes.

Figure 3. Project Timeline.



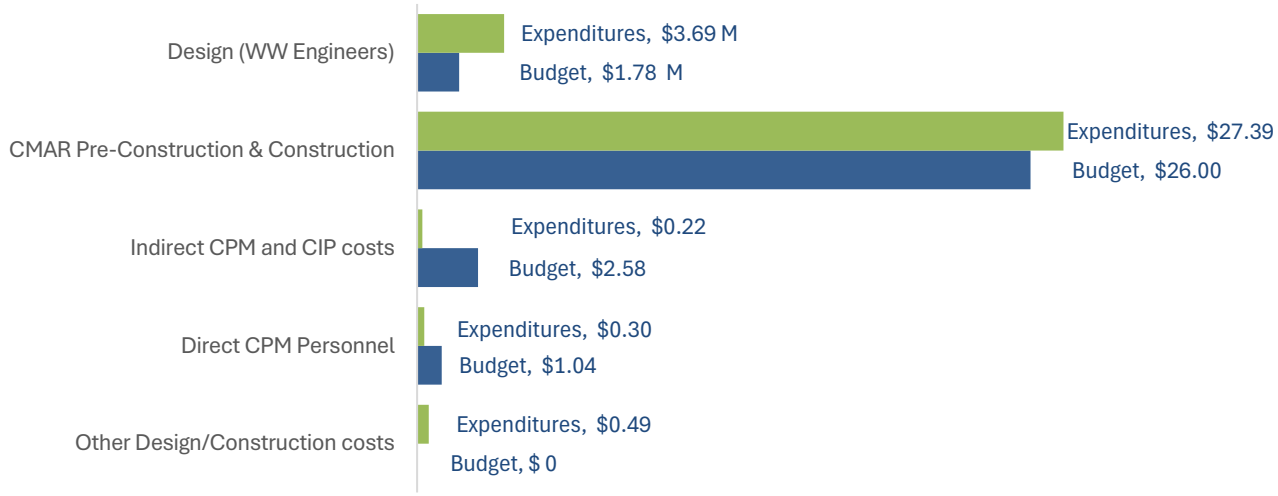
SOURCE: Auditor graphic based on contracts and construction documents.

Project Costs – Budgeted and final expenditures are illustrated in Figure 4 on page 6. Design and construction costs exceeded initial projected budgets. Design costs increased with the addition of post-design construction administration services, commonly added as a change order by CPM, and additional design services. In contrast, direct CPM personnel, indirect CPM and CIP cost allocations (which are initially budgeted based on a percentage of estimated project costs) were significantly lower than budgeted. Final indirect cost allocations were calculated based on management and departmental overhead costs spread among active projects, as a percentage of quarterly expenditures.[1] Overall, actual

[1] CPM allocations include all CPM department costs, except direct personnel hours charged to specific projects. Quarterly expenditures are allocated across active projects based on their proportion of direct personnel hours charged that quarter. CIP allocations include administrative salaries for a portion of other City staff time spent on CIP projects, such as Budget and Accounting personnel. Quarterly allocation is based on each project's expenditures compared to all CIP expenditures.

expenditures exceeded budgeted amounts by about $700,000. This overage was funded by another Water Resources capital project.

Figure 4. Budgeted and Final Project Costs.



	Budget	Expenditures
CMAR Contract (Pre-construction & Construction)	25,998,054	27,392,586
Design - WWE	1,780,660	3,686,759
Other Design/Construction related costs	-	492,602
Direct CPM Personnel Costs	1,040,160	301,263
Indirect CPM Personnel and Costs Allocations	1,290,160	207,143
Indirect Other CIP Allocations	1,290,160	12,413
Total	$31,399,194	$32,092,766

SOURCE: Auditor analysis of project WC07 budget from the Budget Development and Management System and expenditure reports from SmartStream.

FINDINGS AND ANALYSIS

1. Insufficient evaluation of the GMP proposal and lack of monitoring of subcontract selection results increased the risk of paying higher construction costs.

In contrast with the traditional construction delivery method, which awards the construction contract to the lowest qualified bidder, a CMAR project allows the City to negotiate a Guaranteed Maximum Price (GMP), or price ceiling, with the construction contractor. Negotiations for a CMAR project GMP amount should be based on evaluation of cost estimates, subcontractor and supplier bids, and assessment of potential risks. Without a detailed review of cost estimates and supporting details, the City cannot ensure they are getting the best value for the project. This review was particularly important because the contract was paid at the agreed-upon price, rather than actual cost up to the GMP.

A. An independent review of the GMP cost proposals was not obtained and certain aspects of the proposals were not adequately reviewed.

CPM's preconstruction agreement states that the City may compare the GMP proposal to internal cost estimates or obtain a cost review from an independent third-party. While these are common ways to evaluate the reasonableness of GMP proposals, project management did not engage its design/engineering team or hire another independent consultant to conduct a comprehensive evaluation of the submitted proposal. According to project management, all cost estimates were reviewed by the project team during design phase meetings. However, it is not evident from meeting notes that market pricing was researched, what the review comments were, or that final revisions were reviewed to confirm all discussed changes had been incorporated.

Our review of the contract and its attached GMP cost proposal found basic errors and missing documentation that could have been identified by a more comprehensive evaluation.

1. Contract amount for Cost of Work was approximately $363,400 higher than the CMAR's supporting cost proposal.

The "*Complete Cost Model 6-7-19"* (i.e.. detailed GMP cost proposal) attached to the GMP 2 construction contract modification showed subtotals for the construction work estimated. As detailed in Table 3, it totaled $363,433 less for the Cost of Work than the amount shown in the contract GMP Summary.

Table 3. Comparison of contract GMP cost summary with the supporting GMP cost proposal.

	GMP Summary	GMP Cost Proposal	Difference
Direct Cost of Work			
Sub-Contractors' Cost	9,495,117	9,395,119	99,998
CMAR Self-Performed	9,437,312	9,173,877	263,435
Total Cost of Work	$18,932,429	$18,568,996	$363,433
General Conditions	$2,753,221	$2,753,221	0

SOURCE: Auditor analysis of GMP Summary and Complete Cost Proposal (GMP 1 & 2) in Contract No. 2019-038-COS-A1.

2. **CMAR labor and equipment costs were not reviewed and evaluated, and documentation on negotiations of the construction fee was not available.**

   Although about half of the construction work was self-performed by the CMAR's crews rather than subcontractors, the contract does not contain details or terms governing labor costs, and review of labor or equipment rates by the project management team was not evidenced. Based on the proposed Phase 1 supervision costs (salaries for project superintendents, project managers, etc.), we estimated that labor burden rates (benefits and other employee-related costs) were about 64 to 79% of base salaries, a rate generally considered to be high (the higher range includes employee vehicles and cell phone costs that were separately itemized). Wages and burden costs for construction labor were not provided in the detailed cost proposal. Similarly, rates and terms were not required to be submitted for CMAR-provided (internal) equipment rentals.

   Additionally, the construction contract pays the CMAR a construction fee of approximately 10% of the construction cost, however the attached cost proposal or earlier versions did not show a proposed fee. It is unclear if this amount was proposed by the contractor and documentation of its negotiation was unavailable.

   General Conditions and General Requirements Temporary or soft costs of construction that typically include site and project supervision, temporary offices and facilities, and supplies.

   Cost of Work – Direct costs that make up the hard construction costs. This includes the labor, materials, equipment, and subcontracts for completing the work.

   Construction Fee – A negotiated fee for the CMAR's profit and overhead, which is typically intended to also cover indirect administrative costs.

   SOURCE: Auditor summary based on contract and construction industry definitions.

3. **Supporting details for the additional $1.9 million General Conditions cost for GMP 2 were not included in the final cost proposal attached to the contract documents.**

   In the complete GMP proposal, General Conditions for the combined phases (GMP 1 & 2) were detailed as follows:

General Conditions:	
Labor	2,075,634
Materials	305,462
Subcontracts	187,650
Equipment	157,075
Commissioning	27,400
Total	**$2,753,221**

   Based on an earlier version of the detailed cost proposal in the project files, some proposed general condition costs were for expenses that would typically be considered overhead and covered by the Construction Fee, such as general "IT charges", software licenses, computers, and cell phones. These types of costs are often not specific to the city's project and about $94,000 of such costs (not counting internet devices and service) were included in General Conditions.

   According to the project management team, a more detailed report of the cost estimate for the final approved amount was not available.

B. Project management did not monitor the subcontractor selection process or verify final subcontract amounts.

As of the GMP 2 approval in July 2019, bid comparisons for some subcontracts had not yet been received. For pre-qualified subcontractors/trades that would also be evaluated based on pricing, as indicated on its approved selection plan, the CMAR had provided bid comparisons in its Construction Management Plan, dated September 2019. These bid comparisons accounted for about 24% of the cost of work. However, a final subcontractor bid summary or list of selected subcontractors was not later obtained to verify final amounts and ensure competitive selection process.

1. **Bid comparisons were not obtained for all selected subcontractors.**
    - For 9 of the 27 bid comparisons provided, the final selected subcontractor was not one of the bidders listed. For another bid area, the apparent low bidder was not awarded the subcontract and justification was not noted.
    - No bid comparisons were provided for about 5% of subcontracted work.
2. **Self-performed work that the CMAR intended to compete for did not have bid comparisons or cost proposals.** In its subcontractor selection plan, the CMAR stated that it would self-perform the purchase and installation of process equipment to better manage quality, but it also stated that it would compete for certain other work, such as concrete, above-ground mechanical work, and underground piping. However, no bid comparisons or independent evaluation of the CMARs proposed self-performed work were obtained to evaluate fairness and reasonableness of the price as indicated in ARS Title 34.
3. **Some trades did not have multiple bids.** For 12 of the 27 bid comparisons provided, only 1 bid was received, increasing the risk of higher cost due to limited competition.

Related Statutes and Contract terms

ARS 34-603 C(2e): A subcontractor selection plan adopted by the agent that applies to the person or firm that is selected to perform the construction services and that requires subcontractors to be selected based on qualifications alone or on a combination of qualifications and price and not based on price alone and a requirement that each person or firm must submit a description of the procedures it proposes to use to implement the agent's subcontractor selection plan.

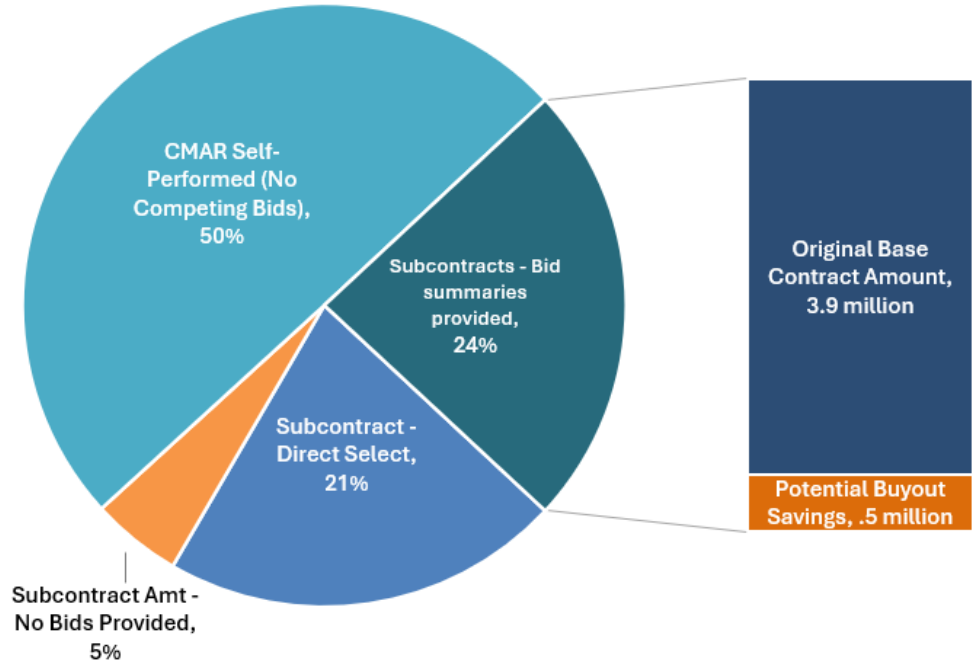
ARS 34-605 K(1): The agent may use methods other than competitive bidding to assure itself that the price the agent pays to the contractor for self-performed work is fair and reasonable. Allowable methods to evaluate fairness and reasonableness of the price of self-performed work include evaluating the contractor's proposed scope of work and price by an estimator who is independent of the contractor.

ARS 34-605 K(2c): In making the selection of subcontractors, the person or firm selected to perform the construction services shall use the subcontractor selection plan, and any procedures included in its contract.

CMAR Pre-Construction Contract: The CMAR will select major subcontractors and major suppliers, subject to first obtaining the City's approval… If the City objects to any subcontractor or self-performed work for good reason the CMAR will nominate a substitute.

SOURCE: Summary of Arizona Revised Statutes Title 34 and CMAR Preconstruction Contract No. 2019-031-COS, Section 1.8

Figure 5. Comparison of Direct Costs in the GMP Proposal with Bids/Quotes and Contracted Amounts.



SOURCE: Auditor Analysis of GMP costs, CMAR Bidding Documentation and cost ledger, and subcontractor invoices/contracts.

Buyout savings – Buyout savings result when, through the competitive bidding process and contract negotiations, subcontract amounts are lower than initially estimated by the CMAR. The City's contract provides that any savings realized as a result of the subcontract buyout process will become City project contingency, to be used for any additional work requested by the City or be returned to the City. Estimated and final subcontract bid amounts were not tracked for this project.

As illustrated in Figure 5 above, our review found that some subcontracts were executed for amounts lower than the amounts in the bid comparisons (which also included some amounts estimated by the CMAR), indicating potential buyout savings of about $0.5 million. However, by not requiring buyout to be tracked, the actual savings are unknown and potential savings essentially become the contractor's contingency, to be used for any potential cost overruns.

Recommendations:

The City Engineer should:

1.1 Establish requirements for comprehensive review of cost proposals, by obtaining independent estimates for comparison or an independent review by a qualified cost estimator. Additionally, require detailed support for the approved construction costs, including breakdown of cost estimates, labor costs, allowances, and general conditions/requirements. Ensure that cost estimates support and agree to the approved GMP.

1.2 Establish requirements for monitoring of subcontractor selection and verification of final subcontracts. Require the contractor to track subcontractor buyout and make adjustments to the construction costs as appropriate.

2. Contract language for payment terms are too broad, allowing terms to be decided informally. Payment terms need to be evaluated for cost-benefit.

The contract for CMAR Construction Services contains flexible language that would allow project management to customize the payment terms. However, this method is ineffective for ensuring all contract terms align with the selected payment terms and, for this project, those terms were not clearly established.

Additionally, the Guaranteed Maximum Price (GMP) contract was managed as a lump sum (fixed price) contract, paying the full amounts estimated in the cost proposal. While some individual work items may sometimes be negotiated as lump sum, GMP contracts are most commonly paid using a cost-plus fee model with a negotiated GMP, particularly if a separate fee is paid for profit and overhead.

A. The agreed-upon payment terms were not clearly identified in the CMAR contract, leading to differences within the project team on evaluating payment amounts and informal decisions on contract management.

According to the contract's definition of the GMP components, costs may be defined as "not-to-exceed cost reimbursable, actual costs or fixed fee amounts"[2]. Within the GMP proposal and Schedule of Values, most work items were estimated with quantities and units of measurements. However, neither the contract nor the CMAR's clarifications and assumptions explicitly indicated the payment terms that would be applied. For example, the quantities shown may have been for estimating purposes only, or for establishing unit pricing for billing of installed/constructed quantities, up to the not-to exceed GMP.

When reviewing monthly pay applications, the CPM inspection team measures the quantities installed and adjusts the payment amount based on those measurements. During the first several months of construction, the inspection team approved pay applications based on measured quantities for work items with quantities and estimated percent completion on other items that did not have quantities. Subsequently, the inspection team was instructed to not pay the items with quantities based on measurements and instead pay based on percentage completion.

For example, in pay application #3, the inspection team measured significantly

Cost Type / Pricing Methodologies:

Lump Sum: Fixed Price that is paid based on percentage complete.

Cost-Plus Fee: Pay at actual cost of work plus an amount for contractor overhead and profit.

Time and Materials: Agreed upon hourly or daily rate is established.

Unit Pricing: Based on estimated quantities (cubic yards, linear feet, etc.) included in the project at a negotiated rate per unit. Payment is based on quantities placed.

SOURCE: Auditor summary of CPM's *Project Management Guide, Section 11.7.*

[2] CMAR Construction Services Contract No. 2019-038-COS, Section 4.3.3

lower quantities of concrete installed for one line item and recommended reducing payment by about $45,000. According to the attached correspondence, the Project Manager stated that they had met with the contractor and agreed to pay based on percentage of completion, and that "additional costs were included in that line item". Our review of the CMAR's final cost ledger found that significantly less labor costs were charged to this work item compared to initial estimates. It was not apparent that additional costs were incurred for that work item. By the end of the project, all GMP line items were paid in full as initially scheduled and invoices and/or cost reports were not requested to confirm actual costs.

The Construction Administration Supervisor explained that he did not agree with this approach because their standard practice was to measure quantities installed where indicated and pay accordingly. After pay application #5 the Inspector and the Construction Admin Supervisor decided not to continue reviewing and signing off on the pay applications due to the disagreement. Starting in pay application #6, the Design consultant was assigned to review the pay applications.

B. Paying a Guaranteed Maximum Price contract as lump sum (or fixed price) is not advantageous in a project with limited pricing competition and likelihood of design changes.

In contrast with traditional construction procurement where the price is established by the lowest qualified bidder, a GMP is negotiated based on the CMAR's cost estimates as it participates in the design review process, as well as subcontract bids and quotes. CMAR approach typically requires transparency on costs and budgets, or an "open book" approach. For this reason, a CMAR delivery method with a GMP, not a fixed price, allows more flexibility for potential design changes. As described in Finding 1, the project GMP was established with subcontractor bids for about 24% of the direct costs, and a significant portion of the work still in the bidding process or to be self-performed. As such, the GMP proposal contained estimated amounts and is subject to change. As well, design changes were requested throughout the project, resulting in numerous change requests.

1. The primary disadvantage of administering a GMP contract as a fixed price contract is that any potential savings would accrue to the CMAR, while any changes requested by the City could result in a cost increase. For this reason, it is important to thoroughly review the cost proposal and supporting bids when considering payment terms.

Administering a GMP contract to a fixed price contract means that any savings would accrue to the CMAR, but changes to the work could result in increased costs to the City.

2. When considering a fixed price approach, project management should negotiate a price reduction associated with the reduced billing and record-keeping effort required by the CMAR for a fixed price contract. Project management staff indicated that they do not want to review invoices or other cost detail, which is likely why a cost-plus method was not applied.

   For the purposes of this audit, the payment structure made it difficult to verify invoiced amounts to the contractor's accounting records, as there was no expectation that they would align. Pay application line items did not match the CMAR's accounting categories and they were not updated for project changes. For example, in reviewing the CMAR's cost ledger, we noted that some costs were not properly supported or not accurately

classified, as well as minor uncategorized transactions that did not appear to be city costs.

3. **Further, although the City's standard CMAR contract language allows for the option of a cost plus fee with GMP approach[3], overall, the contract does not contain sufficient parameters to effectively manage a cost-plus fee structure.** This type of payment approach would reimburse the contractor for allowable costs and pay a fee for construction management, up to the GMP amount. Specifically, the contract lacks terms that detail the allowable and unallowable costs for reimbursement, as well as documentation requirements, such as requiring the CMAR to provide a final accounting of the project costs.

Recommendations:

The City Engineer should:

2.1 Provide guidelines for project management to evaluate the best-fit payment terms for each project and ensure agreed upon terms are followed.

2.2 Work with the City Attorney's Office to ensure standard construction contract terms adequately address expectations for payment of construction work. Develop multiple templates, or template options, to ensure specific terms are tailored to the chosen payment method, such as indicating how each cost or group of costs will be billed. For cost-plus fee payment terms, ensure that contract language specifies the allowable and unallowable costs, as well as documentation requirements and reporting of final project cost.

3. Internal controls over invoice payment and change orders are inadequate, increasing the risk of errors, budget overruns and duplicate payments. Implementing construction management software could help address issues.

Construction projects require authorizing large payments made on a monthly basis. Improvements to control processes are needed to ensure that payment requests are accurate, appropriately authorized, and aligned with the contract terms.

A. The Schedule of Values (SOV), which provides the basis for monthly billing, did not align with the GMP cost proposal and contained some errors. Not reconciling these makes it difficult to monitor approved costs.

The Schedule of Values provides a breakdown of the Contract Price into pay items and is used as the basis for the CMAR's monthly pay application. Our review of the SOV, as detailed in the pay applications, found that it did not align with the detailed GMP cost proposal included in the CMAR contract and no explanations were documented. While these costs break downs may change as subcontracts and supplier contracts are finalized, changes from contract proposal should be reviewed and approved.

1. As shown in Table 4 on page 14, costs allocated to General Conditions increased by about $690,000, or 25% overall. This increase was primarily due to the addition of mobilization and demobilization costs totaling $240,000, and about $450,000 in

[3] CMAR Construction Services Contract No. 2019-038-COS, Article 12 – Definitions, "Savings".

small tools and supplies that were previously not scheduled under General Conditions.

2. Within the Cost of Work, cost categories and amount breakdowns also did not align with the GMP cost proposal. For example, 35 "Sitework" items totaled approximately $1.28 million in the cost proposal, but the SOV included 26 items totaling $1.483 million. Construction Equipment costs (rental of equipment from the CMAR's assets or other) were listed separately within the GMP cost proposal but were not itemized in the SOV.
3. Further, a significant error in the GMP 1 SOV was not identified and corrected. The CMAR neglected to separately list the Construction Fee and instead reallocated the amount among the other categories. Based on our review of their job cost ledger, their Fee (overhead and profit) was at least the amount stated in the contract or higher.

Table 4. Differences between the Contract GMP Summary and Schedule of Values.

	Contract GMP Summary	SOV/ Pay App #1 & 4	*Difference*
GMP 1			
General Conditions	866,954	1,154,848	*287,894*
Cost of Work	3,385,947	3,521,656	*135,709*
Bonds	33,617	36,979	*3,362*
Insurance	41,059	45,165	*4,106*
Construction Fee	430,714	-	*(430,714)*
Taxes	248,855	248,855	-
Total GMP 1	**5,007,146**	**5,007,503**	***357***
Owner Contingency	**250,357**	**250,000**	***(357)***
GMP 2			
General Conditions	1,886,268	2,287,229	*400,961*
Cost of Work	15,546,482	15,152,632	*(393,850)*
Bonds	111,757	108,395	*(3,362)*
Insurance	166,916	162,810	*(4,106)*
Construction Fee	1,766,488	1,766,488	-
Taxes	861,230	861,230	-
Total GMP 2	**20,339,141**	**20,338,784**	***(357)***
Owner Contingency	**499,643**	**500,000**	***357***

SOURCE: Auditor analysis of contract amounts and Schedule of Values, as shown in the CMAR's pay application #1 and 4.

For this project, the Construction Administration Supervisor confirmed that the SOV did not reconcile to the GMP proposal, but it had been approved to move forward. The project files did not contain documentation of this review or any updates to the cost proposal between the contract approval and the first pay application. Further, any changes to the estimated

cost or quantities of individual work items during construction were not reflected in the SOV or pay applications.

The overall GMP amount did not change but these reallocations shifted costs between categories, as shown in Table 4 on page 14. As a result, the cost breakdown no longer aligned with the costs described in the GMP summary, yet a revised estimate had not been obtained.

The contractor was paid based on its completion of each work item. By not requiring that the SOV align with the GMP cost proposal, and that any changes are documented and reconciled, staff cannot monitor against the contract amounts.

B. Documentation of pay application review and approval varied, and supporting documentation was inconsistently maintained.

As described in Finding 2, the CPM inspection team typically reviews the monthly pay applications submitted by the CMAR, requesting changes as needed based on their field observations and measurements. The inspection team documented their review comments and signed off on the first 5 pay applications, then stopped reviewing and approving pay applications, as noted in Finding 2. When this responsibility was later assigned to the Design consultant in September 2019, measurements were no longer attached to the pay applications and any review comments were sent to the project manager directly.

Of the 28 payments processed beginning September 2019:

- 17 payments were missing supporting backup, and 11 of these were also missing the CMAR's original pay application.
- 2 did not contain evidence of review/approval by the design consultant or construction administration team.

In assigning pay application review responsibilities to the consultant, we did not find specific direction being provided by the project management team with regards to process or expectations. For a few initial pay applications, review comments from the design consultant identified potential concerns that needed to be addressed and sought guidance from the project management team. However, responses from the project management team were not always included in the documentation and it was not apparent that any subsequent changes were made. Such review comments included: lack of backup documentation and billings at 100% for which work was not yet completed. Review comments on later pay applications did indicate changes made to the pay application based on the review.

C. Changes to contract work was not well monitored, which could have contributed to the budget overruns.

As shown in Table 5 on page 16, there were a total of 39 construction changes that resulted in one contract change order, increasing the contract price by $973,100. Along with design contract change orders of $1.9 million, the project exceeded its budgeted amount by about $700,000 (see Figure 4 on page 6 for budget and actual expenditures).

Changes to construction work resulting in cost increases are first funded though the City Contingency amount included in the Contract Price. Contingency use may be authorized by the project manager for changes requested by the City or caused by unforeseeable site conditions. Once that Contingency is exhausted, a contract change order is required to increase the contract amount and authorize additional funding. City procurement code and CPM's Project Management guide establish contract change order requirements, including

documentation and approval requirements. For this project, the Water Resources department also required all changes be reviewed and approved by their Engineering team.

Table 5. Construction Change Orders.

	No. of Change Requests	Total Change Amount	Total Construction Cost
City's Contingency	*Included in Contract*	*(750,000)*	$25,346,287
Contingency Used	8	734,146	$26,080,433
Addt'l Change Orders	31	988,954	$27,069,387
Total Contract Change Orders	**1**	**$973,100**	**$27,069,387**

SOURCE: Auditor analysis of CMAR Contract 2019-038-COS and related change orders.

1. **Method of communicating change approvals was informal, and in many cases, delayed.**

   Most changes resulted from a *Request for Change Proposal* (RFCP) issued by the Design consultant with concurrence from the Water Engineering team. In response to these requests, the CMAR obtained subcontractor and supplier quotes and provided a cost proposal for the requested change. Changes may also be requested more informally or be proposed by the CMAR. The CMAR tracked all requested changes in a Contingency Tracking Log, which was reviewed during project team meetings. Meeting minutes were not maintained in project management files.

   Verbal direction to proceed may have been given during these meetings, however, review and approval of the cost proposals details was documented primarily through email.

   Our review of the available documentation shows that project management relied on the CMAR to track change requests, and confirmation of cost proposal approval was often not timely.

   - Of the 8 Contingency Use requests, only the first one appeared to have been approved timely. The remaining 7 change proposals from CMAR and its subcontractors were dated January 2020 through August 2020, but the email confirmation of approval did not occur until October 2020. After several emailed inquiries from the CMAR to the Project Manager regarding pending requests, they were approved in bulk. According to management, this delay was related to the pandemic.
   - For these Contingency Use approvals, Water Resources' review was not evidenced. Email correspondence on the Contingency requests did not

Change Orders Requirements

All Changes are to be:

- logged
- in written format
- supported by written justification
- within original scope of contract
- supported by estimated costs for the work
- reviewed/approved by project management
- fully executed prior to commencement of work

SOURCE: Auditor summary of CPM Project Management Guide, Procurement Code Section R2-200.1, and Administrative Regulation 216.

include Water staff, and the lead Water engineer later inquired about not having seen the change order documentation for an HVAC system upgrade.

- For 11 of the 39 changes, quotes were submitted and construction work had already commenced prior to the Project Manager's approval, with work conducted from 1 month to over 1 year prior to approval. For another 16 changes, supporting documentation was insufficient to determine whether work had already started prior to approval.
- In several instances, the Project Manager asked the project team to confirm whether certain changes had been approved and responses indicated they had been approved during a review meeting several months prior.
- Several change orders were missing documentation about the resolution of scope and cost questions and final confirmation of proposal acceptance.

2. **To minimize the number of contract change orders, changes were accumulated and combined before executing a change order**. After the contingency use was spent, the next 31 changes were combined into one written formal change order that was prepared, submitted and approved at the end of the construction project. As noted, individual changes were authorized in various ways throughout the project, but documentation was compiled into one single contract change order for $973,100 processed at project closeout. This change order exceeded the project budget resulting in about $750,000 of it charged to a different project code.

   According to project management, they were not always included in the discussions when work was directed in the field by the Water department and there was a lack of communication between project team members.

3. **Similar issues were noted in the Design contract change orders.**

   - For one change order adding about $82,000 in design services, the change order was approved nearly 1 year after the proposal was provided and the work was completed.
   - In its last change order, costs associated with additional consultant review of the construction change orders, was held and combined with change orders related to project delays. As a result, some work was paid for more than 6 months after it was performed.
   - Approval by the Public Works Director was missing for 1 of the 5 design change orders that required it. Once aggregate change orders exceed 25% of the original contract price, they must be approved by the Executive Director and the City Manager. [4]

(continued on next page)

[4] In March 2023, the City Manager delegated this authorization to the Public Works Director.

Table 6. Summary of construction costs documentation review.

	Pay Applications	Change Orders	Subcontractor Costs	CMAR Transactions
Files reviewed	All 33 pay applications	All 39 change orders	8 selected major subcontractors	26 selected expenses
Inadequate Review / Approval	6%	74%	N/A	N/A
Insufficient Supporting Documentation	67%	85%	88%	42%
Other Errors	50%	100%	100%	27%

Note: "Other Errors" includes data entry errors, costs that were incorrectly classified, and costs that did not match supporting documentation. It does not count pay applications without supporting documentation.

SOURCE: Summary of Auditor-reviewed pay applications, change orders, subcontracts, invoices, and the CMAR's project ledgers.

D. Stronger internal controls over payment processes are needed to reduce the risk of errors such as duplicate payments and data entry errors.

Once authorized by the Project Manager, monthly billings from the CMAR (pay applications) are sent to the department's Project Management Assistants (PMA) to be entered into the department form (Payment Request), which tracks the contract amounts paid-to-date, retention amounts, and funding codes. Our review of payments to the CMAR identified several errors that could have been prevented with improvements to payment controls.

1. **Two instances of duplicate payments, though not cashed by the vendors, could have been prevented.**

   - A payment for $651,938 to the CMAR for release of retention was issued in August 2022 and was cashed by the vendor that same month. The same payment was re-issued in September, under an adjusted invoice number (PAY31063122 vs. PAY31063022). No explanation was noted on the documentation for the second payment, which was identical to the original but had a new approval date by the Project Manager and was entered by a another PMA. The second payment was cancelled 4 months later, with an explanation that it was a "duplicate payment".
   - A payment of $5,248 to the Design consultant was issued in August 2022. The payment was re-issued in February 2023 because the vendor did not receive the check. However, the original payment was never cancelled. In May 2023, Accounting contacted the vendor about the uncashed check and wrote off the $5,248 as "unclaimed property".

   In both instances, the invoice number was modified by the department, which allowed for the duplicate payment to go undetected by Accounts Payable. However, the department's procedures did not identify the duplicate payment before issuing it and did not require cancellation of lost payments before re-issuing payment.

2. **Two data entry errors were not identified due to lack of validation procedures after payment information was entered by department staff.**

   Errors were identified within pay application #4 and #30 that required adjustment to later billing/payment cycles to correct the difference. Specifically, we noted minor differences between the CMAR pay application and the pay request prepared by the PMAs and one instance where a line item was not identified as overcharged due to changes in the total amount billed-to-date.

The construction payment application and CPM's payment request forms generally follow structure of the American Institute of Architect's standard form, which is designed to minimize these types of errors by tracking contract amounts, amounts earned, previously paid, and currently billed. However, these controls fail when they are not used.

According to our interviews with Project Management Assistants in September of 2024, there were no formal procedures for their responsibilities, and they were not aware of any control procedures for reviewing the pay requests. As well, their job responsibilities may vary, often depending on what they are asked to do by the individual project managers. Since then, the department reported that they have documented specific job responsibilities and related flow chart.

While it appears that the department's pay request form was originally developed with controls to identify errors, those controls were no longer being communicated or monitored, and so can be easily bypassed.

E. Additionally, project team's review of pay application and change order amounts did not identify potential errors:

1. In one pay application, the CMAR invoiced double the usual monthly amount for project supervision. This error was corrected by the CMAR almost a year later by submitting half the fixed monthly payment for two periods.

2. In 7 pay applications, amounts invoiced did not agree with supporting documentation and some costs were assigned to the wrong work item. In one example that appeared to be an overcharge, $8,812 for "taxes, insurance and other fees" was charged to the Temporary Office line, in addition to amounts charged in the taxes and insurance lines. No explanation for this charge was noted.

3. Inconsistent markups for change orders – Two change requests charged varying mark-up percentages, resulting in net higher costs of approximately $7,100. Other change orders also contained minor errors in the calculation of taxes and markups.

   However, the construction contract does not establish approved markup rates for change orders. Further, the CMAR's markup for "supplemental and site office costs" (generally 2.5%, but ranging up to 5.79%) are in addition to other General Conditions costs charged and could very likely include overhead costs that should be included in their Construction Fee.

   Bonds – Additionally, for Contingency change orders, contractors typically charge the markup for Payment and Performance Bonds as they did for the GMP; however, the Bond obtained at the start of the project is generally issued for the *full contract price*, which includes the contingency. As such, at 0.64%, the City paid an additional $4,077 in payment and performance bonds. For the other $973,100 in change orders,

which charged about $10,000 for bonding, we did not see a purchase of additional bond coverage in the CMAR's cost ledger or invoice documentation.

F. These and similar prior audit recommendations indicate a need for more substantial process changes that can be facilitated by implementing a construction management software solution.

Aside from the City's records management system, CPM does not currently use project management software. Contractors often use software to manage projects and these costs are generally billed to the owner (City). However, besides more limited functionality to the department, relying on the contractor to provide these tools could mean that project records uploaded into the application may not be downloaded and retained by CPM after the conclusion of the work.

According to a 2021 survey by Dodge Data & Analytics on Construction Cost Management, respondents felt that the following top challenges were improved with the use of technology tools:

- Converting a final cost estimate into a project budget compatible with cost accounts
- Managing change orders and documentation through the entire approval process
- Assessing risk related to potential changes
- Status reporting during the project
- Accurately estimating total cost to complete for activities in the work breakdown schedule

Additionally, responses indicated that users preferred using a single or primary tool, as compared to multiple tools. For CPM, this could also make maintaining project documentation more efficient.

Recommendations:

The City Engineer should:

3.1 Require review and reconciliation of the Schedule of Values to ensure it aligns with the GMP cost proposal. Subsequent changes to the Schedule of Values should be documented and approved.

3.2 Establish expectations for timely review and approval of change orders, ensuring that cost proposals are consistently reviewed for errors and adequately supported. Change requests, including those funded by Project Contingency, should be formally authorized prior to the initiation of work unless an emergency need is documented.

3.3 Require project management team to actively monitor the status of all change requests and their estimated cost, not solely relying on the contractor's tracking. Where applicable, verify final costs against cost estimates.

3.4 Develop and implement stronger internal controls over the payment process that ensure billings are reviewed for accuracy and completeness of supporting documentation, including establishing formal procedures, adding validation checks over data entry, and requiring cancelation of lost payments before re-issuance. If review of billings and supporting documentation is assigned to a consultant, ensure expectations are clearly communicated.

3.5 Evaluate options for construction management software solutions that strengthen cost management processes and improve project management efficiency.

4. Delays, final inspections, and facility commissioning were not adequately documented, potentially leading to higher costs for the City related to schedule delays and equipment replacements.

In addition to the missing documentation described in the earlier findings (cost estimates, bid comparisons, contract negotiations, pay application supporting documents, etc.), project files were lacking documentation relating to contract administration and project completion.

A. Causes for delays were not documented, potentially contributing to increased costs for the City.

Despite numerous change requests and pandemic-related concerns, the contract completion date was not formally extended from its original completion deadline of February 4, 2021. The Substantial Completion certificate, which establishes the completion date, was issued in 2 phases:

- February 27, 2022 – Substantial completion of the sitework, building, and select process equipment.
- February 27, 2023 – Substantial completion covering the RO system and related parts and equipment.

A change to the contract time requires a formal change order, which was not processed until the conclusion of the project. Change Order #1, approved June 2023, revised the Contract Completion date to February 27, 2023. The 31 individual change requests that comprised Change Order #1 spanned the time period between Jan 2021 – Jun 2023 and did not include requests from the CMAR to extend the contract completion date.

CMAR Contract: *Delays to the Work*

Within 14 days of the delay, the CMAR must request an increase in the Contract Time by written notice with an estimate of the probable effect of the delay on progress of the Work.

Types of Delays:

Excusable – unforeseeable, caused by an event beyond the control and without the fault or negligence of the Contractor (including its suppliers and subcontractors).

Non-excusable – within the control of the Contractor, its suppliers and subcontractors, or resulting from a risk taken by the Contractor under the terms of the contract.

Compensable – result from the City's actions or inactions. Time extensions or delay damages may apply.

SOURCE: Contract 2019-038-COS, Article 5 and 12.

While multiple factors could have contributed to the observed delays, we were unable to confirm them since the project files did not contain records of causes for the delays. In March of 2020 the CMAR gave notice of potential Force Majeure (unforeseen events) time and cost impacts related to the pandemic. However, no change requests for pandemic-related cost or time increases were subsequently submitted.

Overall, it appeared that some costs for schedule delays were born by the City:

1. Construction Change Request # 39 – Extended Supervision labor: $143,109
   According to the CMAR, project supervision costs exceeded budgeted costs by about $273,000 because the project went beyond the 19 months of supervision included in the GMP. Of this amount, about $55,000 was paid by the City through other change requests and $84,000 was paid by the CMAR's Builder's Risk insurance and subcontractor back-charges. The remaining $134,000 in salaries (plus related mark-ups) was submitted through a separate change request, to cover additional time on-site due to start-up challenges and delayed project completion.
2. Design Contract Change Order #7 – Additional post-design services past scheduled completion date: $89,698. This includes additional hours for testing, oversight, startup, and commissioning activities.

B. Records of project completion were incomplete – Final inspections and punch lists, required for the issuance of substantial completion were not retained. As well, documentation of the commissioning process (testing and validation) for the treatment facility equipment was not maintained in the project files, despite equipment issues that required re-commissioning and delayed the final project completion by more than 1 year.

Other documentation required for closing out the project was also not maintained or provided when requested, as described in Table 7 below. According to the department, the inspection team responsible for completing these items did not provide them to the project manager.

Table 7. Required Close-Out and Project Completion items were not properly maintained

Required Items	Documented in CPM Files
Certificate of Occupancy	✓
Certificate of Substantial Completion	✓
Close-Out Checklist	
Final Acceptance Letter	
Final Commissioning Report	
Final Completion Letters	
Manufacturer Warranties	
Operations and Maintenance Manual for the Facility	
Punch-List(s)	
Start-Up Plans	✓
Substantial Completion Log	
Warranty Submittal Log	

SOURCE: Auditor analysis of CPM Project Management Guide and project files maintained in the City's document management system.

C. **Further, all engineering inspections required to be completed by the City's consultant were only recorded in the CMAR's software application.** At auditor's request for these inspection reports that are required by the consultant's contract, the Project Manager obtained a download from the CMAR. However, we noted that these reports were not always signed off by the consultant and there were some instances where it was signed by someone other than the person listed on the signature line. To monitor construction quality and document the completion of contract deliverables, the contract administrator (project manager) or designee should review and accept these reports. No issues were observed with daily inspections completed by CPM's in-house inspection team – their uploaded reports appeared complete.

Contract Administrator responsibilities

- Keep a record in the contract file of all correspondence, conversations, and other data pertinent to the contract.
- Ensure that any required changes are authorized, documented, and approved as provided in the Procurement Code.
- Ensures all terms and conditions of the contract are met and scope of work is satisfactorily performed and scheduling proceeds as required.
- During project closeout, the Project Manager ensures that all project files are complete, including incorporation of inspector's files.

SOURCE: Auditor summary of Administrative Regulation 215, Contract Administration & CPM Construction Administration Guide, Section 9.5.

The department's policies were to store project records electronically in the City's records management system. However, according to project management, some of these files may have been moved to long term storage and were not accessible during the summer of 2024.

Recommendations:

The City Engineer should:

4.1 Ensure that extensions to construction project completion dates are documented as they occur, including the cause of the delay, through a formal change order.

4.2 Establish processes that ensure complete project files meet department standards, as well as Administrative Regulation 215, for documentation of contract administration activities.

METHODOLOGY

To accomplish our objectives, we performed the following:

- Interviewed the CPM project team, including the Project Manager, Project Management Assistants, Construction Admin Supervisor, and Infrastructure Inspector II.
- Reviewed the relevant laws, regulations, contracts, and policies/procedures:
    1. Relevant sections of Arizona Revised Statutes Title 34, Public Buildings and Improvements.
    2. Administrative Regulation 215 Contract Administration and Administrative Regulation 216 Contract Change Orders and Contract Modification.
    3. City of Scottsdale Procurement Code effective February 01, 2016 and the Project Management Guide, October 2020.

4. Engineering Services Contract No. 2016-008-COS awarded to Water Works Engineers LLC, and related change orders.
5. CMAR Preconstruction Contract No. 2019-031-COS, CMAR Construction Services Contract No. 2019-038-COS, and Contract Modification 2019-038-COS-A1 awarded to Archer Western Construction LLC, and related change orders.

- Assessed controls over the contractor payment process, including reviewing pay applications, related city payment requests, change orders and use of contingency.
- Evaluated contract administration and GMP negotiations. This included review of the approved GMP summary, comparing it against supporting cost proposals, subcontractor bid documentation, schedule of values, and subsequent pay applications.
- Evaluated compliance with contract payment terms, including requesting supporting invoices, subcontracts, and job cost ledger from the CMAR.
- Evaluated construction quality assurance controls, including closeout procedures, performed by the department and its consultants.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

MANAGEMENT ACTION PLAN

1. Insufficient review of the GMP proposal and lack of monitoring of subcontract selection results increases the risk of paying higher construction costs.

Recommendations

The City Engineer should:

Priority	Recommendation
High	1.1 Establish requirements for comprehensive review of cost proposals, by obtaining independent estimates for comparison or an independent review by a qualified cost estimator. Additionally, require detailed support for the approved construction costs, including breakdown of cost estimates, labor costs, allowances, and general conditions/requirements. Ensure that cost estimates support and agree to the approved GMP.
Responsible Party: Thyra Ryden-Diaz, Principal Project Manager Est. Completion Date: 07/01/2025	**Management Response**: Agree **Proposed Resolution:** CPM will require documentation on comprehensive review of cost proposals by internal cost estimator, consultant engineer or another qualified professional. New procedure will be distributed to client departments and included in the PM Digital guide by 7/1/2025.

Priority	Recommendation
Med	1.2 Establish requirements for monitoring of subcontractor selection and verification of final subcontracts. Require the contractor to track subcontractor buyout and make adjustments to the construction costs as appropriate.
Responsible Party: Thyra Ryden-Diaz, Principal Project Manager Est. Completion Date: September 2025	**Management Response**: Agree **Proposed Resolution:** Update written procedure for inclusion in the PM Digital guide on monitoring subcontractor selection and verification of final subcontracts on CMAR and Design Build contracts. Include training in September for all Project Managers (PM), Construction Admin Supervisors (CAS) and Project Management Assistants (PMA).

2. Contract language for payment terms are too broad, allowing terms to be decided informally. Payment terms need to be evaluated for cost-benefit.

Recommendations

The City Engineer should:

Priority	Recommendation
Med	2.1 Provide guidelines for project management to evaluate the best-fit payment terms for each project.
Responsible Party: Thyra Ryden-Diaz, Principal Project Manager Est. Completion Date: September 2025	**Management Response**: Agree **Proposed Resolution:** Establish new written procedure for inclusion in the PM Digital guide on guidelines for project management to evaluate the best-fit payment terms for each project in relation to CMAR and Design Build Contracts. Include training in September for all PM's, CAS's and PMA's.

Priority	Recommendation
High	2.2 Work with the City Attorney's Office to ensure standard construction contract terms adequately address expectations for payment of construction work. Develop multiple templates or template options to ensure specific terms are tailored to the chosen payment method. For cost-plus fee payment terms, ensure that contract language covers allowable and unallowable costs, as well as documentation and reporting requirements.
Responsible Party: City Attorney's Office Est. Completion Date: December 2025	**Management Response**: Agree **Proposed Resolution:** CPM will participate with the City Attorney's office to ensure standard construction terms adequately address expectations for payment of construction work. Note the contract under review was a 2019 version. The current CMAR contract was edited by the City Attorney's office in 2020 and in 2023.

3. Internal controls over invoice payment and change orders are inadequate, increasing the risk of errors, budget overruns and duplicate payments. Implementing construction management software can help address many of these issues.

Recommendations

The City Engineer should:

Priority	Recommendation
High	3.1 Require review and reconciliation of the Schedule of Values to ensure it aligns with the GMP proposal. Subsequent changes to the Schedule of Values should be documented and approved.
Responsible Party: Thyra Ryden-Diaz, Principal Project Manager Est. Completion Date: 07/01/2025	**Management Response**: Agree **Proposed Resolution:** CPM will review and reconcile the Schedule of Values to the total City Council approved GMP. Changes to the Schedule of Values during the project will be documented and approved by the project team. New procedure will be included in the PM Digital guide by 7/1/2025.

Priority	Recommendation
Med	3.2 Establish expectations for timely review and approval of change orders, ensuring that cost proposals are consistently reviewed for errors and supporting documentation. Change requests, including those funded by Project Contingency, should be formally authorized prior to the initiation of work unless an emergency need is documented.
Responsible Party: Thyra Ryden-Diaz, Principal Project Manager Est. Completion Date: September 2025	**Management Response**: Agree **Proposed Resolution:** Establish new written procedure for inclusion in the PM Digital guide on guidelines for project the management team for timely review and approval of change orders, ensuring that cost proposals are consistently reviewed for errors and supporting documentation. Include change requests, including those funded by Project Contingency in the procedure. Include training in September for all PM's, CAS's and PMA's.

Priority	Recommendation
Med	3.3 Require the project management team to actively monitor the status of all change requests and their estimated cost, not solely relying on the contractor's tracking. Where applicable verify final costs against cost estimates.
Responsible Party: Thyra Ryden-Diaz, Principal Project Manager Est. Completion Date: September 2025	**Management Response**: Agree **Proposed Resolution:** Require the inclusion of change order tracking in the construction administration services of the engineer of record. Include procedure in PM and CAS Digital guide by September 2025.

Priority	Recommendation
Med	3.4 Develop and implement stronger internal controls over the payment process that ensure billings are reviewed for accuracy and completeness of supporting documentation, including establishing formal procedures, adding validation checks over data entry, and requiring cancelation of lost payments before re-issuance. If review of billings and supporting documentation is assigned to a consultant, ensure expectations are clearly communicated.
Responsible Party: Thyra Ryden-Diaz, Principal Project Manager Est. Completion Date: September 2025	**Management Response**: Agree **Proposed Resolution:** Review internal controls with PMA staff to ensure billings are reviewed for accuracy and completeness of supporting documentation. Establish formal procedures, adding validation checks over data entry and requiring cancelation of lost payments before re-issuance. Engineer of record review of pay applications and supporting documentation shall be clear in the consultant scope of services. Include updated payment application procedure in PM, PMA and CAS updated digital guides.

Priority	Recommendation
Low	3.5 Evaluate options for construction management software solutions that strengthen cost management processes and improve project management efficiency.

Responsible Party: Alison Tymkiw, Senior Director – City Engineer Est. Completion Date: July 2027	**Management Response**: Agree **Proposed Resolution:** CPM has requested construction project management specific software in each budget cycle since FY2010-2011. A software package and position are included in FY25-26 budget request.

4. Delays, final inspections, and facility commissioning were not adequately documented, potentially leading to higher costs for the City related to schedule delays and equipment replacements.

Recommendations

The City Engineer should:

Priority	Recommendation
Med	4.1 Ensure that extensions to construction project completion dates be documented as they occur, including the cause of the delay, through a formal change order.
Responsible Party: Thyra Ryden-Diaz, Principal Project Manager Est. Completion Date: September 2025	**Management Response**: Agree **Proposed Resolution:** Revise the current procedure for construction contract delays and include in PM and CAS updated digital guides.

Priority	Recommendation
Med/Low	4.2 Establish processes that ensure complete project files meet department standards, as well as Administrative Regulation 215, for documentation of contract administration activities.

Responsible Party: Purchasing Department Est. Completion Date: October 2025	**Management Response**: Agree **Proposed Resolution:** Administrative Regulation 215 last revision date was May 10, 2010. Purchasing as the responsible department needs to update the regulation to include digital filing procedures. For departmental standards CPM is in the process of creating an updated checklist to verify project closeout.

City Auditor's Office

Lai Cluff, Acting City Auditor
Travis Attkisson, Senior Auditor
Elizabeth Brandt, Senior Auditor
Mel Merrill, Senior Auditor
Mandi Bradley, Auditor

Our Mission

The City Auditor's Office conducts audits to promote operational efficiency, effectiveness, accountability and integrity in City Operations.

Scottsdale City Auditor
7447 E. Indian School Rd. | Suite 205 | Scottsdale, Arizona 85251
OFFICE (480) 312-7756 | INTEGRITY LINE (480) 312-8348
www.ScottsdaleAZ.gov/auditor