SAFETY AND HEALTH INVESTMENT PROJECTS
FINAL REPORT

Vault Safety Platform Development
Assigned SHIP grant # 2015Y00299
Funding Period: 8 Jan16 – 31 July 17

Ian Chong
ian@ergoinc.com

Applicant Organization
Ergonomics Inc

Partners
JBJ Associates
Safety Specialists Inc

Collaborators
City of Marysville
City of Edmonds
City of Puyallup

31 July 2017

Author of Report
Ian Chong CPE

PART I

Narrative Report

Abstract:

Present a short overview of the nature and scope of the project and major findings (less than half a page).

The overall scope and nature of the project was to address a known safety and risk hazard inherent in below ground vault ingress & egress. A complete solution (actual equipment prototype) is to be designed and developed enabling a safe entry / exit task considering any injured worker as well as those of the aging workforce and also enabling workers with even good physical capabilities a safer more efficient and ingress / egress task, minimizing known fall hazards. To be made publicly available.

In actuality, the project scope incrementally increased due to the enthusiastic input of the City Utility Teams critiquing the project prototype as the project progressed. Additional parameters were stated in two major areas. 1. Addition of capabilities to the Platform design in both functionality and adaptability (i.e. capability to add features such as safety railing, capability to add auxiliary components such as: winches, tripods, lighting, etc.). 2. Developing and prototyping a safety railing for the small round vaults (manhole), addressing the ingress and egress of these vaults via the small round access holes, as well as providing an effective safety barrier preventing members of the public who generally desire to approach a manhole to view inside, thereby distracting the Utility Workers.

All phases of the original project scope and scope additions were successfully completed.

Purpose of Project:

Describe what the project was intended to accomplish.

The original project scope was a design and development of a Vault Safety Platform to ensure a safer ingress and egress to/from deep hazardous underground utility vaults for ALL utility workers, considering known injuries, aging workforce, physical condition and current hazardous vault configurations.

As the project progressed, the scope increased, to include improved task performance of the utility workers by means of Platform modifications regarding flexibility to increase Platform utility. Additional modifications evolved, such as mounting of auxiliary equipment, i.e. winches, tripods to lift heavy equipment, attachment of necessary items such as lighting, power supply, gas sensors and of course safety railings.

An additional project scope included design a prototype of a safety railing for the small round vault (manhole) covers. The parameters were to allow a secure handhold enabling a

worker to effectively and safely reach with the foot, the first rung below ground level. This is virtually the same issue with the deep and wide rectilinear vaults, reaching the first rung safely for ingress and egress. The railing would also serve as a portable barrier to prevent members of the public from venturing too close to the opening with potential fall-in from looking down the vault. The safety of the public currently is a distraction for the workers and detracts attention for the task at hand and can be a safety hazard for both the members of the public and the utility worker.

Statement and Evidence of the Results:

Provide a clear statement of the results of the project include major findings and outcomes and provide evidence of how well the results met or fulfilled the intended objectives of the project.

The overall results of the project succeeded in bringing a prototype and development of a safety device to a group of Utility Workers who originally knew of a safety issue, but had no means to address it. The deliverable prototype allows these workers to have a specific means for evaluation and development to eventually lead to a device to be used in an everyday basis.

The project results met and EXCEEDED the original parameters of the original grant proposal, in that not only the participating municipalities (City of Marysville and the City of Edmonds) enthusiastically requested a final prototype to evaluate, develop and push towards an everyday useable device, but another entity (Seattle City Light) not part of the original project team participated in the overall critique / developmental sessions.

The major finding was that of the respective City Utility teams took ownership of the project, and with their input and critique became an integral part of the design process, more than expected. The original concept was proof-of-concept and without any past experience or device even remotely resembling the original concept / problem statement there was a chance the project could prove to be unfeasible for a myriad of reasons. However if the project did prove unfeasible, the research and approach could be utilized by other parties to further their own path towards a solution to the safety ingress / egress issue.

The intended objectives of the project were met, in that the purpose of prototyping, research and development in a proof-of-concept scenario – to essentially prove it can be accomplished with the intended goal of worker safety, stay-at-work, return-to-work and improved work task performance was accomplished, with the final Platform prototype devices delivered to the respective City Utility Teams.

Overall the project proved the Platform concept viable and provides a definitive stepping stone toward developing a fully functional working professional unti to ensure the safety of utility (and other) workers who must work in an underground manner servicing equipment or ingressing / egressing from deep vaults.

The Platform project successfully accomplished this in terms of deliverables and came in under budget.

Measures to Judge Success:

If relevant, state what measures or procedures were taken to judge whether/ how well the objectives were met and whether the project or some other qualified outside specialist conducted an evaluation.

Measures or procedures taken to judge whether/ how well the objectives were met

The actual measurement of success became evident when City Utility Crews embraced the concept and were more than willing to test, trial and evaluate the Platform, and to eventually host the final working prototype for on-going review and development at their facilities after the SHIP project is closed.

Throughout the project ALL city teams, especially the City of Marysville participated in the evaluations and critiques during the various stages of development. The periodic in-field evaluations activities (always performed with an open vault) involved several different team members representing all cities. Thus a high level of interest was shown throughout the project by the utility specialists who would be the primary audience for Platform final usage. Additionally, high level managers and supervisors attended and also provided invaluable feedback during the evaluation and development sessions.

The overall sign of project success was the request of the City of Marysville and City of Marysville and City of Edmonds utility crews and management requesting a Platform prototype each to further evaluate, test and develop. Also requested was a source for the 80/20 components to further modify the delivered prototype or in fact to further develop the next stage of prototyping on their own.

Clearly such acceptance and embracing of the final prototyping shows the high level of interest and desire to develop such a device to the benefits concerning safety, work task performance and stay-at-work and return-to-work issues .

The secondary prototype (safety railing for the small round vaults), added and implemented to the project scope due to the safety concerns of utility workers (a main portion of the proposal). The safety railing was designed and developed with input from the City of Marysville Utility Team. This safety portion of the project was obviously met with the Marysville Team having faith in the project design team to provide another effective element of safety for the Utility Workers during typical work tasks. As the Marysville utility team requested a final unit for on-going testing and evaluation speaks for the acceptance and success of the overall project.

Did the project or some other qualified outside specialist conducted an evaluation

During the project with an informal introduction, the City of Seattle / City Light ergonomist / safety specialist expressed interest in the Platform project. As such they attended several evaluation sessions and provided feedback. Like the other City Utility teams, they expressed interest in continued evaluation, either by Platform device “loan” from the other City Utility Teams or by using the initial development Platform used to model the final deliverables to the City of Marysville and City of Edmonds.

This high level of interest by a Utility group not originally mentioned in the grant is highly encouraging and was indeed confirmation of the correct and appropriate direction of the project by an "outside" qualified expert and his team.

Relevant Processes and Lessons Learned:

Specify all relevant processes, impact or other evaluation information which would be useful to others seeking to replicate, implement, or build on previous work

AND

Provide information on lessons learned through the implementation of your project. Include both positive and negative lessons. This may be helpful to other organizations interested in implementing a similar project.

Relevant processes useful to others seeking to replicate, implement, or build on previous work

The Platform project was presented as a classical design / prototype and proof-of-concept project. In essence this type of project is taken to completion and then a generally detailed and often lengthy (dependent upon the final deliverable), process of evaluation and (re)design is effected taking the prototype to the next stage of pre-production prototype or to a final model.

To perform the next stage a final prototype MUST be accomplished to further push the project to the next stage of evaluation. Without completing this step the project becomes incomplete and generally ends either without resolution or a determination that the proof-of-concept is unfeasible. With the prototype step completed, the next step of evaluation and development by the Utility Teams is logical and can lead to a production finalized unit, functional for everyday use.

With a completed prototype and the Utility Worker Teams taking ownership of the Platform prototypes, the classical design / prototype sequence has been successfully met according to the project parameters.

The relevant process of such a project as performed is classical design sequencing. In summation, a problem statement is established and a proof-of-concept trial is performed and when this stage is complete, a critique / evaluation of the (at that time) product is undertaken. Considering all evaluation criteria, new ideas, points proven, and new information gleaned / learned, a new trial / proof-of-concept is undertaken and completed to again undergo an evaluation / critique session by all involved parties.

In this way a final configuration of a design / development can be accomplished until all team members concerns are addressed. This is how this project was effected.

Thus, to provide any insight for others seeking to replicate, implement, or build on previous work, it appears that the best course of action is to replicate this same classical design sequencing in addressing project parameters and keep refining and refining with the input of all team members until all concerns / input are met and there are no further issues to address, bringing this phase of the project to completion. The result can only be successful at that point, until further long term testing / evaluation can be made to uncover new information or concerns that were not known (nor could they be) at the time of the previous reviews.

This therefore is a logical sequence for anyone to replicate, implement or build on previous work, as a classical design sequence considers all of these.

Provide information on lessons learned through the implementation of your project
Include both positive and negative lessons. This may be helpful to other organizations interested in implementing a similar project.

The most important element of the entire project contributing to successful completion was the inclusion of as many of the Utility Worker Team members as possible. This worked very successfully with the City of Marysville and the City of Edmonds. The same occurred with the Team members from Seattle City Light.

As in any project attempting to develop anything new, whether device, equipment, equipment or process, there will always be naysayers, who will put up roadblocks, either in a physical sense ("can't be done") or in a psychological sense ("this is the way we do it because this is the way we've always done it and there is no need to change").

It is most important, in order to move the project in a positive manner, to allow these naysayers to have significant input, perhaps the most input and opportunity to critique and be a part of the creative process. Unless such folk are so completely set in their ways, even the most hard-boiled Utility Worker is more than pleased to voice his opinion to someone who will listen. A reason for such resistance may be because no one has listened before.

Open communication and open encouragement to participate must surely be the answer to such roadblocks.

The overall lesson learned to to keep the open communication imbedded into any project in which there are multiple participants, whether they embrace the project or not and at least proffer them respect and an opportunity to make their voice heard. This will help ensure a successful project.

Of course here may be other elements in play which would not encourage a complete embracing of the project, such as specific time schedules, emergency situation, understaffing in relation to everyday tasks needing attention along with a myriad of other typical business and municipal operations.

Fortunately this project has a number of participants, willing to donate their time and resources to further develop the Vault Safety Platform. All in all, each one of the participating partners benefited in some manner.

At the very least ALL of the team members are aware of such a tool as the Vault Safety Platform and its benefits in improving worker safety, task performance and overall department efficiency.

At the very least each of the participants, from Management to the Worker level know there exists means to prevent a catastrophic vault fall event as documented in the proposal.

Product Dissemination:

Outline of how the products of the project have been shared or made transferrable.

The deliverables of the project have been shared with all the City Utility Teams in both actual demonstration (during all the on-site evaluation sessions) and in the actual taking ownership of the final prototype Platform devices.

There is no better transfer of any technology or device other than to actually deliver an actual model or deice prototype to those interested andparticipting parties for their own evaluation, critique, development and hopefully future construction of a more refined device.

As they all have a vested interest in the project in both safety and task performance aspects, they will undoubtedly push the project forward at their own discretion and as time permits. Additionally by their own development stages, the project will undoubtedly be made available to other departments or even through to other utility / construction team who could place such a device in everyday usage. This is tantamount to ongoing and automatic dissemination.

It is also without reservation that any other entity desiring to develop a similar Platform can observe one in use and then take steps to develop their own. The heavy lifting in concept and development by the project team and the City Utility Teams has laid the groundwork for anyone to "take the ball and run."

The instruction sheet, specifications and other public documentation resulting from the project provides a good base for anyone or any entity to further develop the Platform device.

Feedback:

Provide feedback from participants, trainees, individuals who have used your products/processes, as well as any reports from an independent evaluator on the project.

Overall the feedback from the Utility Workers was very positive. The City of Marysville and City of Edmonds Utility Workers were most appreciative in being a part of the design team as it is generally a rarity for a Utility Worker to be asked for an opinion on equipment or processes for their essential tasks. As this project subject of safety and more efficient task performance was determined at the outset to "fly under the radar" for any utility department. The pre project proposal revealed the subject is generally buried under the need to handle day-to-day tasks and emergency situations.

Being asked for their specific input, especially by management was an obvious delight by the Workers who exhibited great enthusiasm and embraced the project.

At the final in-field evaluation / critique, the Utility Workers offered their final critique and when queried if they thought the final design was "workable." The answer was a definite positive, exemplified by eager requests to receive an evaluation prototype to take back to their respective shops.

Project's Promotion of Prevention:

Explain how the results or outcomes of this project promote the prevention of workplace injuries, illnesses, and fatalities?

The project outcome effectively addresses the two main points as expressed in the original problem statement. These address hazard and (catastrophic) worker injury prevention by 1.) Allowing safe and secure ingress and ingress from wide and deep utility vaults, currently have no or inadequate initial step handholds. 2.) Providing a safe working platform for both the topside worker and in-vault (underground) worker in lowering and raising equipment / tools for repair or replacement of equipment / structures contained in the vault. In this regard the Platform also serves as a device which can be custom modified by the Utility Teams to further enhance their working capability. This includes attachment of auxiliary equipment such as winches, lights, power supplies, gas monitors and the like, all which can be removeable or as some Workers suggested, permanently attached and in place with an instantaneous Platform set-up.

Eliminating these hazards as well as simplifying some task performances the overall safety of the Utility Worker is vastly improved.

Uses:

How might the products of your project be used within the target industry at the end of your project?

Is there potential for the product of the project to be used in other industries or with different target audiences?

How might the products of your project be used within the target industry at the end of your project?

As an actual 3-dimensional deliverable, the Platform prototype will undoubtedly be used by the City Utility Teams for testing, evaluations and (in their words) to further develop the concept to an everyday usage device. When the final design is developed and implemented from the delivered prototype, it will undoubtedly be an everyday tool to be used to increase hazard control, safety and improve task performance.

Is there potential for the product of the project to be used in other industries or with different target audiences?

The long term ramifications will be for additional Utility Teams in other cities, counties or states to become aware of the platform device and to either develop their own or find a means to secure one for their own use.

Organization Profile:

For awarded organizations, to include partners and collaborators, provide a brief description of each organization. Mission, vision, and purpose for each of the organizations who applied (this includes partners and collaborators) for the grant.

Design / Development (prototyping) Team

Ergonomics Inc. – Ian Chong, Managing Partner
5735 S. Hawthorn Rd
Annex
Seattle, WA 98118
Ph. 206.725,5757
Email – ian@ergoinc.com
Website – www.ergoinc.com

Mission:

To provide consulting services to all elements of businesses involving reduction of occupational injuries. To promote safe work environments allowing workers to perform work tasks without injury and at a high level of productivity.

Vision:

That all workers are supplied with tools, methods and knowledge enabling them to perform work tasks safely, with the specter of injury. That they are provided with the foresight to seek appropriate help or knowledge before inadvertently endangering themselves to a hazardous work condition.

Purpose:

To provide an easy understanding of high level of instruction and services enabling business organizations and individual workers the ability to address their own industrial injury issues, either through individual instruction, interaction, analysis or through a complete departmental or work team program to forecast and minimize industrial injury occurrences. To act as a resource enabling business entities to custom develop tools or methods required in the scope of injury reduction.

Participation:

Ergonomics design, Platform development and prototyping of Platform, safety applications and implementations

JBJ Associates – Jeff Johnson, Mechanical Design Engineer

6305 - 114th Ave SE
Bellevue, WA 98006
Ph.425.277.8014
Email - jbjassoc@comcast.net

Mission:

To provide engineering and manufacturing expertise for the implementation of special projects such as custom tools, equipment and new task methods, employing safety and productivity principles.

Vision:

That all injured workers would have access to the correct equipment and tools, enabling them to return or continue to a meaningful and rewarding career.

Purpose:

To provide a method by which injured or at-risk workers can resume their usual work tasks to an efficient and high performance level.

Participation:

Engineering design, development, prototyping and assembly of Platform units

Safety Specialty Services – Gordon Coffey – Safety Design Specialist

3811 -237 Pl SW
Brier WA 98036
800.214.7174
Email - mysafetyguy@comcast.net
Website – www.safetyspecialityservices.com

Mission:

Committed to helping business owners and managers create and sustain quality life in the workplace – where employees feel safe in their work – and employers feel confident their decisions will not cause injury or illness to their employees. Specializing in helping employers

who want better results from their safety programs and curtailing company profits expenditures on worker's compensation costs.

Vision:

Specialty Safety Services takes the position that occupational injuries and illnesses are controllable…that worker's compensation is a controllable cost… and the cheapest worker's comp claim is the one you never have.

That clients understand a solution is a total commitment. When a solution is offered there exists a commitment to make it work, not just someone going through the motions.

Most safety consultation focuses on educating employers on how to stay in step with fed OSHA and state WISHA. Known as compliance-based safety, it only treats symptoms.

Purpose:

The whole point is to go to the heart of the safety challenge by showing employers and supervision why employees are injured in the first place and to enable them to manage their safety programs so employees are motivated to make safe choices.

Our clients know that a solution is complex – not simplistic. It involves real-world experience, skills and wisdom. That's why a solution is never promised that cannot be delivered

Participation:

Participation - Platform & ladder design, applying specifically to WAC 296-155 standards and mitigating of overall fall hazards, including adherence to any ANSI standards as applicable. Safety & task performance advisement.

Partners

City of Marysville - Karen Latimer, Managing Partner
80 Columbia Ave,
Marysville, WA 98270
Ph.360.363.8161 Fax.360.658.4648
email - klatimer@marysvillewa.gov
website - www.marysvillewa.gov

Vision Statement:

"Marysville – Live, Work, Play". The vision is a simple statement that underscores our goal to be a full service, sustainable community that provides for residence, jobs and recreation.

Mission Statement: The City of Marysville partners with the community to provide quality, innovative and efficient municipal services, which promote economic growth, thriving neighborhoods, healthful living, and financial sustainability for our residents and businesses.

Participation – In kind participation with management, utility crews in all phases of development, critique, in-field testing and evaluation toward prototype development. Input provided to the design team allowed direction and concepts for the eventual prototype development and fabrication.

City of Edmonds – (state fund)

Mary Ann Hardie
Human Resources Manager
121 – 5th Ave N
Edmonds, WA 98020
Ph. – 425.771.0258

Vision Statement:

We Are:

- Committed to reducing crime and enhancing public safety and security.
- Dedicated to earning and maintaining the respect and confidence entrusted to us.

We Will:

- Treat all people with dignity and respect.
- Empower our employees to reach their maximum potential by providing them with knowledge, training, and mentorship opportunities.

Mission

We Strive:

- Through innovation, to adapt and evolve so that we may provide state of the art law enforcement services.
- To exercise our authority with unparalleled professionalism and humility
- We appreciate the support and trust our community has extended to us. It is our responsibility to uphold that trust. We strive to provide the highest quality law enforcement services to keep Edmonds the safe city that it is.

Participation –

In kind participation with management, utility crews in all phases of development, critique, in-field testing and evaluation toward prototype development. Input provided to the design team allowed direction and concepts for the eventual prototype development and fabrication.

City of Puyallup – (self-insured)

Sheri Thomas
Risk & Safety Manager
333 S. Meridian
Puyallup, WA 98371
Ph. – 253.841.5594
Email - Sheri@ci.puyallup.wa.us

Participation –

In kind participation with management, utility crews in all phases of development, critique, in-field testing and evaluation toward prototype development. Input provided to the design team allowed direction and concepts for the eventual prototype development and fabrication.

Additional Information

Project Type

- X Best Practice
- X Technical Innovation
- ☐ Training and Education Development
- ☐ Event
- X Intervention
- ☐ Research
- X Return to Work
- ☐ Other (Explain):

Target Audience: utility workers - safety professionals – municipal utility departments – private utility companies – construction companies

Languages: *English only*

Industry Classification (check industry(s) this project reached directly)

- ☐ 11 Agriculture, Forestry, Fishing and Hunting
- ☐ 21 Mining
- X 22 Utilities
- X 23 Construction
- ☐ 31-33 Manufacturing
- ☐ 42 Wholesale Trade
- ☐ 44-45 Retail Trade
- ☐ 48-49 Transportation and Warehousing
- ☐ 51 Information
- ☐ 52 Finance and Insurance
- ☐ 53 Real Estate and Rental and Leasing
- ☐ 54 Professional, Scientific, and Technical Services
- X 55 Management of Companies and Enterprises
- ☐ 56 Administrative and Support and Waste
- ☐ 55 M management and Remediation Services
- ☐ 61 Educational Services
- ☐ 62 Health Care and Social Assistance
- ☐ 71 Arts, Entertainment, and Recreation
- ☐ 72 Accommodation and Food Services
- ☐ 81 Other Services (except Public Administration)
- ☐ 92 Public Administration

Please provide the following information - *- (information may not apply to all projects)*

# classes/events:	
# hours trained	
# students under 18	
# workers	50
# companies represented	4
# reached (if awareness activities)	
Total reached	50

List, by number above, industries that project products could potentially be applied to.

22,23,55

Potential impact (in number of persons or companies) after life of project?

Hundreds of workers

Have there been requests for project products from external sources? yes

If Yes, please indicate sources of requests:

The City of Seattle upon learning of the Platform project, requested information and became interested in the project knowing it would benefit their utility workers. Notably, Seattle City Light and the Seattle Utility Group are the departments who work in vaults and would have high interest in the project. Through the City of Seattle Ergonomist (Kieth Osborm) the project was introduced to the Departments who also shared input, concerns and feedback in field tests as the project progressed. As the project wraps up and two final working models are to be left with the City of Edmonds and the City of Marysville, the developmental model of the Platform will be loaned to the City of Seattle for evaluation, critique and further development. Like the other municipalities, they will look to any benefits to be afforded their workers when they can actually see and have some "hands-on" experiences and evaluations of a three-dimensional tool.

PART II

Financial Information
Budget Summary

Project Title:	Vault Safety Platform		
Project #:	2015Y00299	**Report Date:**	31 July 17
Contact Person:	Ian Chong	**Contact #:**	206.725.5757
Start Date:	08 Jan 17	**Completion Date:**	31 July 17

1.	**Total original budget for the project**	$ 60,900.00
2.	**Total original SHIP Grant Award**	$ 60,900.00
3.	**Total of SHIP Funds Used**	$60,562.78
4.	**Budget Modifications (= or - if applicable)**	$
5.	**Total In-kind contributions**	$ 8,500
6.	**Total Expenditures (lines 3+4+5)**	$ 69,062.78

Instructions:

- Complete the Supplemental Schedule (Budget) form first (on the next page).
- The final report must include all expenditures from date of completion of interim report through termination date of grant.
- Indicate period covered by report by specifying the inclusive dates.
- Report and itemize all expenditures during specified reporting period per the attached supplemental schedule.
- Forms must be signed by authorized person (see last page).
- Forward one copy of the report to Anar Imin**, SHIP Grant Manager** at **PO Box 44612, Olympia, WA 98504-4612**

PART II *(Continued)*

Financial Information
Supplemental Schedules (Budget)

Project Title: Vault Safety Platform
Project #: 2015Y00299 **Report Date:** 31 July 17
Contact Person: Ian Chong **Contact #:** 206.725.5757
Total Awarded: 60,900

ITEMIZED BUDGET: How were SHIP award funds used to achieve the purpose of your project?

	Budgeted for Project	Amount Paid Out	Difference
A. PERSONNEL	20,000	28,200	(8,200)
Explanation for Difference and other relevant information: : Unused subcontractor budget was moved to personnel (managing partner) budget due to expanded roles and additional duties taken on by the managing partner and lesser duties by the subcontractors			

	Budgeted for Project	Amount Paid Out	Difference
B. SUBCONTRACTOR	25,000	21,400	3,600
Explanation for Difference and other relevant information: Unused subcontractor budget was moved to personnel (managing partner) budget due to expanded roles and additional duties taken on by the managing partner and lesser duties by the subcontractors			

	Budgeted for Project	Amount Paid Out	Difference
C. TRAVEL	900	570.56	329.44
Explanation for Difference and other relevant information: Mileage and travel required came under budget and original proposal stated the design team would not accrue travel time as part of the project (considered as the project teams in-kind participation)			

	Budgeted for Project	Amount Paid Out	Difference
D. SUPPLIES	15,000	10,492.22	4,507.78
Explanation for Difference and other relevant information: Materials required came under budgeted amount			

	Budgeted for Project	Amount Paid Out	Difference
E. PUBLICATIONS	0	0	0
Explanation for Difference and other relevant information:			

	Budgeted for Project	Amount Paid Out	Difference
F. OTHER	0	0	0
Explanation for Difference and other relevant information:			

	Budgeted for Project	Amount Paid Out	Difference
TOTAL DIRECT COSTS	60,900	60.662.78	237.22

	Budgeted for Project	Amount Paid Out	Difference
TOTAL INDIRECT COSTS			
	Budgeted for Project	Amount Paid Out	Difference
TOTAL SHIP BUDGET	60,900	60,662.78	237.22

	Budgeted for Project	Amount Paid Out	Difference
G. IN-KIND	$ 8,500	$ 8,500	0

Explanation for Difference and other relevant information:

Entire estimated overall project budget estimate was quite accurate considering all categories. Project activities and assignments were modified throughout as is normal for any development project and funds were modified and diverted to different project partners and subcontractors. Additionally the materials budget was slightly overestimated and due to streamlining the materials list, funds were also diverted to the participants allowing for a more complete project extending to participants outside the original listed public entity partners / collaborators

I hereby certify that the expenditures listed on this report were made with my approval:

10/20/2017

Date

Signature of Project Manager

PART III
Attachments:

Provide resources such as written material, training packages, or video/ audio tapes, curriculum information, etc. produced under the grant.

Supplied under separate cover

- Power point presentation illustrating the project through process timeline with photographic documentation
- End-user instructions for Platform usage, application & warnings

- Specification sheet for Platform usage and maintenance
- Hold harmless document for Utility Team Signature /Waivers