Communication Is King

Effective public outreach helps ensure public support for construction of a pump station in a residential neighborhood

Craig J. Smith, Heleana Galvan, and Agustin Lopez

When County Sanitation District 1 (CSD-1; Rancho Cordova, Calif.) needed to construct a new pump station and force main in Fair Oaks, Calif., a residential suburb in eastern Sacramento County, the project team was concerned about possible objections from the local community. The team particularly was concerned because the area is almost fully developed, with no vacant parcels available adjacent to the existing trunk sewer. Although a small area within a large apartment complex nearby provided an option, acquiring the land would require skill and finesse. More importantly, however, the team realized that public acceptance would be crucial to the success of the Madison Avenue Pump Station Project.

By reaching out to the community and addressing their concerns, the team succeeded in garnering support and helped ensure that no significant complaints or requests for design changes arose. During the course of the project, the team discovered that the outreach efforts provided valuable input to the project's design and construction phases and reduced costs.

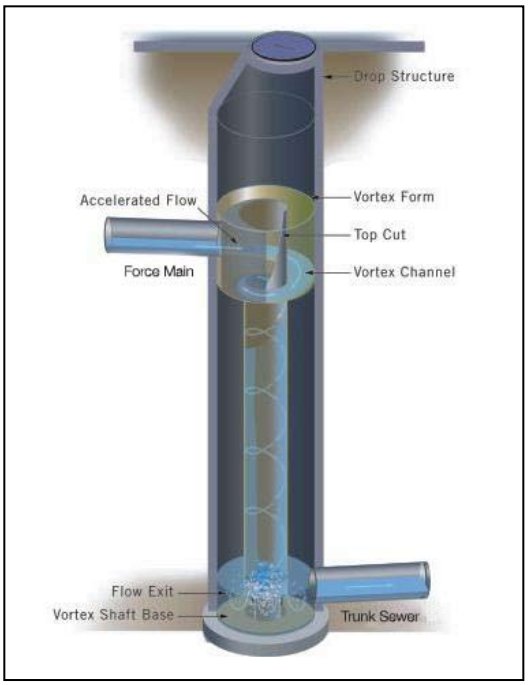
CSD-1 is an independent agency that provides wastewater collection for the unincorporated areas of Sacramento; the cities of Citrus Heights, Rancho Cordova, Elk Grove; and parts of the cities of Folsom and Sacramento. The team assembled to oversee and conduct the project comprised representatives of CSD-1 and the consulting engineering firm MWH Americas Inc. (Broomfield, Colo.), which was hired by CSD-1 to design the pump station, prepare plans and contract specifications, assist with bidding and the contract award, and provide engineering assistance during construction.

Previous computer modeling of CSD-1's sewer network had identified deficiencies in this neighborhood in Fair Oaks. The model predicted a possibility of overflows during periods of heavy rain, and the new pump station was designed to address these deficiencies.

Initially, the project team looked into several alternatives, but all proved to be more expensive because of the limited availability of land. All other options would have to be located farther downstream, necessitating greater pipeline lengths. Furthermore, the alternatives would have required conducting construction throughout a larger area, affecting more residents.

It was important to communicate the design intent to project stakeholders. Therefore, a basis of design report was developed to identify clearly all design concepts and assumptions, including preliminary engineering calculations, site plans, pipeline alignments, equipment selections, permit requirements, cost estimates, and schedules. Supplemental design changes were tracked in a decision log included in the minutes of the design team's meetings.

©2006 Water Environment Federation All rights reserved



COURTESY MWH AMERICAS INC.

A vortex device is a good solution for dealing with a large drop from force main to trunk sewer. It maintains particulate suspension and prevents odor creation. Moreover, the swirling flow creates an air vacuum that draws odor downstream.

Controlling Odors, Addressing Concerns

Because the pump station and force main were located in residential areas, odor control was a big concern to many people. The design included several measures to control odors. For example, a large carbon air scrubber was installed at the new pump station. The scrubber was sized to process the wet well volume plus several hundred feet of upstream sewer. The air-exchange rate was increased to improve air quality in the neighborhood. All manholes within the project area were fitted with carbon inserts to help reduce odors that may rise to the surface. CSD-1 has a maintenance agreement with the scrubber manufacturer for all odor-control equipment. This arrangement helped reassure many stakeholders that odor control would continue to be addressed in the future.

Most force mains have valves at high points to release air that accumulates in the pipeline. This arrangement can create a localized odor problem in a neighborhood. The air-release valves on the Madison project were vented to the adjacent gravity sanitary sewer, rather than directly to the atmosphere. The gravity sewer has a moving volume of air that will dissipate any force-main discharges more quickly. A force main's discharge point is often a primary source of odor. Flows exiting a force main and entering a gravity system can "burp," releasing odors. On the Madison project, the transition from force main to gravity sewer was designed to avoid creating a hydraulic jump by adjusting the pipeline slope.

The final discharge point for the pump station flows is the existing trunk sewer. The elevation difference between the force main and trunk sewer is more than 30 ft (9 m). Several problems can occur with a drop of this magnitude, including loss of particulate suspension and odor creation. A good method of conveying wastewater flows downward is through a vortex device. The vortex device moves flows in a swirling manner to the lower elevation. The device also creates an air vacuum that draws odors downstream into the trunk sewer, away from the neighborhood.

One concern that arose during the initial design phases came out of discussions with the owners and residents of the apartment complex adjacent to the proposed pump station site. Although most pump station components would be located below ground, a few items of equipment, such as the standby power generator, would remain at ground level. The neighborhood requested that this equipment be enclosed in a manner consistent with the existing architecture. The design team hired an architect to design a small building to house electrical controls and the standby generator. The building was designed to match the existing garage buildings at the apartment complex. The odor-control unit and fuel tank were placed outside behind decorative wooden fencing. The overall site was secured with decorative picket fencing, rather than standard chain-link fencing, so it would match the fencing around the apartment grounds.

Mitigating Construction

California, like many other states, has laws protecting native species. At the Madison pump station site, several heritage oak trees were present. An arborist evaluated the large parent tree and found it to be more than 200 years old. Although construction activity was moved away from the parent tree, several smaller trees were situated in awkward locations. In particular, a 10-in.-diameter (250-mm-diameter) tree occupied the best location for the site's driveway. Under California's rules for mitigating heritage oak trees, CSD-1 was required to plant 10 trees that were each 10 in. (250 mm) in diameter. However, the existing site would not accommodate 10 more trees, and finding alternative locations would have been problematic.

An alternative to mitigation was to relocate the existing tree. The site had the available space, but moving a tree of this size was a big job. Yet the project team decided it was worth the effort to try to save the tree. Although CSD-1 thought the

©2006 Water Environment Federation All rights reserved

COURTESY MWH AMERICAS INC.

To assuage resident concerns over the project, the pump station's electrical controls and standby generator were housed in a small building that matched the surrounding architecture.

tree had been moved successfully in September 2004, the tree dropped all of its leaves immediately following the move. Members of the project team were heartbroken through the winter, but new leaves appeared in spring, and the tree now seems to be adjusting well to its new home.

The design team evaluated many different construction methods to minimize the effects of construction on the neighborhood. The project's components included an 2.2-mgd (8300-m^3/d) pump station, 5000 linear-ft (1520 linear-m) of force main, and 4000 linear-ft (1220 linear-m) of gravity sewer. The construction methods included many different types of trenchless pipeline construction.

Because part of the force main was located beneath a busy roadway, this portion of the pipeline was installed using horizontal directional drilling. This method enabled faster installation with less damage to the roadway surface and less disruption to peak hour traffic.

The force main's other part was located beneath the streets of a residential neighborhood. Because one of the streets was in poor condition, trenchless construction methods were not needed to save the pavement. Instead, CSD-1 specified open-cut trench construction methods and coordinated with the Sacramento County Department of Transportation to overlay the street after construction of the force main was completed.

The gravity sewers were installed using microtunneling construction methods. Again, busy roadways could not be disrupted, and a drainage channel crossing at the site was regulated by the state. Tunneling under the drain helped expedite the permitting process.

Communicating the Design to the Public

Once the project was developed internally, it was time to present it to the public. The Madison Pump Station Project was presented to the local community three times, at the 30%, 60%, and 90% design stages.

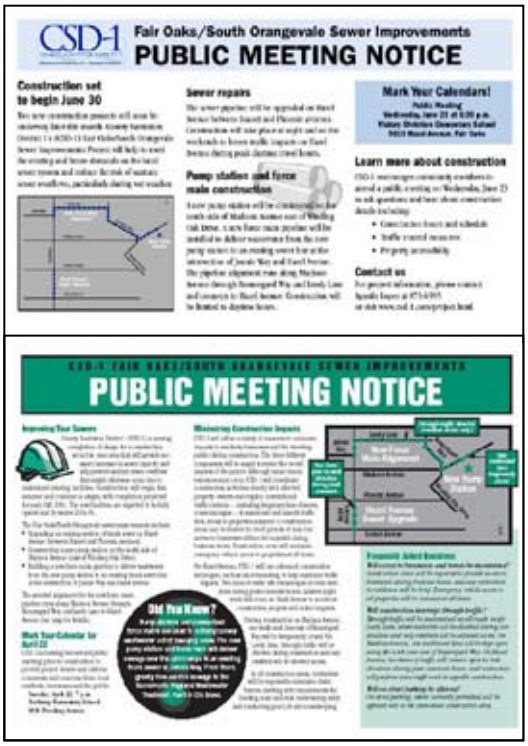
The first public outreach task involves identifying the individuals, groups, and businesses that will be affected by or interested in a project. Stakeholder databases can be developed from existing public records, such as assessor listings of property owners. The Sacramento County Communications and Media Office maintains a comprehensive list of public interest organizations, business associations, and civic affairs groups that have shown interest in similar projects. With an audience identified, the next step is to deliver the information. It is important to develop key messages and a coordinated delivery plan.

For the Madison Avenue Pump Station Project, the key message was to identify it as a stand-alone sewer improvement project. The team did not want its project to be associated with a controversial road-widening project occurring nearby. Keeping the stakeholders focused on the pump station

COURTESY MWH AMERICAS INC.

California's laws to protect heritage oak trees state that to mitigate cutting down one oak requires planting 10 similarly sized trees nearby. The small parcel of land available for the project didn't have room for so many new trees, so project organizers instead moved a 10-in. (254-mm) oak tree across the parcel.

©2006 Water Environment Federation All rights reserved



COURTESY MWH AMERICAS INC.

County Sanitation District 1 (Rancho Cordova, Calif.) held three public meetings during the project design phase to keep citizens and the media informed of the Madison Avenue Pump Station Project.

project, rather than the road project, was crucial to the outreach effort's success.

Many good communication tools are available to distribute project information, including public meetings, media relations, newsletters and other direct mailings, Web sites, and posted informational signs. As a first step, it is a good idea to have a central set of facts for all team members to reference. On the Madison Avenue Pump Station Project, a fact sheet was developed to maintain a consistent message throughout the project life cycle. The fact sheet addressed frequently asked questions, explaining the nature and purpose of the project, as well as the parties responsible for it, the source of its funding, and whom to contact for more information.

Three public meetings were held during the design phase. Meeting notifications were sent to all stakeholders, including local residents and businesses. Signs also were posted in the neighborhood, and press releases were sent to local media. The meetings were conducted on weekday evenings at local neighborhood schools and were well organized, with a host, speakers, and presentation materials. Questions and comments from the public were recorded in a "meeting recap" that was posted later on the project's Web site.

It was important to ensure that members of the media clearly understood the project's key messages. Therefore, local media representatives were invited to all public meetings, where discussions were held between reporters and the design team members. However, all follow-up questions were directed to CSD-1's communications and media officer to avoid sending mixed messages. Outreach to stakeholders also included project newsletters mailed to the community, as well as informational signs displayed in the project areas.

A comprehensive project Web page was included on CSD-1's Web site and updated throughout the project. The Web site contained five pages: a project home page stating the project's current status; a background page discussing project components and reasons for the project; an information page containing public meeting recaps, schedules, frequently asked questions, a fact sheet, and contact information; a contact page that enabled the public to send e-mail messages to CSD-1; and a glossary page with information about technical words and engineering terminology.

Communicating During Construction

Following the successful public outreach efforts during the design phase, the project was bid and a contractor selected. It was important to bring the new contractor into the project team and demonstrate that public outreach would be an important issue. This was accomplished by including members of the public outreach team in prebid and preconstruction meetings. In the subsequent construction progress

COURTESY MWH AMERICAS INC.

During construction, project planners used a Web site and a 24-hour telephone hotline, along with more public meetings, to keep residents updated on the project's progress.

©2006 Water Environment Federation All rights reserved

COURTESY MWH AMERICAS INC.

After some stakeholders expressed concern about the unkempt look of the construction site, planners simply installed tarps along the fence line to solve the problem.

meetings, public outreach was allocated the agenda's second slot, after safety.

Communication methods during the construction phase continued uninterrupted from the design phase. However, some new tools were employed to alert stakeholders to impending effects from construction. For example, at the start of construction, a "Get to Know Your Project" meeting was held in the front yard of a home along the force main's route. The meeting was held at dinner time, and pizza and soda were provided. Public outreach staff outlined the project and specified anticipated construction impacts.

Other communication methods included a 24-hour telephone hotline to provide information about the project. The hotline was a measurable source of public outreach success. Calls to the hotline closely mirrored construction activity. Before working in residential areas, contractors were required to place door hangers notifying residents of specific road closures, detours, or other impacts to the neighborhood. Because CSD-1 did not want the contractor to act as its representative when interacting with the public, the district provided the contractor with business cards that included the project's hotline number and Web site. The contractor then could distribute them to residents who approached with questions or concerns.

Addressing Construction's Effects

The initial public outreach conducted during the design phase surely mitigated many construction impacts. As expected, however, the construction caused unique hardships for many stakeholders. Having an organized public outreach program enabled the project team to address stakeholder concerns quickly. For example, during some construction procedures, local streets were blocked by construction equipment on the day garbage was to be collected. Schedule adjustments were arranged with the local service provider to maintain full service. Another time, the project called for adjustments to the roadway lane stripping, and access to roadside mailboxes became awkward. Temporary post office boxes were provided to stakeholders in these areas.

One roadway lost its bike lane during construction. Therefore, a detour was developed and posted both on signs and on the project's Web site. In addition, the local bicycle coalition was contacted to distribute the detour information to their members. Another challenge involved a local home that hosted a daycare facility in which English was not spoken. Translators were brought in to convey the public outreach messages. Pickup and drop-off schedules also were coordinated with the contractor.

Work at the pump station site was conducted during the day. Unfortunately, a neighborhood resident worked at night and slept during the day in an apartment adjacent to the site. CSD-1 arranged to have the stakeholder moved to another unit in the complex away from the construction noise.

The neighborhood has many nicely landscaped homes and businesses. Some stakeholders expressed concern about the unkempt look of the pump station site and other work areas. Unfortunately, construction is a messy business. However, an easy solution was to install tarps on the construction safety fencing to hide the work areas from the neighborhood.

Managing a Crisis

The project team developed an emergency response plan in case an accident were to occur. Although no one can plan for every possible disaster, some basic planning can be undertaken. The project team's plan included 24-hour contact information, media relations procedures, and the project fact sheet. On two occasions large trucks crashed into the project site, but no one was injured in either accident. For the project team, having an emergency response plan in place helped ensure an effective and efficient response.

The Madison Pump Station Project cost approximately $7 million. The budget for public outreach was approximately $70,000, or 1% of total costs. However, CSD-1 maintains a full-time communications and media officer and support staff whose salaries are not reflected in this budget.

It is difficult to measure the success of public outreach activities. The volume of telephone hotline calls or attendance and feedback at public meetings can be used as indicators of success. Requests for design or construction changes identified in these media can be quantified.

©2006 Water Environment Federation All rights reserved

COURTESY MWH AMERICAS INC.

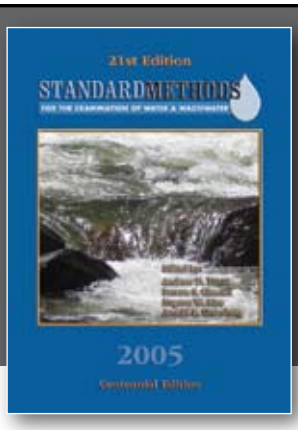
The project's emergency response plan helped to ensure effective and efficient responses to two truck accidents near the construction site. No one was injured in either accident.

However, public outreach efforts address problems that can affect projects in significant ways. For example, objections equal delays, which mean higher costs. What is the cost of aggravation to the project team and to stakeholders? What is the cost of bad publicity? What is peace of mind worth?

Of course, the effort associated with public outreach should serve a clear purpose. All projects should consider the value added by outreach tools and methods. The costs associated with alternative projects also must be evaluated. Similarly, during construction, it is important to talk to the contractor about options that might reduce construction impacts and benefit the community. Not all changes cost extra. The key is to open the lines of communication.

For public works staff, it is important to ask if all of this effort is worthwhile. Do residents really care and pay attention to the public outreach activity? With the Madison Pump Station Project, community participation may have been low, but the project team realized the political value was high. The outreach effort informed the public about project specifics while also acknowledging a public works success.

Craig J. Smith *is a senior engineer in the Walnut Creek, Calif., office of MWH Americas Inc. (Broomfield, Colo.).* ***Heleana Galvan*** *is a communications and media officer, and* ***Agustin Lopez****, is an associate civil engineer with County Sanitation District 1 (Rancho Cordova, Calif.).* *The authors would like to thank the public relations firm Lucy & Co. (Sacramento, Calif.) for assisting CSD-1 with the public outreach efforts associated with the Madison Avenue Pump Station Project.*



Standard Methods for the Examination of Water and Wastewater, 21st Edition

CENTENNIAL EDITION

Since 1905, Standard Methods for the Examination of Water and Wastewater has represented the best current practice of American water analysts. This comprehensive reference is a trusted source of accurate, proven methodology for analysis of natural water, water supplies and wastewater.

Contains over 400 methods and dozens of vibrant full color pages of aquatic algae illustration and more. No other single reference can match it. Edited by Andrew D. Eaton, Leonore S. Clesceri, Eugene W. Rice and Arnold E. Greenberg. 1365 pages. Hard Cover. 2005.

ISBN No:	0-87553-047-8
Member Price: (APHA, AWWA, WEF)	$185.00
List Price:	$250.00

Contents Include:

- Physical and Aggregate Properties
- Metals
- Inorganic Nonmetallic Constituents
- Aggregate Organic Constituents
- Individual Organic Compounds
- Radioactivity
- Toxicity
- Microbiological Examination
- Biological Examination

How to Order

Web	www.aphabookstore.org
E-mail	apha@pbd.com
Phone	(888) 320-APHA
	* International callers dial: (770) 280-0064 for Customer Service Mon – Fri 8:00 am – 5:00 pm EST
Fax	(888) 361-APHA 24-hours a day
Mail	American Public Health Association Publications Sales PO Box 933019, Atlanta, GA 31193-3019

APHA American Public Health Association

American Water Works Association

Water Environment Federation® Preserving & Enhancing the Global Water Environment

Standard Methods is a joint publication of the American Public Health Association (APHA), the American Works Association (AWWA), and the Water Environment Federation (WEF).

©2006 Water Environment Federation All rights reserved