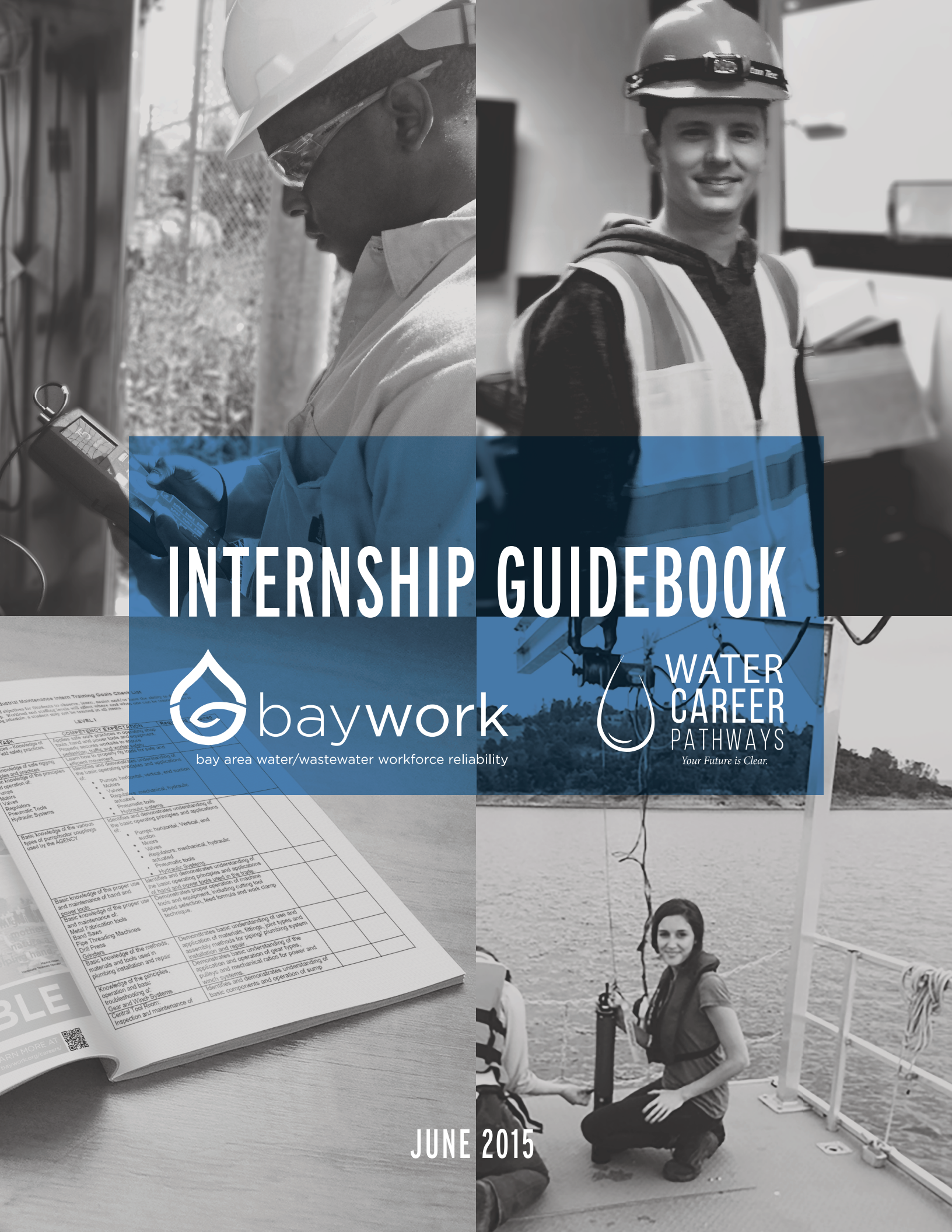




INTERNSHIP GUIDEBOOK



baywork

bay area water/wastewater workforce reliability



WATER
CAREER
PATHWAYS

Your Future is Clear.

Autoclave Maintenance Intern Training Goals Check List

Objectives for Students to observe, learn, assess and be able to perform the ability to:

Workload and training needs will affect where and when they can be trained in the field.

Log schedule, a student may not be trained in the field.

TASK	COMPETENCY EXPECTATION	Basic	Intermediate	Advanced
Knowledge of safe rigging practices and safety practices.	Applies safe work practices in operating shop tools, hand and power tools and equipment. Properly secures workloads to ensure load stability, traffic and safety.			
Knowledge of safe rigging practices and safety practices.	Learn how to properly rig tools for safe and efficient use.			
Knowledge of the principles of operation of pumps, regulators, pneumatic tools, hydraulic systems.	Identifies and demonstrates understanding of the basic operating principles and applications of the basic operating principles and applications of:			
Basic knowledge of the various types of pump/motor couplings used by the AGENCY.	• Pumps: horizontal, vertical, end suction • Motors • Valves • Regulators: mechanical, hydraulic, actuated • Pneumatic tools • Hydraulic systems			
Basic knowledge of the proper use and maintenance of hand and power tools.	Identifies and demonstrates understanding of the basic operating principles and applications of hand and power tools used in the trade.			
Basic knowledge of the proper use and maintenance of:	Demonstrates proper operation of machine tools and equipment, including cutting tool speed selection, feed formula and work clamp technique.			
Metal Fabrication tools				
Basic Saws				
Drill Press				
Grinders				
Knowledge of the methods, materials and tools used in plumbing installation and repair.	Demonstrates basic understanding of use and application of materials, fittings, part types and installation and repair.			
Knowledge of the principles, operation and basic troubleshooting of:	Demonstrates basic understanding of the application and operation of gear types, pulleys and mechanical ratios for power and speed selection.			
Gear and Wind Systems	Identifies and demonstrates understanding of basic components and operation of pump			
Central Tool Room				
Inspection and maintenance of				

JUNE 2015

Credits

Thank you for the invaluable input from all our contributors.

Contributors

City College of San Francisco
College of San Mateo
Contra Costa Water District
Dublin San Ramon Services District
East Bay Municipal Utility District
Foundation for California Community Colleges
Laney College
Los Medanos College
Marin Municipal Water District
Port of Oakland
Rodeo Sanitary District
San Diego County Water Authority
Santa Clara Valley Water District
San Francisco Public Utilities Commission
San José State University
Skyline College
Solano Community College
West Valley College

Water Career Pathways Consortium

The Water Career Pathways Consortium (WCP) mission is to provide a mechanism for effective communication between the water industry and the Consortium to support the advancement of career pathways. The program was developed based on the report performed by the California Community College Center of Excellence and the work of the water industry represented by BAYWORK in collaboration with Bay Area Community College Consortium to identify the needs for mission-critical careers within the industry.

Special thanks to Catherine Curtis, Co-Chair of the BAYWORK Candidate Development Subcommittee, for leading the initiative to develop the Internship Guidebook and for serving as the primary author of this report.

Introduction

The Internship Guidebook was designed, developed and published by BAYWORK with assistance from the Water Career Pathways Consortium.

BAYWORK

BAYWORK is a consortium of water/wastewater agencies and stakeholders with a shared commitment to workforce reliability. We know that our most important asset is our staff and that we can only meet our responsibilities to customers and the environment if they are qualified, knowledgeable, and prepared. The BAYWORK Strategic Roadmap, shown in Figure 0.1, supports operational reliability through workforce preparedness. More information about BAYWORK can be found at baywork.org. The publication of this Internship Guidebook advances our goal of developing qualified candidates for mission-critical jobs.



Figure 0.1: BAYWORK Strategic Roadmap

Table of Contents

A. Overview and Lessons Learned

Section 1: Why Internships Are Important

Section 2: The Purpose of this Guidebook

Section 3: Data Collection Methodology

Section 4: Common Practices

Section 5: Lessons Learned

Section 6: Conclusions

B. Information from Research Participants

1. Utilities

1-A: Contra Costa Water District

1-B: Dublin San Ramon Services District

1-C: East Bay Municipal Utility District

1-D: Marin Municipal Water District

1-E: Port of Oakland

1-F: Rodeo Sanitary District

1-G: San Diego County Water Authority

1-H: San Francisco Public Utilities Commission

1-I: Santa Clara Valley Water District

2. Educational Institutions

2-A: City College of San Francisco

2-B: College of San Mateo

2-C: Foundation for California Community Colleges

2-D: Laney College

2-E: Los Medanos College

2-F: Skyline College

2-G: Solano Community College

2-H: West Valley College

Section 1: Why Internships Are Important

Internships are opportunities for students to enhance their classroom learning by obtaining practical real-world work experience. These programs can be found in corporate and private businesses, nonprofit organizations, and government agencies.

Just as BAYWORK is a collaborative of water and wastewater agencies coming together to work on shared concerns with workforce issues, internships require collaboration between educational institutions, utilities, and in some cases, non-profit agencies to be successful. We need to work together to create meaningful curricula, on-the-job experiences, and structured programs that help prepare students for their transition from students to employees. Creating career pathways through internships and apprenticeships, and collaborating with educational institutions are in the water/wastewater industry's best interests, because our operational reliability depends on having an ample pool of qualified candidates for mission-critical jobs.



Figure 1.1: East Bay Municipal Utility District intern gaining hands-on experience with a journey-level Instrument Technician.

In 2011, the Harvard Graduate School of Education issued *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century*. The report contended that the current educational system is too focused on preparing young people to enroll in four-year college programs to receive a college degree right after high school rather than considering other options offered in post-secondary pathways to careers that might work for many students. These post-secondary pathways include vocational training for trades that are critical for the water and wastewater industry, such as instrumentation technicians and machinists. The research supports the positive and significant relationship between vocational training, internships, and career success. One of the major conclusions in the report is that, "most young people learn best in structured programs that combine work and learning, and where learning is contextual and applied." The Pathways to Prosperity Report can be found online:

<http://dash.harvard.edu/handle/1/4740480>.

In the 1980's, many of our programs that educated high school students for trades (e.g. machine shop) were discontinued because of the myth that permeated our society that a four-year college degree was the only desirable pathway to upward mobility. Additionally, after the Clean Water Act went into effect in the 1970's, the water/wastewater industry hired many people to perform secondary treatment to meet the new regulations. Since staff turnover was low in the water/wastewater industry for decades, candidate development was not a significant concern. However, the water/wastewater industry is now experiencing retirements and staff turnover, coupled with an inadequate supply of qualified candidates for mission-critical jobs. This inadequate supply of qualified candidates results from several factors:

- Lack of student awareness of mission-critical career paths
- Lack of strong basic skills from graduating students
- Lack of vocational training opportunities
- Increasingly more technical and complex jobs that require more specialized skills

A collaborative approach is required to establish career pathways for high school and community college students that meet the challenges we face in our industry.

Benefits of Internships

As baby-boomers retire, coupled with the shortage of qualified candidates in the water/wastewater industry, the benefits of internships to the water and wastewater industry becomes more apparent. Building career pathways to supply our industry with trade workers and engineers will provide crucial operational reliability. If we do not do this, the risk to our agencies is operational failure which impacts public health, the environment, agency budgets, and the well-being of our communities.

Figure 1.2: Santa Clara Valley Water District interns learning how to collect water quality samples on a reservoir.



Students also energize a workplace with their enthusiasm, desire to learn, as well as bringing new skillsets with them, such as social media. Students provide immediate assistance to support projects and routine work, enabling staff to perform higher priority work.

The benefit of creating career pathways for students to our mission-critical jobs (trades and engineers) is also significant. Most of these jobs are hands-on and the only way for students to get real-world experience is through opportunities that provide access to work environments in which they can practice building new skills and learn from others in the field. This also gives interns access to work cultures and requires them to develop norms of conduct and behaviors that are essential to be successful at work. Other benefits to students include:

- Opportunities to explore career avenues
- Opportunities to apply knowledge and skills in a professional setting
- Opportunities to gain practical knowledge
- Valuable work experience for their resumes
- Increased self-confidence
- References from co-workers and supervisors
- Potential to earn academic credits
- Certifications that could lead to stackable credentials to further their education

Section 2: The Purpose of this Guidebook

The purpose for writing this guidebook is to encourage and increase partnerships between schools, utilities, and community-based organizations (CBOs) as well as expand the number and diversity of internships. This guidebook provides helpful information on how to implement internships that are effective for students, educational institutions, and water/wastewater utilities. William Symonds wrote in the conclusion in the *Pathways to Prosperity* report,

“If we could develop an American strategy to engage educators and employers in a more collaborative approach to the education and training of the next generation of workers, it would surely produce important social as well as economic returns on investment.”
(Ferguson, Schwartz, and Symonds 38)

This will require focused collaboration between high schools, community colleges, water/wastewater utilities, and in some cases non-profit agencies to provide wrap-around services such as job coaching for youth. This guidebook provides not only detailed information about the models, criteria, and tools in successful internship programs, but also overall lessons learned that can be applied by a variety of utilities and educational institutions.

Many water and wastewater utilities in the Bay Area have internship programs. The purpose and structure of these programs vary. Examples of different programs are in the appendices of this guidebook with detailed descriptions of the program components, recruitment strategies, lessons learned, and outcomes. Materials from the internship programs are also included to provide samples and ideas that can aid the development and design of new internship programs. There are also questionnaires profiling successful leaders and trades people that started as interns in their careers. In these questionnaires former interns describe how the internships shaped their career path. Additionally, the appendices contain information from educational institutions that detail their internship programs with examples of documents, processes, rubrics, handbooks, and more.

The lessons learned, best practices, and sample program material provided in this guidebook can serve as a model for utilities and educational institutions looking to create or further develop collaborative internship programs.

Section 3: Data Collection Methodology

Develop Questionnaires to Collect Data

In order to gather data about existing internship programs the Internship Guidebook Committee developed questionnaires to capture both the details of the programs and the lessons learned from the programs. In total, three questionnaires were developed and each questionnaire was tailored to address the intended audiences: employers, educational institutions, and former interns. All questionnaires were reviewed and revised by the Internship Guidebook Committee. Special attention was given to ensure feedback was received from the intended audience of each questionnaire (i.e., staff from local community colleges reviewed the Educational Institution questionnaire). The three questionnaires are included in the appendices for reference.

Distribute Questionnaires

The Internship Guidebook Committee identified utilities within California that employ interns. The committee intentionally included utilities with highly established internship programs as well as utilities with developing internship programs. The Career Water Pathways Consortium helped identify educational institutions that promote or facilitate placement of students in internship programs. The questionnaires were distributed to the identified utilities, educational institutions, or non-utility employers with internship programs. Completed questionnaires were collected from a portion of the organizations contacted. Table 3.1 lists the organizations that provided information about their internship program.

Table 3.1: Internship Guidance Manual Contributors

Employers	Educational Institutions
Contra Costa Water District	City College of San Francisco
Dublin San Ramon Services District	College of San Mateo
East Bay Municipal Utility District	Foundation for California Community Colleges
Marin Municipal Water District	Laney College
Port of Oakland	Los Medanos College
Rodeo Sanitary District	Skyline College
San Diego County Water Authority	Solano Community College
San Francisco Public Utilities Commission	West Valley College
Santa Clara Valley Water District	

In addition to completing the questionnaire, each organization was asked to provide samples of developed program materials. Developed program material include some of the following: internship advertisements, applications, interview selection process, intern job descriptions, sample calendar of activities, and exit surveys. Each

utility was also offered the opportunity to spotlight a former intern from their organization who went on to have a successful career in the industry.

When requested, interviews were conducted to collect the internship program data. The questionnaire was then completed by a committee member based on the information gathered from the interview. If an interview was conducted, the completed questionnaire was re-circulated to the organization for verification of accuracy and permission to print in the manual.

Additional Research

The Career Water Pathways Consortium provided relevant internship-related research and resources for the Internship Guidebook Committee to review and analyze in preparation for writing this document. These resources are listed in the bibliography.

Section 4: Common Practices

After reviewing the information provided by employers and educational institutions regarding their internship programs, a list of common practices has been compiled. Table 4.1 and Table 4.2 identify the commonalities among the internship programs that were studied.

Among utility internships, common practices include:

- **Liability assigned to third party** – A third party hires the interns and covers any liability concerns, thus simplifying the hiring process for the utility.
- **Paid interns** – Interns receive monetary compensation for their work.
- **Orientation** – Interns participate in a formal orientation at the beginning of the internship.
- **Tours** – Interns participate in a tour of the facilities at the beginning of the internship.
- **Safety training** - Interns participate in safety training at the beginning of the internship.
- **Performance or learning objectives** – Interns are given a list of clear performance or learning goals to achieve during the internship.
- **Mentors assigned to intern** – Interns have an assigned mentor who offers guidance and support.
- **Partnered with educational institutions** – The employer is partnered with an educational institution which can allow student interns to receive college credits for their employment, educational instruction that aligns with their internship and additional resources to aid the student intern.
- **Rotational schedule** – Interns rotate job assignments throughout the course of the internship to diversify the training provided.
- **Work performance evaluation at the internship conclusion** – Supervisors provide interns with performance evaluations at the conclusion of the internships.
- **Post-internship employment opportunities** – Interns may be hired on as full-time staff after the internship if there is an open position and the intern is qualified.
- **Skilled trade(s) emphasis** – Internship program emphasizes training for a skilled trade or trades.

Table 4.1: Utility Internship Commonalities

	Contra Costa Water District	Dublin San Ramon Services District	East Bay Municipal Utility District	Marin Municipal Water District	Port of Oakland	Rodeo Sanitary District	Santa Clara Valley Water District	San Diego County Water Authority	San Francisco Public Utilities Commission
Liability assigned to 3 rd party		✓	✓				✓	✓	
Paid interns	✓		✓	✓	✓		✓	✓	✓
Orientation	✓	✓	✓		✓		✓	✓	✓
Tours	✓		✓		✓		✓		✓
Safety training	✓		✓	✓			✓	✓	✓
Performance or learning objectives	✓	✓	✓	✓		✓	✓	✓	✓
Mentors assigned to intern	✓		✓	✓			✓	✓	
Partnered with educational institution		✓	✓		✓	✓	✓	✓	✓
Rotational schedule			✓			✓		✓	✓
Work performance evaluation at internship conclusion	✓	✓		✓	✓		✓	✓	✓
Post-internship employment opportunities	✓	✓	✓	✓	✓	✓	✓	✓	✓
Skilled trades emphasis			Maintenance, Operations, and Instrumentation Workers			WW Operator	Engineering, Biology, Administration	Plant Operators	Stationary Engineers

The educational institution internship commonalities are shown in Table 4.2. Among educational institutions the commons practices include:

- **Hire internship coordinator** – An internship coordinator is assigned to handle the administrative affairs of the internship.
- **Advertise recruitment at college** – Internship opportunities are advertised at the educational institution via posted flyers, online job boards, classroom announcements, etc.
- **Advertise recruitment at other venues** - Internship opportunities are advertised at locations outside of the educational institution.
- **Assist students with internship applications** – Educational institutions provide assistance for students looking for internships and/or completing the application process.
- **Track intern success** – Educational institutions keep statistics of students hired after their internship and/or other career path statistics.
- **Utilize industry partners** – Educational institutions form partnerships with industry employers to support internship programs for their students.
- **Utilize water and wastewater partners** – Educational institutions form partnerships with water and wastewater agencies to support internship programs for their students.

Colleges can contribute to successful internships by offering course credits to student interns. The Foundation for California Community Colleges (“The Foundation”) is the official technical assistance provider for the California Community Colleges Chancellors Office, under the “Doing What Matters for Jobs and the Economy” framework. The Foundation offers a payroll service to employer partners, becoming the employer-of-record for student interns and takes on the risk and liability of hiring an employee handling human resources and payroll functions including workers’ compensation. For utilities that have complex hiring practices, going through a third party like the Foundation could be a valuable resource. The Foundation has been identified as a best practice and included in Table 4.2; however, because they are a supporting partner rather than a community college, only one check appears in their column.

Table 4.2: Educational Institution Internship Commonalities

	City College of San Francisco	College of San Mateo	Foundation for CA Community College	Laney College	Los Medanos College	Skyline College	Solano Community College	West Valley College
Hire internship coordinator			.		✓	✓	✓	✓
Advertise recruitment at college	✓	✓	✓	✓	✓	✓	✓	✓
Advertise recruitment at other venues				✓	✓	✓	✓	✓
Assist students find or apply for internships	✓	✓		✓	✓	✓	✓	✓
Track intern success	✓				✓	✓		✓
Utilize industry partners	✓	✓		✓	✓	✓	✓	✓
Utilize water and wastewater partners		✓		✓	✓		✓	

Section 5: Lessons Learned

Data collected from the employers, educational institutions, and former interns was analyzed and current literature about workforce and training for internship programs provided by the Water Career Pathways Consortium was reviewed. Committee members participated in a work session to determine how to consolidate the resulting data analysis and literature review into an actionable document. As a result, the five distinct themes presented in this section emerged. Best practices from the agencies that contributed to the manual are woven in as examples to support the lessons learned.

- 1. Begin with clarity about what you want interns to learn, so that it can be incorporated in the selection process, orientation and on-boarding process, mentoring and supervision, and evaluation of the individual intern's success, and the process as a whole.**

Examples:

- i. The East Bay Municipal Utility District (EBMUD) internship announcement clearly lists the qualifications and skills required to apply for the internship position so that they recruit only interns who possess the required skillset to meet the desired learning goals. The desired learning goals impact the tours given during orientation, the expectations outlined with the mentors, and the evaluation given at the end of the internship.
- ii. At the Contra Costa Water District (CCWD), learning objectives are well integrated in the onboarding process. The onboarding process clearly defines the intern's roles, goals, responsibilities, and tasks at the beginning of the internship. CCWD found that it is important to be clear about expectations and to provide regular feedback throughout the internship process to ensure that the desired learning goals are met. The exit interview also helps interns summarize what they have learned and update their resumes appropriately.
- iii. The San Francisco Public Utilities Commission (SFPUC), Wastewater Enterprise (WWE) community benefit 9910 training program has an announcement that outlines specific skills and knowledge to be learned as well as screening tests to recruit the most qualified candidates to match the learning objectives. The program has an extensive orientation with safety training and tours, as shown in Figure 5.1. Site supervisors provide interns with Learning Skills Assessments (LSA) where skills and levels of competencies are defined. Both supervisors and trainees receive these defined LSAs and a resource binder. Field tests are conducted to ascertain if the learning objectives are being met and soft skills are assessed by the field supervisor. In essence, all aspects of the program reflect the desired intern learning objectives.



Figure 5.1: San Francisco Public Utilities Commission 9910 training program participants working at the Southeast Treatment Plant.

- iv. Rodeo Sanitary District (RSD) only receives interns who are enrolled with Solano Community College and have completed enough educational units to obtain the Operator-In-Training Certificate (OIT) from the California State Water Resources Control Board (SWRCB). RSD gears their internship program for operators and have a 93% success rate in placing the intern in a full-time position with another public agency within the 1,800 hours required to become a certified operator with the SWRCB.
- v. The Santa Clara Valley Water District (SCVWD) strives to reach a large and broad audience when advertising their internship positions and thus utilizes the broadcasting capabilities of CalOpps. CalOpps is a public employment job board owned and operated by public agencies. Interested candidates can search current public agency career opportunities on CalOpps. The internship advertisement is also posted on SCVWD's website, the BAYWORK website, social media, and at selected colleges.
- vi. The City College of San Francisco (CCSF) hopes to provide students with specific, hands-on learning experiences that complement the classroom curriculum. Therefore, students are informed by instructors and academic advisors of internships, among other methods. The targeted recruitment allows students with the specific skillsets required for the job to be considered. Advertising internships in the classroom is a recruitment best-practice method that produces strong candidates and good partners.
- vii. At Dublin San Ramon Services District (DSRSD), the operational supervisor teaches classes at Bay Area Consortium of Water and Wastewater Education (BACWWE) and informs students about internship and career opportunities. The DSRSD also partners with Solano Community College (SCC) and targets their recruitment efforts to students in the SCC Regional Occupation Program (ROP).

2. Investigate options for administering and paying interns that streamlines the process

Compensation to interns can come in the form of paid internships (stipends), academic credits, or a combination of both. It is in the interest of the utility to have paid internships to attract the highest number of candidates and the highest caliber of candidate. Additionally, the Fair Labor Standards Act (FLSA) has six criteria that an employer must meet in order to have an unpaid intern, while paid internships do not need to worry about following these six criteria, which is beneficial. (More information can be found on fact sheet #71, stored [here or by typing the link: http://www.dol.gov/whd/regs/compliance/whdfs71.htm](http://www.dol.gov/whd/regs/compliance/whdfs71.htm).) The use of a third party agency to hire, pay, and cover workers' compensation for the interns can alleviate the burden on the employer and streamline the administrative process.

Examples:

- i. Santa Clara Valley Water District (SCVWD) hires their summer interns through a temporary employment agency.
- ii. The East Bay Municipal Utility District (EBMUD) adopted a hybrid employment approach, working with a College Foundation and a Cooperative Education Program. The College Foundation pays the interns a stipend and the Cooperative Education Program provides workers' compensation insurance coverage. Since EBMUD does not pay the interns directly, the interns receive a higher wage, despite the foundation's 5% fee. The Cooperative Education Program also provides students with units for their time. In addition, EBMUD partners with Laney Community College to help interns get National Institute for Metalworking Skills (NIMS) certification.
- iii. Dublin San Ramon Services District (DSRSD) has partnered with Solano Community College (SCC) and a local Regional Occupational Program (ROP) to address liability issues associated with having interns on-site.

3. Provide as much hands-on experience as possible, especially for skilled trades.

This is exemplified in these programs:

- i. During the three-year San Francisco Public Utilities Commission (SFPUC) 9910 program, trainees are rotated every four months to maintenance, operations, lab, and some specialty operations to give opportunities to qualify for lab, labor, or operator positions at the end of the training. These interns get experience between two treatment plants to further develop their skills.

- ii. Los Medanos College interns have a work-study program in which students can earn semester credit units for hands-on experience in the field. Students are supported by both a faculty member and their work-site supervisor as part of this objective-based learning. They complete a Cooperative Work Experience Educational and Internship Evaluation of Student Workplace Competencies Form which rates soft skills in addition to the trade skills they learn. The San Francisco



Figure 5.2: Los Medanos College instrument and control technician interns working at

Public Utilities Commission (SFPUC) currently hosts two Los Medanos College interns for 40 hours each week so that the interns get experience in the field doing basic tasks and learning more sophisticated process tasks.

- iii. At the San Diego Regional Water Authority, interns receive a one week orientation and rotate for 8 weeks at a time to system operations, system maintenance, water treatment, and wastewater treatment. Interns work 20 hours-per-week and are concurrently enrolled in the cooperative education course, Regional Water/Wastewater Internship at either Cuyamaca College or Palomar College.



Figure 5.3: San Diego Regional Water Authority former intern getting hands-on experience.

- iv. The East Bay Municipal Utility District (EBMUD) rotates interns between water and wastewater sites. The summer internship program is limited in time (6-10 weeks). This limited time creates a challenge to the intern to receive enough experience-based learning to qualify for full-time positions.

Figure 5.4: East Bay Municipal Utility District intern performing preventative maintenance on the recycled water system.



4. Select strong mentors and provide them with the support needed to be successful.

A good mentor can be identified by the follow characteristics:

- A mentor has greater experience than the intern and a track record of success in the field of study
- A mentor is able to communicate clearly, actively listen, give appropriate projects to pursue, and help troubleshoot problems as they occur
- A mentor is honest and will tell the intern the truth
- A mentor fosters collaboration and ensures interns are making progress toward their stated goals and objectives
- A mentor gives interns feedback on work performed in a constructive and timely manner
- A mentor encourages intern's participation in career-building activities such as taking lab samples and technical writing
- A mentor introduces interns to others in the field and suggests ways to develop professionally, whether that means going to networking events (i.e., CWEA Conferences or BAYWORK Workshop on Wheels) or reading relevant material of the field of work

Examples from internship programs that provide a good model for mentoring include:

- i. The Santa Clara Valley Water District (SCVWD) has a mentor-training program to properly equip each mentor for their role. In addition, each intern is assigned a manager as well as a mentor. Each intern designs a learning plan with their mentor to ensure expectations are clear for both the student and the mentor. See the sample learning plan in the appendices.

- ii. San Francisco Public Utilities Commission (SFPUC) Project Pull provides professional mentorship to highly-motivated, promising high school students from the diverse communities within San Francisco. The students intern with full-time City employees from various City departments. By pairing young people with professional employees in the fields of architecture, business, engineering and science, with the goal of instilling a sense of responsibility and civic pride, Project Pull teaches participants the skills they need to be successful in the future.
- iii. The East Bay Municipal Utility District (EBMUD) hand selects good role models for interns and provides them with behavioral guidelines. A goals checklist is provided to supervisors, mentors and interns on the first day.
- iv. San Diego Regional Water Authority assigns a mentor to each of the four modules in their program that include system operations, system maintenance, water treatment and wastewater treatment. The mentors are responsible for conducting safety training specific to the module they are participating in, providing guidance to the intern relative to work and jobsite conduct training to enhance the intern skills. When the module is completed, they provide interns with a written evaluation and recommendation for rotation to the next module. The mentors share their evaluations with the intern with the goal of increased performance as they move through the modules. A side benefit to the host agencies is the opportunity for mentors to develop skills in leadership and mentoring.

5. Partner with educational institutions and community based organizations (CBOs) to help transition students from academic careers to industry work and provide the wrap-around services to the students engaged in the internship program.

Examples of educational institutions and community based organizations include:

- i. Solano Community College (SCC) provides soft skills and job readiness training courses for their students to equip them for the workplace. SCC also provides course credit for students in internships and requires that students enroll in a course that develops occupational soft skills. The SCC student handbook can be found in the appendices.
- ii. Jewish Vocational Services (JVS), a community based organization, offers wrap-around services to the Tech 21 Program at John O'Connell High School. The JVS staff help the high school students apply for internship programs available to them, escort the students to college vocational training programs and guide them to sign up for their first semester, help with logistics for travel if needed, identify resources to help students overcome personal challenges they face such as transportation or peer pressure and so much more. JVS can also offer oversight of activity and direct and/or counsel students on next steps in their process to reach their identified goals.

Section 6: Conclusions

Increasing the amount of internships offered and strengthening the current internship offered to students pursuing mission-critical career paths may be challenging. Some of the anticipated challenges include, but are not limited to, the following:

- The need for utilities to develop new programs, resources, and skills.
- The need to build new partnerships between organizations with different priorities, resources, and perspectives:
 - Educational Institutions (high schools and community colleges)
 - Industry
 - Non-governmental organizations (e.g., community non-profits)
- Identifying budget and people resources to be used to build the programs in utilities including subject matter experts' time to advise educational institutions on what skills are needed.
- Acquiring grants and resources for educational institutions to focus on collaborating with industry and building curriculum and programs that focus on practical application of skills within the water and wastewater industry.
- Implementing internship programs for the first time and learning from mistakes while adopting continual improvement processes for these programs.

Overcoming these challenges will be instrumental to successful development of internship programs. In order to provide interns with hands-on training that aligns with their academic goals and results in the acquisition of skills that are invaluable to utilities, it is imperative to increase internship partnerships between utilities, educational institutions, and community-based organizations. The synergy of collaboration and communities of practice like BAYWORK offer many opportunities to think through the challenges and give the chance for all stakeholders to participate.

BAYWORK has recognized the need to support the creation of hands-on internships in mission-critical job categories and in such manner, has already done the following:

- **Hosted an annual S.T.E.M. (Science, Technology, Engineering, and Math) Career Fair** – Started in 2014, this annual career fair, has provided a forum for students to connect with employers in the water and wastewater industry who offer internships in mission-critical job categories.
- **Hosted a How-To Workshop on Successful Internships** – The workshop, held in January 2014, brought together agencies and community college professionals to share lessons learned from successful internship programs and brainstorm ideas for improvement.

- **Developed a Jobs and Internships Board on BAYWORK website –**
Located on the BAYWORK website, at baywork.org/jobs, the Jobs & Internships board contains information on current openings in mission-critical job categories in water/wastewater agencies. Participating agencies posting these openings make every effort to provide accurate and up-to-date information on these positions, which are open to all qualified applicants.

To further support the development of hands-on internships in mission-critical job categories and to develop candidates for the future water/wastewater work force, BAYWORK is planning to accomplish the following:

- Continue hosting the BAYWORK S.T.E.M. Career Fair to allow students to visualize a career path in the water/wastewater industry and connect with employers who offer internships and full-time jobs in mission-critical job categories.
- Facilitate a networking workshop with educators and utility staff to encourage implementation of effective internships.
- Support for creation of curriculum materials that help students prepare for mission-critical jobs.
- Publish a How-To Guide on supporting the development of contextualized learning materials. Contextualized learning materials will allow students to engage in STEM classroom learning while both providing context for why math and science skills are imperative to a career in the workforce and provide students a better understanding of career paths in the water/wastewater industry.
- Host a workshop for educators and industry professionals that highlight developed contextualized learning materials and outline the process for developing contextualized learning materials.
- Begin design, in collaboration with the WCP Consortium, on a micro-website for students.
- Begin design, in collaboration with WCP Consortium, on a micro-website to help teachers and career counselors find useful resources and curriculum materials.

To get involved with BAYWORK and the initiatives that support the development of hands-on internships in mission-critical job categories, please visit baywork.org.

Bibliography

Many references were reviewed in preparation for this Guidebook. These resources included sample documents such as FAQ's, internship position posting, sample job descriptions, interview questions, internship offer letters, program schedules, commitment agreements, host agreements, learning objective samples, orientation checklists, internship attendance agreement form, work plan templates, intern performance evaluations, and feedback forms. The resources included the following:

- The Pathways to Prosperity Report: Meeting the Challenge of Preparing Young Americans for the 21st Century, Harvard Graduate School of Education, William C. Symonds, Robert B. Schwartz and Ronald Ferguson
- The Career Pathways Movement: Challenges and Opportunities, Bob Schwartz
- Education for Upward Mobility; Career Pathways: A Route to Upward Mobility, Robert Schwartz and Nancy Hoffman
- The Pathways to Prosperity Network: A State Progress Report, 2012 – 2014
- Silicon Valley Internship Summit 2014
- Internship Guide for Employers from The Career Center, USFSP
- Student Internship Program Guide from State of California
- Internship: An Employer's Guide to Developing an Internship Program, Career Center University of Notre Dame
- Manual for the Internship Supervisor: Internship to Industry Lifelong Learning Program
- San Diego Region Water/Wastewater Internship Program Fall 2012 Paid Internship Program
- EPA: A Selection of Training Programs for Water and Wastewater Operators
 - o Alaska Job Corps Water and Wastewater Operator Training
 - o Apprenticeship Carolina – South Carolina Technical College
 - o City of Groton Water Pollution Control Authority Summer Internship Program
 - o East Bay Municipal Utility District Mentorship Program and Operator Internship Program
 - o Environmental Engineering Technology Water and Wastewater Degree – Cincinnati State Technical and Community College
 - o Get Into Water Program – Water Utility Science Program/Water Quality Management – Coursework approved by the State of Colorado
 - o Hampton Roads Sanitation District Apprenticeship Program – Virginia Community College Program

- o Kentucky Water Training Institute – Western Kentucky University
- o Massachusetts Department of Environmental Protection (MassDEP) Green Jobs Training and Placement Partnership
- o New Jersey Department of Environmental Protection – Licensed Operator Internship Program
- o Operator in Training Committee of Ohio Water Environment Technician Program
- o San Jose Company Summer Laborer Program
- o Southern Illinois University Edwardsville One-Year Water Quality Control Operations Certificate Program
- o Technical High School Programs in Texas: Technical high school entry-level water and wastewater operator training programs in Irving and Waco, TX

Works Cited

Ronald Ferguson, Robert Schwartz, and William Symonds, *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century* (Cambridge, MA: Harvard University Graduate School of Education, February 2011),
[http://dash.harvard.edu/bitstream/handle/1/4740480/Pathways to Prosperity_Feb2011-1.pdf?sequence=1](http://dash.harvard.edu/bitstream/handle/1/4740480/Pathways_to_Prosp erity_Feb2011-1.pdf?sequence=1).

Robert Schwartz and Nancy Hoffman, *Education for Upward Mobility: Career Pathways, A Route to Upward Mobility*, Prepared for the Thomas B. Fordham Institute's Education for Upward Mobility Conference, December 2, 2014.