

CITY OF SANTA CRUZ
City Hall
809 Center Street
Santa Cruz, California 95060



Water Department

WATER COMMISSION

Regular Meeting

February 05, 2018

7:00 P.M. GENERAL BUSINESS AND MATTERS OF PUBLIC INTEREST, COUNCIL CHAMBERS

*Denotes written materials included in packet.

The City of Santa Cruz does not discriminate against persons with disabilities. Out of consideration for people with chemical sensitivities, please attend the meeting fragrance free. Upon request, the agenda can be provided in a format to accommodate special needs. Additionally, if you wish to attend this public meeting and will require assistance such as an interpreter for American Sign Language, Spanish, or other special equipment, please call Water Administration at 831-420-5200 at least five days in advance so that arrangements can be made. The Cal-Relay system number: 1-800-735-2922.

APPEALS: Any person who believes that a final action of this advisory body has been taken in error may appeal that decision to the City Council. Appeals must be in writing, setting forth the nature of the action and the basis upon which the action is considered to be in error, and addressed to the City Council in care of the City Clerk.

Other - Appeals must be received by the City Clerk within ten (10) calendar days following the date of the action from which such appeal is being taken. An appeal must be accompanied by a fifty dollar (\$50) filing fee.

Call to Order and announce the reappointment of Water Commissioners Doug Schwarm and Walt Wadlow

Roll Call

Statements of Disqualification -

Section 607 of the City Charter states that ...All members present at any meeting must vote unless disqualified, in which case the disqualification shall be publicly declared and a record thereof made. The City of Santa Cruz has adopted a Conflict of Interest Code, and Section 8 of that Code states that no person shall make or participate in a governmental decision which he or she knows or has reason to know will have a reasonably foreseeable material financial effect distinguishable from its effect on the public generally.

1. Election of Water Commission Officers for 2018

Oral Communications - No action shall be taken on this item.

Announcements - No action shall be taken on this item.

Consent Agenda (pages 2.1 - 5.2)

Items on the consent agenda are considered to be routine in nature and will be acted upon in one motion. Specific items may be removed by members of the advisory body or public for separate consideration and discussion. Routine items that will be found on the consent agenda are City Council Items Affecting Water, Water Commission Minutes, Information Items, Documents for Future Meetings, and Items initiated by members for Future Agendas. If one of these categories is not listed on the Consent Agenda then those items are not available for action.

2. City Council Actions Affecting Water

Accept the City Council items affecting the Water Department.

3. Water Commission Minutes from December 4, 2017

Approve the December 4, 2017 Water Commission Minutes.

4. 2nd Quarter FY 2018 Financial Report

Accept the 2nd Quarter FY 2018 Financial Report.

5. Water Commission Workplan for 2018

Approve the Water Commission's Workplan 2018.

Items Removed from the Consent Agenda

General Business (pages 6.1 - 9.7)

Any document related to an agenda item for the General Business of this meeting distributed to the Water Commission less than 72 hours before this meeting is available for inspection at the Water Administration Office, 212 Locust Street, Suite A, Santa Cruz, California. These documents will also be available for review at the Water Commission meeting with the display copy at the rear of the Council Chambers.

6. Award from the Alliance for Water Efficiency

Acknowledge the receipt by the Santa Cruz Water Department's Water Conservation Program of the Alliance for Water Efficiency's first and so far only Platinum Award for meeting all AWWA standards for Water Conservation Program Operation and Management.

7. Presentation of Capital Improvement Projects
Accept the Presentation of Capital Improvement Projects.
8. Update on the HDR Contract for Program Management Services
Accept the update on the HDR/Program Management efforts.
9. 2018 Water Supply Outlook - First Look
Accept the 2018 Water Supply Outlook - First Look.

Subcommittee/Advisory Body Oral Reports - No action shall be taken on this item.

10. WSAS Ad Hoc Committee - Project Evaluation Framework
11. Santa Cruz Mid County Groundwater Agency
12. Santa Margarita Groundwater Agency

Director's Oral Report - No action shall be taken on this item.

Adjournment

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WATER COMMISSION
INFORMATION REPORT

DATE: 1/30/2018

AGENDA OF: February 5, 2018
TO: Water Commission
FROM: Rosemary Menard
SUBJECT: Election of Water Commission Officers for 2018

RECOMMENDATION: The Water Commission elects a Chair and Vice-chair for 2018.

BACKGROUND: Water Commission Bylaws, Article VI – Officers and Elections provided for review.

Attachment: Water Commission Bylaws, Article VI - Officers and Elections.

ARTICLE VI – OFFICERS AND ELECTIONS

Section 1. Officers

Officers of the Advisory Body shall consist of a Chair and Vice Chair.

Section 2. Election of Officers

As soon as is practicable following the first day of February of every year, there shall be elected from among the membership of the Advisory Body a Chair and Vice Chair.

Section 3. Term of Office

The term of office for the Chair and Vice Chair is one calendar year. Officers may not serve in the same position for more than two consecutive years.

Section 4. Nominations

The Chair will open the floor to nominations. Any member may nominate a candidate from the membership for the position of Chair or Vice Chair; nominations need not be seconded.

A member may withdraw his/her name if placed in nomination, announcing that, if elected, s/he would not be able to serve; but s/he shall not withdraw in favor of another member.

Once the nominations are complete, the Chair will ask for a motion to close the nominations; a second of, and vote on, the motion is required.

The Chair then declares that it has been moved and seconded that the nominations be closed, and the members proceed to the election.

Section 5. Voting

Voting may be by voice vote or by roll call vote.

The candidate who receives a majority of the votes is then declared to be legally elected to fill the office of Chair, and will immediately chair the remainder of the meeting.

The same procedure is followed for the election of Vice Chair.

Section 6. Vacancy of an Officer

Should a vacancy occur, for any reason, in the office of Chair or Vice Chair prior to the next annual election, a special election shall be held to fill the vacant office from among the membership. That member shall serve until a new appointment has been made.

Section 7. Removal of Elected Officers

The Chair or Vice Chair may be removed by a majority vote of the full Advisory Body at a regularly scheduled meeting of the Advisory Body, when all appointed members are present, or at a special meeting convened for that purpose at which a quorum is present. Any officer removed ceases to hold the office once the vote has been tallied and announced. If the Chair is removed, the Vice Chair shall become the new Chair. An election for the Vice Chair shall then be agendized for the next meeting.

Section 8. Duties of the Chair

The Chair shall preside at all regular meetings and may call special meetings. The Chair shall decide upon all points of order and procedure during the meeting; his/her decision shall be final unless overruled by a vote of the Advisory Body, in compliance with Article IX, Section 2, "General Conduct of Meetings." The Chair may not make motions, but may second motions on the floor. The Chair acts as primary contact for staff and shall represent the Advisory Body before City Council whenever the Advisory Body or Council considers it necessary unless another member(s) is (are) appointed by the Advisory Body. The Chair and staff shall jointly set the meeting agenda.

Section 9. Duties of the Vice Chair

The Vice Chair shall assume all duties of the Chair in the absence or disability of the Chair.

Section 10. Duties of the Acting Chair

In case of absence of both the Chair and the Vice Chair from any meeting, an Acting Chair shall be elected from among the members present, to serve only during the absence of the Chair and Vice Chair.

ARTICLE VII – STAFF SUPPORT

Section 1. Staff

Staff support and assistance is provided, but advisory bodies do not have supervisory authority over City employees. While they may work closely with advisory bodies, staff members remain responsible to their immediate supervisors and ultimately to the City Manager and Council.

The Director of the Water Department shall designate appropriate staff to act as staff person(s) to assist and support the Advisory Body. Staff shall attend all regular and special Advisory Body meetings. Staff shall be responsible for coordination of such reports, studies, and recommendations as are necessary to assist the Advisory Body in the conduct of its business according to City Council policy and the Brown Act. Staff may enlist the assistance of other departments as required. Staff shall be responsible for all public notification regarding all regular and special Advisory Body meetings.

Staff shall record the minutes of the meetings in accordance with these bylaws. t Staff shall supervise volunteers and interns, shall work closely with the Chair between meetings, shall make recommendations, prepare reports and proposals to the Advisory Body, may represent the Advisory Body at other meetings, presentations, and other public functions as requested, and shall perform administrative tasks.

Staff shall be responsible for the maintenance of proper records and files pertaining to Advisory Body business. Staff shall receive and record all exhibits, petitions, documents, or other materials presented to the Advisory Body in support of, or in opposition to, any question before the Advisory Body. Staff shall sign all notices prepared in connection with Advisory Body business, shall attest to all records of actions, transmittals, and referrals as may be necessary or required by law, and shall be responsible for compliance with all Brown Act postings and noticing requirements.

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WATER COMMISSION
INFORMATION REPORT

DATE: 1/31/2018

AGENDA OF: February 5, 2018
TO: Water Commission
FROM: Rosemary Menard, Water Director
SUBJECT: City Council Actions Affecting the Water Department

RECOMMENDATION: Accept the City Council items affecting the Water Department.

BACKGROUND/DISCUSSION:

December 5, 2017

Award of Professional Services Agreement and Contract Amendment for Program Management Services - Budget Adjustment

Motion carried to authorize the City Manager to execute an agreement with HDR Inc. (Walnut Creek, CA) for Program Management Services for a five year period with an option to renew for one additional five year period in a form to be approved by the City Attorney.

Motion carried to authorize the City Manager to execute Contract Amendment No. 1 for Service Order No. 1 in the amount of \$603,185 for services for Task No. 1 - Program Mobilization in a form to be approved by the City Attorney.

Resolution No. NS-29,341 was adopted appropriating funds and amending the FY2018 budget in the amount of \$663,503 from the Water Operations Fund (711) to fund Program Management Services needed during FY2018.

January 23, 2018

Loch Lomond Recreation Area – Addition of Half-Season Boat Storage Fee

Resolution to revise the Loch Lomond Recreation Area fee schedule to add a half-season boat storage fee and rescinding Resolution No. NS-29,041.

Annual Adjustment of Water Department Miscellaneous Fees

Resolution adjusting the Water Department's miscellaneous fees for services due to labor cost increases and rescinding Resolution No. NS-29,239.

System Development Charge Annual Inflation Adjustment

Resolution to adjust the System Development Charge by the inflationary factor calculated by the Handy-Whitman Construction Cost Index of water utility construction for the Pacific region, effective July 1, 2018, and rescinding Resolution No. NS-29,254

Purchase of Felton Diversion Inflatable Rubber Bladder

Motion to authorize the purchase of a replacement rubber bladder for the Felton Diversion from Dyrhoff, Inc. (West Boylston, MA) in the amount of \$102,800.

North Coast System Rehabilitation Project-Phase 3 – Contract with Granite Construction Inc., Notice of Completion

Motion to accept the work of Granite Construction, Inc. (Watsonville, CA) as complete per the plans and specifications and authorize the filing of a Notice of Completion for the North Coast System Rehabilitation Project-Phase 3.

Program Management Services with HDR Engineering – Contract Amendments No. 2018-02 and 2018-03 – Budget Adjustment

Motion authorizing the City Manager to execute Contract Amendment No. 2018-02 with HDR Engineering for Service Order No. 2 in the amount of \$1,296,420 in a form to be approved by the City Attorney.

Motion authorizing the City Manager to execute Contract Amendment No. 2018-03 with HDR Engineering for Service Order No. 3 in the amount of \$1,309,873 in a form to be approved by the City Attorney.

Resolution appropriating funds and amending the FY 2018 budget in the amount of \$773,500 from the Water Operations Fund (711).

PROPOSED MOTION: Motion to accept the City Council items affecting the Water Department.

ATTACHMENTS: None.



Water Department

Water Commission
7:00 p.m. – December 4, 2017
Council Chambers
809 Center Street, Santa Cruz

Summary of a Water Commission Meeting

Call to Order: 7:00 PM

Roll Call

Present: Present: D. Engfer (Vice-Chair), D. Baskin, J. Mekis, A. Schiffrin, W. Wadlow.
Absent: L. Wilshusen (Chair) (with notification), D. Schwarm (with notification)
Staff: R. Menard, Water Director; H. Luckenbach, Deputy Director/Engineering Manager; N. Dennis, Principal Management Analyst; S. Easley Perez, Associate Planner II; K. Moore, Associate Planner II; T. Goddard, Conservation Manager; C. Berry, Watershed Compliance Manager; G. Eidam, Chief Ranger; E. Bean, Water Resources Supervisor.

Others: 9 members of the public.

Presentation: None.

Statement of Disqualification: None.

Oral Communications: One public comment.

Announcements: Commissioner Engfer announced the USGS - Pacific Coastal Marine Science Center (PCMSC) seminar on atmospheric-river activity on the Central Coast is being held on Wednesday, December 6, 2017 at 2:00 PM.

Consent Agenda

1. City Council Items Affecting Water
2. Approve November 6, 2017 Water Commission Minutes

Commissioner Schiffrin moved the consent agenda. Commissioner Baskin seconded.

VOICE VOTE: MOTION CARRIED

AYES: All.

NOES: None

ABSENT: Commissioners Wilshusen and Schwarm

ABSTAIN: Commissioner Wadlow

General Business

3. Update on Watersheds Health and 2017 Watersheds Sanitary Survey Presentation

A presentation on the health of the watershed was provided by E. Bean, Water Resources Supervisor.

In the report it states the negative impacts from increased sedimentation will continue for approximately 5 years, why is this the case?

- Over decades of less significant storms, sediment made its way to the lower portions of the watershed. Sediment accumulation in the lower San Lorenzo River (SLR) was moved out to the ocean as a result of the 2017 winter storms. Additional sediment was deposited into the upper portions of the watershed as a result of mud slides and bank failures. This new, looser sediment will take approximately 5 years to move through the system.

With high rainfalls, we can expect additional turbidity but will we experience more algae events at Loch Lomond Reservoir?

- Loch Lomond is a dynamic system with a number of factors contributing to algae events including: turbidity, sun exposure and the nutrients inputs (i.e., nitrogen and phosphorus) in the 2017 winter storm runoff. Testing of the lake water showed 2-5 times more phosphorus in the water than normal. Phosphorus is a naturally occurring element in the soils in the watershed. The higher than average phosphorus amounts were to blame for the initial algae blooms but due to the substantially higher than normal levels of turbidity in the lake that persisted through the spring and much of the summer, there was not enough sunlight at deeper levels to allow the algae blooms to fully develop.

Do we anticipate treatment issues at GHWTP due to the increased sediment moving through the system?

- It is possible that the water treated will be more turbid and the more turbid the water is, the more chemicals are required to treat the water and the more solids are produced from the treatment process. Given the existing state and treatment process capacity (not hydraulic capacity) of GHWTP, we are anticipating that future rehabilitation and replacement work for this facility will need to improve our ability to treat water across a range of conditions.

High rainfall and low rainfall years comes with their own sets of problems, so how do we ensure the sufficiency of the water supply for our customers?

- You need to be prepared to adapt to a variety situations. In reviewing the cumulative rainfall, we have to plan for and be ready to deal with significant variability. For example, in the 2013-2014 water year, we received just over 20 inches of rain and in the 2016-2017 water year, we received almost 100 inches of rain. This variability is at the heart of the problem here locally and it means you have the systems, tools and abilities to operate effectively across the full range of possible circumstances. This requirement also is critical because it informs the design requirements of any new or upgrades to the existing treatment plant.

Are we actively engaged in re-vegetation efforts in the watershed?

- On our watershed lands, depending on the situation, we do revegetate areas. In the rest of the County, seeds and roots sprout on their own which also correlates to the 5 years requirement for sediment to move through the system.

Public comment was received following this item and the relevant points have been included in the summary above.

A presentation on the 2018 San Lorenzo River and North Coast Sanitary Survey Update (Survey) was provided by K. Moore, Associate Planner II.

The Sanitary Survey is part of multi-barrier strategy for the protection for drinking water. The multiple barriers include source water protection, treatment of raw water and disinfection in your distribution system.

These barriers work collectively to produce a quality product that protects public health. In a system like ours, where we don't control the entire watershed, the main concern is to identify contaminants of concern in our source water. While we are not seeing any major events that would affect the water quality, one area of concern is the potential for additional cannabis cultivation to bring introduce additional pesticides, herbicides and/or fertilizer into the watershed.

In regards to the new County cannabis regulations, it is hoped that illegal operations will be converted to legal businesses and watershed protection measures will be enforced, and also that new taxes on the industry will support and improve enforcements. What other concerns does staff have?

- Our staff is not only concerned about the potential for additional chemicals being introduced into the watershed but also about the land clearing and use of rural roads which can cause additional issues. These latter activities can substantially increase the potential for additional water quality issues due to increased erosion and sedimentation.

Has the Water Department commented on the draft EIR that the County is preparing?

- Yes, the City did comment.

Is the County expecting enforcement of the cannabis regulations to be performed by Water department staff?

- The Water Department does not typically have jurisdiction in the impacted areas and therefore, will not be providing enforcement in those areas. We try to be a watchdog in the watershed and work with our government partners to address issues.

Please explain the prioritization of Karst protection.

- Karst protection is a new element in the Survey and is part of this year's update. We worked on the Karst Protection Zone Policy with the County as they are currently developing protection language and policy. The importance of Karst Zone protection in drought years for base flows and for providing clean, cold, clear water is critical. The creeks in the Karst Zone, provide habitat for Coho salmon which are on the verge of

extinction. So, in addition to being an important raw water source, cold, clear water from our Karst Zone is important to fisheries.

- Two years ago, the County Water Advisory Board, proposed language to protect the Karst Zone to be incorporated into County code, but action to complete this step hasn't yet been taken. We continue to strongly support amending the County code to include it.

4. Updated Status of the Habitat Conservation Plan (HCP) and Water Rights Conformance

A presentation on the Updated Status of the HCP was provided by C. Berry, Watershed Compliance Manager.

Regarding water rights held by City of Santa Cruz, we have pre-1914 water rights on the North Coast, why not on the SLR?

- The SLR watershed was fairly developed in the 1900s with logging activities and other pollutants discharged into river so it wasn't a high quality water source. Cleaner water, from the North Coast, was readily available. Water rights on the SLR were not established until the 1920s and 1930s.

If the planned HCP includes Public Works' activities, does the Water Department receive funding from them for this effort?

- The Water Department staff does its best to collaborate with the Public Works Department on funding opportunities.

Because this process will involve the State Water Resources Control Board (SWRCB) combined with the need to perfect our water rights, are there any concerns about any potential competing interest for additional diversion from the SLR?

- We are not aware of any competing interests at this time. The California Department of Fish and Wildlife and the National Marine Sanctuary have indicated their willingness to partner with us to protect flows address illegal diversions that might threaten our rights.

Are we vulnerable to irrigation diversions on the SLR?

- The SLR is over over-appropriated during the irrigation season and only has available supply in the winter months which would require an irrigation diverter to find a place to store winter water.

Are you allowed to store SLR water outside your place, in the Purisima or Santa Margarita aquifers if you intend to use the stored water in your place of use?

- There are specific provisions of water rights law and regulation that relate to Aquifer Storage and Recovery (ASR) projects. If an ASR project proceeds, it would be permitted under those requirements.

Regarding the HCP, are there issues related to wet years and increased turbidity and the impact on fish? Can wet years impact how and when can we take water?

- Turbidity as an impact was studied across Northern California as it related to timber harvesting in the 1990's. Wet winters and increased turbidity has a negative impact on fisheries as sedimentation impacts the streambeds however, increased spring flows are good for spawning and rearing.

Do we have some sense of the amount of water that will be available from the North Coast for In Lieu or ASR?

- Our modeling work is set up to maximize how much water we can take from all of our sources while still meeting instream flow requirements and all other constraints. Table 7-2 on Page 7-9 of the 2015 Urban Water Management Plan provides the following information based on our modeling:

	2020	2025	2030	2035
North Coast Sources	637	642	671	671
San Lorenzo River	1882	1842	1829	1834
Loch Lomond Reservoir	595	551	540	547
Groundwater	138	129	127	128
Supply totals	3,252	3,164	3,167	3,180
Demand totals	3,327	3,225	3,205	3,220
Difference (mgd)	(75)	(61)	(38)	(40)
Demand served %	97%	97%	98%	98%

7-9

Given the 16 years it has taken us with the HCP process, combined with the increased complexity of the process, is the completion date optimistic? In addition, why are there two, separate environmental reviews for water reliability and HCP?

- We are looking at running the water rights review in parallel with finalizing the details of the HCP. It is likely that the CEQA analysis that will be done as part of the water rights EIR will describe and analyze the work that was done to assess the various flow options that have been considered in developing the HCP as well as the recommended flow regime. That analysis can, at the very least, be lifted from the water rights EIR and put into another CEQA document (or possibly some supplemental EIR to the water rights EIR) for the Cal DFW 2081 permit. For the federal section 10 permit for the HCP, there will be a separate NEPA process, with the National Marine Fisheries Service being the lead agency.

Is all this is foundational to a supplemental water supply project?

- We know we need to complete the Water Rights Conformance Project in order to consider potential conjunctive use of surface and groundwater supplies in northern and central regions of the County. At the very least, this would include direct diversion from Felton and Newell Creek, extension of the Felton permit, open up the place of use for the SLR water rights. Whether we ever do an in-lieu or ASR project, we still need to complete this work. So proceeding to address and resolve these water rights issues makes sense now. Ultimately, having them resolved, will allow us to operate the water system in a more flexible way, which would have value in any case.

Is the timeline for reaching a decision point on a water supply project realistic given the work required to complete the water rights reliability and HCP projects?

- We are currently on a schedule with these efforts, with a reasonable accommodation for delays, to complete all the work required in time to inform the water supply decision point(s).

Can you provide a general overview of flow requirements goals and how they relate to historical diversions?

- A good place to get an overview of the science that underlies the development of flow targets is from the December 3, 2014 presentation on Bypass Flows for Fish (see: <http://www.cityofsantacruz.com/home/showdocument?id=41430>) that was part of the work of the Modeling and Forecasting Working Group. This presentation is a good place to get an overview of the science that underlies the development of flow targets. The presentation to the Water Commission made by Gary Fiske on October 2, 2017 provides additional details about the analysis of impacts of several more recent changes.

Why would we consider attenuating our pre 1914 water rights on the North Coast to include minimum flow requirements?

- This was a recommendation of our water rights attorney to preserve the City's ownership rights in stream and protect the water for instream uses thus not allowing downstream diversion in the future.

Public comment was received following this item and the relevant points have been included in the summary above.

5. Quarterly Update on the Water Supply Augmentation Strategy

Regarding the Pipeloop study, will the bench top analysis be enough or will we need to complete a larger study before we move water to Soquel Creek Water District (SqCWD) in 2019?

- It is too early to tell with water testing samples just going in for analysis in the bench top analysis. SqCWD only funded the first phase (bench top) of this study in the hopes that it would yield enough information to determine feasibility.

When will the bench top analysis be complete?

- In May of 2018.

Is there a specific report-back date regarding how the Ocean Plan Amendment might impact the feasibility or cost of the desalination project?

- Typically this information would be reported in the quarterly update.

Regarding UCSC, are they planning on doing a project separate from the City? Do they have plan to implement recycled water on campus?

- Through a public-private partnership, UCSC is looking to include in their new housing projects, an on-site wastewater project. They are in the exploration phase looking at different possibilities and interested in partners that can provide the technical skills.

Public comment was received following this item regarding residential dishwasher rebate expansion to commercial applications, water use reports and storm water incentives and green infrastructure as a useful strategy.

6. Establish a Water Commission Ad Hoc Committee to participate in the development of the Water Supply Augmentation Strategy-Project Evaluation Process

Once the work plan is approved by the Water Commission, how will we ensure City Council approval of the work plan?

- We are proposing a joint meeting with the City Council in March 2018. If we are ready to bring forward a proposal during our joint meeting, we will do so as it is important to maintain transparency and communication with the Council.

Commissioners discussed criteria for membership on the Ad Hoc Committee which included a person was involved in WSAC and the desire to begin work prior to the holidays. In addition, those who expressed an interest in participating are Commissioners Wadlow, Engfer & Mekis. Ms. Menard indicated that she would reach out to Commissioner Schwarm to see whether he was interested in being considered for appointment to the Ad Hoc Committee and if so pass that information on to Chair Wilshusen.

Public comment was received following this item and the relevant points have been included in the summary above.

Commissioner Schiffrin moved to quickly form a temporary Ad Hoc Committee of no more than 3 Water Commissioners, appointed by the Chair, to assist staff in the development of a decision-making framework for the Water Supply Augmentation Strategy (WSAS) and to consider those Commissioners who have expressed an interest in serving on the Ad Hoc Committee. Commissioner Wadlow seconded.

VOICE VOTE: MOTION CARRIED
AYES: All.
NOES: None
ABSENT: Schwarm & Wilshusen
ABSTAIN: None.

Subcommittee/Advisory Body Oral Reports

7. Santa Cruz Mid-County Groundwater Agency

Commissioner Baskin announced the next workshop addressing Ground Water Modeling at the Simpkins Swim Center on December 7, 2017.

The first meeting of the Advisory Committee on plan development for the Mid County Basin will be held on January 24, 2018 at the Live Oak/Green Grange. The group then will meet on the fourth Wednesday of each month.

8. Santa Margarita Groundwater Agency

Commissioner Engfer announced the next meeting will be held on December 13, 2017 and the start time has been changed to 8pm to accommodate a Ground Water 101 workshop at 5:30pm.

Directors Oral Report None.

Final Comments and Requests for Follow up.

1. Provide the most recent karst protection zone standards provided to the Board of Supervisors to the Commissioners.
2. Include the Santa Margarita Groundwater Agency as a stakeholder in the Sanitary Survey update.
3. Once finalized, provide the Commissioners with copies of the 2018 Sanitary Survey Update.
4. Provide a copy of the Request for Qualifications for CEQA consultants on behalf of the Water Rights Reliability Project.
5. Provide us with more specificity on flow requirements goals and how they relate to historical diversions at an appropriate time.
6. A listing of contract amounts, including and various amendments, which reflects total amount the City has committed to each project and tie them to the project timeline will be included in future WSAS Quarterly reports.
7. Provide a written rationale for increasing the desalination project to a 3.3 million gallon/day versus a 2.5 million gallon/day as originally discussed?

Adjournment Meeting adjourned at 9:09 PM.

Respectfully submitted,

Nicole B. Dennis
Staff



WATER COMMISSION
INFORMATION REPORT

DATE: 1/31/2018

AGENDA OF: 2/5/18
TO: Water Commission
FROM: Malissa Kaping, Management Analyst
SUBJECT: 2nd Quarter FY 2018 Financial Report

RECOMMENDATION: That the Water Commission receive the 2nd Quarter FY 2018 Financial Report.

BACKGROUND/DISCUSSION: The second quarter report for FY 2018 is attached showing a snapshot of our financial status for the first half of the fiscal year. 44% of budgeted revenues have been received and 45% of budgeted expenses has been spent or encumbered, leaving a positive net balance of over \$2.8M.

Difference between Adopted Budget and Adjusted Budget

- The budget for miscellaneous revenues increased by \$343,000 in anticipation of Soquel Creek Water District's contribution toward the Pipe Loop Study.
- Expenses for Services, Supplies, and Other increased by \$664,000 for mobilizing the Department's program management service contract with HDR.
- The remaining budget adjustments of \$407,000 in Services, Supplies, and Other and \$520,000 in Capital Outlay are the result of purchases carried forward from FY 2017.

Rate Stabilization Fund Balance

- The Rate Stabilization Fee of \$1 /ccf, effective with the July 1st billings, now appears in the 713 fund balance. Nearly \$1.5M has been collected in Rate Stabilization Fees.

CIP projects

Staff has been performing cash flow analyses of the capital program and working with HDR to validate the projects, their priority and budget estimates. Changes in spending include the Newell Creek Dam Inlet/Outlet Pipeline Project to complete the design and environmental work, additional spending on the citywide Security Camera & Building Access Upgrades project, and water mains replaced by the Department's Distribution section.

FISCAL IMPACT: None

PROPOSED MOTION: Accept the un-audited 2nd Quarter FY 2018 Financial Report.

ATTACHMENTS: 2nd Quarter FY 2018 Financial Report

Water Department

2nd Quarter FY 2018 Financial Report

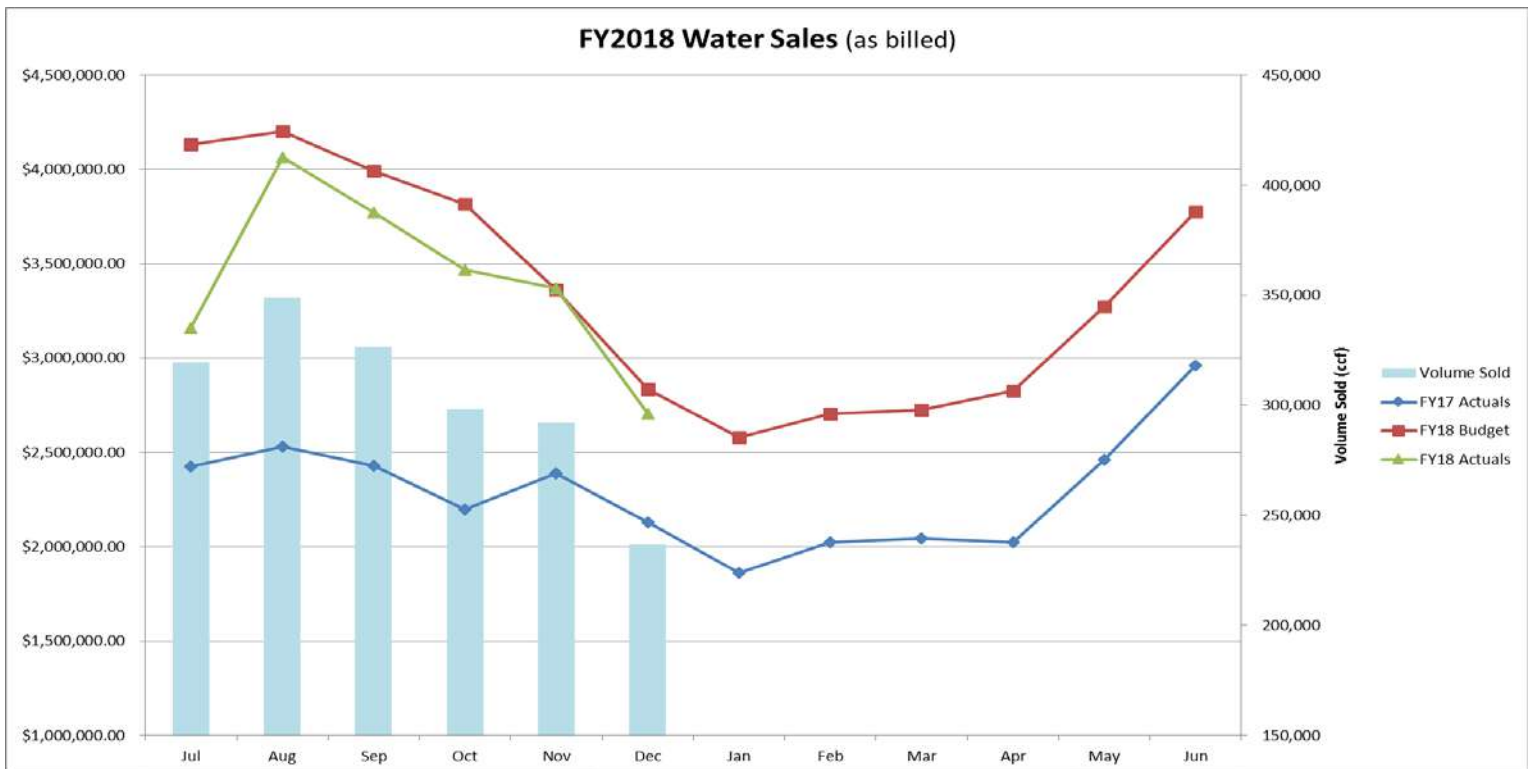
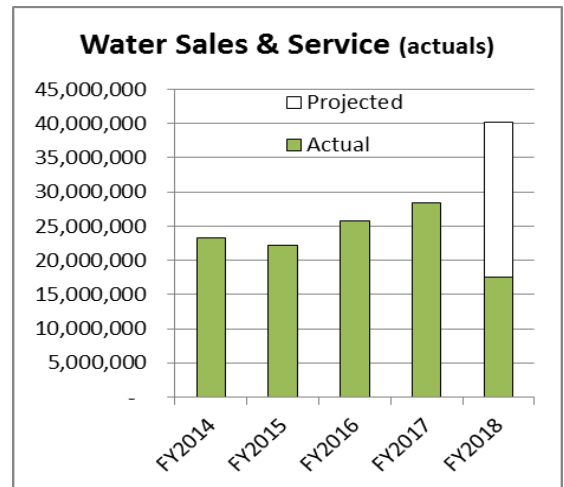
Preliminary, Unaudited, as of 12/31/17

Financial Status for Water Operations, Fund 711

	FY 2018 Ado Budget	FY 2018 Adj Budget	Actual YTD Thru 12/31/17	Remaining Enc	FY 2018 YTD Act + Enc	YTD % of Budget Act + Enc
Revenues						
Water Sales and Service *	40,171,529	40,171,529	17,599,707	-	17,599,707	44%
Miscellaneous	1,193,181	1,536,181	666,660	-	666,660	43%
Grants & Other Financing	-	-	10,613	-	10,613	0%
Total Revenues	41,364,710	41,707,710	18,276,979	-	18,276,979	44%
Expenses						
Personnel	14,249,469	14,454,386	6,057,799	-	6,057,799	42%
Services, Supplies, and Other	14,667,833	17,404,503	5,523,074	2,559,963	8,083,036	46%
Capital Outlay: Other	175,000	692,680	513,872	99,307	613,179	89%
Debt Service	1,949,327	1,949,327	688,855	-	688,855	35%
Total Expenses	31,041,629	34,500,895	12,783,600	2,659,270	15,442,870	45%
Balance	10,323,081	7,206,815	5,493,379		2,834,109	

Fund Balances

	Balance as of 12/31/17	Target for FY end **
711- Enterprise Operations	12,362,899	7,142,413
713- Rate Stabilization	3,990,663	5,821,270
714- Public Art	332,936	N/A
715-System Devel. Charges	3,716,667	N/A
716- 90-Day Operating Reserve	6,516,570	7,142,413
717- Emergency Reserve	3,055,696	3,100,000
718- MHJB Endowment	144,041	145,000



* Actual revenues received (not as billed)

** Target balance from the Pro Forma and not yet adopted by Council

CIP Projects Overview, as of 12/31/2017

Rehab or Replacement Projects	Project #	Life of Project Total (Projected) **	Spend Thru 12/31/17 *	Project Duration	Current Status
Aerators at Loch Lomond	c701706	350,000	-	2017-2019	Design
Bay Street Reservoir Reconstruction	c700313 & -027	25,934,172	25,351,943	2007-2019	Complete/Phase 5
Beltz 10 & 11 Rehab & Development	c700026	509,243	106,768	2017-2018	Design
Coast Pump Station Line Repairs	c701707	550,000	30,000	2018	Feasibility
Felton Diversion Replac. & Pump Station	c701602	1,200,000	92,036	2016-2020	Pre-Design
Gravity Trunk Main Valve Replacement	c701504	640,000	583,519	2014-2017	Complete
Newell Creek Dam Inlet/Outlet Pipeline	c701606	51,280,744	4,462,404	2016-2022	Design
Newell Creek Pipeline Rehab/Replacement	c701701	19,782,600	9,999	2016-2020	Feasibility
N. Coast System Rehab- Laguna Diversion	c701801	1,750,000	-	2018-2021	Feasibility
N. Coast System Rehab- Majors Diversion	c701802	1,750,000	-	2018-2021	Feasibility
North Coast System Rehab - Phases 1-4	c709835	27,425,259	13,764,959	2003-2023	Phase 3 Complete
Pressure Regulating Stations	c701703	490,000	64,986	2017-2020	Design
San Lorenzo River Diversion & Tait Wells	c709872	2,055,014	1,981,624	2002-2017	Complete
Tube Settler Replacement	c701708	3,800,000	227,138	2018-2019	Design
University Tank No. 4 Rehab/Replace	c701505	3,770,000	-	2014 - 2020	Feasibility
University Tank No. 5 Replacement	c701506	4,428,000	549,079	2014 - 2020	Design/Construction
Water Treatment Upgrades	c700025 & -1401	1,637,047	535,725	On-going	Feasibility
Wharf Water Main Replacement	c701613	193,501	158,188	2016	Complete
WTP Concrete Tanks Replacement	c701501	27,128,320	2,005,362	2014 - 2021	Design
WTP Filter Rehabilitation and Upgrades	c701303	6,037,300	6,019,570	2013 - 2018	Complete
WTP Flocculator Improvements	c701502	2,360,000	-	2018-2019	Feasibility
		183,071,200	55,943,302		

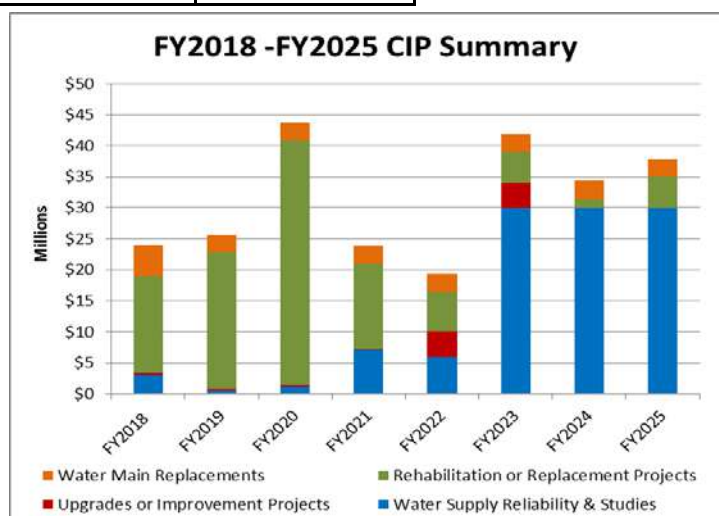
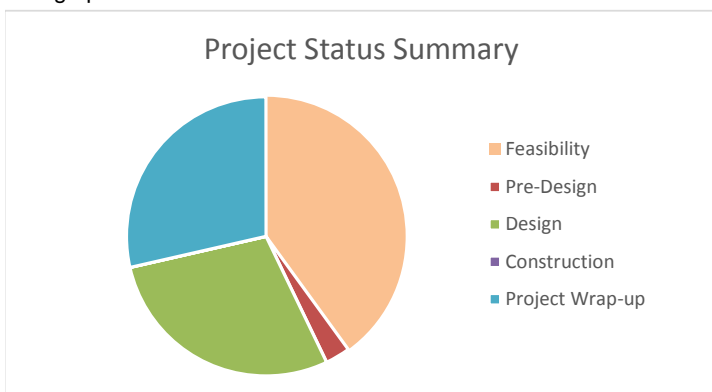
Upgrades or Improvement Projects	Project #	Life of Project Total (Projected) **	Spend Thru 12/31/17 *	Project Duration	Current Status
Advanced Metering Infrastructure (AMI)	c701603	11,100,000	29,100	TBD	Feasibility
Loch Lomond Facilities Improvements	c701301	385,000	73,626	2013-2020	Design/Construction
Photovoltaic System Evaluation/Construc	c701607	910,000	838,082	2016-2018	Complete
Security Camera & Building Access Upgrades	c701704	645,000	176,996	2016-2019	Feasibility
Spoils and Stockpile Handling Facilities	c701508	350,000	237,059	2015-2018	Complete
Water Resources Building	c701702	1,100,000	206,585	2016-2019	On Hold
Brackney Landslide Risk Reduction	c701803	TBD	70,100	TBD	Feasibility
Coast Pump Station Flood Reduction	c701804	TBD	67,300	TBD	Feasibility
Union/Locust Building Expansion	c701805	TBD	27,694	2018 - 2019	Design
		14,490,000	1,726,542		

Water Supply Reliability & Studies	Project #	Life of Project Total (Projected) **	Spend Thru 12/31/17 *	Project Duration	Current Status
Aquifer Storage and Recovery	c701609 & -10	3,885,000	843,243	2016 - 2020	Feasibility
Recycled Water	c701611 & -12	575,000	573,807	2016 - 2018	Project Wrap-Up
Source Water Evaluation	c701608	1,100,000	339,675	2016 - 2020	Feasibility
Water Supply Reliability - WSAC	c701402 & -03	2,296,250	2,296,249	2014 - 2016	Completed
Water Supply Augmentation Strategy	c701705	105,778,352	155,848	2020 - 2025	Feasibility
		113,634,602	4,208,822		

Water Main Replacements	Project #	Average Spend Per Year	Spend For 7/1/17 - 12/31/17	Project Duration	Current Status
Main Replacements - Engineering Section	c700002 +	1,298,289	3,974,287	Annual - Ongoing Programs	
Main Replacements - Customer Initiated	c700004	35,759	-		
Main Replacements - Distribution Section	c701507	369,643	99,639		
Main Replace.- Outside Agency Initiated	c700003	172,564	-		
		1,876,255	4,073,926		

* Amount includes spent & current encumbered funds from the project start through 12/31/17.

** Non-inflated 2015 dollars, will change as projects move through design process.





WATER COMMISSION
INFORMATION REPORT

DATE: 1/31/2018

AGENDA OF: 2/5/18
TO: Water Commission
FROM: Heidi Luckenbach, Deputy Director/Engineering Manager
SUBJECT: Water Commission Work Plan for 2018

RECOMMENDATION: That the Water Commission receive the Calendar 2018 Water Commission Work Plan (Working Draft)

BACKGROUND/DISCUSSION: Staff has developed a preliminary plan of major items to be received by the Water Commission in Calendar Year 2018. Updates will be made periodically as more information is available.

FISCAL IMPACT: None

PROPOSED MOTION: Accept the Calendar 2018 Water Commission Work Plan (Working Draft).

ATTACHMENTS: Calendar 2018 Water Commission Work Plan (Working Draft)

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Working Draft – Calendar 2018 Water Commission Work Plan (rev 01/30/18)

Major Water Commission Work Plan Item	Anticipated City Council Action on Water Commission Recommendations
January 8, 2018	
➤ Meeting cancelled	
February 5, 2018	
➤ Election of Officers	
➤ 2018 Water Supply Outlook – First Look	
➤ 2 nd Quarter FY2018 Financial Report	
➤ Presentation of Capital Improvement Projects	
➤ Update on HCR contract for Program Management Services	
March 5, 2018	
➤ Update on Decision Making Framework (tentative)	
➤ 2018 Joint Meeting Overview	
➤ Quarterly WSAS Update /2017 WSAS Annual Report	
April 2, 2018	
➤ 2018 Water Supply Outlook	➤ Peak Season 2018 Water Supply Outlook – Council Action
➤ Presentation on FY 2019 – FY 2028 Draft Capital Improvement Plan (CIP) (focus on project validation)	➤
April 10, 2018	
Joint Study Session with City Council on Implementation of Water Supply Augmentation Strategy	
May 7, 2018	
➤ 3 rd quarter FY2018 Financial Report	
➤ Water Commission Recommendation on FY 2019 Operations and Maintenance Budget and Capital Improvement Program (updated financial Pro Forma)	➤ Council Hearings on the City’s Operating Budgets;
➤ ASR: Summary of Phase I/Discuss Phase II scope (tentative)	➤
June 4, 2018	
➤ Quarterly WSAS Update	
➤ DAC Grant Possibilities for financial assistance (tentative)	
July 2, 2018	
➤ Recommend Cancelling as this falls the Monday before the 4 th of July	
August 6, 2018	
➤ TBD	
September 10, 2018	
➤ Quarterly WSAS Update	
October 1, 2018	
➤ 4 th Quarter FY2017 Financial Report	
➤ Workshop on water treatment – GHWTP condition assessment, seismic assessment, treatment process evaluation, requirements for ongoing operations with existing sources and water quality characteristics and with additional winter water sources and water quality characteristics.	
November 5, 2018	
➤ WSAC Element 3/Begin Discussions on Comparative Analysis	
December 3, 2018	
➤ Quarterly Update on WSAS	
➤ 1 st Quarter FY2018 Financial Report	

Items to be scheduled:

Follow up on Ocean Plan Amendment ramifications of seawater desalination.

Update on Water Rights Reliability Project, prior to notice of preparation/project description



WATER COMMISSION
INFORMATION REPORT

DATE: 1/31/2018

AGENDA OF: February 5, 2017
TO: Water Commission
FROM: Rosemary Menard
SUBJECT: Award from the Alliance for Water Efficiency

RECOMMENDATION: Acknowledge the receipt by the Santa Cruz Water Department's Water Conservation Program of the Alliance for Water Efficiency's first and so far only Platinum Award for meeting all AWWA standards for Water Conservation Program Operation and Management.

BACKGROUND/DISCUSSION: Staff will present information related to the background and importance of the Alliance for Water Efficiency's first and so far only Platinum Award for meeting all AWWA standards for Water Conservation Program Operation and Management.

POSSIBLE MOTION: Acknowledge the receipt by the Santa Cruz Water Department's Water Conservation Program of the Alliance for Water Efficiency's first and so far only Platinum Award for meeting all AWWA standards for Water Conservation Program Operation and Management.

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WATER COMMISSION
INFORMATION REPORT

DATE:

01/29/18

AGENDA OF: February 5, 2018
TO: Water Commission
FROM: Heidi Luckenbach, Deputy Director/Engineering Manager
SUBJECT: Presentation of Capital Improvement Projects

RECOMMENDATION: Accept the Presentation of capital improvement projects.

BACKGROUND/DISCUSSION: Over the next few months, the Water Commission will receive several items related to the FY 2019 operating and capital budgets. This item focuses on projects that have been completed (or very nearly completed) in the current fiscal year (FY 2018) as well as several that are ongoing. The purpose of the presentation is to memorialize projects previously supported by the Commission, and provide some context for the upcoming meetings.

This report and the staff presentation are not exhaustive of all projects; rather Department staff will present information on selected projects that reflect the size and diversity of the content of the Department's Capital Improvement Program (CIP). The Second Quarter FY2018 Financial Report, presented elsewhere on the agenda, provides the entire CIP for broader context.

At this time the Water Department does not plan on any major changes to the existing CIP as we work to produce the FY2019-2021 CIP recommended budget. This is largely due to the fact that the Department is engaged in a process with its program management firm, HDR, to "validate" the existing CIP. The scope of this effort will be discussed in more detail on a separate agenda item at this meeting.

REHABILITATION AND REPLACEMENT PROJECTS

Bay Street Reservoir Reconstruction (c700313, c700027)

Two large upgrades occurred at the Bay Street Tank Site during 2017. One of the new 6 million gallon storage tank's roof is covered with a new photovoltaic array that allows for solar energy to be used as an offset to electricity use at the tank site and the U2 Pump Station located across the street. This installation supports the City of Santa Cruz's Climate Action Plan and substantially reduces the power costs to the department. A second array is feasible for the site and the

Department is working with the Climate Action Program to determine when it becomes financially beneficial to consider increasing solar production at this location.

For the past 10 years, the neighborhood has been involved in discussions on improvements to the site following the completion of the tanks. A significant amount of interest was expressed in beautifying the Cardiff Place frontage. The landscaping and site improvement project (Phase 4 of the project) focused on work that beautified the site for the benefit of the neighborhood and larger community. Feedback from the neighbors about the project continues to be positive and the look of the frontage will only improve with time as the plantings reach maturity. Still planned for the site are several small, onsite improvements including enclosed storage, a restroom, and facilitating use of the facility by the City's Fire Department for training purposes. Total cost approximately: \$26 million.

Felton Diversion Replacement & Pump Station (c701602)

In January, City Council approved the purchase of a new bladder dam to replace the existing one. The project has been in the feasibility and design phase for a long time due to the need to divert river flows during in-stream activities. Replacement is scheduled for fall 2018. This project will retain the capacity and capability of the station to reliably divert water to Loch Lomond during high San Lorenzo River flows. Total cost estimated at: \$1.2 million.

Newell Creek Dam Inlet/Outlet Pipeline & Aerators (c701606)

AECOM remains on contract for the design of a replacement inlet/outlet (I/O) as well as a higher level assessment of rehabilitation of the existing I/O. The focus this past year has been on replacement. The 10% design was completed and included two options, one being constructed by conventional tunneling equipment and the other using a microtunnel boring machine. Staff submitted a report to Division of Safety of Dams (DSOD) who commented that both options were feasible and acceptable. The City retained AECOM to complete a 100% design of the replacement of the I/O pipe. The current scope of the replacement project includes (1) the replacement of the I/O pipe based on the conventional tunnel option; (2) the replacement of the spillway bridge; (3) designing the road and culvert system that would allow access to the outlet under flood conditions; (4) designing a replacement of a small section of the Newell Creek Pipeline downstream of the dam.

Staff initiated the Environmental (CEQA) Review and Permitting for the project, retaining Dudek in November 2017, and started Phase 2 of the Geotechnical investigation with the drilling of 6 land borings and 5 water borings. Data from the geotechnical investigation is being analyzed and will be incorporated into final replacement design. Total cost estimated: \$50 million.

Staff also just started working with HDR on right of way and other property-related issues associated with the project.

North Coast System Rehab (c709835)

Phase 3 of the North Coast System Rehabilitation Project replaced 18,500 linear feet of leak-prone raw water transmission main. The project improved the reliability of that portion of the water system and reduces the incidence of water loss. Due to a major leak on the line in December 2015, 1,300 feet of 24 inch pipe was installed by horizontal directional drilling as part

of an emergency project and the balance was installed between June 2016 and September 2017. The total cost for this segment of the project was approximately \$6.5 Million.

The project was completed in January 2018; however, there is a multi-year maintenance and monitoring regulatory requirement for the revegetation. Phase 4 of the program is currently scheduled FY2021; the work that HDR is conducting with staff may influence this schedule. Total estimated cost of the entire project: \$29 million.

San Lorenzo River Diversion & Tait Wells (c709872)

Located on Crossing Street near Ocean Street Extension, this project replaced two low-yield production wells constructed over 75 years ago, and rehabilitated one well constructed in 1992. Following completion of the project, well production improved from approximately 50 to 250 million gallons per year. Water from these wells is blended with other surface water from the San Lorenzo River and North Coast sources and pumped to the Graham Hill Water Treatment Plant via the Coast Pump Station. These wells provide a source of high quality reliable water that increases operational flexibility. This project was completed in late spring 2017, delayed by the impacts of the winter storms. Total estimated cost \$2 million.

University Tank No. 5 (c701506)

In 2015, an engineering analysis and condition assessment of University Tank No. 5 (U5) was completed. It was determined that a significant number of structural members were corroded and needed rehabilitation or replacement. During preliminary design, it was apparent that replacement of the tank was preferred over rehabilitation due to minimal cost differences, the ability to re-build the tank to meet modern seismic standards and to reduce construction related risk (i.e. cost escalation, lead paint removal, etc.). Prior to taking U5 offline a 35,000 gallon maintenance tank (underway) and replacement of the 14-inch water main (spring/summer 2018) are required. Construction of the U5 tank is anticipated to begin in spring of 2019. Total estimated cost \$4 million.

GHWTP Concrete Tank Evaluation & Replacement (c701501)

A condition assessment was completed in 2015. Replacement of the tanks was recommended because the existing tanks are nearing the end of their useful life, and are vulnerable to damage from a seismic event. West Yost Associates was retained to complete the design. The project is currently nearing completion of the Basis of Design phase, which will document the precise needs of the City that will be met by the project. During the course of the basis of design phase, the project has grown to include the addition of a UV treatment facility, and a sludge dewatering facility. Design is expected to continue through the end of 2018. Construction may begin as early as summer of 2019 and is estimated to cost up to \$24 million.

GHWTP Filter Rehabilitation and Upgrades (c701303)

This project was completed in March 2017. While in operation, one of the six filters experienced a series of turbidity increases while in standby mode which then caused problems during filter startup. This filter was taken out of service and staff has been working to diagnose the problem(s). It appears the issue may be associated with unlined cast steel piping in the filter gallery. Several large pipe fittings are being removed and sent out for abrasive blasting to bare steel and several new coats of epoxy paint. Filter 3 is expected to return to service in March.

Having one filter out of service made operations of the GHWTP more difficult and prevented the post-Filter Rehab Project performance testing from occurring. Once Filter 3 is fully back in service we will move forward on the performance testing with a goal to have new, more flexible filter operational plan submitted to the State Division of Drinking Water (DDW) this year. Total estimated cost \$6 million.

UPGRADES OR IMPROVEMENTS PROJECTS

Loch Lomond ADA (c701301)

The project site (Loch Lomond Recreation Area) is located at 100 Loch Lomond Way in Felton, California in the County of Santa Cruz, approximately 10 miles north of the City of Santa Cruz. The purpose of this project is to improve accessibility to facilities in one of the most beautiful large group picnic sites in the area. This project is scheduled to be constructed in summer 2018 and includes remodeling two existing bathrooms to meet ADA standards and constructing an ADA compliant path between the two existing accessible parking spaces, accessible restrooms, and two accessible picnic areas. Total estimated cost \$400,000.

WATER MAIN REPLACEMENTS

Main Replacements – Engineering (c700002)

Water Engineering utilizes design-bid-build contracting on an annual basis to replace aging water mains selected by age, frequency and impact of breaks, and coordination with other City Departments. Completed in 2017, the Cedar Street Water Main Replacement project replaced 3,265 linear feet of pre-1900 4” diameter cast iron pipe with 6” diameter PVC in downtown Santa Cruz. Currently under construction, the River Street Water Main Replacement project will replace 3,810 linear feet of early 1900’s 8” and 12” diameter cast iron pipe with 1,100 feet of 18”, 1,640 feet of 12”, and 1,070 feet of 8” diameter PVC pipe and is expected to be complete by May 2018. Total estimated costs for these projects is \$3.5 million.

Main Replacements – Distribution (c701507)

The Department’s Distribution section performs main replacements annually, typically involving mains 8” or less in diameter. This year to date, water main work has included: replacement in 14th Avenue from East Cliff Drive to the southern end; extension of a 6” main in Harvey West Park to Harvey West Blvd; replacement of a 4” water main at the Owens R-O-W off Soquel Drive; retirement of the 6” 1946 cast iron water main in Goss Avenue between North Branciforte Avenue and Elk Street and reconnection of all the services to the existing 14” main in the same road; beginning work to extend a 6” water main in Thurber Lane including relocating and replacing a nearby pressure regulating station.

EMERGENCY WORK

During January and February 2017, a series of storms hammered Santa Cruz. Rainfall totals hit all-time highs causing landslides and flooding that broke water mains and disabled the Coast Pump Station. Raw water transmission main breaks on Pipeline Road in Henry Cowell State Park cut off the Loch Lomond Reservoir from Graham Hill Water Treatment Plant. The

emergency intertie with Soquel Creek Water District helped, but with limited raw water sources available for treatment, the City was only able to produce four million gallons a day, about 2/3 of normal winter supply. Emergency declarations were issued and customers were asked to curtail water use by 30%. As the rains continued, so did damage to the water system. Some of the notable incidents included a landslide wiping out the water main in Highway 9 which left the Paradise Park community without water for 24 hours. Other sections of the Newell Creek Pipeline were threatened at Brackney Road and at Zayante Trail, both in Felton. A 175-foot section of Majors Creek Pipeline was wiped out by a landslide, the main from Liddell Spring was similarly impact, and significant flooding occurred at the Coast Pump Station and the Tait Well #4 site. These series of emergencies had a major impact on normal operations and ongoing projects, requiring all hands on deck with some working around the clock to restore the system. By the time the storms were a bad memory, we had spent over \$737,000 in emergency contract work as detailed below in addition to Water Department staff time. Staff continues to spend a significant amount of time compiling documentation for partial reimbursement through FEMA.

- Pipeline Road, Brackney Road, Zayante Trail: \$330,000
- Coast PS/Tait Wells: \$50,000
- Liddell: \$251,000
- Majors: \$70,000
- Highway 9: \$36,000

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WATER COMMISSION
INFORMATION REPORT

DATE: 1/31/2018

AGENDA OF: February 5, 2018
TO: Water Commission
FROM: Kevin Crossley, Senior Engineer
SUBJECT: Update on the HDR Contract for Program Management Services

RECOMMENDATION: That the Water Commission receive information on the Program Management Services contract with HDR Engineering, Inc, and current scopes of work.

BACKGROUND: In the next ten years, the Water Department will implement a Capital Improvement Plan (CIP) that includes a planned \$300 million in capital investments and reinvestments in the water system. The water system's diversion, transmission, and treatment infrastructure is approaching the end of its service life and will require major upgrades or replacement over the next decade. In that same timeframe, the Department is on track to select and construct a supplemental water supply project as directed by the Water Supply Advisory Committee, and is under a state regulatory mandate to rehabilitate or replace the inlet/outlet infrastructure at the Newell Creek Dam.

After reviewing several alternate approaches for meeting its staffing needs, the Department has determined that a program management model, provided through consultant services, is the best response to the increased project load. In August 2017, staff provided the Commission a presentation that outlined some of the key advantages of the program management model, which include: access to senior technical experts, flexibility to increase or reduce program staffing in response to dynamic workload, skill-building through integrated teams, and creation of systems and structures to more effectively and efficiently deliver projects.

In that same month, a Request for Qualifications was issued for program management services. Several firms expressed strong interest in proposing, and attended pre-proposal informational meetings. Statements of Qualifications (SOQ) were received on September 14, 2017. Although many firms were interested, only one firm, HDR Engineering, submitted an SOQ. Staff surveyed several firms that declined to propose, and found that the main reasons given for passing up the work were 1) there are several other multi-billion dollar programs currently underway in the Bay Area, 2) they didn't have the right mix of staff available to form a team, and 3) Santa Cruz is geographically remote compared to other Bay Area opportunities. HDR's SOQ was well

prepared, their core team members are all very experienced, and the City has had very positive experience working with HDR on prior projects. After conducting reference checks, staff began contract negotiations with HDR in October 2017.

In December 2017, Council approved the HDR professional services agreement and Master Scope of Services, collectively referred to as the Master Service Agreement. The Master Scope of Services was developed at the outset to include the broadest scope of services contemplated at the time. The Master Service Agreement is organized into six tasks:

- Task 1 - Program Mobilization
- Task 2 - Design Management
- Task 3 - Program Administration
- Task 4 - Planning and Preliminary Engineering
- Task 5 - Construction Management
- Task 6 - Support Services

As the program is developed and priority projects are approved for implementation, individual Service Orders are issued through contract amendments to define scopes of services, fee estimates and schedules.

This form of contract (master service agreement with service orders) is commonly used for Program Management Services where it is not possible at the outset to define the exact scope of work that will be required over a multi-year period. The initial term of the Master Service Agreement is five years, with an option to renew for an additional five years.

In addition to approving the Master Service Agreement in December, Council approved Service Order No. 1, for all services related to Task 1 - Program Mobilization. (Contract Amendment No. 2018-01/ Service Order No. 1 - is attached for reference.) Mobilization kicked off in late December 2017, will span a five month period, and will consist of a number of critical tasks that form the foundation for longer term program success. Key tasks include: assessing current IT, financial, engineering, and operations systems and practices for delivery of projects; developing a program charter which will summarize the scope, goals, and definition of program success; assessing resource needs; developing a program management plan; and conducting project validation, which will develop a refined and expanded program project list. When completed, the results of the validation effort will be used to update the current CIP, and, if necessary, current budgets will be adjusted.

DISCUSSION:

Because Service Order No. 1 only covers the mobilization task, additional service orders were required to enable HDR to assist with existing and new projects within the program. On January 23, 2018, Council approved Service Orders No. 2 and No. 3, which include work on the other five tasks within the Master Service Agreement. A summary of each service order is provided below, with full copies attached for reference.

- **Contract Amendment No. 2018-02/Service Order No. 2, Program Annual Activities**, relates to work where HDR will provide staff to augment Department staff to perform certain

duties for a given time period. An example would be providing an HDR staff person to assist department staff with property-related issues for the Newell Creek Dam. This type of service order will span one fiscal year, and thus a new “Program Annual Activities” service order will be implemented each fiscal year. This service order covers two existing Capital Improvement Projects (CIP): the Newell Creek Dam Inlet/Outlet, and the Coast Pump Station Pipeline Repair.

- **Contract Amendment No. 2018-03/Service Order No. 3, Program Deliverables**, involves services that create specific deliverables (e.g., a planning study) which could finish within a fiscal year but might also extend into another fiscal year to be completed. This service order covers five existing CIP projects: Supplemental Water Supply, Graham Hill Water Treatment Plant Upgrades, North Coast System Rehabilitation, Newell Creek Pipeline Rehabilitation/Replacement, and Source Water Evaluation.

FISCAL IMPACT: The total cost for Service Order No. 1 is \$603,185. The cost for Service Order No. 2 is \$1,296,420 and Service Order No. 3 is \$1,309,873.

PROPOSED MOTION: Motion to receive information on Program Activities.

ATTACHMENTS:

Master Service Agreement

Contract Amendment No. 2018-01/Service Order No. 1

Contract Amendment No. 2018-02/Service Order No. 2

Contract Amendment No. 2018-03/Service Order No. 3

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PROFESSIONAL SERVICES AGREEMENT FOR
PROGRAM MANAGEMENT SERVICES FOR THE
CITY OF SANTA CRUZ WATER DEPARTMENT

THIS AGREEMENT for professional services is made by and between the City of Santa Cruz ("City") and HDR Engineering Inc. ("Consultant") (together referred to as the "Parties") as of December 22, 2017 (the "Effective Date").

For the purposes of this agreement, and all subsequent changes or amendments, the following definitions are provided to describe the relationship between the various work plans and scopes of work.

Professional Services Agreement: This document provides the terms of the contractual relationship between the City and Consultant. These terms would be amended through a Contract Amendment.

Master Scope of Work: this document includes, in broad terms, the range of services currently contemplated as being delivered by Consultant. The Master Scope of Work does not assign work.

Service Order: these documents will be issued as needed to describe and assign the work. Each Service Order will be created from the Master Scope of Work and authorized through a Contract Amendment.

Annual Work Plan: For approval on a fiscal year basis, the annual work plan will describe the work to be accomplished in the ensuing fiscal year. The annual work plan may take the place of a service order, or may be modified by service order(s). An Annual Staffing Plan may accompany the Annual Work Plan as appropriate.

SECTION 1: RELATIONSHIPS OF THE PARTIES

1.1 City of Santa Cruz and Consultant

It is the Parties' intent that Consultant shall perform the program management services set forth in the Scope of Work ("SOW" or "Work"), incorporated herein as Exhibit A, to support successful completion of the City of Santa Cruz Water Program (Program). During the term of this Agreement, Consultant's Program Services, as herein defined, shall be provided by Consultant as an independent contractor, notwithstanding any shared facilities or co-location of offices, or any integration of Consultant's staff with City staff during the course of the Program. Acting at all times as an independent contractor, Consultant shall have the responsibility for and control over the details and means of performing the Program Services. Consultant acknowledges it has the duty to provide continuous, adequate supervision of its personnel, consultants and subcontractors, if any. Nothing in this Agreement shall be construed or shall imply that Consultant or any of its sub-consultants, subcontractors, affiliates, employees, agents, or representatives are employees, representatives, or agents of the City. Consultant shall be subject to the direction of the City only with respect to the Program Services and the general results required. Consultant shall not make any commitment nor incur any charge or expense for or on behalf of the City without the prior written approval of the City.

Due to the complex nature and length of the City of Santa Cruz Water Program, the Parties contemplate that the SOW may be modified from time to time and the Parties agree to use their best efforts to incorporate those adjustments in a timely and mutually acceptable manner. Any such modification shall be in writing. The timing, sequence, and specific services necessary to carry out this Agreement and the SOW shall be updated annually by the Parties in an Annual Work Plan (which is further described in Exhibit A) approved by the City in its sole discretion. Nothing in this Agreement shall be construed to mean that Consultant is an agent or fiduciary of the City unless otherwise expressly stated herein.

The City's Water Department Director, or his/her designee (hereafter "Program Director") is the City's authorized representative. The Program Director is responsible for authorizing and approving all Work performed under this Agreement. All Work to be performed by Consultant shall be authorized in writing by the Program Director as provided by this Agreement. All Consultant's communications related to the City shall be with the Program Director and, in the Program Director's absence, his/her designee. The Program Director is authorized to make decisions on behalf of the City related to the SOW. The Program Director shall be responsible for the day-to-day administration, coordination and approval of Work performed by Consultant, except for approvals which are specifically identified in this Agreement as requiring the approval of the City.

Holly Kennedy ("Consultant's Representative") shall serve as Consultant's representative for the Work. Consultant's Representative shall have sufficient authority to represent and bind Consultant in those instances when such authority is necessary to carry out Consultant's responsibilities and obligations under the terms of this Agreement.

1.2 Staffing and Key Personnel

In addition to Consultant's Representative, Consultant personnel listed below are essential to the proper performance of the services under this Agreement:

- Phillippe Daniel, Program Manager
- Karen Pappas, Deputy Program Manager
- Bob Ellis, Quality Assurance
- Holly Kennedy, Planning Lead and Principal-in-Charge
- John Buttz, Program Mobilization Lead
- Jeff Lawrence, Planning and Preliminary Engineering, Pipeline Design Lead
- Rich Stratton, Water Treatment Design Lead
- Betty Dehoney, Environmental Permitting Strategy

The above-identified individuals are key persons and shall be available to perform the Work. Consultant agrees to make these key personnel available as required to perform the Work as long as such persons are employed by Consultant. Consultant shall obtain the prior written approval of the City before appointing other Consultant personnel as a substitute(s) for the above named key personnel. The City reserves the right to reject proposed replacement personnel, or to require the replacement of any Consultant personnel. The City's exercise of its right to reject or require replacement of any Consultant personnel shall not subject the City to any liability to Consultant, nor be used by Consultant as an excuse for failure to meet the requirements of this Agreement, nor shall City's termination of this Agreement for failure to assign personnel acceptable to City be deemed a "termination for convenience" pursuant to Section 8, below.

Consultant shall insure the quality, timeliness, and continuity of services are maintained through the duration of the Program. Consultant shall avoid changes to the key personnel to the extent possible.

Mobilization of all full time Program Management staff assigned to the Program shall be individually approved in writing by the Program Director prior to their mobilization on the Program. Requests for mobilization of staff shall be submitted to the Program Director and shall include the reason for the individual's mobilization, their hourly salary rate without benefits, and the expected duration of their mobilization on the program. A list of projected demobilization dates for all program management staff shall also be maintained by the program manager and updated in the annual staffing plan.

Any other staff support for the City that is either not assigned to the Program and/or is assigned to the Program less than full time shall be authorized in advance by the Program Director. The Consultant shall submit to the

Program Director the reason for the staff support, the name of the support staff to be utilized, and their base hourly rate without benefits for written approval in advance of their work on the program. No staff shall be charged to the program unless written approval is given in advance by the Program Director. Any charges for staff that have not been properly approved will be disallowed and not paid by the City.

Consultant shall inform the City in writing of any non-employee persons or firms it intends to contract with to perform any Work required by this Agreement and shall keep the City informed of any changes or additions to this information. The City shall approve in writing any additional firms Consultant proposes to contract with prior to commencement of Work. Consultant shall be responsible for any Work performed under this Agreement, including that portion of the SOW performed by other individuals or firms. Nothing contained herein shall create any contractual relationship between any additional persons and/or firm(s) and the City.

1.3 The City and Designer

The City will enter into separate contracts with one or more Designers to design major components of the Program and provide certain design related services during the construction phase of the Program. To the extent required by this Agreement, Consultant shall support the City in the selection of and coordination with any Designer retained by City for the Program.

1.4 The City and Contractors

The City reserves the right to enter into one or more separate construction contracts for construction of the Program. The construction contractor ("Contractor" or "Contractors") shall perform the specific work for the Program, the scope of which work shall consist of furnishing all labor, materials, tools, equipment, supplies, services, supervision, and perform all operations as required by the applicable construction contract.

1.5 Relationship of the Consultant to Others

The Consultant shall establish and maintain, on the City behalf, a good, professional working relationship with the contractors, designers and the City's program management personnel.

The Contractors shall be solely responsible for construction means, methods, techniques, sequences and procedures used in constructing the Program, for the safety of their respective personnel, property, and their operations, and for performing in accordance with their contracts between the City and contractors. The designers are solely responsible for the Program's design and shall perform in accordance with the Agreements between the designers and the City.

SECTION 2: PROGRAM SERVICES

2.1 Program Services

The Consultant shall perform the professional services described in Exhibit A, to this Agreement.

2.2 Standard of Care

Consultant covenants with the City that it shall perform the Program Services with the same degree of care, skill and diligence as is ordinarily possessed and exercised in the same profession under similar circumstances and shall ensure that its subcontractors, if any, have the level of skill in the area commensurate with the requirements of the Program Services to be performed. Consultant shall at all times serve the best interests of the City in

performing Program Services and Consultant shall advise the City when, in Consultant's professional judgment, Professional Services the City requests are not in the City's best interests.

SECTION 3: TERM OF THE PROGRAM MANAGER'S SERVICES

The commencement date for the Consultant's Program Services shall be the date of the execution of this Agreement. The term of the Consultant program services under this agreement shall be through June 30, 2019 and may be renewed annually at the option of the City.

Consultant shall submit a proposed Annual Work Plan and budget by January 15, 2018 and January 15 of each year thereafter during which this Agreement is in effect. Prior to June 30, 2018 and prior to June 30 of each year thereafter, City shall review and approve the Annual Work Plan and budget for the fiscal year commencing July 1. Unless the Annual Work Plan and budget are approved for that ensuing fiscal year, no work shall occur.

Time is of the essence and performance of the Program Services under this Agreement shall be developed, completed and implemented according to the SOW. Any delays in performance within the control of Consultant, its consultants, subcontractors, employees or agents shall not be cause for extending the final completion of Program beyond expiration of the term specified above, unless otherwise specified in writing.

SECTION 4: CHANGES IN THE PROGRAM MANAGER'S SCOPE OF WORK

4.1 City Changes

The City, without invalidating this Agreement, may make changes in the Consultant's SOW. If any changes in the SOW are within the general scope of the SOW, Consultant's compensation for any changed work shall be subject to the rates set out in Exhibit B. If the scope or the duration of the Consultant's SOW is materially changed, the Consultant's compensation shall be adjusted. To the extent the Consultant considers an act or omission by the City to be a material change to the SOW for which Consultant is entitled to additional compensation, Consultant shall submit a written proposal identifying the material change, the proposed change in compensation for the change in the SOW and/or schedule impact. The Consultant's written submission shall be provided by the Consultant to the City within thirty (30) days of the occurrence of the event giving rise to such request. The amount of the change in compensation to be paid, if any, shall be determined by the City consistent with the compensation provisions of this Agreement as provided in Exhibit B Rates/Fees/Prices.

4.2 Authorization

Changes in Consultant's SOW and entitlement to additional compensation or a change in duration of this Agreement shall be made by a written amendment to this Agreement executed by the City and the Consultant. The amendment shall be executed by the City and Consultant prior to the Consultant performing the services required by the amendment.

The Consultant shall proceed to perform the services required by the amendment only after receiving written notice from the City directing the Consultant to proceed.

SECTION 5: PROGRAM MANAGER AND CITY RESPONSIBILITIES

City shall provide to the Consultant information regarding City's knowledge of and requirements for the Program.

City shall furnish required information and approvals and perform their responsibilities and activities in a timely manner to facilitate orderly progress of the Program in cooperation with the Consultant consistent with this Agreement.

At the request of the Consultant, copies of the Contract Documents shall be furnished to the Consultant by City.

Except as provided in the Contract Documents, it is the intent of the City and Consultant that Consultant, its representatives and consultants shall coordinate its communications with the designer(s) and contractor(s) through the Program Director, except as otherwise directed by the City. Consultant, by its communications, written or otherwise, is not authorized to commit or obligate City in any manner, express or implied, and including but not limited to, financial or any other payment obligations.

City shall send to the Consultant and shall require the designer(s) to send to the Consultant copies of all notices and communications sent to or received by the City or the designer relating to the Program. During the construction phase of the Program, City shall require that the contractor(s) submits all notices and communications relating to the Program directly to the Consultant.

City shall designate, in writing, one or more authorized representatives to act in City' behalf with respect to the Program. This representative shall have the authority to approve changes in the scope of the contractors' work within certain limits and shall be available during working hours and as often as may be required to render decisions and to furnish information in a timely manner.

This Agreement does not guarantee to Consultant any additional or future work except as expressly authorized herein or in any approved Annual Work Plan.

This Agreement does not create or imply an exclusive agreement between Consultant and the City.

The services and any and all interests contemplated under this Agreement shall not be assigned or otherwise transferred except with the written consent of City.

Consultant and its personnel shall remain the agents and employees of the Consultant. Consultant and its personnel are not and shall not be construed to be employees of City under any circumstances, nor shall its personnel be construed to be agents of the City, except to the extent expressly provided for herein. It is not the intention of the Parties that they shall be co-employers.

All documents of any nature prepared by Consultant in connection with the services provided by Consultant as identifiable deliverable documents under the terms of this Agreement, or electronic files of any nature prepared by Consultant pursuant to this Agreement, shall become the sole property of City and shall be available for use by City for any purpose without additional compensation to Consultant. However, any modification or reuse of such materials for purposes other than those intended by this Agreement shall be at City's sole risk and without liability to Consultant.

Consultant shall not utilize work product, data, information, results, and materials produced as part of its efforts under this Agreement for any promotional or public relations purposes whatsoever without the express, prior, written consent of City.

SECTION 6: COMPENSATION FOR SERVICES AND PAYMENT

City shall pay Consultant for services performed or furnished in accord with the agreed rates and pricing as specified in Exhibit B. City shall pay Consultant for reimbursable expenses incurred by Consultant as set forth in Exhibit B. Transportation shall be pre-approved by City in writing; lodging, meals and incidental expenses shall be reimbursed in accord with City' current Travel Reimbursement Policy as it may be amended from time to time. The foregoing compensation to be paid Consultant under this Agreement, as provided herein, is intended to cover the entire cost of the services under this Agreement.

The program management staff and expenses will be billed to the Program as provided in Exhibit B.

Consultant shall submit monthly invoices to the City. Consultant's invoices for payment shall be submitted in the manner required by City, the format of which shall be specified by City. All invoices shall be accompanied by supporting documentation as required by City, and such supporting documentation shall include, but not be limited to details of time expended, materials used, progress reported and approved, and earned value of SOW. City reserve the right, either directly or through its authorized representatives, to perform an audit of all of Consultant books and records which support Consultant's invoices, and Consultant shall retain all such books and records for three (3) years after the termination of this Agreement.

Invoices shall detail the time worked by each class of employee on each task and the expenses incurred for which billing is made. Invoices shall indicate the percentage completion of each work task as identified in the Scope of Work in Exhibit A and the overall percentage of completion of the total required services. Payments shall be made monthly by the City based on itemized invoices from the Consultant which list the actual costs and expenses.

All invoices shall contain the following affidavit signed by a principal of the Consultant's firm:

"I hereby certify as principal of the firm of (Insert Firm Name), that the charge of (Insert invoice amount) as summarized above and shown in detail on the attachments is a fair and reasonable use of public funds, is in accordance with the terms of Agreement dated (Insert Agreement Date), and has not been previously paid."

Unless otherwise stated in this Agreement, a copy of each invoice, duly marked "COPY," shall be sent directly to the Program Director or contract administrator as identified in this Agreement or as otherwise directed by City in writing.

Net Payment of undisputed invoices is due and payable Net Thirty (30) days of City receipt of a complete and accurate invoice, notwithstanding anything that may be printed on such invoice. If City dispute or contest all or any part of any invoice, City shall request a replacement invoice stating only the undisputed amount, and shall promptly pay any undisputed amount and shall withhold payment of any disputed amount, without waiving any of its claims or defenses to payment of the disputed amount. If Consultant issues a replacement invoice for any undisputed amount, the Parties agree that submission by Consultant of a replacement invoice does not constitute a waiver of Consultant's rights with regard to the disputed amount.

If this Agreement is terminated pursuant to Section 8, Consultant shall submit a final invoice to City and shall be paid for services completed and reasonable reimbursable expenses incurred through the effective date of termination.

SECTION 7: TIME OF BEGINNING AND SCHEDULE FOR COMPLETION

Consultant shall begin work upon its receipt of a written Notice to Proceed. The Notice to Proceed shall not be issued until after this Agreement has been approved and authorized by the City.

The schedule for completion of the work shall be as shown upon the Annual Work Plan and/or Service Order. In the event that major changes are ordered, the schedule for completion as stated in the Annual Work Plan will be adjusted by City so as to allow Consultant a reasonable period of time within which to complete any additional work which may be required as a result of the ordered changes.

Neither party will be held responsible for delay or default caused by declared emergencies, natural disasters, or any other cause which is beyond the party's reasonable control. Consultant will, however, make all reasonable efforts to remove or eliminate such a cause of delay or default and will, upon the cessation of the cause, diligently pursue performance of its obligations in this agreement.

The City reserves the right to obtain the item(s) covered by this contract from another source during any on-going suspension of service due to the circumstances outlined above.

Consultant acknowledges that it is necessary for Consultant to complete its work on or before the completion date set forth in the Annual Work Plan in order to allow the City to achieve its objectives for entering into this Agreement. The parties therefore agree that time is of the essence in the performance of this Agreement.

SECTION 8: TERMINATION

The City or Consultant may terminate the agreement for convenience by providing written notice to the other party not less than 30 calendar days prior to an effective termination date.

The City or Consultant may terminate the agreement for material breach of agreement by providing written notice to the other party not less than 14 calendar days prior to an effective termination date, provided that the terminating party will not terminate this Agreement for cause if the other party cures the breach within the notice period.

Upon notice of termination, the Consultant will immediately take action not to incur any additional obligations, costs or expenses, except as may be reasonably necessary to terminate its activities. The City's only obligation to the Consultant will be just and equitable payment for services authorized by, and received to the reasonable satisfaction of, the City up to and including the effective date of termination. All finished or unfinished work or documents procured or produced under the agreement will become property of the City upon the termination date. In the event of termination due to a material breach by Consultant, City reserves the right to obtain Program services elsewhere, and the defaulting Consultant will be liable for the difference between the prices set forth in the terminated agreement and the actual cost to the City. In no event will the City be liable for any loss of profits on the resulting agreement or portion thereof so terminated. After the effective date of termination, Consultant will have no further claims against the City under the agreement. Termination of the agreement pursuant to this paragraph may not relieve the Consultant of any liability to City for damages sustained by City because of any breach of agreement by Consultant, and City may withhold any payments to Consultant for the purpose of set-off until such time as the exact amount of damages due City from Consultant is determined.

The rights and remedies provided in this section will not be exclusive and are in addition to any other rights and remedies provided by law or under the agreement.

SECTION 9: INSURANCE

Prior to the beginning of and throughout the duration of the agreement, the Consultant will maintain insurance in conformance with the requirements set forth below. The Consultant will insure the City against claims for injuries

to persons or damages to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the Consultant, his agents, representatives, employees or subcontractors.

CERTIFICATE REQUIREMENTS

The City will be issued a Certificate of Insurance (a Memorandum of Understanding will not be accepted) with the following minimum requirements:

- Certificate(s) will show current policy number(s) and effective dates,
- Coverage and policy limits will meet, or exceed, requirements below,
- The Certificate Holder will be City of Santa Cruz, Risk Management, 809 Center St, Rm 7, Santa Cruz, CA 95060,
- Certificate will be signed by an authorized representative,
- An endorsement will be provided to show the City, its officers, officials, employees, and volunteers as additional insured on the CGL policy.

MINIMUM SCOPE AND LIMITS OF INSURANCE

The Consultant acknowledges that the insurance coverage and policy limits set forth in this section constitute the minimum amount of coverage required. The City will be entitled to coverage for the highest limits maintained by the Consultant. Coverage will be at least as broad as:

- **PROFESSIONAL LIABILITY (ERRORS AND OMISSIONS): \$1,000,000 PER OCCURRENCE OR CLAIM, \$2,000,000 AGGREGATE.**
The Consultant will maintain insurance appropriate to the Consultant's profession; with limit no less than \$1,000,000 per occurrence or claim, \$2,000,000 aggregate. Insurance must be maintained and evidence of insurance must be provided for at least five years after date of completion of the agreement work. If the Consultant is unwilling or unable to maintain the coverage for this period of time, Consultant agrees to purchase an extended period coverage for a minimum of five years after completion of agreement work.
- **COMMERCIAL GENERAL LIABILITY (CGL): \$1,000,000 (Including products and completed operations)**
Proof of coverage for \$1 Million per occurrence for bodily injury, personal injury and property damage will be provided on Insurance Services Office (ISO) Form CG 00 01 12 07 covering CGL. If a general aggregate limit applies, either the general aggregate limit will apply separately to this project/location or the general aggregate limit will be twice the required occurrence limit.
- **AUTOMOBILE LIABILITY: \$1,000,000**
Proof of coverage for \$1 Million will be provided on ISO Form Number CA 00 01 covering any auto (Code 1), or if Contractor has no owned autos, hired, (Code 8) and non-owned autos (Code 9), per accident for bodily injury and property damage.
- **WORKERS' COMPENSATION AS REQUIRED BY THE STATE OF CALIFORNIA, WITH STATUTORY LIMITS, AND EMPLOYER'S LIABILITY INSURANCE: \$1,000,000 per accident for bodily injury or disease. Must include a waiver of subrogation.**

OTHER INSURANCE PROVISIONS

The insurance policies are to contain, or be endorsed to contain, the following provisions:

- **ADDITIONAL INSURED STATUS**
The City, its officers, officials, employees, and volunteers are to be covered as an additional insured on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Consultant including materials, parts, or equipment furnished in connection with such work or operations. General liability coverage will be provided in the form of an endorsement to the Consultant's insurance at least as broad as ISO Form CG 20 10 11 85, or if not available, through the addition of both CG 20 10 and CG 20 37 (if a later edition is used).
- **PRIMARY COVERAGE**

For any claims related to this agreement, the Consultant's insurance coverage will be primary insurance as respects the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees, or volunteers will be excess of the Consultant's insurance and will not contribute with it.

- **NOTICE OF CANCELLATION**

Each insurance policy required above will provide that the City will be notified of any coverage canceled with 30 days' prior written notice (10 days for non-payment).

- **WAIVER OF SUBROGATION**

Consultant hereby grants to the City a waiver of any right to subrogation which any insurer of said Consultant may acquire against the City by virtue of the payment of any loss under such insurance. Consultant agrees to obtain any endorsement that may be necessary to effect this waiver of subrogation, but this provision applies regardless of whether or not the City has received a waiver of subrogation endorsement from the insurer.

The Worker's Compensation policy will be endorsed with a waiver of subrogation in favor of the City for all work performed by the Consultant, its employees, agents and subcontractors.

- **DEDUCTIBLES AND SELF-INSURED RETENTIONS**

Any deductibles or self-insured retentions must be declared to and approved by the City.

- **ACCEPTABILITY OF INSURERS**

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the Entity.

- **VERIFICATION OF COVERAGE**

Consultant will furnish the City with original certificates and amendatory endorsements or copies of the applicable policy language effecting coverage required by this clause. All certificates and endorsements are to be received and approved by the City before work commences. However, failure to obtain the required documents prior to the work beginning will not waive the Consultant's obligation to provide them. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements required by these specifications, at any time. Consultant will provide complete certified copies that redact proprietary and confidential information not required to confirm Consultant is satisfying their insurance obligations.

SECTION 10: INDEMNIFICATION

Consultant agrees to indemnify, defend, and hold harmless the City, its officers, agents and employees, from and against any and all claims, demands, actions, damages, or judgments, including associated costs of investigation and defense to the extent arising in any manner from consultant's negligence, gross negligence, recklessness, or willful misconduct or patent or copyright violation in the performance of this agreement.

SECTION 11: EQUAL EMPLOYMENT OPPORTUNITY

The City of Santa Cruz strongly supports equal employment opportunities for all and requires its Consultants to ensure that effective policies and procedures concerning the prevention of illegal discrimination and harassment exist in their companies. In addition, all Consultants must be in compliance with all applicable Federal and State and local equal employment opportunity acts, laws, and regulations. The City's current Equal Employment Opportunity and Anti-Discrimination policies to which this provision applies may be viewed at <http://www.codepublishing.com/CA/SantaCruz/?SantaCruz09/SantaCruz0983.html>.

SECTION 12: LEGAL ACTION/ATTORNEYS' FEES

If any action at law or in equity is brought to enforce or interpret the provisions of this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees in addition to any other relief to which he or she may be entitled. The laws of the State of California shall govern all matters relating to the validity, interpretation, and effect of this Agreement and any authorized or alleged changes, the performance of any of its terms, as well as the rights and obligations of Consultant and the City.

SECTION 13: ASSIGNMENT

This Agreement shall not be assigned without first obtaining the express written consent of the Director or after approval of the City Council.

SECTION 14: AMENDMENTS

This Agreement may not be amended in any respect except by way of a written instrument which expressly references and identifies this particular Agreement, which expressly states that its purpose is to amend this particular Agreement, and which is duly executed by the City and Consultant. Consultant acknowledges that no such amendment shall be effective until approved and authorized by the Director. No representative of the City is authorized to obligate the City to pay the cost or value of services beyond the scope of services set forth in Exhibit A. Such authority is retained solely by the Director. Unless expressly authorized by the Director, Consultant's compensation shall be limited to that set forth in Exhibit B, Fee Schedule.

SECTION 15: MISCELLANEOUS PROVISIONS

1. Project Manager. Director reserves the right to approve the project manager assigned by Consultant to said work. No change in assignment may occur without prior written approval of the City.
2. Consultant Services Only. Consultant is employed to render professional services only and any payments made to Consultant are compensation solely for such professional services.
3. Subcontractors. Subcontracting of work without prior approval of the City, may result in contract termination. If at any time, the City determines any subcontractor is incompetent or undesirable, Consultant will be notified and will be expected to immediately cancel the subcontract.
4. Licensure. Consultant warrants that it has complied with any and all federal, state, and local licensing requirements and agrees to provide proof of a current City of Santa Cruz Business Tax Certificate if:
 - Consultant is located in the City of Santa Cruz;
 - Will perform physical work in the City of Santa Cruz for 6 or more days annually; or
 - Will use company vehicles to deliver within the City of Santa Cruz for 6 or more days annually.For additional information and licensing requirements, view the City's [Business Licenses and Permits webpage](#) or call the Revenue and Taxation division at 831/420-5070.
5. Other Agreements. This Agreement supersedes any and all other agreements, either oral or in writing, between the parties with respect to the Scope of Work specified in Exhibit A.

6. City Property. The work, or any portion, of Consultant in performing this Agreement shall become the property of City. The Consultant shall be permitted to retain copies or such work for information and reference in connection with the City's use; however, such work shall not be used by the Consultant on other projects, except by agreement in writing by the City.
7. Consultant's Records. Consultant shall maintain accurate accounting records and other written documentation pertaining to the costs incurred for this project. Such records and documentation shall be kept available at Consultant's office during the period of this Agreement, and after the term of this Agreement for a period of three years from the date of the final City payment for Consultant's services.
8. Independent Contractor. In the performance of its work, it is expressly understood that Consultant, including Consultant's agents, servants, employees, and subcontractors, is an independent contractor solely responsible for its acts and omissions, and Consultant shall not be considered an employee of the City for any purpose.
9. Consultant Not an Agent. Except as City may specify in writing, Consultant shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent. Consultant shall have no authority, express or implied, pursuant to this Agreement to bind City to any obligation whatsoever.
10. Conflicts of Interest. Consultant stipulates that corporately or individually, its firm, its employees and subcontractors have no financial interest in either the success or failure of any project which is, or may be, dependent on the results of the Consultant's work product prepared pursuant to this Agreement.
11. MacBride Principles/Peace Charter. City of Santa Cruz Resolution NS-19,378 (7/24/90) encourages all companies doing business in Northern Ireland to abide by the MacBride Principles and Peace Charter.
12. Storm Water Requirements. The Contractor, and all subcontractors, are required to abide by the applicable City of Santa Cruz Storm Water Best Management Practices (BMPs) for the duration of the work. The City's mandatory Storm Water BMPs, which are listed according to the type of work, operations, or business, are located on the City website at: <http://www.cityofsantacruz.com/index.aspx?page=138>.
13. Notices. If either party shall desire or is required to give notice to the other such notice shall be given in writing, via facsimile and concurrently by prepaid U.S. certified or registered postage, addressed to recipient as follows:

To CITY:
City of Santa Cruz
Water Department
Rosemary Menard, Director
212 Locust St Ste A
Santa Cruz CA 95060

To CONSULTANT:
HDR Engineering Inc.
Holly L. Kennedy, Senior Vice President
100 Pringle Ave, Suite 400
Walnut Creek CA 94596

Changes to the above information shall be given to the other party in writing ten (10) business days before the change is effective.

14. Prevailing Wage.
 - a. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations (DIR). Contractor will be responsible for verifying compliance with all prevailing wage laws and regulations for all subcontractors.

- b. As required by § 1770 and subsequent sections of the California Labor Code, the Contractor and all subcontractors shall pay no less than the prevailing rate of wages as determined by the Director of the California Department of Industrial Relations as applicable to the date of the Construction Agreement.
- c. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work at the time the contract is awarded. Refer to DIR website, www.dir.ca.gov, to register and to find the correct wage rates and answers to questions related to prevailing wage requirements.
- d. The Contractor and all subcontractors must submit to the Labor Commissioner of the DIR, on regular intervals (weekly, biweekly, or monthly), electronic certified payroll records as specified by SB 854. Payroll records shall contain all the information required pursuant to Labor Code Section 1776 and be signed under penalty of perjury.
- e. The Contractor will post job site notices prescribed by DIR regulation.

**City of Santa Cruz Professional Services Agreement for PROGRAM MANAGEMENT SERVICES
FOR THE CITY OF SANTA CRUZ WATER DEPARTMENT**

Technical Review:

By: Heidi R. Luckenbach Date: 12/18/17
Heidi Luckenbach, P.E.
Deputy Water Director/Engineering Manager

Approved As To Form:

By: [Signature] Date: 12/19/2017
City Attorney

CONSULTANT

By: [Signature] Date: 12/21/2017
Printed: Holly Kennedy Title: Sr. Vice President

CITY OF SANTA CRUZ WATER DEPARTMENT

By: Rosemary Menard Date: 12/22/2017
Rosemary Menard
Water Department Director

CITY OF SANTA CRUZ

By: [Signature] Date: 12/22/17
Martín Bernal
City Manager

EXHIBIT A: SCOPE OF WORK

MASTER SCOPE OF WORK

Revised November 20, 2017

This Master Scope of Work outlines the tasks that the City anticipates having the Consultant complete over the course of the Program. Individual Service Orders (SOs) will be issued by the City to authorize the Consultant to complete specific services. Those SOs will contain detailed scope of work language and specific compensation amounts. The SO may be a standalone document or part of the annual work plan.

**Exhibit A
Scope of Work**

***Master Services Agreement (MSA) for
Program Management Services
City of Santa Cruz Water Department***

Introduction

The City of Santa Cruz Water Department (City) is taking a program management approach to implementing its capital improvement program (Program). It has contracted HDR, under a Master Services Agreement (MSA), to provide program management services. This MSA Scope of Work outlines the tasks that the City anticipates having HDR complete over the course of the Program. Individual Service Orders (SOs) under this MSA will be issued by the City to authorize HDR to complete specific services. Those SOs will contain detailed scope of work language and specific compensation amounts.

This Scope of Services is organized under the following major areas:

1. Program Mobilization
2. Design Management
3. Program Administration
4. Planning and Preliminary Engineering
5. Construction Management
6. Program Support Services

Task 1—Program Mobilization

Program mobilization involves tasks to establish the primary elements of program management, including a fully functioning program management office (PMO) and team, consisting of a blend of City and HDR staff. During program mobilization HDR will work with the City's Program Director to establish a fully functioning PMO.

Task 1.1—Assess Current City Project Delivery Systems: Assess the current status of all City project delivery systems, including project management, asset management, financial and cost accounting, and document management.

Task 1.2—Develop the Program Charter: Define the overall goals and objectives of the Program.

Task 1.3—Assess Resource Needs and Develop Program Organizational Structure: Resource load the program schedule and estimate the technical, operational, and support staff needs over the next five years. Create a Program delivery organizational chart, showing the blending of City and HDR staff. Create a Workforce Development Strategy document to define methods the program will develop City staff capabilities over the course of the program.

Task 1.4—Develop the Program Management Plan (PMP), Policies and Procedures: The PMP will contain all the policies and procedures to be used on the Program. HDR would

establish initial document templates, file management strategies, and related document management protocols. Create a document management system that integrates with and complements the City's existing system. Develop and implement a Project Delivery Model (PDM) that will be applied to every project on the Program. Develop a Health, Safety & Security Plan for the program. Facilitate and develop an internal governance structure including reporting responsibilities, delegations of authority, roles and responsibilities for the City. The PMP will be web-based and regularly reviewed and updated to reflect the evolving status of the work.

Task 1.5—Develop the Risk Management Plan: Develop a plan that captures the overall approach to risk management on the program. Identify the potential risks to completing the projects within the program, along with the probability each risk would occur and its potential impact on the project. Identify mitigation measures to reduce the chance of the risk event occurring, or reduce its impact if it does occur. Compile these results in a tabular Program Risk Register.

Task 1.6—Develop the Quality Assurance/Quality Control (QA/QC) Plan: The QA/QC plan will identify QC processes to be used during all phases of the program, and the QA processes to verify that they've been done.

Task 1.7—Develop the Program Controls System: Program controls involves monitoring and reporting on the Program's cost, schedule, and progress. HDR will establish the IT system needed to support those activities. Issue a monthly Program Status Report. Establish project invoicing requirements and draft billing templates to be used with providers of design services.

Task 1.8—Project Validation: Summarize past and on-going studies and designs. Review and prepare a validation of capital projects. Prepare a preliminary baseline program schedule and cost estimate. Consider and recommend project delivery methods for each project, such as Design-Bid-Build, Design-Build, or Construction Management at Risk (CMAR).

Task 1.9—Manage the Program Mobilization Activities: Provide a weekly report on mobilization progress. Provide training to all staff on items implemented during Program Mobilization.

Task 2—Design Management

The Program Management Team will coordinate and manage study and design activities for all City work packages. HDR will be responsible for the following and will submit for approval by the City.

Task 2.1—Prepare Design Management Guidelines and Standard Contracts: Review the City's current design standards and criteria and develop modifications to ensure consistency and compliance with industry and City standards. Work with City staff to develop a standard professional services agreement for the City that meets City code, policies, and procedures. Work with City staff to develop Standard General Conditions and Supplementary Conditions for the City.

Task 2.2—Select Final Design Consultants: In alignment with City procurement policies and procedures, assist the City in selecting design consultants by doing the following:

1. Establish the selection process to be used for final designers.
2. Prepare requests for qualifications/proposals.
3. Conduct outreach to the design consultant community to generate interest in the program.
4. Assist in evaluating designer SOQs/proposals and making selections.
5. Assist in negotiating professional services agreements with selected designers.

Task 2.3—Monitor Design Progress and Changes: Provide Design Managers and project engineers to supplement City staff, as needed. Monitor design progress, coordinate resolution of design changes, and report monthly on the status of design efforts. Facilitate project progression through the Project Delivery Model, including presenting results at review meetings. Obtain input from the City's engineering and operations staff on facility design elements, and ensure that this input is appropriately incorporated into facility designs. Solicit and coordinate local participation, as needed, in design and architectural choices for City facilities with approvals from City management.

Task 2.4—Review Plans and Specifications: Review and comment on all designer-produced documents, including technical memoranda, reports, plans, and specifications. Provide operations review both through facilitating input from City staff and independent operations review. Manage the geotechnical and survey protocols and standards, documents, and independent geotechnical design and construction review and input. Maintain a system of geotechnical data and reports for the program.

Task 2.5—Conduct Project Certification Process: Lead the project through the “project certification process” to confirm completeness of design and other activities (e.g., permitting, right-of-way acquisition) prior to bidding.

Task 2.6—Facilitate the Bidding Process: Support the bidding process by doing the following:

1. Manage and coordinate the contractor pre-qualifications process.
2. Coordinate the assembly of construction bid packages with designers and City staff.
3. Prepare for and participate in pre-bid or pre-proposal conferences.
4. Facilitate review of bids and formal recommendations of award.
5. Oversee the addenda development process.
6. Evaluate construction bids for completeness, develop bid tabulations, and consult with the design engineers and City staff to recommend award of each contract.
7. Work with City to execute construction contracts and obtain all bonds and insurance documents.

Task 2.7—Conduct Value Engineering (VE): Convene and manage value engineering (VE) reviews, operability and constructability reviews, and workshops.

Task 3—Program Administration

Program structures, policies, procedures, and systems developed during Program Mobilization will be implemented over the course of the program management services contract.

Task 3.1—General Program Management: General program management activities include:

1. Support the City with management of all aspects of Program implementation.
2. Update program workflow policies and procedures as needed.
3. Manage program resources and ensure necessary technical, management and support resources are available to meet the goals and objectives of the City.
4. Participate in City leadership, City Council, Water Commission, and other meetings as requested.
5. Conduct regular program review meetings and monthly progress meetings with the Program Director.
6. Work with the Program Director to develop and update the overall program management organization chart and related roles and responsibilities.
7. Work with the Program Director to provide inter-agency coordination with various city agencies and regional entities.
8. Work with the Program Director, City legal counsel, , and other key staff to facilitate completion of various intergovernmental agreements for projects.
9. Provide graphics support, including preparing presentations and mounted graphics.

Task 3.2—Risk Management: Implement the risk management plan developed during mobilization, including:

1. Assess, document and present major potential risks with an estimated cost or schedule impact, a probability of occurrence, and proposed mitigation actions. Monitor implementation of the mitigation actions.
2. Develop and administer project-specific constructability and construction claims analysis for projects at various stages of design and construction.

Task 3.3—Document Management: Maintain the document management system created during mobilization. Train City, HDR, and contractor staff on how to access, utilize and administer the system.

Task 3.4—Procurement and Contract Administration: Assist City with the procurement and contracting of miscellaneous contracts to support studies, feasibility analyses, preliminary engineering, permitting, and environmental review. (Note that procurement

of design consultants and construction contractors is specifically addressed in the “Design Management” task below.) Assist the City to develop and implement an overall procurement strategy for the Program that is aligned and in compliance with city code, policies, and procedures. Maintain a procurement tracking database.

Task 3.5—Health, Safety and Security: Implement the health, safety and security plan developed during mobilization.

Task 3.6—Quality Assurance: Provide a Quality Assurance Manager that will implement the Quality Assurance/Quality Control Plan created during mobilization, and audit compliance with the plan throughout the implementation of the program.

Task 3.7—Project Delivery Model (PDM) Implementation: Implement the PDM created during mobilization by applying it to every project on the Program.

Task 3.8—Program Controls: Implement, maintain and update all program controls items created during mobilization. These items will include:

1. Program cost estimate and cash flow estimate
2. Program schedule
3. Decision log
4. Program Change Notice process to review and approve design, procurement, construction and start-up changes having a major impact on cost and schedule
5. An Annual Work Plan to provide City staff with information needed for the City’s annual budgeting cycle, including cost and schedule updates for the program as a whole
6. Program contingency, including drawdown curve forecasts, risk forecasts and trends indicating usage
7. Program Work Breakdown Structure (WBS)
8. Monthly Program Report summarizing the results across the Program

Task 3.9—Workforce Development: Implement the Workforce Development Strategy developed during mobilization. Support the Water Department’s workforce development efforts by providing direct training on project management to City staff through day-to-day interactions with the Program Management team, noon-time seminars, workshop debriefs, and project management tool development and implementation.

Task 4—Planning and Preliminary Engineering

HDR will prepare planning and preliminary engineering documents needed to progress the various components of the Program. In some cases, the City may direct HDR to help procure outside consultants for larger efforts. Examples of HDR’s initial efforts are defined below. Other planning and preliminary engineering efforts will be identified as CIP projects are implemented.

Task 4.1—Planning Efforts: Prepare planning studies and analyses to support the development of the Program. Initial planning efforts will include:

1. **Supplemental Water Supply Planning:** Integrate the water supply augmentation strategy decision in 2020 as outlined in the Water Supply Advisory Committee Report (2015) into the Program as needed.
2. **Treatment Plant (GHWTP) Facilities Plan Update:** Draw on past and on-going studies to prepare an update of plans for upgrading the GHWTP, and defining a long-term surface water treatment strategy. Perform a condition assessment of the GHWTP facilities.
3. **Raw Water Supply Diversion and Pipeline Rehabilitation/Replacement Prioritization:** Prepare a single prioritization of all raw water diversion and pipeline projects, including the remaining portions of the North Coast System, Newell Creek Pipeline, and the Coast Pump Station Pipeline.
4. **Source Water Evaluation:** Review the results of studies being done by other consultants, and incorporate into program decision processes.

Task 4.2—Preliminary Engineering Efforts: As requested by the City, HDR will prepare preliminary engineering documents prior to hiring outside consultants for final design, or hiring design-build firms, if that delivery method is selected.

Task 4.3—Asset Management: Assist the City in developing an overall asset management strategy for its water facilities. Implement components of that strategy, as directed by the City.

Task 5—Construction Management

HDR will provide construction management (CM) services for individual projects on the Program, as directed by the City. Those CM services will include, but not be limited to, the following tasks.

Task 5.1 – Preconstruction Services: Prior to construction, HDR will provide the following services:

1. Develop an overall Construction Management Strategy and implement throughout the program
2. Establish Construction Management Guidelines for projects in the Program
3. Develop O&M documentation standards and project turnover criteria
4. Provide constructability reviews of contract packages prior to bidding
5. Prepare a Construction Management Plan for each project
6. Prepare QA Inspection Plan for each project
7. Initiate and lead pre-construction meetings

Task 5.2—Construction Phase Services: During construction, HDR will provide the following services:

1. Provide construction management staff including construction managers and inspectors
2. Document project area pre-existing conditions
3. Implement QA Inspection Plan and prepare daily inspection reports
4. Establish and maintain construction field offices, if needed
5. Administer other consultant contracts related to construction management
6. Coordinate environmental and cultural monitoring and inspections
7. Review construction contractors' schedules
8. Identify and track changes to the work including City approval for all project changes
9. Actively seek early identification of potential claims for every project and advise City for potential of settlement or litigation
10. Hold and/or attend on-site construction meetings
11. Process and facilitate review and approval of material Submittals between Contractor and Design Consultants
12. Coordinate tie-ins and shutdowns with City operations staff
13. Review and monitor Requests for Information (RFIs) and change orders
14. Provide construction status updates (including cost, schedule, and progress)
15. Work with City staff to coordinate with regulatory agencies
16. Maintain a working set of "as-built" record drawings
17. Provide or coordinate special inspections and material testing as required
18. Confirm that all project records, including final "as-built" record drawings, are properly stored in the program management information system

Task 5.3—Facility Testing and Commissioning: At the end of construction, HDR will provide the following services:

1. Lead start-up, facility testing and commissioning work
2. Coordinate operator training/vendor training

Task 5.4—Project Closeout and Transfer of Operations: At the end of the project, HDR will provide the following services:

1. Verify CM records, including record drawings
2. Coordinate information transfer to the City's computerized maintenance management system (CMMS)

3. Prepare a summary report for each project addressing work accomplished, operations and maintenance documentation, recommendations for changes to standard operating procedures and changes to staffing to optimize or preserve the integrity of the assets for the long term
4. Complete project close-out work

Task 6—Program Support Services

There are a number of functions that support the successful execution of the Program.

Task 6.1—CEQA and Environmental Permitting: Each project on the Program will require some form of CEQA clearance, and some projects will require environmental permits and/or environmental studies. HDR will:

1. Prepare a “CEQA and Environmental Permitting Strategy,” further outlining the Program’s approach
2. Create and populate an Environmental Permit Tracking database to track the status of all environmental permits
3. Prepare CEQA documents, environmental studies, and environmental permits as requested by the City
4. Support the City in communications with, and reporting to, major permitting entities
5. During construction, document CEQA and environmental permit compliance on the Program

Task 6.2—Right-of-Way and Property Acquisition: Various Program projects will require permits-to-enter (for planning and design work) and/or rights-of-way and property purchase (for construction and permanent facilities). HDR will be responsible for:

1. Research and investigation into existing easements and property boundaries
2. Compiling record information
3. Preparing plats and legal descriptions
4. Negotiating temporary and permanent easements
5. Coordinating ROW and property acquisitions with City staff
6. Obtaining Appraisals as Required
7. Interfacing with land, facility, or property managers, real-estate agents, brokers, and title companies

Task 6.3—Communications and Public Outreach: HDR will provide a supporting role in communications and public outreach on the Program, in consultation with City staff and management. Efforts will include:

1. Create a plan outlining the Program’s communications and public outreach efforts, including communications guidelines for staff

2. Prepare a reporting matrix for all issued reports by name and frequency.
3. Train all staff on the communications guidelines
4. Facilitate communications if an incident occurs on the Program
5. Support the Program Director by preparing memos, PowerPoint presentations, graphics, and other support materials for use in external communications
6. Prepare materials describing the Program's progress for City staff to post to the City's public website
7. Prepare public information documents (e.g., fliers, brochures, posters, FAQs) for use at public meetings/workshops, and participate in those meetings if requested
8. Create and populate a stakeholder database with communications summaries.

Task 6.4—Surveying: Provide land surveying services as needed to support the Program, including staking of property and easement boundaries during right-of-way acquisition.

Task 6.5—Geotechnical Exploration: Provide geotechnical exploration services, including obtaining and analyzing soil boring samples, as needed to support the Program.

Task 6.6—Project Funding Assistance: Participate in departmental financial analysis and planning efforts. Work to assist the department in applying for grants and low income loans. Participate in developing materials to support debt financing, including credit rating agency briefings.

Task 6.7—Program Technical Support: Outside of specific technical reviews on projects, HDR will provide technical expert input on water infrastructure, treatment and water quality issues, as requested by the City.

EXHIBIT B: FEE SCHEDULE

Fee Estimates/Cost Proposals will be developed for specific Service Orders and executed as contract amendments.

Basis of Compensation:

1. **Labor:** The hourly charge for all staff will consist of the employee's direct hourly rate multiplied by a factor of 3.0.
2. **Associated Project Cost:** The associated project cost (APC) applies only for those staff supporting the program, working from their home office. The APC shall be the sum of the number of hours worked by these employees multiplied by a factor of \$5.25 per hour. The APC shall not apply to full time staff mobilized to the PMO, defined as staff spending more than 30 hours per week (on average) in or at a City facility for more than 6 months. The APC is not applicable to any Construction Management Staff hours.
3. These factors, multiplier and APC, shall be effective through December 31, 2019. These factors may be negotiated by the Consultant and the City, provided Consultant submits written notice to the City of Consultants request for revisions thirty calendar days prior to the requested changes.
4. Other Direct Costs, including travel, special equipment, outside printing, sub-consultant charges, and other direct costs (as approved), will be billed at cost plus five percent (5%).

EXHIBIT C: WORK SCHEDULE

This Master Scope of Work has been developed to support the implementation of the City of Santa Cruz Water Program, which is aligned with the Department's Capital Improvement Program from 2017-2027. The initial term of the contract will be five years with an option to renew for an additional five years.

Schedules will be developed for each Annual Work Plan and Service Order. Those specific schedules will then be integrated with the master program schedule and annual work plan schedules as appropriate.

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**CONTRACT AMENDMENT
Number 2018-01**

That certain Agreement dated 12-22-17 between the City of Santa Cruz and HDR Engineering Inc, for professional services for the Program Management Services is hereby amended per attached Service Order Number 01 dated November 17, 2017 as follows:

1. Add Service Order No. I-Program Mobilization, Tasks 1.1-1.9, revision date November 17, 2017, 13 pages.

The revised contract Not to Exceed amount is \$572,885

The terms of this contract apply to all Consultant's duties and tasks under the Professional Services Agreement. All other terms and conditions of the original Agreement shall remain in effect.

Technical Review

By: Heidi R. Luckenbach
Heidi R. Luckenbach P.E.
Deputy Director/Engineering Manager

12/18/17
Date

Approved as to Form

By: [Signature]
Anthony P. Condotti, City Attorney

12/19/2017
Date

HDR Engineering Inc.

By: [Signature]
Holly Kennedy, Principal in Charge

12/21/2017
Date

City of Santa Cruz Water Department

By: Rosemary Menard
Rosemary Menard, Water Director

12/22/2017
Date

City of Santa Cruz

By: [Signature]
Martin Bernal, City Manager

12/22/17
Date

SCOPE OF WORK

Service Order 1—Program Mobilization

The City of Santa Cruz Water Department (City) is taking a program management approach to implementing its capital improvement program (the Program). It has contracted with HDR, under a Master Services Agreement (MSA), to provide program management services. This service order falls under that MSA, and covers "Task 1—Program Mobilization" activities.

Task 1 – Program Mobilization

Task 1 involves creating the organization, procedures, and controls to be used for the duration of the Program. The goal is to complete a majority of these efforts within the first 120 days of mobilization. It consists of the following sub-tasks:

- Task 1.1—Assess Current City Project Delivery Systems
- Task 1.2—Develop the Program Charter
- Task 1.3—Assess Resource Needs and Develop Program Organizational Structure
- Task 1.4—Develop the Program Management Plan (PMP)
- Task 1.5—Develop the Risk Management Plan
- Task 1.6—Develop the Quality Assurance/Quality Control Plan
- Task 1.7—Develop the Program Controls System
- Task 1.8—Project Validation
- Task 1.9—Manage the Program Mobilization Activities

The following items will be prioritized for completion during the first 60 days of mobilization:

1. Existing systems inventoried
2. Program Charter created
3. Initial collaboration platform established, including a document management system, and staff training provided
4. Project Delivery Model (PDM) flowchart established, along with decision-making guidelines
5. Initial Program Schedule and Budget established
6. Initial Program resource analysis completed and organization chart created
7. First Monthly Report issued
8. Project invoicing process and templates established, and first invoice issued
9. Work breakdown structure (WBS) created

The following assumptions relate to the overall mobilization effort:

- The City will generally be responsible for the direct purchase of goods and services necessary for completion of the Program, such as office supplies, computer systems, desk phones, meeting logistics (e.g., conference room rental, food), and related information technology according to the needs of the team as defined during mobilization.
- HDR will supply its staff with laptop computers and cell phones.
- Following implementation of City improvements, the Program Management Office (PMO)

will be located at:

City of Santa Cruz Water Engineering
212 Locust Street
Santa Cruz, CA 95060

- The City will provide general office administrative assistance to the Program Management Team while they are operating at the PMO. HDR will not provide an administrative person on-site at the PMO.

Task 1.1—Assess Current City Project Delivery Systems

HDR will hold three meetings to assess the current City project delivery systems:

1. City's engineering group to assess the City's organization, decision-making processes, project controls and tools, communications strategy, and other project delivery items.
2. City's financial group to assess the City's current financial accounting system, including tracking of project costs, and invoice review and approval.
3. City's O&M group to determine existing procedures for O&M interacting on capital projects. Identify any gaps that must be addressed in the Program Management Plan (described below).

Deliverables: Draft and final memorandum identifying current processes and potential gaps.

Task 1.2—Develop the Program Charter

The Program Charter is the document that will present a common understanding of the City's desired scope, goals, and definition of success for the Program, including specific goals for cost and schedule. The team will develop the Charter through a four-hour facilitated workshop, attended by the City's Program staff and the Consultant team. The Charter can be updated as needed and referenced at any time. The Charter will orient new team members and provide guidance to the team for the duration of the Program.

Deliverables:

- Agenda and pre-workshop materials
- Workshop minutes
- Draft and final Program Charter

Task 1.3—Assess Resource Needs and Develop Program Organizational Structure

In this sub-task, the team will assess the resource (staffing) needs of the Program and work with the City to identify a staffing plan and organizational structure, using the following steps:

1. Identify staff roles needed on the program (e.g., project manager, project engineer, administration, finance, contracts/purchasing, and operations & maintenance (O&M) staff) and prepare job descriptions for each role
2. Develop an algorithm that relates each role to the workload on a specific project (i.e., how many projects, of what size, can an individual staff member handle)
3. Load these resource requirements by project into the program schedule (developed under the "Project Validation" task)
4. Compare the needed resources to current available resources, and identify "gaps." In doing so, map specific existing City staff to specific project assignments.
5. Develop a draft "delivery" organizational chart, consisting of both City and consultant staff

6. Prepare a "Workforce Development Strategy" document, laying out the plan for supporting the City's workforce development efforts.
7. Determine whether future supplemental office space will be required, beyond the PMO space already developed by the City at its existing offices. If additional space is required, identify location options and a timeline for obtaining additional space.

Deliverables: Draft and final Resource Analysis memorandum

Task 1.4—Develop the Program Management Plan (PMP), Policies and Procedures

Develop the PMP to integrate and consolidate all Program management policies and procedures. It is anticipated that the PMP sections listed below will reside on the web-based collaboration portal (discussed below).

There are several components of the PMP that will be developed under other tasks, with the results stored within the web-based PMP:

- Design Management Plan: This plan will define how the Program Management Team will manage outside design consulting firms, including the process for procuring them.
- Construction Management Plan: This plan will define how CM will be conducted on the Program.
- Communications and Public Outreach Plan: This plan will define how all Program communications and public outreach will be conducted.
- Asset Management Strategy and Guidelines

It is assumed that one working meeting will be held with City staff for each of the subtasks below, and that one written PMP section will be produced for each subtask.

Task 1.4.1—Project Delivery Model (PDM)

During mobilization, a Project Delivery Model (PDM) will be created. The PDM will contain a defined series of phases (termed "stages") that every project in the program will be required to implement (e.g., Facilities Planning, Pre-Design, Final Design, Construction, Project Close-out). At the end of each stage, each project will have to "pass through" a "stage gate" before proceeding. A stage gate is a review meeting where all key decision-makers from the City and HDR will gather to review progress and approve the project to proceed.

In this sub-task, HDR will:

1. Meet with the City to develop the overall PDM (stages and stage gates), and identify the process for implementing the PDM (e.g., stage gate meetings)
2. Develop templates for stage gate presentations
3. For projects currently underway, identify their location on the PDM, and determine if/how to incorporate them into the PDM process

Task 1.4.2—Decision Log and Program Change Notice (PCN) Process

All key decisions made by the Program Management Team will be logged in a decision log database. Those decisions that could result in significant changes to the Program's cost or schedule will be flagged and handled under the Program Change Notice (PCN) process. The PCN process will allow Program members to identify, track, and resolve these key decisions. The key items requiring a decision may be initially generated by the following groups:

- Members of the Program Management Team
- Other City staff members (e.g., O&M staff, management staff)

- Final designers, during the course of preparing final designs. Each final design firm will maintain their own decision logs, but all decisions that could significantly impact a project's cost/schedule will need to be run through the Program's PCN process. These will be termed "Engineering Change Notices," and will be handled via the Design Management process and tracked in the PCN database.
- Value Engineering teams, which recommend changes to designs
- Construction teams (via the Construction Manager). These will be termed "Field Change Notices," and will be handled via the Construction Management process and tracked in the PCN database.

The PCN process will be created using the following steps:

1. Inventory the City's existing decision-making process and levels of authority relative to approving decisions.
2. Develop and agree upon a decision-making hierarchy (escalation chart) for use on the program. This hierarchy will differentiate between "recommendations" which can be made by HDR and City staff, versus cost and schedule "decisions" that must be made ultimately by City staff.
3. Establish escalation procedures for running decisions up that decision-making hierarchy.
4. Create a decision log database to capture all major decisions and track resolution of PCNs.

Task 1.4.3—Format for Alternatives Analysis

Over the course of the Program, a number of alternatives analyses will need to be prepared, either by the Program Management Team or by outside consultants. It is helpful to have all of these analyses follow the same basic format and criteria. HDR will review, and modify as necessary, existing City criteria for performing alternatives analyses (e.g., Triple Bottom Line criteria) and life cycle costing assumptions (e.g., facility life spans, inflation rate).

Task 1.4.4—Operations and Maintenance (O&M) Coordination Plan

Define O&M staff involvement in design reviews, operations plans (tie-ins and shutdowns), project acceptance protocols, CMMS data inputs, development of standard operating procedures (SOPs), training coordination, and inventory management. Develop a version of the PDM listing O&M involvement during each stage of the program.

Task 1.4.5—Document Management

A Program document management system will be established using the following steps:

1. Inventory the City's existing document management (DM) system
2. Identify and procure the DM software system (covered under Task 1.7.1 below)
3. Create written DM guidelines that address:
 - a. Filing procedures regarding written and electronic documents (including e-mails)
 - b. Filing system (linked to the work breakdown structure)
 - c. Handling of photos
 - d. Electronic file naming convention
 - e. Archiving of written and electronic files, including records retention requirements and protocols
4. Create Program templates for the following electronic documents:
 - a. Word templates (memos, meeting agenda, meeting minutes, letters)
 - b. PowerPoint presentation template

Task 1.4.6—Health, Safety, and Security Plan

Develop an initial Health, Safety and Security Plan (HSSP) to cover the activities of the program team, aligned with the City's existing injury and illness prevention program. Note that this HSSP will not address future HSSP requirements for construction; those requirements will be addressed after Program mobilization.

Deliverables:

- Agenda, pre-meeting materials, and meeting minutes for each of the subtask meetings
- Draft and final PMP sections for each subtask above
- Decision Log/Program Change Notice (PCN) database
- External Communications database

Task 1.5—Develop the Risk Management Plan

During mobilization, HDR will develop a Risk Management Plan that captures the overall approach to risk management on the Program. For the Program's risk management efforts, "risks" are defined as those actions that could either delay implementation of a project or cause project costs to increase. Activities include:

1. Review existing City risk management plans and procedures.
2. Hold a two-hour workshop with City staff to discuss the overall risk management strategy for the program, including:
 - a. Roles and responsibilities of key staff with respect to risk evaluation and decision making
 - b. Processes of risk identification and assessment, mitigation strategies and contingency planning
 - c. Distinctions between program- and project-level risk management activities
 - d. Use of schedule float and budget contingency in managing risk
 - e. Tools for risk identification and tracking
 - f. Other operational topics of risk management
3. Conduct a one- or two-day workshop, as necessary, to create an initial Program risk register. For each risk, participants would identify:
 - a. Likelihood of the risk occurring
 - b. Consequence (impact) of the risk, should it occur
 - c. Mitigation steps to reduce or eliminate the likelihood of the risk occurring
 - d. Possible contingency plans, if mitigation is not possible
4. Incorporate the strategy and risk register into a Risk Management Plan.

Deliverables:

- Agenda and pre-meeting/workshop materials (two meetings)
- Summary for each meeting
- Draft and final Risk Management Plan

Task 1.6—Develop Quality Assurance/Quality Control Plan

Develop a program-specific quality assurance/quality control (QA/QC) Plan. The QA/QC Plan will identify QA processes to monitor QA/QC implementation and pre-scheduled and/or random QA audits, and will identify QC during the planning, design and construction phases of the Program. The QA/QC Plan will be prepared in the following steps:

1. Develop a comprehensive list of program quality processes and identify where quality assurance/quality control (QA/QC) will be incorporated.

2. Identify the process for reviewing other consultants' quality plans and construction contractors' quality plans, and providing periodic audits of those entities compliance with their quality plans.
3. Develop forms and procedures for various required document revisions.
4. Provide guidance and training to all PMO staff.

Deliverables: Draft and final QA/QC Plan

Task 1.7—Develop the Program Controls System

The key principles of a robust Program Controls System are to:

1. Develop an IT system to support all of the program's efforts, including the controls work
2. Develop a Work Breakdown Structure (WBS) based on the scope of work
3. Develop a cost-loaded Baseline Project Schedule (based on the WBS)
4. Measure project performance against the baseline using objective methods
5. Analyze and forecast cost and schedule performance
6. Identify and implement corrective actions as necessary
7. Adjust baseline as a result of contract changes in scope, price and/or schedule

Task 1.7.1—IT Assessment and Development

The initial controls effort includes developing the IT tools needed to support the entire Program.

Steps for this effort include:

1. Developing an "As Is" diagram of the City's existing IT network, as it relates to program/project delivery. Items include: document management, project/performance reporting, cost (financial) tracking, schedule, asset management, GIS, decision-making, change control, risk, and cost estimating.
2. Identifying a desired IT network that makes maximum use of the City's "As Is" systems (unless the City decides to target specific improvements to the as is systems). This "To Be" system will likely include a program collaboration portal (e.g., ProjectWise site, SharePoint site). Specific decisions will need to be made on where to host various IT components (on City server vs. on the cloud).
3. Implementing the "To Be" components in a logical fashion, beginning with setting up the SharePoint site and managing documents there.
4. Training staff in the use of the Program's IT components.

The following assumptions apply to the Program's IT system:

- Final delivery of the program's IT system will include training to support the City program staff ability to serve as a system administrator.
- The City will provide commercially available software (including license fees) necessary to implement the approved project controls system. Should HDR recommend the use of its own customized, proprietary program controls software systems or subsystems, HDR will be solely responsible for furnishing and installing it on the City's computing hardware. There will be no separate payment by City of license or related fees for the use of proprietary software provided by HDR. Any such additional costs or fees shall be included in the Respondents' all-in Billing Rate Factors.
- Source code and program controls systems data shall be provided to the City at the completion of the program or Program Management contract, whichever comes first. At the

conclusion of the City or at termination of the contract, the City shall retain ownership, at no additional cost, of all systems required to view and manipulate all project data, said data, and software.

Task 1.7.2—Work Breakdown Structure

Develop a workable Work Breakdown Structure (WBS) prior to developing the baseline project schedule. The purpose of the WBS is to breakdown the scope of work into a series of executable tasks. Develop the WBS through the following procedure:

1. Identifying high-level elements of the work necessary to meet the project requirements.
2. Break down high-level elements into smaller deliverable-oriented components.
3. Continue to breakdown elements until the WBS reaches the lowest level of detail deemed necessary for the establishment of management visibility and control

Through the WBS, the Program schedule can be managed at stratified reporting levels.

Task 1.7.3—Program Schedule

The initial program baseline schedule will be developed as part of the Project Validation task. In this sub-task, the Program controls team will:

1. Document the scheduling assumptions to be used by all project scheduling
2. Create an on-going updating process for the program schedule
3. As part of the monthly report, issue updates of the program schedule for the duration of this service order

Task 1.7.4—Program Cost

In this sub-task, the Program controls team will:

1. Document the cost assumptions to be used by all project cost estimating, including a standardized method for estimating "project contingency" over the life span of the project.
2. Establish an overall Program Contingency, and establish a process for accessing and releasing that contingency.
3. Create an on-going updating process for the program cost.
4. As part of the monthly report, issue updates of the program cost for the duration of this service order.

Task 1.7.5—Project Invoicing

Establish project invoicing requirements and draft billing templates to be used with providers of design services.

Task 1.7.6—Program Monthly Report

HDR will issue a monthly status report for the program. During mobilization, HDR will work with City staff to create a template for the monthly status report.

Deliverables:

1. A written PMP section capturing appropriate Task 1.7 results
2. SharePoint/ProjectWise collaboration site and associated training materials
3. Monthly Status Report template

Task 1.8 - Project Validation

The various projects that the City wishes to include in the program will be assembled, prioritized, and scheduled to create agreement on a refined capital improvement program (CIP) for the program team to move forward on. Some projects and efforts in the program have not yet been developed sufficiently to allow validation. Therefore, this task will be initiated in this service order and the validation process established. Validation of future projects will occur and be included in future service orders.

Task 1.8.1—Update the Project List

In a separate effort preceding this task order, HDR gathered existing information on current and planned water CIP projects, and created a summary table of those projects. In this task, HDR will meet with City engineering and operations and maintenance (O&M) staff to confirm that the project list is complete. If additional projects are identified, they will be added to the list.

Deliverables: Updated project list

Task 1.8.2—Develop Project Sheets

HDR will prepare two-page project sheets for each project. In some cases, engineering sizing work will need to be done on some projects to create an initial cost estimate. In the future, the program team will use these project sheets to initiate a project. The project sheets will include the following information:

1. Objective of the project (i.e., the issue it is meant to resolve)
2. Current status of the project
3. Short description of the project components
4. Delivery method (to be filled in after work outlined below)
5. Environmental issues and preliminary CEQA/NEPA strategy
6. O&M issues (if any)
7. Stakeholder issues (if any)
8. Location map
9. Graphic illustrating the project (if possible)
10. Cost estimate (existing estimates adjusted for escalation, appropriate level of contingency, complexity)
11. Estimated schedule durations (planning, environmental, design, and construction)
12. Priority (to be filled in after prioritization work, below)
13. Estimated start date (to be filled in after prioritization work below)
14. List of reference documents

Deliverables: Project sheets

Task 1.8.3—Prioritize Projects

HDR will work with City staff to prioritize projects on the project list. HDR will place each project into one of three priority categories:

- High:** To be initiated within the first five years of the program
- Medium:** To be initiated in years 6 through 10 of the program
- Low:** To be considered for implementation beyond the first 10 years of the program

This sub-task will consist of the following activities:

1. Program team members will prepare a preliminary prioritization. The prioritization criteria will be based on the program goals and objectives established as part of the "Program Charter" task.
2. A workshop will be held with City engineering and O&M staff to finalize the priorities.

Deliverables: Prioritized project list

Task 1.8.4—Update Program Schedule

Using the information gathered during preparation of the preliminary baseline program schedule, project sheets, and reflecting the priorities established in the previous task, the preliminary baseline program schedule will then be cost-loaded. The cost-loaded schedule will then be used to shift projects and "level" the capital spend (thus also leveling future staff workload). A workshop will be held with City engineering and O&M staff to review and finalize the program schedule.

Deliverables: Baseline program schedule and cash flow chart

Task 1.8.5—Package Projects

The projects identified as high and medium priority will be analyzed to determine whether projects can be grouped to create larger projects. Larger projects create greater efficiencies, a reduced number of concurrent procurements, and (potentially) fewer construction contractors working in the same areas. Reasons for packaging projects together can be:

1. Previously packaged by the City
2. Project implementation already underway
3. Occur in the same geographic area (avoid interferences by multiple contractors)
4. Process and/or system interdependency
5. Involve similar construction methods, and therefore similar contractors
6. Similar priority rating
7. Maintain treatment plant compliance
8. Evaluate bundling of small projects into larger contracts where possible and desirable
9. Comprehensive scope to include ancillary facilities/utility feeds (e.g., road and support utilities)
10. Incorporate O&M projects into larger packages

Once the projects are packaged, a revised project list, program schedule, and cash flow will be prepared. Because only a few projects will be defined sufficiently for packaging consideration, this

task will focus on developing the criteria and process used to package projects for the duration for the program.

Deliverables: Revised project list, program schedule, and cash flow chart

Task 1.8.6—Identify Project Delivery Methods

The purpose of this task is to discuss the attributes, advantages, and disadvantages of project delivery methods that are allowable and applicable to the program; and establish an approach for selecting a delivery method for each project. Most of the task's activities will occur during workshops (up to 2 anticipated, including attendance by City legal staff as needed) consisting of:

1. Review alternative delivery methods currently in use in the water industry.
2. Screen out delivery methods that do not meet the City's requirements (e.g., legal concerns, past difficult experiences).
3. For the remaining methods, identify criteria for which types of City water projects would lend themselves to which methods.
4. On a preliminary basis, apply these criteria to high priority projects on the project list to identify preliminary recommendations on delivery methods.

Deliverables: Workshop agendas and minutes, and delivery method table

Task 1.8.7—Prepare Project Validation Report

The results of the previous tasks will be compiled into a project validation report.

Deliverables: 1st and 2nd Draft project validation report

Task 3.1 Assumptions:

1. One meeting with City staff to review project list
2. Project sheets will be developed for projects that have completed the planning stage, these consist of:
 - i. Newell Creek Dam Inlet/Outlet
 - ii. GHWTP Tube settlers replacement
 - iii. GHWTP Tanks replacement
3. An initial prioritization of all projects/efforts (currently in planning and design) will be developed. As the planning projects develop the prioritization will be updated in future service orders. One 2 hour meeting is included to discuss and review project priorities.
4. A review of projects for packaging will be completed, but the number of projects developed sufficiently to package may not be large enough during the term of this service order. The project packaging process will be continued in future service orders.
5. Delivery methods workshops will be attended by 2 HDR staff with a 2 hour duration.

6. The project validation report will be prepared to document the validation process completed in this service order. The draft report will incorporate one round of City comments but will remain draft until future service order when a more complete report can be prepared.

Task 1.9—Manage the Program Mobilization Activities

During the mobilization period, the following management activities will occur:

1. Work with team members and City to finalize the Start-up Plan (11x17 grid)
2. Hold weekly team meetings with program task leads and key City staff
3. Issue weekly e-mail progress updates to the City, consisting of a summary of work accomplished, upcoming work, and an updated Mobilization Plan
4. Attend City meetings, as requested, to report on progress

Deliverables:

- Mobilization Plan and updates
- Weekly progress update e-mails

Table 1 - Estimated Work Effort and Fee Estimate (12-13-2017)

City of Santa Cruz

Program Management Services, Service Order 1—Year 1 Program Activities (Assumed NTP: 12/15/2017)

Task No.	Task Description	Total HDR Labor Hours	Total (\$)
SERVICE ORDER 1 - MOBILIZATION			
Task 1 - Program Mobilization			
1.1	Assess Current City Project Delivery Systems	84	\$23,363
1.2	Develop the Program Charter	36	\$8,719
1.3	Assess Resource Needs and Develop Program Organizational Structure	124	\$33,920
1.4	Develop the Program Management Plan (PMP)	276	\$72,817
1.5	Develop the Risk Management Plan	84	\$26,610
1.6	Develop the Quality Assurance/Quality Control Plan	80	\$25,492
1.7	Develop the Program Controls System	318	\$85,297
1.8	Project Validation	656	\$150,949
1.9	Manage the Program Mobilization Activities	289	\$63,686
	Reimbursable Expenses		\$82,032
	TOTAL	1,947	\$572,885

Schedule for Service Order 1 - Program Mobilization Santa Cruz Water Program

ID	Task Name	Task Mode	Duration	Start	Finish	Predecessors	December	January	February	March	April	May	June
1	Notice-to-Proceed		0 days	Mon 12/11/17	Mon 12/11/17		12/11						
2	1.1 Assess Current City Systems		15 days	Mon 12/11/17	Fri 12/29/17	1	12/11	12/29					
3	1.2 Develop the Program Charter		5 days	Mon 12/18/17	Fri 12/22/17	1SS+5 days	12/18	12/22					
4	1.3 Assess Resources/Org Chart		25 days	Mon 12/11/17	Fri 1/12/18	1	12/11	1/12					
5	1.4 Develop Program Mng. Plan (PMP)		110 days	Mon 12/25/17	Fri 5/25/18	2SS+10 days	12/25						5/25
6	1.5 Develop Risk Management Plan		15 days	Mon 1/15/18	Fri 2/2/18	4	1/15	2/2					
7	1.6 Develop QA/QC Plan		25 days	Mon 2/5/18	Fri 3/9/18	6	2/5	3/9					
8	1.7 Develop Program Controls System		110 days	Mon 12/25/17	Fri 5/25/18	2SS+10 days	12/25						5/25
9	1.8 Project Validation		120 days	Mon 12/11/17	Fri 5/25/18	1	12/11						5/25
10	1.9 Manage Mobilization Activities		120 days	Mon 12/11/17	Fri 5/25/18	1	12/11						5/25

Project: Santa Cruz PGM SOT M
Dates: Fri 11/17/17

Task: 1.1 Assess Current City Systems

Task Mode: Manual Task

Duration: 15 days

Start: Mon 12/11/17

Finish: Fri 12/29/17

Predecessors: 1

Task Summary: Manual Summary

Task Legend:

- Manual Task
- Duration-only
- Manual Summary Rollup
- Manual Summary
- Start-only
- Finish-only
- External Task
- External Milestone
- Deadline
- Progress
- Manual Progress

**CONTRACT AMENDMENT
Number 2018-02**

That certain Agreement dated December 22, 2017 between the City of Santa Cruz and HDR Inc, for professional services for Program Management Services is hereby amended per attached Service Order Number 2 dated December 22, 2017 as follows:

1. Add Service Order No. 2-Program Annual Activities (FY 2018) Tasks 2, 3 and 5, 15 pages including budget.
2. Increase project budget by \$1,296,420.

The revised contract Not to Exceed amount is \$1,869,305.

The terms of this contract apply to all Consultant's duties and tasks under the Professional Services Agreement. All other terms and conditions of the original Agreement shall remain in effect.

Technical Review

By: _____
Heidi R. Luckenbach P.E.
Deputy Director/Engineering Manager

_____ Date

Approved as to Form

By: _____
Anthony P. Condotti, City Attorney

_____ Date

HDR Inc.

By: _____

_____ Date

Holly Kennedy, Principal in Charge

City of Santa Cruz Water Department

By: _____
Rosemary Menard, Water Director

_____ Date

City of Santa Cruz

By: _____
Martin Bernal, City Manager

_____ Date

SCOPE OF WORK

Service Order 2—Program Annual Activities (FY 2018)

The City of Santa Cruz Water Department (City) is taking a program management approach to implementing its capital improvement program (the Program). It has contracted with HDR, under a Master Services Agreement (MSA), to provide program management services. Under that MSA, “Service Order 1 – Program Mobilization” was previously approved. This service order falls under the MSA, and covers ongoing program activities that will occur from Notice-to-Proceed through the end of FY 2018 (June 30, 2018).

This service order contains the following major tasks corresponding to the MSA structure:

- Task 2—Design Management
- Task 3—Program Administration
- Task 5—Construction Management

Task 2—Design Management

HDR will coordinate and manage study and design activities for program work packages. This includes the design activities of outside consultants, as well as designs prepared by City staff. For the purposes of estimating the labor requirements for this Task, HDR assumes it will provide design management services for the following projects within this service order:

1. **Newell Creek Dam Inlet/Outlet Project.** HDR will assist the City in progressing the Newell Creek Dam Inlet/Outlet Project, which is currently (as of January 2018) between 10% and 50% design completion. HDR’s specific support activities for this project are listed under Task 2 General Assumptions.
2. **Coast Pump Station Pipeline Repair Project.** HDR understands this project is ready for consultant selection, thus this project will be supported by HDR via design management.

This task consists of the following subtasks:

- Task 2.1—Prepare Design Management Guidelines and Standard Contracts
- Task 2.2—Select Final Design Consultants [Coast Pump Station Pipeline Repair Project only]
- Task 2.3—Monitor Design Progress and Changes [Coast Pump Station Pipeline Repair Project only, except as identified for the Newell Creek Dam Inlet/Outlet Project]
- Task 2.4—Review Plans and Specifications [Coast Pump Station Pipeline Repair Project only, except as identified for the Newell Creek Dam Inlet/Outlet Project]
- Task 2.5—Conduct Project Certification Process [not used in this current service order]
- Task 2.6—Facilitate Bidding Process [not used in this current service order]
- Task 2.7—Conduct Value Engineering (VE) [Newell Creek Dam Inlet/Outlet Project only]

Task 2 General Assumptions:

Following the completion of the Validation effort (mid-March), any projects/activities that the City determines will need HDR's support prior to June 30, 2018 will be added to this Service Order by amendment.

HDR's support of the Newell Creek Dam Inlet/Outlet Project will include, but not be limited to, the following activities.

1. Provide senior structural engineering review of the bridge design being prepared by AECOM.
2. Coordinate HDR's ROW acquisition and activities (covered under Task 6 of this service order).
3. Coordinate surveying activities be needed for ROW acquisition, which will be done by the City's surveying consultant under a separate contract.
4. Hold a workshop to further develop the overall schedule for the project (including design of the separate packages, CEQA documentation, environmental permitting, ROW acquisition, and construction). Submit that schedule to the program team to be included in the overall program schedule.
5. Assist the City in hiring a third-party construction management firm for the project.
6. Prepare a staffing plan and recommend organization chart for the project team for July 1, 2018 and beyond.
7. Work with the City to develop Division 0 and 1 specifications for use on this project. (The City's existing Division 0 and 1 specifications are not considered adequate for this size of project.)
8. Provide senior input and review on miscellaneous AECOM deliverables that are submitted during the period of this service order. These documents could include electrical, instrumentation and control, and mechanical items, including a review of the existing system to make sure the proposed design will work with the new design; safety documents; AECOM's risk register (HDR risk expert to help the city understand assumptions in the risk register); geotechnical baseline analysis (HDR tunneling engineer to assist in City review the of the geotechnical baseline report and risks associated with those assumptions); and security and traffic plan. Up to 80 hours are budgeted for technical experts.
9. Assess the feasibility of drawing down Loch Lomond Reservoir to facilitate construction of the inlet/outlet
10. Engage with AECOM, DSOD, etc. as needed to support the City.
10. 50% Technical Design Review: AECOM's 50% design is currently scheduled to be submitted in May 2018. It is anticipated that HDR will provide assistance to the City in reviewing those documents, up to and including discipline reviews (structural, electrical, mechanical). At this point in time, up to 20 hours for a senior engineer in each of three disciplines is budgeted for the review, including participation in one review kick off call and one comment review call. If the review needs differ, this service order will be amended to add the required HDR scope and fee to cover the review.

Subtasks 2.3 and 2.4, which may have some overlap with the above 10 items, pertain to the design management of the Coast Pump Station Pipeline Repair Project.

To accomplish the design management activities for the duration of this service order, HDR will provide:

- For Newell Creek Dam Inlet/Outlet Project: one senior project engineer (averaging 30 hours a week) and one junior project engineer (averaging 30 hours a week).
- For Cost Pump Station Line Repair Project: one 33% time project manager (averaging 12 hours a week) and one junior project engineer (averaging 4 hours per week).
- Design Manager coordination oversight of the two above projects plus all other on-going City managed projects within the Program (averaging 10 hours a week).
- Other HDR assistance needed (e.g., ROW assistance, senior technical review and support beyond where specifically noted in Task 2) is budgeted under Task 6 of this service order.

For the purposes of defining scope and labor requirements for this task, it is assumed that the projects managed are/will be delivered through design-bid-build. The scope for this task will be updated for future Service Orders to include alternative delivery projects, as appropriate.

Task 2.1—Prepare Design Management Guidelines and Standard Contracts

To help standardize the design management process, HDR will do the following:

1. Prepare a design management guidelines technical memorandum (TM), documenting the standard approach the program will use in managing designers. The TM will include such things as:
 - a. A standard definition of design deliverables (e.g., 30%/60%/90%/100% drawings)
 - b. Requirements for monthly invoicing and progress reporting (e.g., earned value, schedule)
 - c. Standard work breakdown structure (to align with the program)
 - d. Requirements for draft and final documents (e.g., time to allow for reviews, format, and numbers of copies)
 - e. Seismic design requirements and current seismic codes
 - f. Geotechnical investigation standards
 - g. Cost estimating standards (contingencies, percent adders for Owner administration, construction management, etc.)
2. Work with City staff to develop a standard professional design services agreement for the City, including a standard scope of work, that meets City code, policies, and procedures. This would be attached to every design request for proposal (RFP) as a “template” agreement.

3. Review design standards prepared by the City, and develop updates or modifications for consistency and compliance with industry and permitting requirements, and City internal standards. Add new standard details as applicable to projects in this Service Order.
4. Work with City staff to develop Standard General Conditions and Supplementary Conditions for the City. Support the development of separate contract documents for conventional design-bid-build projects and projects delivered through design-build or construction management at risk (CMAR) methods. Project delivery during this Service Order is assumed to be design bid build. HDR will provide the City with “standard of the industry” design-build and CMAR contracts for review by City’s legal counsel to determine acceptability.
5. Work with City staff to develop geotechnical investigation protocols and standard guidelines, such as number of boring per length of pipe. Provide review of geotechnical investigation documents. Develop repository for geotechnical data and reports for the Program. Develop and maintain geographic information system (GIS) map of program geotechnical data.
6. Work with City staff to develop survey request protocols and deliverables standard guidelines, such as number of boring per length of pipe. Develop repository for survey data and reports for the Program. Develop and maintain geographic information system (GIS) map of program survey data.
7. Prepare and implement a design quality assurance program to ensure completeness of design prior to any solicitations.

Deliverables:

- Design Guidelines TM
- Standard Professional Design Services Agreement
- System GIS map of geotechnical boring locations
- Design quality assurance program

Task 2.1 Assumptions

1. The specific scope of this task cannot be defined at this time. For the purposes of creating an initial Service Order budget, an allocation of labor hours has been created in the budget table based on our current understanding for the level of effort.

Task 2.2—Select Final Design Consultants (*Coast Pump Station Pipeline Repairs Project only in the Service Order*).

In alignment with City procurement policies and procedures, HDR will assist the City in selecting final design consultant(s) by doing the following:

1. Conduct a meeting with City staff to confirm the recommended process for selecting the final design consultants.
2. Prepare draft RFP(s) for retaining final design consultants for each solicitation and submit to the City for their review and approval.

3. Conduct pre-proposal meetings for each proposed final design contract. Record attendance and questions, and issue answers to questions and modifications to the selection process if appropriate in addendum format.
4. Receive final design consultant proposals in accordance with the City procedures. Review the proposals in accordance with the approved selection process, and place emphasis on understanding of the project, qualifications, and availability of staff and commitment to the project. Meet with the City staff to provide input and receive comments on the proposals. Make written recommendations to the City on what firms should be selected for interview. Review of up to six proposals is assumed per RFP.
5. Conduct interviews with up to three shortlisted firms in accordance with the authorized selection process. Prepare written recommendations on the firms to be awarded the design consultant contract.
6. Using the City designated contract terms and conditions, negotiate the scope, level of effort, and schedule for each final design contract with the selected firm. Prepare cost analysis metrics for evaluation of levels of effort associated with various professional services contracts. Prepare independent cost of services estimates, if needed. Prepare backup materials for City Council action and other procurement requirements and document selection processes. Coordinate discussions with the City and consultant's legal counsel, if required. Prepare final contract for signature by the City and the final design consultant.

Deliverables:

- City meeting agenda and minutes to confirm final design consultant lists, selection process, schedule, and draft RFP development
- Draft and final design RFP(s)
- Written recommendation for selection of final design consultant
- City Council agenda package (attachments to staff reports) for final design contracts

Task 2.2 Assumptions:

1. It is assumed this task will include independent cost of services estimate(s), support of City Council action, and coordination with legal. For the purposes of creating a Service Order budget, assumed hours have been added to the budget cost table for this task.
2. Prepare the City Council agenda package for submitting each final design contract to the City Council for their review and approval. Attend the City Council meetings to provide supporting information if requested. 4 hours are budgeted for attendance to support Q&A at each City Council meeting.

Task 2.3—Monitor Design Progress and Changes

HDR will monitor the progress of the final designs, and also manage the process for making changes to those designs:

1. As part of the program kick-off meeting with the design consultants, HDR will provide information regarding the design guidelines, standard details, design review process, quality control procedures and quality assurance procedures.
2. Attend progress meetings conducted by the design consultants on a bi-weekly basis. These meetings will cover items such as progress to date, major issues, contract compliance, deliverables, and impacted agencies and utilities. O&M staff will be asked to attend these meetings on an as-needed basis.
3. Address design questions and issues from the design consultants. Discuss with City staff and receive feedback when necessary. Design issues and their status will be discussed at the weekly team meeting.
4. Develop and implement an engineering change notice (ECN) process to log, analyze, and approve proposed changes during design that impact a project's cost or schedule. Integrate this ECN process with the overall program change management process.
5. Identify and facilitate resolution on overlaps and interfaces between adjacent projects.
6. Review the monthly design progress report and invoice submitted by the final design engineer. Provide invoice recommendations to City staff for their final action.
7. Provide the status of engineering deliverables to program controls for reporting.
8. Participate in meetings with regulatory agencies regarding design activities and design document reviews and approvals.
9. Manage preparation of permit submittal packages by final designers to meet regulatory requirements. Monitor permit submittals and coordinate modifications, as required and requested by the permit lead.

Deliverables:

- Meeting agendas and minutes from design coordination and review meetings
- ECN log
- Project status reports
- Permit applications

Task 2.3 Assumptions: The specific scope of this task cannot be defined at this time. For the purposes of creating an initial Service Order budget, an allocation of labor hours has been created in the budget table based on our current understanding for the level of effort, as described in the Task 2 General Assumptions above.

Task 2.4—Review Plans and Specifications

HDR will provide design and constructability review of the final designs, including facility design elements, equipment vendor selection, configuration, and process control. In doing so, HDR will confirm that program design guidelines and standards are integrated. Specifically, HDR will:

1. Conduct a review of each project's plans and specifications at the 30%, 60%, 90% and 100% completion point. The detailed check of each design submittal will remain the design consultant's responsibility and will be completed prior to providing the submittal to the Program team for review.
2. Review and comment on the cost estimate provided in the 30%, 60%, 90% and 100% submittals.
3. Provide a constructability review on the 60% submittal.
4. Prepare and distribute a memorandum summarizing the findings of each review within two weeks of receiving all City personnel reviews. HDR will prepare and maintain a database to document and track the action taken on items noted during each review.
5. Operability reviews will be provided by the City's O&M staff. HDR will conduct workshops on 60%, and 90% final design consultant submittals for City O&M staff to provide comments.
6. Work with the final designer to identify long lead items, and develop an approach to address those issues.

Deliverables:

1. Review comments at 30%, 60%, 90% and 100% Final design completion, including constructability review at 60%
2. Agenda and minutes of the workshops for City O&M staff reviews at 60% and 90% final design consultant submittals

Task 2.4 Assumptions: One design review (30% design) for the Coast Pump Station Pipeline Repair Project is assumed to be conducted within the service order and one design review (50% design) for the Newell Creek Dam Inlet/Outlet Project is assumed for this service order, as described in the Task 2 General Assumptions above.

Task 2.5—Conduct Project Certification Process

Based on project schedules, this task will not be used within the service order.

Task 2.6—Facilitate Bidding Process

Based on project schedules, this task will not be used within the service order.

Task 2.7—Conduct Value Engineering (VE) (Newell Creek Dam Inlet/Outlet Project only)

HDR will work with the City to implement a VE study effort for the Newell Creek Dam Inlet/Outlet Project at approximately the 50% design level. The steps below will be developed and executed for this VE and subsequently replicated for future VEs that are conducted within the Program:

1. Develop "VE Guidelines" for VE studies to be conducted on the program, to be issued to VE participants at the start of the VE. These guidelines will include:

- a. Detailed master agenda for the VE Study workshops
 - b. Worksheets for the VE team members to use during their individual document review and preparation for the VE Study workshop
 - c. Written instructions to VE team members to guide and direct their preparations for the workshop
 - d. Worksheets to use to document the VE review process and for the use of team members to document the basis of their VE recommendations and design suggestions
 - e. A template to be used for the preparation of a briefing document to be assembled by the team during the workshop and delivered at the end of the workshop
 - f. A memo providing instructions to support staff in their preparations for the workshop
2. Incorporate the VE into the program schedule.
 3. Organize the VE team. Identify VE team members, and review with the City. Prior to the start of each VE workshop, brief the final design consultant and the VE teams on the effort to be undertaken.
 4. Prepare VE Workshop package. Work with the final designer to prepare an advanced package for VE participants, and distribute.
 5. Conduct the VE Workshop. At the end of the workshop, facilitate the debriefing to the program management team and the final design consultants.
 6. Meet with City staff to discuss the VE recommendations and their impact on the project's cost and schedule. Develop recommendations on which ideas should be adopted. Summarize recommendations in a directive document to the final designer.
 7. Meet with the final designer to review the directive document. If necessary, negotiate changes in scope, schedule and budget.

Deliverables: VE guidelines, workshop reports, and directive document to final designer

Task 2.7 Assumptions:

1. One VE is included in this Service Order budget.
2. A VE Workshop will last one week.
3. The VE effort will occur in the program office with the VE team (assume on average five participants) provided by HDR.
4. Each final design consultant firm will provide needed review materials and initial briefings to the VE team.

Task 3—Program Administration

Program structures, policies, procedures and systems developed during Program Mobilization will be implemented over the course of the program management services contract. These activities will be completed in close association with the City’s senior management team. This task consists of the following subtasks:

- Task 3.1 – General Program Administration
- Task 3.2 – Risk Management
- Task 3.3 – Document Management
- Task 3.4 – Procurement and Contract Administration
- Task 3.5 – Health, Safety, & Security Plan
- Task 3.6 – Quality Assurance
- Task 3.7 – Project Delivery Model (PDM) Implementation
- Task 3.8 – Program Controls
- Task 3.9 – Workforce Development

Task 3.1 - General Program Administration

HDR will complete the following general program administration tasks:

1. Update program workflow policies and procedures, as needed, and implement following submission to and approval by City. Incorporate these updates in the Program Management Plan (PMP) created during mobilization.
2. Manage program resources and make sure technical, management, and support resources are available to meet the goals and objectives of the City.
3. Attend City leadership, Water Commission, City Council, and other meetings as requested.
4. Work with the Program Director to provide inter-agency coordination with various city agencies and regional entities.
5. Provide key management interface with internal and external stakeholders.
6. Conduct regular program review meetings and monthly progress meetings with Program Director.
7. Work with the Program Director to develop and update the overall program management organization chart and related roles and responsibilities. Capture these updates in the PMP.

Deliverables: Updates to PMP

Task 3.2 - Risk Management

HDR will implement the draft risk management program (RMP) developed during mobilization by doing the following:

1. On an on-going basis, populate the risk management planning tool developed during mobilization with updates on the risk register, mitigation strategies and contingency planning.

It is expected that the Program team will use the risk management planning tool to develop and document contingency plans for high priority risks to a sufficient level of detail that they can be implemented within 7 business days of the risk being identified.

2. On a monthly basis, conduct a review of the RMP with City staff. Review the current risk register and status of risk mitigation items. Most of these reviews will be in person at the City's office supported by a risk analyst by phone.
3. On a quarterly basis, the risk analyst will facilitate the risk assessment meeting in-person to discuss issues in more detail. After two quarterly risk meetings, finalize procedures, roles and responsibilities, and initial risks from the draft RMP into the Final RMP.
4. Use program risk assessments to support decisions about procurement strategies and packaging, delivery mechanisms, third party discussions, and project planning.

Deliverables: Risk Management Planning Tool, Final Risk Management Plan, meeting minutes

Task 3.3 - Document Management

HDR will be responsible for maintaining the document management system created during mobilization by doing the following:

1. Monitor placement of documents into the document management system for proper coding, etc. Be sure that program management team members are using the system.
2. Train new program team members and contractor staff on how to access and use the system.
3. Maintain project files for reference, retrieval, and storage in electronic format. Maintain hard copies for those documents that the City deems necessary. Contractual related or contract change documents are to be finalized in hard copy. No text messaging is acceptable for formal project communication of any kind.

Deliverables: Document management system populated and checked

Task 3.4 - Procurement and Contract Administration

Over the course of the program, the City will need to enter into numerous contracts to support studies, feasibility analyses, preliminary engineering, permitting, and environmental review. The most common contracts will be with final design consultants and construction contractors; specific HDR tasks associated with assisting with contracting with those two groups are covered under the Design Management task. For the remaining contracts, HDR will assist the City by doing the following:

1. Develop an overall procurement strategy for the program that is aligned and in compliance with City code, policies, and procedures, including the ongoing evaluation of potential cost-saving procurement methods, such as direct owner purchase of equipment or materials.
2. Assist City legal staff as they develop contract documents.
3. Assist City staff in negotiating contracts.

4. Administer contracts by tracking completion of required follow-up activities.
5. Maintain a database of the various contracts.

Deliverables: Procurement Strategy memo, contract database

Task 3.5 - Health, Safety, and Security Plan

HDR will implement the health, safety, and security plan (HSSP) developed during mobilization by doing the following:

1. Summarize safety reports as consolidated from contractors, including Occupational Safety and Health Administration (OSHA) required reporting or status, and submit with monthly report.
2. For individual significant safety items, communicate with City staff by implementing the Incident Communication Plan prepared during mobilization.
3. Train Program Management Team members on HSSP requirements.

Deliverables: Input to monthly report, HSSP training sessions

Task 3.6 - Quality Assurance

HDR will provide a quality assurance manager to implement the quality assurance/quality control (QA/QC) plan developed during mobilization.

Deliverables: As defined in the QA/QC plan

Task 3.7 - Project Delivery Model (PDM) Implementation

During mobilization, a Project Delivery Model (PDM) will be created. The PDM contains a defined series of phases (termed “stages”) that every project in the program will be required to implement (e.g., Facilities Planning, Pre-Design, Final Design, Construction, Project Close-out). At the end of each stage, each project will have to “pass through” a “stage gate” before proceeding. A stage gate is a review meeting where key decision-makers from the City and HDR will gather to review progress and approve the project to proceed. In this task, HDR will:

1. Schedule upcoming stage gate meetings
2. Prepare and issue advance materials, using templates created during mobilization
3. Facilitate the stage gate meeting, and prepare and issue minutes following the meeting

Deliverables: Advance materials and meeting minutes

Task 3.8 - Program Controls

HDR will implement, maintain and update systems needed to effectively manage program costs, schedule, and reporting functions, building on the systems set up during mobilization. These efforts will include:

1. **Program Cost Estimate:** Incorporating results from Project Validation, update the program cost estimate prepared during mobilization and update the program budget baseline, as required, for review and approval by the City.
2. **Program Schedule:** Incorporating results from Project Validation, update the resource-loaded baseline schedule prepared during mobilization and update the program schedule baseline, as required, for review and approval by the City. The schedule will include:
 - a. Key program deliverable list, which shall include design deliverables, long lead procurements, construction commencements, milestones, and operational completions
 - b. Permits for projects
 - c. An adequate period, as agreed upon by City, for commissioning of the entire system, including a designated schedule float.
 - d. As needed, additional scheduling items may be generated:
 - Detailed engineering, procurement, and construction schedules
 - A tie-in schedule and startup schedules
3. **Annual Work Plan:** Prepare an annual work plan to provide City staff with needed information for the City's annual budgeting cycle. The due date for the draft Annual Work Plan will be January 15, 2018, with the due date for the final annual work plan February 15, 2018. (The fiscal year begins July 1 and ends June 30.) The first annual work plan will cover the fiscal year July 1, 2018, through June 30, 2019. The annual work plan will contain the following components:
 - a. Summary memo
 - b. Summary table: tasks, planned activities, key resources, and estimated fee per task
 - c. Draft Service order attached with detailed scope of work, detailed fee estimate, and signature page (not yet signed)
4. **Decision Log and Program Change Notice:** Log key decisions and resolve those impacting cost and schedule via the Program Change Notice (PCN) process established during mobilization. HDR will:
 - a. Train all Program Management Team members to log key decisions into the decision log created during mobilization, and flag those that are PCNs (i.e., have a potentially significant impact on cost and schedule).
 - b. Coordinate resolution of PCNs using the processes established during mobilization.
 - c. Review overall PCN results with the City, on the frequency established during mobilization.

- d. Based on the PCN results to-date, estimate trends in program cost and schedule and report in the program monthly report.
5. **Program Contingency:** Implement the “program contingency” approach developed during mobilization. Recommend program contingency usage to the City for both scope and non-scope issues as documented through the PCN process.
6. **Work Breakdown Structure (WBS):** Update the WBS created during mobilization, as needed.
7. **Information Technology (IT) System:** Maintain and update the program IT system established during mobilization.
8. **Program Monthly Report:** Prepare and issue the program monthly report, using the template established during mobilization.

Deliverables: Program monthly report in PDF format

Task 3.9 – Workforce Development

Support the Water Department’s workforce development efforts by providing direct training on project management to City staff through day-to-day interactions with the Program Management team, noon-time seminars, workshop debriefs, and project management tool development and implementation. Work with all Program Team members to develop a group study effort for obtaining Project Management Professional (PMP) certification from the Project Management Institute (PMI).

Deliverables:

- Agendas for noon-time seminars
- Workshop debriefs,
- Training on project management tool development and implementation.

Task 5—Construction Management

As part of this Service Order, it is not anticipated that HDR will be asked to provide construction phase CM services. In future Service Orders (or via an amendment to this service order if needed sooner), detailed construction management scope will be added. For this Service Order, the following will be done.

Task 5.1—Preconstruction Phase Services

1. Inventory existing City construction management practices and resources.
2. Develop an overall construction management strategy regarding how future construction management work will be handled. The construction management strategy will include at least the following:
 - a. Program reporting and lines of communication between the District, program staff, designer, and the construction management teams.

- b. Identification of program level construction constraints and sequencing between projects.
 - c. Strategy and timing for constructability reviews
 - d. Construction contract procurement strategies and bid packaging
 - e. Construction management staff roles and requirements
3. Compile and establish construction management (CM) guidelines which will identify the policies and procedures for the management of all construction contracts as part of the Program. The objective of the CM Guidelines are as follows:
- a. Define and describe the roles, duties, and responsibilities of those involved with the construction projects.
 - b. Describe procedures necessary for detailed process used in the management and inspection of construction projects.
 - c. Define and describe procedures that are consistent with Contract provisions of the construction projects.
 - d. Minimize duplication of effort by construction management personnel.
 - e. Provide consistency in the management and inspection of individual construction projects
 - f. Provide a useful, concise, and easily readable guide to prepare construction management and inspection documents
 - g. Serve as a guide and training tool for new and current employees who are not familiar with construction management and inspection procedures.

Deliverables: Construction Management Strategy TM
Construction Management Guidelines

Task No.	Task Description	QA/QC (Engr)	QA/QC (CM)	QA/QC (Env)	Program Manager	Program Controls	Engr 6	Sr. Struct	Sr. Geotech	CM	Cost Est	Engr 5	Deputy Program Mgr	Struct Engr	Ops 4	Engr 4	Engr 2	Env 2	Tech Specialist 4	Tech Specialist 1	Technician 2	Technician 1	Project Controller	Document Mgmt/Admin	Total HDR Labor Hours	Total (\$)	APC Charge \$5.25	Total HDR Expenses (\$) 5% MU	Subs w/ 5% MU (\$)	Total Cost (\$)	
SERVICE ORDER 2 - PROGRAM ANNUAL ACTIVITIES (FY 2018)																															
Task 2 - Design Management																															
2.1	Prepare Design Management Guidelines and Standard Contracts	52			16		60	40				60	60			364						160				812	\$168,155	\$3,423			\$171,578
2.2	Select Final Design Consultants				16											120	72									208	\$45,112	\$1,092			\$46,204
2.3	Monitor Design Progress and Changes																														
	Newell Creek Dam Inlet/Outlet (complete scope, per Task 2)						160						40			690	690									1,580	\$331,042	\$8,295			\$339,337
	Cost Pump Station Pipeline												24			95	22									140	\$30,383	\$737			\$31,120
	Ongoing other city project coordination (Design Mgr)												138			0	0									138	\$30,197	\$725			\$30,922
2.4	Review Plans and Specifications (Coast PS line)						24						40			20	0									84	\$20,455	\$441			\$20,896
2.5	Conduct Project Certification Process						0					0	0			0	0									0	\$0	\$0			\$0
2.6	Facilitate Bidding Process						0					0	0			0	0									0	\$0	\$0			\$0
2.7	Conduct VE (1)	12		12			80	40					40											32	216	\$54,805	\$1,134			\$55,939	
	Reimbursable Expenses																										\$51,555		\$35,708	\$35,708	
	Subtotal Task 2	64	0	12	32	0	324	40	40	0	0	60	342	0	0	925	1,148	0	0	0	160	0	0	32	3,178	\$731,704	\$15,847	\$35,708	\$0	\$731,704	
Task 3 - Program Administration																															
3.1	General Program Administration				240								120										50		410	\$116,900	\$2,153			\$119,052	
3.2	Risk Management				40		30						10						100							180	\$49,321	\$945			\$50,266
3.3	Document Management				8																104				112	\$18,131	\$42			\$18,173	
3.4	Procurement and Contract Administration				8								24												36	\$8,655	\$168			\$8,823	
3.5	Health, Safety, and Security Plan				4		16																		36	\$8,551	\$105			\$8,656	
3.6	Quality Assurance	104											18												158	\$48,422	\$641			\$49,062	
3.7	PDM Implementation				8								80												168	\$32,102	\$462			\$32,564	
3.8	Program Controls				44	72							140					16							432	\$94,883	\$1,428			\$96,311	
3.9	Workforce Development				16		40					40	20												116	\$31,935	\$609			\$32,544	
	Reimbursable Expenses																									\$121,999		\$115,447	\$115,447		
	Subtotal Task 3	104	0	0	368	72	86	0	0	0	0	40	412	0	0	0	0	0	116	0	400	0	50	0	1,648	\$530,899	\$6,552	\$115,447	\$0	\$530,899	
Task 5 - Construction Management																															
5.1	Preconstruction Services	8	24		8		48														16		8		112	\$31,650	\$504			\$32,154	
5.2	Construction Phase Services (NONE)																														\$0
5.3	Facility Testing & Commission. (NONE)																														\$0
5.4	Project Closeout (NONE)																														\$0
	Reimbursable Expenses																										\$2,166		\$1,662	\$1,662	
	Subtotal Task 5	8	24	0	8	0	48	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	8	0	112	\$33,816	\$504	\$1,662	\$0	\$33,816	
COLUMN TOTALS (SO2 - Full Scope)		176	24	12	408	72	458	40	40	0	0	100	754	0	0	925	1,148	0	116	0	576	0	58	32	4,938	\$1,296,420	\$22,903	\$152,816	\$0	\$1,296,420	

8.58

**CONTRACT AMENDMENT
Number 2018-03**

That certain Agreement dated December 22, 2017 between the City of Santa Cruz and HDR Inc, for professional services for Program Management Services is hereby amended per attached Service Order Number 3 dated December 22, 2017 as follows:

1. Add Service Order No. 3-Program Deliverables, Tasks 4 and 6, 17 pages including budget.
2. Increase project budget by \$1,309,873.

The revised contract Not to Exceed amount is \$3,179,178.

The terms of this contract apply to all Consultant's duties and tasks under the Professional Services Agreement. All other terms and conditions of the original Agreement shall remain in effect.

Technical Review

By: _____
Heidi R. Luckenbach P.E.
Deputy Director/Engineering Manager

Date

Approved as to Form

By: _____
Anthony P. Condotti, City Attorney

Date

HDR Inc.

By: _____

Date

Holly Kennedy, Principal in Charge

City of Santa Cruz Water Department

By: _____
Rosemary Menard, Water Director

Date

City of Santa Cruz

By: _____
Martin Bernal, City Manager

Date

SCOPE OF WORK

Service Order 3—Program Deliverables

The City of Santa Cruz Water Department (City) is taking a program management approach to implementing its capital improvement program (the Program). It has contracted with HDR, under a Master Services Agreement (MSA), to provide program management services. Under that MSA, “Service Order 1 – Program Mobilization” was previously approved. This service order falls under the MSA, and covers program deliverables that will be developed from Notice-to-Proceed through the end of FY 2018 (June 30, 2018).

This service order contains the following major tasks corresponding to the MSA structure:

- Task 4—Planning and Preliminary Engineering
- Task 6—Program Support

Task 4—Planning and Preliminary Engineering

This task involves planning and preliminary engineering efforts by HDR that would be initiated during this Service Order. It includes the following subtasks:

- Task 4.1 – Planning Efforts
 - Task 4.1.1 - Supplemental Water Supply Project Support
 - Task 4.1.2 - Graham Hill Water Treatment Plant (GHWTP) Facilities Plan Update
 - Task 4.1.3 - Raw Water Supply Diversion and Pipeline Rehab/Replacement
 - Task 4.1.4 - Source Water Evaluation
- Task 4.2 – Preliminary Engineering Efforts [none identified for this Service Order]
- Task 4.3 - Asset Management

Task 4 General Assumptions: Some of the projects in the planning phase are at a conceptual level so the scope of these studies may require modification as the planning process progresses. For the purposes of creating this Service Order budget, the scope and labor hours created in the budget estimate are based on the current understanding of what will be needed for each project. HDR will work with City staff to refine the scope and fee for this task, and adjust the SO budget if needed.

Task 4.1—Planning Efforts

Task 4.1.1— Supplemental Water Supply Project Support

For this task, HDR will support the City as it makes its water supply augmentation decision in 2020, as outlined in the Water Supply Advisory Committee Report (2015).

The following subtasks will be completed initially to identify the needed level of technical support the City will require:

Task 4.1.1.1 – Meet with City and Its Facilitator

Three coordination meetings will be held with the City and its consultants, focused on understanding the envisioned process and what technical support will be provided by HDR. It will provide for the scoping of future efforts.

Task 4.1.1.2—Meet with Supplemental Supply Technical Consultants

Meet with the three consultants preparing augmentation studies and review their scopes and anticipated deliverables. Determine if revisions to the scope of the consultants is required, and prepare a “gap” memo with suggested revisions.

Deliverables:

1. Consultant Scope Gap memo
2. Draft workplan for technical support requirements to the decision-making process.

Task 4.1.1 Assumptions:

1. Three (3) meetings with City staff are included as part of the planning process and potential needed technical support
2. Three meetings with City/consultants are assumed for Task 4.1.1.2.
3. The scope may be amended based on items identified in the project validation process.

Task 4.1.2—GHWTP Facilities Plan Update

The objective of the Facilities Plan Update is to determine the most effective means of implementing improvements to address updated treatment requirements/goals, as well as identify and prioritize the improvement projects for incorporation in the Program. The components of this task are described below.

Task 4.1.2.1—GHWTP Condition Assessment

The purpose of this task is to perform a condition assessment of the water treatment plants major equipment (assets) and processes. A tiered approach will be used on this condition assessment where Tier 1 will be based on the consultant’s visual observations, and staff interviews on past performance and reliability. Once single point of failure and highly critical assets are identified Tier 2 inspections will be performed as appropriate to obtain quantifiable data in order to obtain a higher confidence of asset condition and effective remaining useful life.

The purpose of assessing asset condition is to identify needed maintenance and capital renewal, and to estimate the asset’s remaining useful life. The aggregation of assets remaining useful lives will be used to determine when unit processes and/or facilities should be scheduled for renewal, and to forecast short and long-term capital improvement needs and costs. As part of this methodology, the water utility assets need to be itemized into asset classes to provide a basis for a consistent replacement cost estimate and to assign service lives to each asset class. This sometimes means unraveling bundled assets (within the processes they are installed) by their function such as pumps, motors, structures, HVAC an others. In addition, assets that are highly critical or have exceeded useful life estimates may require elevated inspections beyond the Tier 1 methods listed below. The condition of each asset must be assessed based on several or a combination of the following methods:

Tier 1:

- Age
- Material and other physical attributes
- Physical Observation of Condition
- Operator Assessment of Performance
- Previous Inspection/Condition Assessment Reports/Studies (e.g. Tank inspection reports)
- Maintenance Records to assess reliability
- Use of comparative condition of similar asset types

Tier 2 To Be Determined, possible methods include:

- Thermography (electrical and power distribution assets)
- Vibration analysis (rotating mechanical equipment)
- Ultrasonic Thickness Testing (above ground piping / metal tanks and structures)
- Core sampling (concrete structures)

Three condition assessment activities will be conducted:

1. **Draft and Final Condition Assessment Program Overview:** HDR will outline the means and methods to perform the condition assessment. An industry standard 1 to 5 condition rating scale will be used to provide an estimated remaining useful life for the asset or asset groups evaluated. HDR will also evaluate and compile previous condition assessments, inspections, process performance studies and other reports to incorporate into this work effort in evaluating condition, performance and capacities of all GHWTP treatment processes.
2. **Complete Condition Assessment:** HDR will conduct the appropriate inspections of assets and processes. Tier 1 condition assessments will be performed by a team of process engineers and operations specialists. Based on the findings and results of the Tier 1 assessment additional Tier 2 inspections and/or testing will be performed by specialist with expertise in the type of testing required. Any equipment showing indication of immediate failure will be called to the Owners attention through the issuance of a “Red Flag Report”. HDR will develop a summary list of proposed improvements (based on “in kind” process upgrades) derived primarily from the operations and condition assessment but which may also include other items identified in the process of developing the Facility Plan alternatives analysis. A rough order planning level cost estimate will also be developed based on the level of intervention required such as repair, rehabilitate or replace. The list will be discussed and reviewed for completeness with City staff. The list will provide input into the Facility Plan alternatives analysis.
3. **Summary Technical Memorandum:** HDR will summarize the results of the Condition Assessment in draft and final Technical Memorandums for insertion in the Facility Plan Update.

Assumptions:

1. The City will provide an asset inventory of equipment and treatment processes with in-service and rehabilitation dates.
2. The City will provide knowledgeable staff able to articulate current maintenance work processes.
3. The City will review and provide input or comments to the draft CA Program Overview within 10 work days of submittal.
4. For the purpose of this proposal we have assumed that 2 HDR engineers over 4 days with an additional 2 HDR experts (electrical and structural) for return visits of 2 days each will conduct a physical inspection of representative components of the water treatment system including tanks, concrete basins, pumps, valves, hydrants, power distribution and pipes where accessible.
5. The condition assessment effort will not be initiated until the asset inventory is completed and accepted by the City.
6. Tier 1 condition inspections will not entail any entry into confined spaces or high voltage equipment.

Deliverables: Draft and Final Condition Assessment Technical Memorandum, including asset list updates, and a summary list of the deficiencies and the necessary corrective measures

Task 4.1.2.2—GHWTP On-site Pipeline Assessment

The purpose of this task is to perform a condition assessment of the buried water pipelines at the water treatment plant.

Four condition assessment activities will be conducted:

1. **Meetings.** HDR will lead a task kick-off and monthly progress meetings attended by City staff and members of the consulting team. Up to three progress meetings are assumed. During the kick-off meeting, HDR will recommend criteria that are commonly used to evaluate water pipelines and plan condition assessments. Following discussion, the collective project team will determine what is important to City staff, including what criteria should be used to judge the water pipelines. A preliminary list of pipelines to assess will be developed and discussed with City staff.
2. **Pipeline Ranking and Assessment Techniques.** HDR will complete a desktop review of the pipeline inventory and rank the pipelines by performing the following:
 - **Background Information Review/Site Visit.** HDR will review available information related to the pipelines (to be provided by the City), including record drawings, maintenance records, pumping station operational data, shutdown and bypass criteria, soils information, and other data as available and applicable. HDR will use this data to identify applicable inspection techniques, plan bypass and access requirements, etc. HDR will conduct up to 2 site visits for this task.
 - **Ranking and Condition Assessment Techniques Evaluation.** Using the background information, together with site visits and discussions with City staff, HDR will rank the GHWTP pipeline for condition assessment priority based on the criteria agreed by City staff during the kick-off meeting. HDR will evaluate the available pipeline condition assessment techniques and associated costs as a means of identifying the most appropriate method for determining the condition of the highest water pipelines. Up to 3 condition assessment techniques will be evaluated.
 - **Water Pipeline Ranking Technical Memorandum (TM).** HDR will develop a TM summarizing the pipeline ranking, including the information reviewed, ranking methodology, and final water pipeline ranking. The TM will also recommend appropriate condition assessment technologies for the pipelines being assessed. The TM will detail shutdown, access, assessment tool launch and reception, and other requirements for the anticipated work. A draft TM will be submitted for review and comment by City staff. The final TM will incorporate City comments on the draft TM.
3. **Implement Assessment Techniques.** HDR will help facilitate implementing assessment techniques on priority pipelines by performing the following:
 - **Pipeline Improvement for Condition Assessment Work.** HDR will develop plans, figures, and technical specifications for pipeline improvements needed for the implementation of the selected condition assessment technique(s). This scope of work assumes that the improvements will be minor and will be made by the City's own forces (selection of a contractor by competitive bidding will not be required). Up to four drawings for pipeline improvements plan, section, and details are anticipated.

- Review of Documentation. HDR will review and provide comments on submittals from vendors, contractors, subconsultants, etc. This scope of work assumes that up to 3 submittals will be reviewed.
 - Implementation. HDR will utilize a subconsultant for condition assessment. HDR will manage the subconsultant, providing coordination with the Subconsultant and City staff for the work. HDR has budgeted up to 16 hours of coordination time for this effort. Condition Assessment Findings reports will be provided by the condition assessment subconsultant, the format and content of which will depend upon the condition assessment technology and/or vendor selected for the work. Because the condition assessment technology to be used is unknown at this time, the subconsultant fee for this part of the work is a “placeholder” based on the assumptions stated above, and may need to be revised should the actual work vary from these assumptions.
4. **Summary TM.** HDR will prepare a Pipeline Condition Assessment TM summarizing the techniques implemented, a summary of the findings, and recommendations for water pipelines. Technical Memoranda prepared under Task 2 will be incorporated as an appendix, as will reports provided by the condition assessment technology vendors. HDR will submit a Draft Report for City staff review and comment. The Final TM incorporating City review comments will be incorporated in the Draft Facility Plan Update report.

Assumptions:

1. An allowance of \$270,000 has been included, which includes HDR’s completion of this scope and subcontractor allowance for pipeline assessment.
2. The pipelines being assessed and the assessment techniques to be implemented are unknown at this time. Condition assessment technologies are assumed to include visual inspection and wall thickness testing.
3. The scope for this task will be completed to a 70 percent level in FY 2018.

Deliverables: Meeting agenda and minutes; Draft and Final Ranking TM. PDF and AutoCAD files of the pipeline improvement drawings and specifications; review and comment for up to 3 submittal reviews; Condition Assessment Findings reports from selected condition assessment subconsultant(s); and Draft and Final Condition Assessment Technical Memorandum

Task 4.1.2.3—Develop and Evaluate Alternatives

This task builds upon the high level initial planning effort performed by HDR in November, 2017 through January, 2018. Components of this task include:

1. **Confirmation of Objectives, Evaluation Criteria:** Based on the results and recommendations of the Initial Analysis, HDR will review and confirm with the City the objectives (treatment and water supply) for continued use in this alternatives analysis. HDR will facilitate the establishment of treatment and supply criteria goals, where not previously established during the initial analysis, such as solids design loading, disinfectant byproducts (with associated water age), and treatment of contaminants of emerging concern, CECs. HDR will confirm the continued applicability of the previously determined evaluation criteria

and weightings for continued use in this analysis. Updates will be made, as applicable. HDR will facilitate a meeting (2 hour) with City staff to obtain input and review. Criteria will include non-economic factors, such as: reliability, operability, constructability, adaptability to possible future regulations, and (where applicable) environmental issues.

2. **Alternatives Development:** HDR, together with the City, will generate up to eight (8) treatment alternatives that address the City's combined objectives of water treatment and water supply. Alternatives development will include conceptual process descriptions, summary of advantages and disadvantages, and process flow diagrams. The following alternatives will be developed:
 - In-Kind: Existing systems improved to reliable operation for a 25-year life (per the condition assessment), with treatment of current flows, allowing for anticipated variation in source water allocation.
 - Augmented Supply: Treatment of the increased winter flows and associated source water quality changes. Depending on the results of the Initial Analysis, alternatives could include a separate (new) plant to treat winter flows. (The City has identified one potential site).
3. **Alternatives Screening:** HDR will conduct a screening review of the candidate alternatives, including a fatal flaw analysis, to determine which alternatives merit further evaluation as potential treatment solutions. Up to four alternatives will be selected for further development. HDR will facilitate a workshop with the City staff to review the draft alternatives screening and implement real-time refinements of rankings based on City input.
4. **Alternatives Refinement:** Up to four alternatives will be selected for further consideration. HDR will develop site plans, preliminary design criteria, and comparative planning level cost estimates (capital, operations and maintenance, and total present worth) for each alternative.
5. **Alternative Selection:** HDR will facilitate a workshop to review the final ranking process and subsequent alternative recommendation. HDR will perform sensitivity analyses where deemed appropriate by closely ranked alternatives. The objective of the review workshop is to obtain agreement from City staff on the recommended alternative.
6. **Recommended Alternative Development:** HDR will develop the recommended alternative to an approximate ten percent level of design to include consideration of structural and seismic requirements, electrical power, SCADA, solids handling, chemical feed, storage, and consumption, and will develop a preliminary cost estimate (Class 4, per AACE International). This task includes:
 - Site layout with increased detail
 - Conceptual design criteria
 - Description of construction sequencing
 - Delivery method recommendation,
 - Preliminary risk register
 - Preparation of capital and operation and maintenance cost estimates
 - Next steps recommendations (environmental requirements, etc.)

7. **Additional Studies:** HDR will conduct supplemental studies to facilitate the development of treatment and water supply objectives, as well as holistic alternatives development.
- Hanson Quarry Facility Siting Study and associated pipeline alignment
 - Review of existing work completed by others
 - Site visit
 - Alignment walk
 - Review of available survey data
 - Geotechnical evaluation (up to 2 borings are assumed will be drilled)
 - Preliminary siting for full treatment and/or pretreatment
 - Environmental considerations
 - Jar Testing and SDS testing of process alternatives, where needed, for supplemental comparative evaluation.
 - Ozone demand and decay
 - Review of distribution system model for general analysis of optimization of water quality and minimized water age. Perform preliminary evaluation the WAR valve reduction of water age. Identify potential improvements within the distribution system for optimized water quality. Detailed model calibration is not included in this scope and will be added to a future service order as recommended to provide value for alternatives development.
 - Perform preliminary evaluation of considerations for use of chloramination as a secondary disinfectant and impacts to: Considerations include
 - Treatment goals at WTP
 - System (corrosion mitigation, etc)
 - Downstream users (for in lieu alternative)
 - Review of ongoing studies to confirm that ASR or recharge basins are feasible.

Assumptions:

1. The scope for this task will be completed to the approximate 60 percent level in FY 2018.
2. Pilot Testing is not included in this task. Proof of performance testing may be recommended for refinement of design criteria/dosing of the selected process as part of the basis of design phase.
3. Planning level cost estimates for alternatives comparison will be Order of Magnitude Estimates as defined by the AACE International. These will be approximate estimates without detailed engineering data and are normally expected to be accurate within accurate within +50% or -30%. Cost input will include historic construction estimates, vendor quotes, and HDR experience with similar projects and market conditions.
4. This task builds upon the ongoing Initial Analysis performed by HDR from November, 2017 to January, 2018, as well as prior planning work including the Water Quality and System Improvements Study (CDM, 2007) and the Alternatives Evaluation Report (HDR, 2010).
5. The City will provide survey and other available information from the Hansen Quarry site.
6. We understand that City staff is working on the filter improvements and that these improvements will be completed by others.

7. An allowance of \$250,000 has been included as a placeholder for item 7 above, additional studies.

Deliverables: Workshop Agendas and Minutes; Summary memo for each supplemental study performed.

Task 4.1.2.4—Prepare Facilities Plan Update Report

HDR will develop draft and final GHWTP Facility Plan Update reports to organize and document the information developed in the above tasks and the facility plan recommendations. HDR will conduct a meeting with the City staff to present the draft Facility Plan prior to the City's review.

Assumptions:

1. The scope for this task will be completed to the 50 percent level in FY 2018. City staff will provide comments on the Draft Plan combined in a single version.

Deliverables: Draft and Final Facilities Plan Update Report

Task 4.1.2.5—Management of the Facilities Plan Update Task

This task includes the management activities needed for on-time and on-budget task completion. HDR will develop a baseline schedule of work, develop monthly progress reports to support invoicing, schedule and coordinate HDR staff and resources to execute the work, and coordinate the quality assurance effort. HDR will facilitate a kick-off meeting with the City to initiate the start of the task work.

Assumptions:

1. The scope for this task will be completed to the 70 percent level in FY 2018.

Task 4.1.3 - Raw Water Supply Diversion and Pipeline Rehab/Replacement

Scope and level of effort to be refined during SO1, Task 1.7 Project Validation.

Task 4.1.4 - Source Water Evaluation

Scope and level of effort to be refined during SO1, Task 1.7 Project Validation.

Task 4.2—Preliminary Engineering Efforts

There are no preliminary engineering efforts planned for this service order.

Task 4.3—Asset Management

Over the course of the Program, the City would like to advance its asset management efforts and systems. No level of effort is included at this time, pending City direction.

Task 6—Program Support

There are a number of functions that support the successful completion of the Program. The following subtasks are included in this service order:

- Task 6.1—CEQA and Environmental Permitting
- Task 6.2—Right-of-Way (ROW) Acquisition
- Task 6.3—Communications and Public Outreach
- Task 6.4—Surveying and Mapping
- Task 6.5—Geotechnical Investigations
- Task 6.6—Project Funding Assistance
- Task 6.7—Program Technical Support

The functions and activities described below will be completed by HDR staff. Use of additional subconsultants outside of those included in the original proposed HDR team will require prior approval by the City.

Task 6.1—CEQA and Environmental Permitting

Each project on the Program will require some form of CEQA clearance, and some projects will require environmental permits and/or environmental studies. On any given project, obtaining CEQA clearance and environmental permits (if needed) may happen in one of the following ways:

1. City staff prepares the CEQA document, with HDR providing project information and (if needed) environmental studies
2. HDR prepares the CEQA documents, environmental studies, and/or environmental permits
3. HDR assists the City in hiring an outside consultant to prepare the CEQA documents, environmental studies, and environmental permits, and then monitors the progress of that outside consultant

During construction, with CEQA and environmental permits in place, there is usually a Mitigation Monitoring and Reporting Program (MMRP) that must be implemented, to verify that the mitigation requirements in the CEQA document are implemented. Similarly, fulfillment of the requirements of the environmental permits must also be documented.

Task 6.1 Assumption: For this service order, the scope is limited to the following services.

1. Prepare a “CEQA and Environmental Permitting Strategy,” further outlining the Program’s approach on this, including:
 - a. Document the CEQA/permitting status of all current City projects in the Program
 - b. Identify (on a preliminary basis) the likely CEQA documentation and environmental permitting requirements on each future CIP project
 - c. Identify the likely contracting approach to obtaining those approvals (i.e., which of the three approaches above to take)

- d. Estimate CEQA/permitting schedule requirements, and feed into the Program Schedule

Deliverables: “CEQA and Environmental Permitting Strategy” memo

Task 6.2—Right-of-Way Acquisition

Various Program projects will require permits-to-enter (for planning and design work) and/or rights-of-way (for construction and permanent facilities).

Task 6.2 Assumption: In FY 2018, HDR will create a right-of-way acquisition flow chart under this sub-task. HDR will provide right-of-way services to support the Newell Creek Dam Inlet/Outlet Pipeline Project. Other efforts are not currently budgeted.

HDR will be responsible for the following subtasks.

Task 6.2.1—Conduct Research and Investigation

On certain projects, alternative locations or routes (in the case of pipelines) may exist. In this task, HDR will research parcel ownership and existing easements in those alternative locations to inform the alternative selection process. The following efforts will be completed:

1. Create a ROW acquisition flow chart, documenting the steps needed for acquisition within the City’s processes.
2. Obtain copies of the current Assessor’s Parcel Maps at the alternative locations. This information will be organized and catalogued to facilitate both field survey efforts and right-of-way studies. It is assumed there will be approximately three (3) Assessor’s Parcel Maps required.
3. Acquire copies of all record maps from the County at the alternative locations. This information will be organized and catalogued similar to the Assessor’s Parcel Maps. It is assumed there will be an average of three maps per each Assessor’s Parcel Map or approximately nine (9) Subdivision, Parcel Map or Records of Surveys to obtain. The City will provide existing Deed to each parcel.
4. Obtain copies of grant deeds for parcels not within the recorded maps (assume zero (0) parcels), which may be affected by the proposed locations.
5. Obtain title research to facilitate survey activities, including gathering of Assessor Parcel Maps and City GIS details and information.
6. Research additional information available from other sources. This may include corner records, unrecorded surveys, construction drawings and other records that may be used in assisting with right-of-way analysis. This information will be acquired on an as needed, as available basis. It is assumed three (3) labor-days will be required.

Deliverables:

- ROW and parcel acquisition flow chart
- Copy of all Assessors’ Parcel Maps pertaining to the alternative locations

- Copies of all record maps pertaining to the alternative locations
- Copies of any/all data acquired

Task 6.2.2—Compile Record Information

HDR will coordinate with City contracted surveyor for Newell Creek Dam Inlet/Outlet Project on the following scope to be performed:

HDR will compile record map information at the alternative locations, enter into digital format and analyze for any miss-closures, gaps or overlaps that may occur.

HDR will coordinate with the surveyor to locate and survey existing property corner monuments and street centerline monuments at the alternative locations in sufficient numbers to develop a right-of-way base map. This base map will be used to determine the final parcel list for which right-of-way, easement and staging area acquisitions will be required.

HDR will coordinate with the surveyor to analyze and resolve the record map information and property legal descriptions with the monumentation located in the field. Upon completion of the base map and analysis of right-of-way requirements, a final parcel list will be developed by the surveyor and transmitted to the City for acquisition of necessary title reports.

The surveyor will compile existing easement information disclosed in each title report and record map and add this information to the base map. The surveyor deliverable will include digital AutoCAD files of base mapping and hardcopy plots.

Task 6.2.3—Coordination with Surveyor to Prepare Plats and Legal Descriptions

Based upon the final design alignment and right-of-way requirements, HDR will coordinate with the City contracted surveyor for preparation of the necessary exhibit plats and legal descriptions for each affected parcel. It is assumed there will be approximately three (3) parcels with acquisitions that may include fee title parcels, temporary construction easements, permanent easements and staging areas. It is further assumed each of the parcels will require revisions or modifications during the negotiation period and final design.

HDR will coordinate with the Surveyor and City staff to review the survey approach taken on this task.

HDR will coordinate with the Surveyor to prepare special right-of-way or easement exhibits to support the community outreach and negotiation process. It is assumed three (3) such exhibits may be required.

HDR will lead the ROW acquisition and provide updates to the City's Project Manager on a weekly basis, reporting on the status of plats and legal descriptions and conferring on special exhibits as may be required.

HDR will coordinate the production of the following deliverables with the Surveyor.

- Calculated areas for fee title parcels, permanent easements, temporary construction easements and other forms of acquisitions
- Stamped and signed copies of all legal descriptions and exhibits

- Stamped and signed copies of all modified legal descriptions and exhibits
- Copies of exhibits

Task 6.2.4—Coordinate Right-of-way Acquisition with City Staff

HDR's Program Right-of-way (ROW) Coordinator will facilitate the acquisition process with City legal staff to gather and provide legal descriptions, plat maps, maintaining right-of-way acquisition records, documentation and reports. In addition the Program ROW Coordinator will provide assistance in preparation of appraisal reports, acquisition negotiations and coordination with City legal staff in condemnation proceedings as requested and as needed. These ROW activities will include:

1. Attend weekly and monthly City and Program meetings for Program scoping, research, coordination, scheduling and implementation of necessary acquisitions. Meet weekly with City legal staff and acquisition agents. Assist Program team in coordinating ROW issues.
2. Prepare monthly status reports. (Six months are assumed).
3. Assist City legal staff in contracting with Appraisers as necessary for the preparation of Appraisal Reports for required parcels and provide project description and impacts on each parcel. Three parcels are assumed.
4. Assist City legal staff with the acquisition of the parcels (three assumed), resolution of title issues, exceptions and clearances for the type of title required for the Program.
5. Assist City legal staff in establishment of a data base for required parcels and data requirements for City GIS map showing parcel locations and ROW acquisition status.
6. Assist City legal staff in identifying timing issues including possible eminent domain actions, parcels that may have special issues and potential restraints at the potential facility locations such as subdivisions being developed that include road widening improvements that will require in depth negotiations and coordination and long lead-time parcels such as schools, churches, railroads or government-owned properties.
7. Coordinate with the final design consultants to refine right-of-way requirements, property boundary issues, and right-of-way changes as a result of design and engineering requirements during the final design phase.
8. Meet with City legal staff bi-weekly to coordinate ROW activities.
9. Assist City legal staff with the preparation of Resolutions of Necessity for up to three parcels to gain possession of required parcels where settlement cannot be reached with property owners.

Deliverables:

- ROW Status Report
- List of ROW Restrictions and Cautions for construction documents

Task 6.3—Communications and Public Outreach

Communications and public outreach on the Program will occur in the following areas:

- Internal Communications: Communications between Program Team members.
- Management Communications: Communications from the Program Team to City management staff, the City Council, and the Water Commission. These communications will always flow through City Staff, usually the Program Director.
- Public Outreach: External communication to the public at large. This is usually “one way” in nature (from the Program out to the public), and involves communications with the public about the purpose and progress of the Program.
- Stakeholder Communications: External communication to specific members of the public. This is usually “two way” in nature, and involves communicating with specific stakeholders about issues impacting them individually (e.g., a homeowner that we’re trying to purchase a pipeline easement from).

Task 6.3.1—Prepare Communications and Public Outreach Plan

HDR will consult with City staff to create a plan outlining the Program’s communications and public outreach efforts in the areas described above. Once completed, this plan will reside within the web-based Program Management Plan. Efforts to document in the plan include:

- Establish goals and objectives for the communications/outreach
- Identify typical communications media to use (social media, websites, mailers, etc.)
- Develop communication flow charts, where applicable
- Develop an “Incident Communication Flow Chart” to specifically define the communication steps to take during an incident on the Program (e.g., an accident on a construction site)
- Create a list of groups to target for Public Outreach communications
- Create an external communications database, to be populated as projects proceed and individual stakeholders are engaged.
- Create a Communications Guidelines document for Program Team members, clearly defining how communications with the public (including the media) should be handled.

Task 6.3.2 – On-going Communications and Public Outreach

Implement the Communications and Public Outreach Plan by doing the following:

1. Internal Communications: Train new staff on the Communications Guidelines. In the event of an incident, help facilitate implementation of the Incident Communication Plan (e.g., send out periodic e-mail status updates).
2. Management Communications: Support the Program Director by preparing memos, PowerPoint presentations, graphics, and other support materials for use in communicating with management.
3. Public Outreach: Prepare materials (e.g., text, graphics) describing the Program’s progress for City staff to post to the City’s public website. Prepare public information documents (e.g.,

fliers, brochures, posters, FAQs) for use at public meetings/workshops, and participate in those meetings if requested.

4. Stakeholder Communication: Populate the stakeholder database with communications summaries.
5. Project specific support of easement and ROW acquisition. HDR will provide public outreach support for the Newell Creek Dam Inlet/Outlet Pipeline project. As the exact scope is yet to be defined, HDR will provide up to 40 hours support as part of this task.

Deliverables: Communications and Public Outreach Plan, including an Incident Communication Plan. Communications Guidance document. Stakeholder database.

Task 6.4—Surveying and Mapping

HDR will coordinate, with the City contracted surveyor, land surveying services as needed to support the Program, including staking of property and easement boundaries during right-of-way acquisition.

Task 6.4 Assumption: It is assumed, for this service order, that surveying will be needed to support the Newell Creek Dam Inlet/Outlet Pipeline project. The City will contract with the surveyor to complete the scope as identified below, and HDR will lead coordination with the surveyor.

Task 6.4.1—Stake Right-of-way in the Field

When required, during the appraisal and right-of-way acquisition process, HDR will coordinated with the surveyor to field stake the proposed right-of-way, limits of construction, easements or other property owner concerns as needed. It is assumed three (3) parcels will need to be staked.

Task 6.4.2 -- Establish Horizontal and Vertical Control

HDR will coordinate with the City contracted surveyor to confirm the establishment of the primary control for the Newell Creek Dam Inlet/Outlet Pipeline project to the City's standards. All control established for the Program will be coordinated through City Staff for verification of locations and methodology.

HDR will coordinate with the City contracted surveyor to confirm and or coordinate setting of supplemental control intervisably at intervals of approximately 1,000 feet. Supplemental control will be coordinated for the Newell Creek Inlet/Outlet Pipeline Project once a preferred route is chosen.

HDR will review the existing Survey Report or coordinate with the surveyor to compile a Survey Report for the primary control describing the methods and results of the work performed, as well as an addendum to the report upon completion of the supplemental control.

Task 6.4.3 -- Conduct Photogrammetric Control Surveys

HDR will coordinate with the surveyor to establish targets as required, based upon the control scheme established in the above task. Photogrammetric control values, as available, will be incorporated into the Survey report.

Task 6.4.4 -- Prepare Photogrammetric Mapping/Orthophotos

HDR will coordinate with the surveyor to provide digital aerial mapping and orthophotographs at a scale of 1"=50' with 1-foot contours.

Task 6.4.5 -- Conduct Supplemental Design Surveys

As required, HDR will coordinate with the surveyor to supplement the aerial coverage by performing detailed design surveys. Specific items included may be match conditions, surface features such as edge of pavement, pothole data, flow lines and/or cross sections of existing creeks and canals, visible utility locations, wire heights, etc. HDR will also coordinate the survey of existing trees along the alignment. The Consultant will survey the location and a certified tree arborist will tag and record the species and size of each tree.

Task 6.5—Geotechnical Investigations

Provide geotechnical exploration services, including obtaining and analyzing soil boring samples, as needed to support the Program.

Task 6.5 Assumption: It is assumed that no efforts will be needed under this task, for this service order.

Task 6.6—Project Funding Assistance

Participate in departmental financial analysis and planning efforts. Work to assist the department in applying for grants and low income loans. Participate in developing materials to support debt financing, including credit rating agency briefings.

Task 6.6 Assumption: 40 labor hours are assumed under this task for this service order.

Task 6.7—Program Technical Support

Outside of specific technical reviews on projects (covered in Task 2—Design Management), HDR will provide technical expert input on water infrastructure, treatment and water quality issues, as requested by the City. An allocation of 160 labor-hours has been made in this service order for these as-needed efforts.

Task No.	Task Description	QA/QC (Engr)	QA/QC (CM)	QA/QC (Env)	Program Manager	Program Controls	Engr 6	Sr. Struct	Sr. Geotech	CM	Cost Est	Engr 5	Deputy Program Mgr	Struct Engr	Ops 4	Engr 4	Engr 2	Env 2	Tech Specialist 4	Tech Specialist 1	Technician 2	Technician 1	Project Controller	Document Mgmt/Admin	Total HDR Labor Hours	Total (\$)	APC Charge \$5.25	Total HDR Expenses (\$) 5% MU	Subs w/ 5% MU (\$)	Total Cost (\$)	Percent Spent by 6/30/18	
SERVICE ORDER 3 - PROGRAM DELIVERABLES																																
Task 4 - Planning and Preliminary Engineering																																
4.1 - Planning Efforts																																
4.1.1	Augmentation Strategy Update	4			20							40	20													150	\$34,211	\$788			\$34,999	100%
4.1.2	GHWTP Facilities Plan Update (NTP Jan 15, 2018)																															
4.1.2.1	GHWTP Condition Assessment	12			8		24		50		46		20	50	80									6	418	\$93,257	\$2,069		\$21,000	\$116,326	100%	
4.1.2.2	GHWTP Pipeline Assessment	20			8		24				40	24	16										16	288	\$60,737	\$1,302		\$210,000	\$272,039	70%		
4.1.2.3	Alternatives Analysis	20			64		120	32	32	40	60		120	40	16	120	400					200	16	1,280	\$271,504	\$5,670			\$277,174	50%		
	Supplemental Studies	20			40		72		24		24		100	24	16	120	366		40				16	882	\$193,072	\$4,421		\$52,500	\$249,992	50%		
4.1.2.4	Facility Plan Report	12			16		60		20		120		40	8	8	40	100						32	496	\$108,256	\$2,394			\$110,650	50%		
4.2	Preliminary Engineering Efforts (NONE)																															
	Reimbursable Expenses (Includes 5% Subconsultant Markup)																									\$323,454.41		\$39,954		\$39,954	60%	
	Subtotal Task 4	88	0	0	156	0	300	32	126	40	290	64	316	122	120	280	1,130	0	40				86	3,514	\$1,084,491	\$16,643	\$39,954	\$283,500	\$1,101,133			
FEE THRU JUNE 30, 2018 ONLY																																
Task 6 - Program Support																																
6.1	CEQA and Environmental Permitting	4			4		48									8							8	80	\$21,257	\$378			\$21,635			
6.2	Right-of-Way Acquisition	4											8			4			134	218		66			500	\$64,570	\$2,279		\$25,200	\$92,048		
6.3	Communications and Public Outreach	8			16		40									36					28		8	136	\$33,866	\$567			\$34,433			
6.4	Surveying and Mapping Coordination												2			16	16								34	\$6,801	\$179			\$6,979		
6.5	Geotechnical Investigations (NONE)																													\$0		
6.6	Program Technical Support						80					80													160	\$43,861	\$840			\$44,701		
	Reimbursable Expenses																									\$13,186		\$8,944		\$8,944		
	Subtotal Task 6	16	0	0	20	0	168	0	0	0	0	80	0	0	64	16	0	134	218	36	66	16	0	910	\$183,540	\$4,242	\$8,944	\$25,200	\$208,740			
COLUMN TOTALS (SO3 - Full Scope)		104	0	0	176	0	468	32	126	40	290	144	316	122	120	344	1,146	0	174	218	380	66	16	86	4,424	\$1,268,031	\$20,885	\$48,898	\$308,700	\$1,309,873		

8.76



WATER COMMISSION
INFORMATION REPORT

DATE: 1/31/2018

AGENDA OF: February 5, 2018
TO: Water Commission
FROM: Toby Goddard, Water Conservation Manager
SUBJECT: 2018 Water Supply Outlook – First Look

RECOMMENDATION: For information and discussion by the Water Commission.

BACKGROUND: This report provides an overview of current water conditions and presents the Water Department’s first formal outlook covering the City’s water supply situation for Water Year 2018. The end of January represents the mid-point of the winter wet season. The outlook will be updated as the 2018 wet season progresses and a final water supply outlook will be prepared toward the end of March.

DISCUSSION:

Rainfall In contrast to one year ago, when parts of California were starting to flood from a relentless series of atmospheric rivers, Water Year 2018 has seen only a few brief periods of wet weather, punctuating an otherwise persistently dry and warm start. A few scattered storms in November gave way to unseasonably clear, calm, and dry weather in December. There was only one day with measureable precipitation in December totaling 0.18 inches, making it the third driest December on record. For the season to date, total rainfall in the City measures 8.28 inches, just over half the long-term average amount of 16 inches for this time of year. Monthly and cumulative rainfall amounts are shown in Figures 1 and 2.

In the City’s watershed around Loch Lomond Reservoir, total rainfall measures 13.40 inches for the season to date, in contrast to the more than four feet of rain that was recorded this time last year.

The short term forecast has mostly sunny and dry weather through the end of January and into early February. Long-term, the National Weather Service Climate Prediction Center is showing equal chances of normal precipitation across California in its 3-month outlook for the period February through April 2018 that was generated January 18.

Stream Flow Figure 3 shows the mean monthly stream flow in the San Lorenzo River for the season to date, along with the long-term average monthly values for comparison. The San

Lorenzo River flowed strong all summer long due to heavy rains last year. Beginning in the month of October though, flows dropped off to levels slightly to well below average due to meager rainfall received thus far. It usually takes about a foot or more of rain in the watershed to saturate soils before significant winter runoff occurs. This year, with the long, dry stretch in December, that hydrologic process is still taking shape.

Reservoir Storage The 2018 Water Year started October 1 with Loch Lomond Reservoir at about 93 percent of capacity. The combination of strong surface water flows this past summer and continuing low system demand resulted in plant operators not having to draw much water down from the lake during the dry season, keeping storage high. Currently, the reservoir is holding at 93.5 percent of capacity, with the lake level about three feet below the spillway elevation.

Water Year Classification The Water Department uses a water year classification system to characterize the City's overall annual water supply condition. Under this classification system, the water year beginning October 1 is designated as one of four types – **Wet, Normal, Dry, or Critically Dry** – depending on the total annual discharge of the San Lorenzo River, measured at the stream gage in Felton, and expressed in acre-feet¹.

As might be expected with such dry start to winter, cumulative discharge from the San Lorenzo River is running well below normal. The long-term average for cumulative discharge at this time of year is about 33,000 acre-feet. So far this year, the river has generated less than 9,000 acre feet of runoff, barely more than a quarter of normal (Figure 4). As a result, the Water Year remains provisionally classified as Critically Dry. In contrast, exactly one year ago, annual discharge from the San Lorenzo River had already exceeded 117,000 acre feet, and the year classification was about to roll over from Normal to Wet in what was to eventually become the wettest year on record in terms of cumulative annual discharge.

Initial Outlook for 2018 As with elsewhere in California, the City's surface water storage is in good shape, but the relative lack of rainfall so far is starting to feel reminiscent of conditions experienced a few years ago. Where last year the outlook was clear; this year it is more uncertain.

On the positive side, reservoir storage is healthy and the chances of spilling this year are still pretty good. System demand remains restrained. Historically, it is not uncommon to see large storms and/or plentiful rainfall during the months of February and March.

¹ Discharge refers to the accumulated volume of runoff. One acre-foot of water is equal to 325,851 gallons. 3.07 acre-feet equals one million gallons.

Annual discharge of the San Lorenzo River is regarded as the best individual benchmark of the City's water supply condition for two reasons. First, the river is the city's single largest source of drinking water, providing about half the normal annual supply. Second, about three quarters of all the water used by city water customers is obtained from a flowing source of supply. In general, the higher the volume discharged from the San Lorenzo River means that:

- the local watersheds in the Santa Cruz mountains are more saturated;
- the stream sources will flow at higher levels later into the dry season; and
- there is more water available from all surface water sources, including the reservoir, to meet system demands over the course of the year.

The question is: will there be enough rain during the latter half of the wet season to reverse the trend of the first half? At this time, it is still too early to draw conclusions about what kind of year 2018 will be. Just as there has been extreme year-to-year variability over the last few years, the same variability in weather patterns often occurs on a shorter time scale within a single season.

The Water Department will continue to monitor water supply conditions, and will reevaluate the water supply outlook in early March. At that time, staff will have the information upon which to make a monthly projection of the City's water supply availability and evaluate the adequacy of this supply to meet expected water demands within the City's water service area for the rest of 2018. One key variable is the level of instream flow releases that the City will need to meet during the dry season for fish rearing, which is unknown at this time. Instream flows are organized into five categories or hydrologic conditions. Which category will apply this summer depends on cumulative runoff in the San Lorenzo River over the entire wet season, which won't be established until later in winter or early spring.

With annual demand last year totaling only 2.66 billion gallons and the lake nearly full, it is hard to envision being in a position that would require the City to impose water restrictions to preserve reservoir storage in 2018. Still, the City relies on river and stream flows for the majority of its water supply and the yield of those sources is closely tied to annual rainfall. Should weather conditions continue to be as dry, or drier, than they have been so far this year, the Water Department stands ready to implement demand reduction measures as the situation requires.

FISCAL IMPACT: None.

ATTACHMENTS:

Figure 1: Monthly Rainfall, City of Santa Cruz

Figure 2: Cumulative Rainfall, Santa Cruz

Figure 3: Monthly Streamflow, San Lorenzo River at Big Trees

Figure 4: Cumulative Runoff and Water Year Classification

Figure 1. Monthly Rainfall, City of Santa Cruz, 01/26/2018

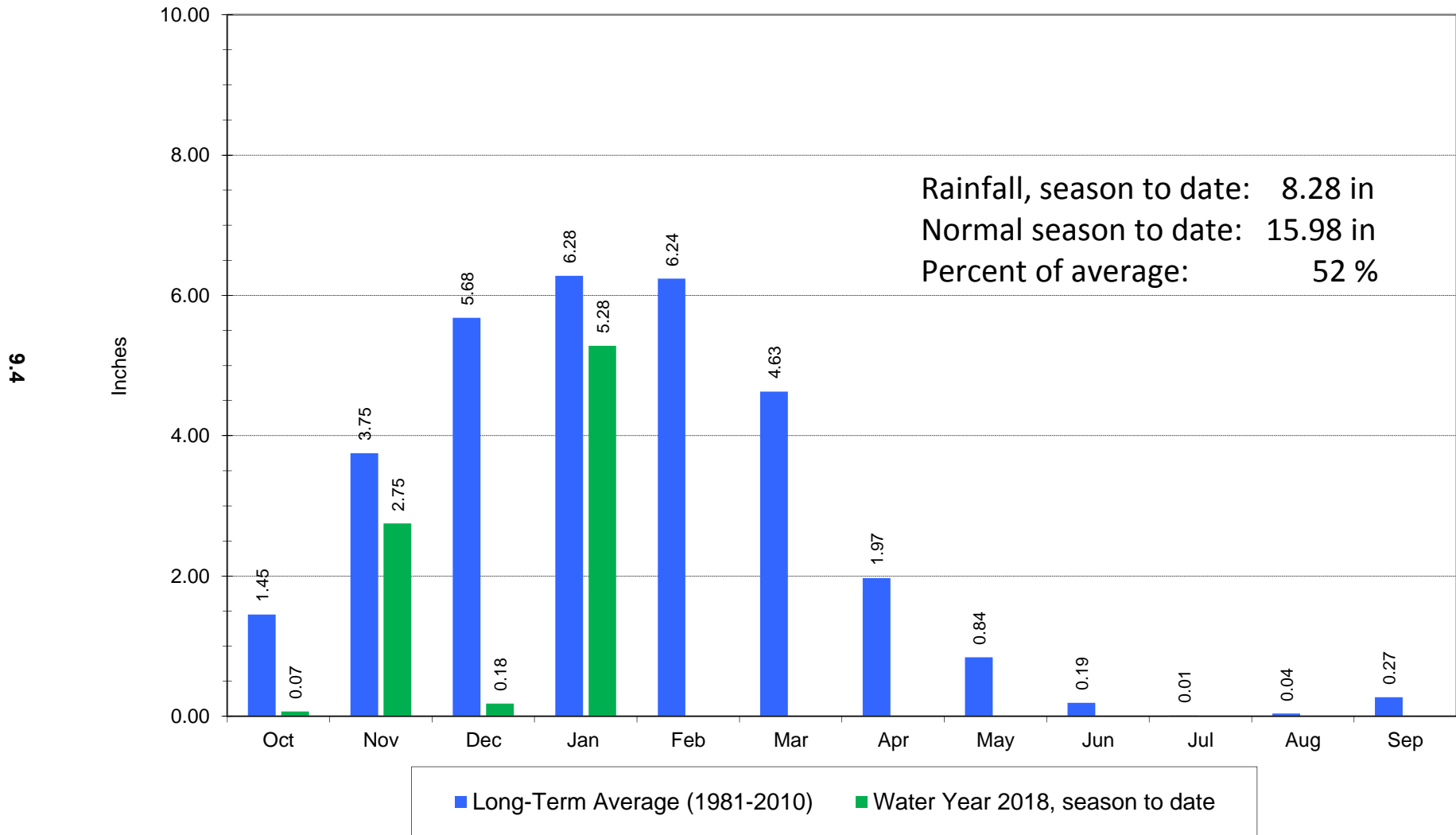
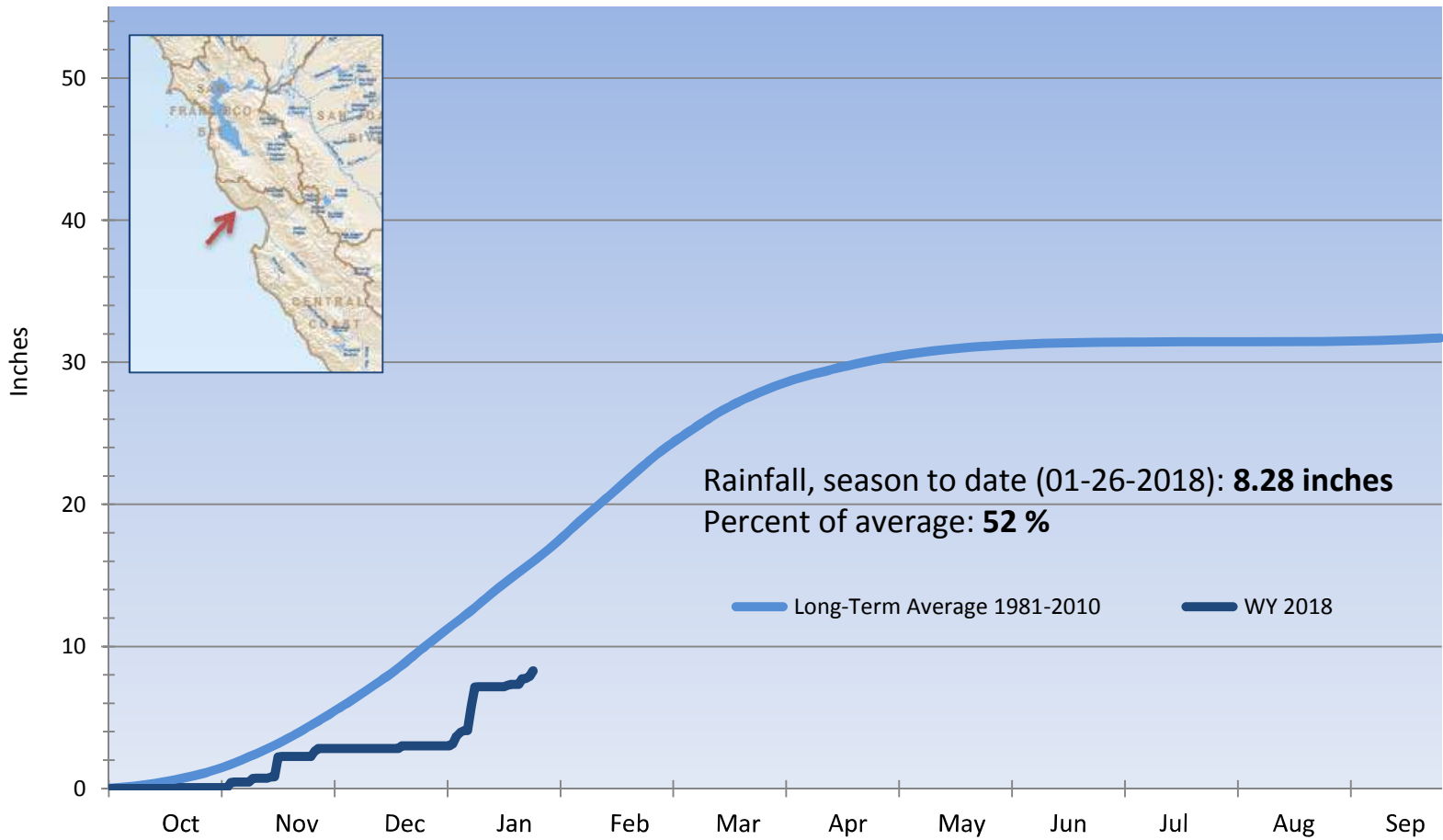


Figure 2.

Cumulative Precipitation Santa Cruz, CA Water Year 2018



9.6

Figure 3.

Mean Monthly Streamflow, San Lorenzo River at Big Trees (cubic feet per second)

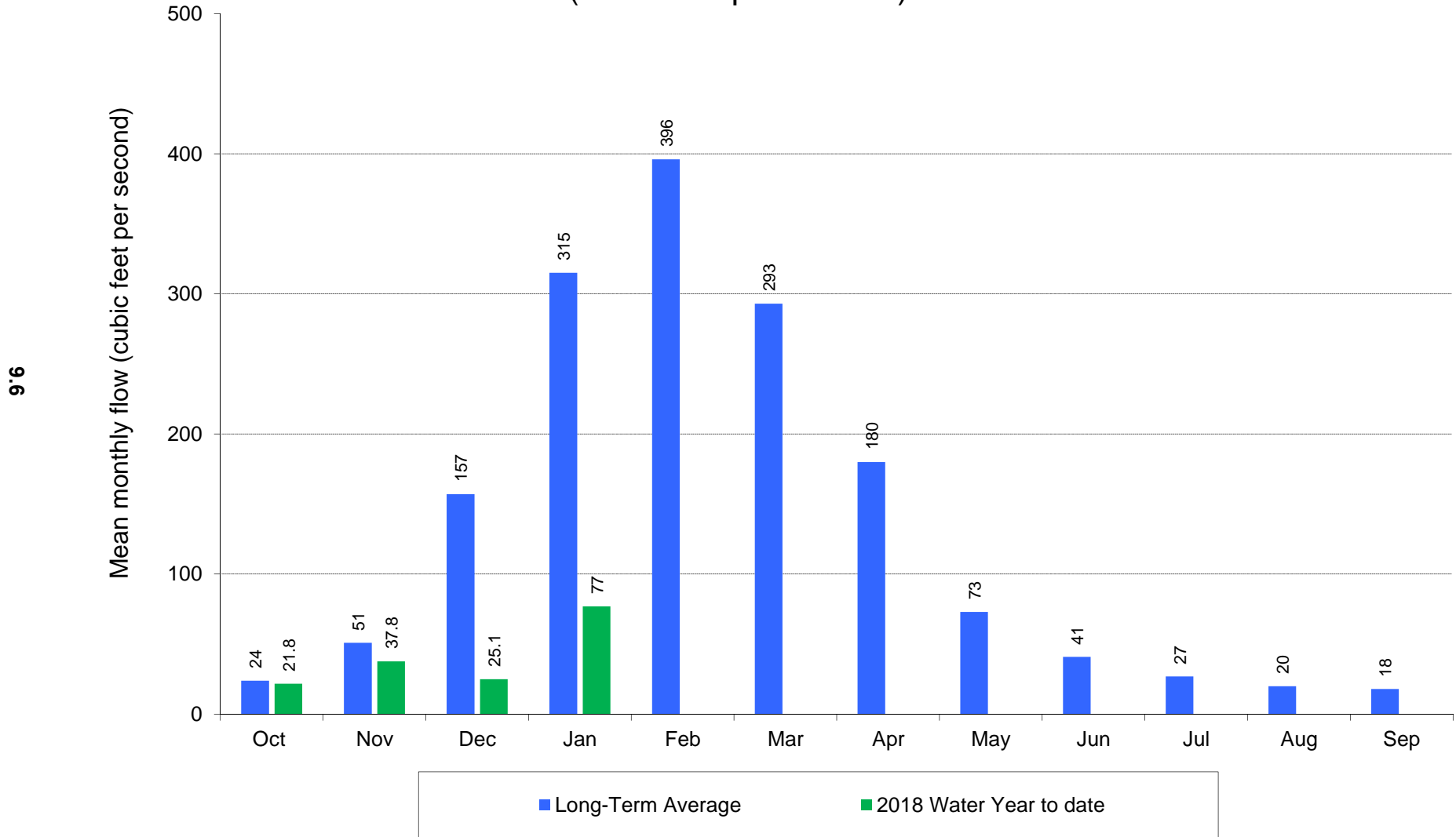


Figure 4.

Cumulative Runoff and Water Year Classification, 01/26/2018 (acre-feet)

