Gary Woodard - Water Resources Consulting

Minimizing Trap Cooling and Other Continuous Flows at Biomedical Facilities

Phoenix AMA
Cover Page
Program/Project Title AND Brief Description: Minimizing Trap Cooling and Other Continuous Flows at Bio-Medical Facilities: A collaborative effort involving local water utilities and healthcare organizations will be used to identify facilities having high savings potential and to schedule site visits. Continuous flows will be measured using ultrasonic flowmeters and other appropriate devices. A report will be provided to each facility listing recommended repairs and/or upgrades, projected savings, and any incentives available through their local water utility. Follow-up visits will be conducted to measure achieved savings.

<table>
<thead>
<tr>
<th>Type of Program or Project:</th>
<th>Infrastructure Water Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Your level of commitment to maintenance of project benefits and capital improvements:</td>
</tr>
<tr>
<td></td>
<td>☒ &lt; 5 years ☐ 5-10 years ☐ 11-15 years ☐ 16-20 years</td>
</tr>
</tbody>
</table>

Applicant Information:

<table>
<thead>
<tr>
<th>Name/Organization:</th>
<th>Gary Woodard, Water Res Consulting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>1415 East Lind Road</td>
</tr>
<tr>
<td>City:</td>
<td>Tucson</td>
</tr>
<tr>
<td>State:</td>
<td>AZ</td>
</tr>
<tr>
<td>ZIP Code:</td>
<td>85719</td>
</tr>
<tr>
<td>Phone:</td>
<td>520-850-4249</td>
</tr>
</tbody>
</table>

AMA:

<table>
<thead>
<tr>
<th>Phoenix</th>
<th>Tucson</th>
<th>Prescott</th>
<th>Pinal</th>
<th>Santa Cruz</th>
</tr>
</thead>
</table>

If the project is located outside of an AMA, it is not eligible for funding.

<table>
<thead>
<tr>
<th>Contact Person:</th>
<th>Name: Gary Woodard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Title: Principal</td>
</tr>
<tr>
<td>Phone:</td>
<td>520-850-4249</td>
</tr>
<tr>
<td>e-mail:</td>
<td><a href="mailto:Gary@GaryWoodard.com">Gary@GaryWoodard.com</a></td>
</tr>
</tbody>
</table>

Does this project meet any of our priority criteria? If so, which?
- [ ] Additional contribution
- [ ] Innovative qualities
- [ ] Demonstrate high impact
- [ ] Demonstrate multiple benefits

Water Management Assistance Program Grant Amount Requested: $89,605

<table>
<thead>
<tr>
<th>Applicant/Agency/Organization:</th>
<th>Amount ($):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Applicant</td>
<td>in kind</td>
</tr>
<tr>
<td>2. Scottsdale Water</td>
<td>in kind</td>
</tr>
<tr>
<td>3.</td>
<td>Total:</td>
</tr>
</tbody>
</table>

Signature of the undersigned certifies understanding and compliance with all terms, conditions and specifications in the application. Additionally, signature certifies that all information provided by the applicant is true and accurate. The undersigned acknowledges that intentional presentation of any false or fraudulent information, or knowingly concealing a material fact regarding this application is subject to criminal penalties as provided in A.R.S. Title 13. The ADWR Director may approve Grant Awards with modifications to scope items, methodology, schedule, final products and/or budget.

Signature Date Signed: 13 February 2020
Project Map
APPENDIX 1. PROJECT MAP

The project will be located entirely within municipal water services areas in the Phoenix Active Management Area. See map below.

The locations of biomedical facilities that will be audited are currently unknown. As per ADWR instructions, the GIS coordinates of the office of Water Resources Consulting are provided here:

Office coordinates: 32° 16’ 1.11” N, 110° 56’ 58.26” W
Executive Summary
Large bio-medical facilities with steam boilers offer significant and very cost-effective savings opportunities through reduction of continuous flows to drain. Reductions in trap cooling for boilers, sterilizers, ware-washers, and food steamers provide the most commonly identified opportunities at these facilities. Other regularly observed opportunities to be addressed under this proposal include continuous flows from liquid-ring vacuum pumps, conveyor dishwashers and single-pass water-cooled equipment such as ice machines. Recommended measures to minimize these continuous flows are typically low cost, with paybacks of under one year, and are therefore generally addressed quickly. Recommended upgrades will include replacement of failed equipment with equipment that will be less prone to failure in the future.

Our proposal is to work with a variety of partners, including local water utilities, and potentially AMWUA, the Southwest Healthcare Sustainability Collaborative, ASU, and interested hospital systems, such as Mayo Hospital, BannerHealth, HonorHealth, the VA, DignityHealth, and Phoenix Children’s, to develop a list of target facilities and schedule audits. We will encourage participating water utilities to offer financial incentives covering all or part of the cost of recommended upgrades. Funding being requested under this proposal will cover our direct costs for auditing 20 high savings potential sites throughout the Phoenix AMA, distributed among participating water providers. Priority will be given to larger facilities having steam boilers. (Note: Complex facilities using more than 50 MGY of non-irrigation water may be counted as multiple sites.)

Initial facility visits will be scheduled in coordination with local water providers. During these initial visits we will use ultrasonic flowmeters and other devices to accurately document savings potential. Subsequent to the initial site visits we will provide facilities with reports containing recommendations for repairs and/or upgrades, along with projected savings. Follow-up visits to measure achieved savings will be scheduled at an appropriate time, for all facilities for which recommendations were made.

Over the past 20 years, Roger van Gelder, as a consultant, has conducted water efficiency audits at numerous biomedical and other CII facilities, including for Scottsdale Water, Tucson Water, Seattle Public Utilities, and the California Public Utilities Commission. He was instrumental in helping Seattle Public Utilities pilot a program at UW to promote installation of strap cooling kits on sterilizers.* Following successful results at UW, this program was expanded to all biomedical facilities in the city, resulting in total calculated savings of around 75 MGY. More recently, with Tucson Water, he assisted the VA Hospital in Tucson identify and correct trap cooler malfunctions at their main boiler, resulting in documented 13 MGY of savings. An additional six hospitals were audited in Scottsdale and Tucson, identifying seven separate continuous flows totaling 21 gpm. The sources of these flows included two boilers, two sterilizers, one ware-washer, one conveyor dishwasher, and one water-cooled ice machine. Assuming 24-hour flow, elimination of these flows could result in savings of up to 11 MGY, for a total of up to 24 MGY for all seven of these hospitals, including the VA.
*For additional information see the 2003 UW Study:

Project Overview
3. PROJECT OVERVIEW

All work conducted under this proposal would be conducted within the boundaries of the Phoenix AMA. Due to its demographics, the Phoenix AMA is home to an exceptionally high number of healthcare and biomedical facilities, including over 50 hospitals, with these facilities typically using large amounts of water. With its high population growth rate, and the majority of its water use being for municipal purposes, the Phoenix AMA should achieve significant savings of fresh water through this program, displacing the need for groundwater pumping and/or allowing for increased recharge.

It has been demonstrated that perhaps the quickest and most cost-effective way to significantly reduce water use at healthcare facilities is through reduction or elimination of continuous flows directly to drain including water used for trap cooling at facilities with steam boilers. In Seattle, a water use was reduced by an estimated 75 MGY (230 AF/Yr) over a two year period by retrofitting approximately 100 steam sterilizers with trap cooling kits, at an installed cost of approximately $2,500 each, resulting in a simple payback of only a few months. More recently, Mr. van Gelder, together with Tucson Water, assisted the VA Hospital in Tucson in identifying malfunctions related to trap cooling at their main boiler, resulting in quick savings to them of a documented 13 MGY. Water efficiency audits conducted by Mr. van Gelder at six additional hospitals in Scottsdale and Tucson resulted in identification of a total of 21 gpm of continuous flows to drain which, if flowing 24 hours per day, would result in up to 11 MGY of potential savings, for a total of up to 24 MGY for seven audited hospitals.

As part of the initial site visits, 24-hour water usage for each piece of equipment identified as having a continuous flow to drain will be documented, using ultrasonic flowmeters and/or other appropriate measurement devices. Following delivery of a recommendations report, a questionnaire will be emailed within 30 days of their receipt of the recommendations report, requesting information regarding which, if any, of the recommendations they either have
implemented, or are planning to implement, along with approximate implementation dates. **Follow-up visits will then be scheduled appropriately, to document actual savings**, using ultrasonic flowmeters or other devices as appropriate. For facilities for which recommendations were made but from which no indication is received that any recommendations have been implemented, follow-up visits will also be scheduled, within 6 months of their receipt of the recommendations report, to document possible savings from any unreported repairs or upgrades.

**This program is consistent with the goal of reducing non-per-capita water use** within the AMA, through adoption of voluntary water conservation measures.

**This program should benefit multiple hospitals, healthcare organizations and biomedical research facilities** located within the Phoenix AMA. It should also help the various water utilities located within the AMA meet their conservation goals.

**This project will leverage resources of local water utility conservation programs**, both for outreach efforts and in offering potential financial incentives. In addition, the project will leverage resources, as available through facility and/or sustainability personnel, to assist with conducting on-site audits. Audited facilities will also cover the cost of all implemented measures, minus any financial incentives provided by their water utility. **We are not aware of any systematic duplication of this work** within the Phoenix AMA, aside from four audits we have performed for Scottsdale Water at hospitals within their service area.

**Long-term effectiveness of the project** will be addressed by highlighting the benefits of installing upgrades which eliminate components which typically malfunction, such as needle valves, electronic temperature sensors, and solenoid valves. Therefore, upgrades should remain sustainable over time.

**This project could be duplicated** in other AMAs and areas throughout the state through joint efforts with local water providers and with regional organizations such as AMUWA and the Southwest Healthcare Sustainability Collaborative.
Scope of Work
4. SCOPE OF WORK

Task 1. Introduce Program to Water Providers and Facility Contacts

The purpose of this task is to introduce water providers and facility representatives to the goals of the program, answer questions they may have, and finalize protocols for how site visits are scheduled and conducted for each water provider, while maintaining ongoing lines of communication with all interested parties as needed and appropriate.

Consultants will:

- Develop a list of potential attendees, arrange for an appropriate venue, and schedule a kick-off meeting,
- At the meeting, describe the program and discuss options for how water providers and facility representatives may participate.
- Finalize roles and responsibilities with each water provider for scheduling and conducting site visits within their service area (this may vary by water provider).
- Provide ongoing coordination among interested parties as needed and appropriate.

Gary Woodard will be responsible for planning and coordination of the kickoff meeting

Roger van Gelder will assist with presentations and follow-up

Task deliverable consists of agreed-upon protocols for working with participating water providers

Deliverable will be complete 2 months after project start.

Task 2: Arrange Initial Facility Visits

The purpose of this task is to develop a schedule of initial site visits which meets the needs and concerns of the water providers and their customers.
Consultants will first identify interested customers and facility contacts. Consultants will then send out surveys to interested facility contacts requesting information on the number of sites they oversee that have steam boilers, along with the approximate number of specific pieces of equipment, listed as having high potential for continuous flows to drain, which may be located at each site. Consultants will work with facility contacts to select facilities to be audited, and schedule initial facility visits, along with return visits as necessary to pick up any metering equipment installed during the initial visit.

Gary Woodard will be responsible for coordinating with water providers and professional organizations to identify potential participants, prepare and send out initial survey questions to interested participants, and tabulate responses.

Roger van Gelder will be responsible for communicating with site contacts as appropriate to confirm date and time of scheduled.

Water Providers will be responsible for identifying interested customers, and, in coordination with Water Resources Consulting, scheduling initial facility visits. Representatives from water providers are welcome to participate in any or all site visits.

Task deliverable consists of initial site visits scheduled at 20 selected sites, with customers from a variety of water providers. (Note: Complex sites using more than 50 MGY of non-irrigation water may be considered as multiple sites.)

Deliverable will be complete 4 months after project start.

Task 3: Conduct Initial Facility Visits and Draft Facility Reports

The purpose of this task is to collect all data necessary for making recommendations and calculating achieved savings during follow-up visits, and then to draft a brief report containing recommendations for the facility contact, to assist them in reducing continuous water use in a cost-effective manner.

Consultants will:

- Meet designated facility contacts at the site, and briefly discuss areas to be visited,
- Take flow and temperature measurements as appropriate for water being discharged directly to drain,
• Install ultrasonic flowmeters to log 24-hour flow rates and total gallons of water used by specific pieces of equipment, as appropriate.
• Arrange an acceptable time to return to pick up any meters left on site,
• Download and analyze log data collected using ultrasonic flowmeters or other devices,
• Draft a brief report for each facility detailing any recommendations for repairs or upgrades, and the projected savings associated with those recommendations.

**Gary Woodard will be responsible** for reviewing facility reports and forwarding these to water providers.

**Roger van Gelder will be responsible** for conducting site visits, recording measurements, installing and removing flowmeters or other measurement devices, and drafting facility reports.

**Water Providers will be responsible** for forwarding recommendations reports to facility contacts. Water provider representatives may accompany auditor on site visits if desired.

**Task deliverable** will be recommendations reports for 20 audited sites provided to facility contacts. (Note: Complex sites using more than 50 MGY of non-irrigation water may be considered as multiple sites.)

**Deliverable will be complete** 9 months after project start.

**Task 4: Send out Post-Audit Questionnaires and Arrange for Follow-up Visits**

The purpose of this task is to determine if facility contacts are aware of recommendations which have been implemented or are planned to be implemented, and if so, what the expected timeframe is. Follow-up visits then will be arranged at all sites for which recommendations were made, including at sites where no repairs or upgrades were reported.

**Consultants will**

• Develop a set of post-audit interview questions for facility contacts, and
• Work with water providers to email interview questions to the facility contacts who received the recommendations report.
Gary Woodard will be responsible for developing post-audit questionnaire, tabulating results, and scheduling follow-up visits.

Water Providers will be responsible for forwarding questionnaires to customers (or conducting interviews by phone), and forwarding results back to Water Resources Consulting.

Task deliverable will be tabulated responses to the post-audit questionnaire, for all facilities for which recommendations were made.

Deliverable will be complete 12 months after project start.

Task 5: Conduct Follow-up Visits and Calculate Savings at Individual Sites

The purpose of this task is to document achieved water savings at any and all sites for which recommendations were made.

Consultant will coordinate with water providers to schedule and conduct follow-up site visits, to collect data using ultrasonic flowmeters or other measuring devices as necessary for calculating savings achieved at sites where recommendations were made.

Gary Woodard will be responsible for coordinating with water providers to schedule follow-up visits.

Roger van Gelder will be responsible for conducting site visits, taking and recording measurements as appropriate, installing and removing flowmeters or other measurement devices as appropriate, and calculating achieved savings at each site.

Water Providers will be responsible for providing assistance, as appropriate, to schedule follow-up site visits.

Task deliverable consists of follow-up visits completed and calculated savings made for all sites for which recommendations were made.

Deliverable will be complete 16 months after project start.

Task 6: Prepare Final Report Detailing Total Realized Savings

The purpose of this task is to prepare a final report documenting total achieved water savings at all audited sites attributable to this project.
Consultant will compile calculated savings for all sites for which recommendations were made into a final report, including summaries of results from questionnaires and of savings calculations, to show average savings per facility, both by facility type, and by type of recommendation.

Gary Woodard will be responsible for preparing the final report.
Roger van Gelder will be responsible for assisting with report preparation as appropriate.

Task deliverable consists of report provided to ADWR providing all information requested under the contract.
Deliverable will be complete 18 months after project start.
Budget Breakdown
APPENDIX 4:

## Budget Breakdown & Narrative

### Budget Breakdown Sheet

- **Tasks:** Grant Program, Function, or Activity (provide a brief description)

<table>
<thead>
<tr>
<th>Budget Categories</th>
<th>Task 1: Coordinate with Water Providers, Facility Contacts and Professional Organizations</th>
<th>Task 2: Arrange for Initial Facility Visits</th>
<th>Task 3: Conduct Initial Facility Visits and Draft Facility Reports</th>
<th>Task 4: Email Post-audit Questionnaires and Schedule Follow-up Visits</th>
<th>Task 5: Conduct Follow-up Facility Visits and Calculate Achieved Savings at Individual Sites</th>
<th>Task 6: Prepare Final Report Detailing Total Realized Savings</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Personnel</td>
<td>$12,720</td>
<td>$6,240</td>
<td>$38,940</td>
<td>$3,840</td>
<td>$21,600</td>
<td>$5,460</td>
<td>$88,800</td>
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<td>b. Fringe Benefits</td>
<td>-$</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
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<tr>
<td>c. Travel</td>
<td>$230</td>
<td>$-</td>
<td>$288</td>
<td>$-</td>
<td>$288</td>
<td>$-</td>
<td>$805</td>
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<tr>
<td>d. Equipment</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>e. Supplies</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
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<tr>
<td>f. Contractual</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>g. Construction</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>h. Other</td>
<td>$-</td>
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<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>i. Total Direct Charges</td>
<td>$12,950</td>
<td>$6,240</td>
<td>$39,228</td>
<td>$3,840</td>
<td>$21,888</td>
<td>$5,460</td>
<td>$89,605</td>
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<tr>
<td>j. Indirect Charges</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
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<tr>
<td><strong>Total Project Budget</strong></td>
<td>$12,950</td>
<td>$6,240</td>
<td>$39,228</td>
<td>$3,840</td>
<td>$21,888</td>
<td>$5,460</td>
<td>$89,605</td>
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</table>
Budget Narrative
MINIMIZING TRAP COOLING AND OTHER CONTINUOUS FLOWS
AT BIOMEDICAL FACILITIES
Submitted by Water Resources Consulting

5. BUDGET NARRATIVE

Note – Budget Breakdown Sheet is included as Appendix 4.

The proposed project is to conduct audits for continuous or semi-continuous flows at 20 large biomedical facilities, provide recommendations reports, and conduct pre and post measurements to document savings. The total budget is $89,605 plus various kinds of in-kind support from participating water providers.

The total award will be spent on the six task areas as follows:

<table>
<thead>
<tr>
<th>Task</th>
<th>Description of task activities, deliverables</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Task 1: Introduce Program to Water Providers and Facility Contacts</td>
<td>12,700</td>
</tr>
<tr>
<td>2</td>
<td>Task 2: Arrange Initial Facility Visits</td>
<td>6,240</td>
</tr>
<tr>
<td>3</td>
<td>Task 3: Conduct Initial Facility Visits and Draft Facility Reports</td>
<td>38,940</td>
</tr>
<tr>
<td>4</td>
<td>Task 4: Send out Post-Audit Questionnaires and Arrange for Follow-up Visits</td>
<td>3,840</td>
</tr>
<tr>
<td>5</td>
<td>Task 5: Conduct Follow-up Visits and Calculate Savings at Individual Sites</td>
<td>21,600</td>
</tr>
<tr>
<td>6</td>
<td>Task 6: Prepare Final Report</td>
<td>5,400</td>
</tr>
<tr>
<td></td>
<td>Total Personnel Budget</td>
<td>88,800</td>
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<tr>
<td></td>
<td>Travel Expenses*</td>
<td>805</td>
</tr>
<tr>
<td></td>
<td>Budget Request from ADWR</td>
<td>89,605</td>
</tr>
</tbody>
</table>

*Note that this proposal includes $805 in travel expenses, calculated for a total of 1,400 miles, using IRS 2020 rate of $0.575/mile.

Detailed budget data for each task are provided below.

**Detailed Budget, Task 1 Introduce Program to Water Providers and Facility Contacts**

Task 1 will require an estimated 104 hours of labor at the rates indicated below.
### Task 1: Introduce Program to Water Providers and Facility Contacts

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.a</td>
<td>Plan and lead kick-off meeting</td>
<td>GW</td>
<td>120</td>
<td>28</td>
<td>3,360</td>
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<tr>
<td>1.b</td>
<td>Assist with kick-off meeting</td>
<td>RvG</td>
<td>135</td>
<td>16</td>
<td>2,160</td>
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<tr>
<td>1.c</td>
<td>Develop protocols for all participating water providers</td>
<td>GW</td>
<td>120</td>
<td>20</td>
<td>2,400</td>
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<tr>
<td>1.d</td>
<td>Provide ongoing program coordination as needed</td>
<td>GW</td>
<td>120</td>
<td>40</td>
<td>4,800</td>
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</tbody>
</table>

**Task 1 Subtotal**  
104 12,720

*GW = Gary Woodard; RvG = Roger van Gelder

### Detailed Budget, Task 2 Arrange Initial Facility Visits

Task 2 will require an estimated 52 hours of labor at the rates indicated below.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.a</td>
<td>Assist with identification of interested facility contacts</td>
<td>GW</td>
<td>120</td>
<td>24</td>
<td>2,880</td>
</tr>
<tr>
<td>2.b</td>
<td>Develop, send out and tabulate answers to initial survey</td>
<td>GW</td>
<td>120</td>
<td>16</td>
<td>1,920</td>
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<tr>
<td>2.c</td>
<td>Assist with scheduling of initial facility visits</td>
<td>GW</td>
<td>120</td>
<td>12</td>
<td>1,440</td>
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**Task 2 Subtotal**  
52 6,240

*GW = Gary Woodard; RvG = Roger van Gelder

### Detailed Budget, Task 3 Conduct Initial Facility Visits and Draft Facility Reports

Task 3 will require an estimated 292 hours of labor at the rates indicated below.
### Task 3: Conduct Initial Facility Visits and Draft Facility Reports

<table>
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<tr>
<th>Task</th>
<th>Description</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.a</td>
<td>Travel to and from audit sites</td>
<td>RvG</td>
<td>135</td>
<td>40</td>
<td>5,400</td>
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<tr>
<td>3.b</td>
<td>Input tables for estimation of removal benefits</td>
<td>RvG</td>
<td>135</td>
<td>100</td>
<td>13,500</td>
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<tr>
<td>3.c</td>
<td>Material on non-financial benefits of pool removal</td>
<td>RvG</td>
<td>135</td>
<td>40</td>
<td>5,400</td>
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<tr>
<td>3.d</td>
<td>Static content review / test / modify</td>
<td>RvG</td>
<td>135</td>
<td>80</td>
<td>10,800</td>
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<td>3.e</td>
<td>Interactive web content, specific removal benefits</td>
<td>GW</td>
<td>120</td>
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**Task 3 Subtotal**

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<tbody>
<tr>
<td></td>
<td>292</td>
<td>38,940</td>
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*GW = Gary Woodard; RvG = Roger van Gelder

### Detailed Budget, Task 4 Send out Post-Audit Questionnaires and Arrange for Follow-up Visits

Task 4 will require an estimated 32 hours of labor at the rates indicated below.

<table>
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<th>Task</th>
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<th>Hours</th>
<th>Amt</th>
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<tr>
<td>4.a</td>
<td>Develop post-audit questionnaire</td>
<td>GW</td>
<td>120</td>
<td>8</td>
<td>960</td>
</tr>
<tr>
<td>4.b</td>
<td>Tabulate questionnaire results</td>
<td>GW</td>
<td>120</td>
<td>12</td>
<td>1,440</td>
</tr>
<tr>
<td>4.c</td>
<td>Schedule follow-up visits</td>
<td>GW</td>
<td>120</td>
<td>12</td>
<td>1,440</td>
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**Task 4 Subtotal**

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<tr>
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<td>32</td>
<td>3,840</td>
</tr>
</tbody>
</table>

*GW = Gary Woodard; RvG = Roger van Gelder

### Detailed Budget, Task 5 Conduct Follow-up Visits and Calculate Savings at Individual Sites

Task 5 will require an estimated 210 hours of labor at the rates indicated below.
Task 5: Conduct Follow-up Visits and Calculate Savings at Individual Sites

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.a</td>
<td>Travel to and from audit sites</td>
<td>RvG</td>
<td>135</td>
<td>40</td>
<td>5,400</td>
</tr>
<tr>
<td>5.b</td>
<td>Conduct follow-up audits including collection of necessary data benefits</td>
<td>RvG</td>
<td>135</td>
<td>80</td>
<td>10,800</td>
</tr>
<tr>
<td>5.c</td>
<td>Material on non-financial benefits of pool removal</td>
<td>RvG</td>
<td>135</td>
<td>40</td>
<td>5,400</td>
</tr>
</tbody>
</table>

Task 5 Subtotal 160 21,600

*GW = Gary Woodard; RvG = Roger van Gelder

Detailed Budget, Task 6 Prepare Final Report

Task 6 will require an estimated 44 hours of labor at the rates indicated below.

Task 6: Prepare Final Report

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Lead*</th>
<th>Rate</th>
<th>Hours</th>
<th>Amt</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.a</td>
<td>Calculate total achieved savings and assist with final report</td>
<td>GW</td>
<td>120</td>
<td>12</td>
<td>1,620</td>
</tr>
<tr>
<td>6.b</td>
<td>Prepare and review final report</td>
<td>GW</td>
<td>120</td>
<td>32</td>
<td>3,840</td>
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</table>

Task 6 Subtotal 44 5,460

*GW = Gary Woodard; RvG = Roger van Gelder
Additional Contribution Breakdown
APPENDIX 6

ADDITIONAL CONTRIBUTIONS BREAKDOWN AND LETTERS OF SUPPORT

**In-kind Support, Participating Water Providers**

Scottsdale Water and other participating municipal water providers will be expected to:

- Support the auditing effort by providing historical water, sewer, billing and meter data for biomedical facilities
- Directly and through relevant partnerships such as the Southwest Sustainability Healthcare Collaboration, identify interested customers and assist in scheduling initial facility visits and follow-up visits

**In-kind Support, Biomedical Facilities**

All participating biomedical facilities will assist the auditors by answering questionnaires, providing relevant data, and providing access to their boilers, sterilizers, ware-washers, steamers, and other similar equipment. Participating facilities will also state their intention to quickly evaluate and act upon audit recommendations.

**Letters of Support**

Letters of Support from Scottsdale Water and Mayo Clinic are appended.
February 12, 2020

Thomas Buschatzke, Director
Arizona Department of Water Resources
1110 W Washington Street, Suite 310
Phoenix, AZ 85007
C/O Melissa Sykes, Water Resources Specialist

Dear Director Buschatzke:

The City of Scottsdale supports Water Resources Consulting’s proposal for "Minimizing Trap Cooling and Other Continuous Flows at Bio-Medical Facilities." We support this grant application and the focus on reducing water usage in healthcare facilities.

Scottsdale recently implemented a large Commercial, Institutional and Industrial (CII) Water Audit Program using Water Resources Consulting as our contractor and we have been pleased with their work. Through this program, we have provided multiple healthcare facilities with a water audit and developed partnerships.

Through this letter, we acknowledge the specific roles and responsibilities we will fulfill if this proposal is funded. We would expect our role in the "Minimizing Trap Cooling and Other Continuous Flows at Bio-Medical Facilities" grant proposal to include:

- Working through our partnerships with the Southwest Sustainability Healthcare Collaborative to reduce water usage in healthcare facilities in our water service area and the larger Phoenix AMA.
- Communicating with a regional CII work group to share hospital contacts with other cities through the Arizona Municipal Water Users Association.
- Supporting Water Resources Consulting with historical water, sewer, billing and meter data to facilitate their audits and analysis within our water service area.

In conclusion, we believe that Water Resources Consulting’s proposal is well conceived and should result in significant and cost-effective savings and should be considered for grant funding.

Sincerely,

[Signature]

Eliša Klein, Water Conservation Coordinator
Scottsdale Water
February 12, 2020

Thomas Buschatzke, Director
Arizona Department of Water Resources
1110 W Washington Street, Suite 310
Phoenix, AZ 85007
C/O Melissa Sykes, Water Resources Specialist

Dear Director Buschatzke:

The Mayo Clinic would like to support the water conservation proposal, “Minimizing Trap Cooling and Other Continuous Flows at Biomedical Facilities”. The proposal principals recently performed a water efficiency audit at our Scottsdale facilities, and we would like to benefit from the targeted audits proposed, particularly at our hospital in Phoenix.

Mayo prides itself on efforts to reduce energy and water use. Our landscapes feature native plants and drip irrigation, and we regularly upgrade our building infrastructure to incorporate the most energy and water-efficient devices and systems available. Therefore, reducing water used by our boilers, sterilizers, and related equipment is consistent with our culture.

We are prepared to assist the auditors in whatever way necessary, and intend to quickly evaluate and act upon the audit recommendations.

We appreciate this opportunity, and hope you conclude that this proposal merits funding.

Sincerely,

Peter Pallagi, Sustainability Officer
Mayo Clinic
Supplemental Information:

Evidence of Physical and Legal Availability of Water
Evidence of Physical and Legal Availability of Water

For Minimizing Trap Cooling and Other Continuous Flows at Biomedical Facilities

This project does not require any available water. Therefore, this form is not applicable.
Evidence of Control and Tenure of Land
Evidence of Control and Tenure of Land
For Minimizing Trap Cooling and Other Continuous Flows at Biomedical Facilities

This project does not require any control or tenure of land. Therefore, this form is not applicable.
State Historic Preservation Office (SHPO) Review Form
STATE HISTORIC PRESERVATION OFFICE
Review Form

In accordance with the State Historic Preservation Act (SHPO), A.R.S. 41-861 et seq, effective July 24, 1982, each State agency must consider the potential of activities or projects to impact significant cultural resources. Also, each State agency is required to consult with the State Historic Preservation Officer with regard to those activities or projects that may impact cultural resources. Therefore, it is understood that recipients of state funds are required to comply with this law throughout the project period. All projects that affect the ground-surface that are funded by AWPF require SHPO clearance, including those on private and federal lands.

The State Historic Preservation Office (SHPO) must review each grant application recommended for funding in order to determine the effect, if any, a proposed project may have on archaeological or cultural resources. To assist the SHPO in this review, the following information MUST be submitted with each application for funding assistance:

• A completed copy of this form, and
• A United States Geological Survey (USGS) 7.5-minute map
• A copy of the cultural resources survey report if a survey of the property has been conducted, and
• A copy of any comments of the land managing agency/landowner (i.e., state, federal, county, municipal) on potential impacts of the project on historic properties.

NOTE: If a federal agency is involved, the agency must consult with SHPO pursuant to the National Historic Preservation Act (NHPA); a state agency must consult with SHPO pursuant to the State Historic Preservation Act (SHPA), OR
• A copy of SHPO comments if the survey report has already been reviewed by SHPO.

Please answer the following questions:

1. Grant Program: ADWR WMAP Conservation Grants, FY2020
2. Project Title: Minimizing Trap Cooling at Bio-Medical Facilities
3. Applicant Name and Address: Gary Woodard, 1415 E. Lind Road, Tucson, AZ 85719
4. Current Landowner/Manager(s): N/A
5. Project Location, including Township, Range, Section: N/A
6. Total Project Area in Acres (or total miles if trail): N/A
7. Does the proposed project have the potential to disturb the surface and/or subsurface of the ground?
   □ YES  ☒ NO
8. Please provide a brief description of the proposed project and specifically identify any surface or subsurface impacts that are expected: This project will reduce the amount of cool potable water used in trap coolers for boilers and sterilizers at medical centers and research labs in the Phoenix metropolitan area. No surface or subsurface impacts are expected.
9. Describe the condition of the current ground surface within the entire project boundary area (for example, is the ground in a natural undisturbed condition, or has it been bladed, paved, graded, etc.). Estimate horizontal and vertical extent of existing disturbance. Also, attach photographs of project area to
The sites where these targeted water efficiency audits will occur are inside hospitals, medical centers, research labs, and blood banks. As such, the sites have been thoroughly developed.

10. Are there any known prehistoric and/or historic archaeological sites in or near the project area? □ YES □ NO

11. Has the project area been previously surveyed for cultural resources by a qualified archaeologist? □ YES □ NO □ UNKNOWN

  If YES, submit a copy of the survey report. Please attach any comments on the survey report made by the managing agency and/or SHPO

12. Are there any buildings or structures (including mines, bridges, dams, canals, etc.), which are 50-years or older in or adjacent to the project area? □ YES □ NO

  If YES, complete an Arizona Historic Property Inventory Form for each building or structure, attach it to this form and submit it with your application.

13. Is your project area within or near a historic district? □ YES □ NO

  If YES, name of the district:

Please sign on the line below certifying all information provided for this application is accurate to the best of your knowledge.

[Signature] Feb. 14, 2020
[Applicant Signature] /
[Date]
[Applicant Printed Name]

<table>
<thead>
<tr>
<th>FOR SHPO USE ONLY</th>
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</thead>
<tbody>
<tr>
<td>SHPO Finding:</td>
</tr>
<tr>
<td>□ Funding this project will not affect historic properties.</td>
</tr>
<tr>
<td>□ Survey necessary – further GRANTS/SHPO consultation required (grant funds will not be released until consultation has been completed)</td>
</tr>
<tr>
<td>□ Cultural resources present – further GRANTS/SHPO consultation required (grant funds will not be released until consultation has been completed)</td>
</tr>
</tbody>
</table>

| SHPO Comments: |

For State Historic Preservation Office: Date:
Application Checklist
ARIZONA DEPARTMENT OF WATER RESOURCES
WMAP Groundwater Conservation Grant Application Checklist

- Project Proposal
  - Cover Letter
  - Executive Summary
  - Project Overview
  - Scope of Work
  - Budget Breakdown & Narrative
  - Additional Contribution Breakdown (if applicable)
  - Project Map
- Supplemental Information
  - Evidence of physical and legal availability of water
  - Evidence of Control and Tenure of Land
  - State Historic Preservation Office Review Form