**Communicating Science:**

An Analysis of the Communication Process between the Orange County Water District and the Public Regarding the Water Supply

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Executive Summary

Water quality is an important concern that members of the public take into consideration. Water is an essential aspect in life and people come into contact with it throughout the day; thus, the presence of contaminants and corresponding concerns regarding water quality require water agencies to ensure clear communication with members of the public on the issue.

This report examines the public outreach process carried out by the Orange County Water District. The OCWD has created a number of outreach programs regarding water quality and conservation that target different segments of the population. Certain programs focus on children, such as O.C. Water Hero, and encourage them to reduce consumption of water. O.C. Water 101 allows members of the public to visit OCWD headquarters and take a course exposing them to numerous water issues. Other initiatives, such as the OCWD Twitter account, utilize social networking in order to disperse information about the OCWD and water quality to segments of the population that rely on the internet as a news source.

The outreach process carried out by the Orange County Water District is thorough in that it caters towards different segments of the Orange County population. Nevertheless, the county’s demographic realities illustrate areas of outreach that can be improved. Expanding the district’s outreach translation services will allow it to reach otherwise unreachable segments of the population. In addition, the OCWD’s emphasis on conservation in its outreach programs may come at the cost of comprehensive water quality education.
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Cover Photo: Crystal-clear purified water from the Groundwater Replenishment (GWR) System is piped to OCWD’s percolation ponds in Anaheim, California. Photo Credit: Mark Greening, Orange County Water District.

Source for figures 1,2,5: www.ocwd.com

Source for figure 3: www.twitter.com
Chapter I—Introduction

The safety of the water supply is a sensitive issue to the public. Water is an essential component of life; water is utilized in nearly every aspect of one’s day. We utilize water for drinking, as an ingredient in our food, to bathe our children, to wash our clothes, and in many other ways. The public comes into contact with the water resource at nearly all times. Thus, the negative perception of this resource can have tremendous impacts on the public's behavior. If the public perceives that its water supply is tainted, mistrust will ensue. The emergence of endocrine disrupting compounds (EDCs) and other pharmaceuticals and personal care products (PPCPs) has become a widespread issue; within the water field, this one area can be assessed in order to analyze threats posed to the water supply and how the public receives corresponding information.

Problem Statement

This professional report will evaluate the present communication process between water agencies and the public in Orange County, California on the safety and quality of water supply. The focus will be the Orange County Water District (OCWD); I undertake a thorough investigation and evaluation of its communication process with the public. Background on how the public receives information about its water will first be addressed in order to better understand where misunderstandings regarding the safety of the water supply stem.

The county’s local newspaper, The Orange County Register, has previously addressed suspicion and concern in the county regarding pharmaceuticals (Sforza, 2008). Thus,
media outlets and other distributors of news and information will be analyzed in order to better understand how the communication process regarding the water supply takes place.

Following this background, the issue of the safety of the water will be addressed in two ways: 1) by examining the presence of endocrine disrupting chemicals (EDCs) and pharmaceuticals and personal care products (PPCPs) in the water supply and their corresponding threats. And, 2) utilizing literature and other resources, the professional report will address how water providers such as water and utility industries can better educate the public on the safety of the water supply. Assessing the water regulatory system in Orange County and ensuring that the public is appropriately informed and educated will be the primary concern of this professional report.
Objectives

- To ensure that the Orange County Water District is appropriately informing and educating the public on the safety of the water supply.
- To better understand what the Orange County public expects in terms of communication and the role of water agencies.
- To understand the Orange County consumer’s perceptions and attitudes of emerging water quality issues (especially regarding EDCs and PPCPs).
- To help the water industries and utility providers in Orange County better assess the conditions and develop appropriate resources to better communicate with the public.
- To develop recommendations for improving future communications with customers.
Significance

The significance of the public’s perception of the water supply is tremendous. The public may change its behaviors as a result of perceiving the water supply as tainted. This report aims to assess Orange County water agencies and their communication process with stakeholders. Understanding this communication process allows for potential improvements in the communication process as well as the minimization of mistrust and misunderstanding between agencies and the public.

In developing recommendations for water suppliers regarding the improvement of their communication with customers, suspicion, mistrust, and lack of public confidence regarding water safety can be reduced. This is significant because we must provide the public with the peace of mind that it has accurate and timely information regarding the water it uses. In addition, the significance of analyzing the public’s perception regarding water is to better understand where suspicion and mistrust stems. For example, miscommunications on the part of the media can be reversed if it is found to be a culprit in exaggerating the danger of the water supply. Water providers can gear their communication to directly addressing the public’s concerns and to come up with a strategy for alleviating such concerns.

Finally, better understanding the public’s perception of the water supply and the manner in which it is educated about water can be helpful if the need arises to increase communication with the public as a result of changes in water quality. If the water supply becomes contaminated in the future, an understanding of how the public learns
about water as well as the manner in which news regarding water is delivered would be essential. If water suppliers have a communication system in place regarding the present safety of water, any future announcements or dangers would be made public quickly and efficiently.

Thus, the significance of this professional report regarding communication with the public concerning the water supply is to prevent miscommunications and to ensure that the public has access to timely and accurate information.
Chapter II—Background

The Orange County Water District, formed in 1933, is responsible for overseeing the groundwater that is distributed to 23 cities and water agencies in Orange County, California; numerous water agencies obtain groundwater under the OCWD umbrella including the Mesa Consolidated Water District and the Golden State Water Company. Ultimately, the OCWD’s water supplies reach 2.3 million members of the public in the northern and central portions of the county. There are two main sources of groundwater that are managed by the OCWD: 1,600 acres in and near the Santa Ana River and 2,400 acres above Prado Dam. The OCWD is composed of 10 board members; seven board members are elected and three are appointed by cities.
Chapter III—The Present OCWD Communication Process

There are a number of ways in which the Orange County Water District communicates with the public. The OCWD has several outreach programs which target various segments within the Orange County public, from children to adults. The main way in which the OCWD communicates with the public is through its website. The website, itself, serves as a tool in which the OCWD publicizes its outreach programs to the public. The following section highlights the main communicative tools that the OCWD utilizes in informing and educating the public.

The OCWD Webpage

The Orange County Water District relies on its website (www.ocwd.com) as one of the primary ways in which to inform and reach the public. The website homepage states the OCWD’s main tenets and commitment to:
• Water supply and reliability
  o This tenet focuses how the OCWD has invested in water supply reliability through the doubling of the yield of the groundwater basin. Approximately $16-19 million a year is saved through collecting water behind Prado Dam in Riverside County.

• Water quality
  o This tenet focuses on how the OCWD tests water from about 1,400 locations throughout the basin. Approximately 18,000 samples have been taken, with 335,000 analyses of these samples annually. The tenet goes on to mention that the OCWD tests for 335 chemicals, despite only being required to test for 122 chemicals. Finally, there is mention of an existing zero tolerance policy with polluters with litigation being a possibility.

• Environmental stewardship
  o This tenet focuses on the OCWD’s environmental restoration efforts; these efforts have revitalized an endangered California song bird and increased its population from 18 pairs in the 1980s to more than 900 pairs at present.

• Sound financial management
  o This tenet focuses on the OCWD’s “high financial ratings”. More than $178 million have been brought into Orange County through the OCWD’s efforts.

• Industry leadership and innovation
This tenet focuses on the OCWD’s expertise in regards to its groundwater management, seawater intrusion barriers, and water reuse and purification programs.

The aforementioned tenets, presented on the front page of the Orange County Water District’s website, are most likely the first form of communication that the public receives. As such, these tenets hold tremendous importance. In regards to communicating science, the “water quality” tenet is the only tenet that deals directly with issues surrounding water safety and the presence of pharmaceuticals in the water supply. The tenet gives a general background on the water quality testing that the OCWD does; however, there is no mention of links to further information on water quality and water testing. Such information would have to be accessed by delving deep into the website content.

**Twitter**

The Orange County Water District has also utilized the social networking website “Twitter” as another tool for communication with the public. The OCWD has posted a link to its Twitter account on the official OCWD website. There are nearly 900 members of the public who follow the daily updates that the OCWD posts on Twitter. The daily posts that are made are meant to share information with the public regarding the OCWD’s tours, activities, public reminders, and concerns. The following are examples of each of the aforementioned aspects of OCWD outreach through twitter:
• Example of tours and activities: “And the Groundwater Adventure Tour is underway! 75 adventurous stakeholders are in for a treat this Halloween week. Thursday, October 28, 2010 8:42:12 AM via Snaptu.com”

• Example of activities: “2011 Children’s H20 Education Festival is March 23-24 for OC’s 4-6 graders. Teachers- mark your calendars for this amazing enviro field trip 5:33 PM Jul 2nd via Snaptu.com”

• Example of public reminders: “Hey Orange/L.A. counties: don’t forget to reset your automatic sprinklers now that temps are dropping & we’re getting much needed rain! 9:02 AM Oct 19th via TweetDeck”
• Example of concerns: “As it should, GWR System shut down when 7.2 earthquake hit. Operators checking all systems, pipes, pumps and filters. 5:26 PM Apr 4th via Snaptu"

As illustrated by these highlighted Twitter examples, the OCWD utilizes this social networking website in order to connect with, and inform, the public. The manner in which this communication takes place is far less formal than on the OCWD website. The Twitter outlet appears to serve as an informal platform in which to share information about the Orange County Water District to an audience that may, otherwise, be inaccessible due to age or the utilization of the internet as a primary form of news.

Tours
Another aspect of the OCWD’s public outreach efforts is its tours. The OCWD offers two main types of tours: tours of the Groundwater Replenishment (GWR) System and tours of the Prado Wetlands.

The OCWD advertises its tours of the Groundwater Replenishment System as being offered to the public once a month. These tours are held on the first Friday of every month at 10 a.m. There are dress code requirements for tour participants such as wearing closed-toe shoes and long pants. Dresses, skirts, sandals, and high heels are forbidden for tour participants. The tour is described as including “climbing stairs, walking and standing for periods up to 45 minutes”. Reservations for the tour must be made in advance by calling the OCWD, sending an email, or sending a fax. It should be noted that custom tours on alternate days are available.
The OCWD’s Prado Wetlands tours are offered by appointment. These tours differ in focus from the GWR tour. The Prado Wetlands tours consist of “an OCWD environmental expert guiding attendees on a three-mile walk through the wetlands”. The tour focuses on birds, raptors, and other species that reside in the Prado Wetlands. In its tour description, the OCWD advertises that it owns 2,150 acres behind Prado Dam including 465 acres of “the largest constructed wetlands in Southern California”.

The two types of tours offered by the Orange County Water District differ immensely in focus. Both tours appear to target adults, as the described physical requirements may be too strenuous for children. The Groundwater Replenishment System tour allows members of the public to come into contact with the water purification process that takes place. There is also opportunity for tour participants to visit the Advanced Water Quality Assurance Laboratory. In regards to communicating science, this tour has great potential to inform members of the public on water quality and contamination issues. On the other hand, the Prado Wetlands tour is focused on wetlands and the corresponding species. Communication on the scientific processes of water quality is essentially irrelevant to this particular tour.

O.C. Water Hero Program

The Orange County Water Hero Program is a public outreach tool utilized by the Orange County Water District in conjunction with the Municipal Water District of Orange County. The program targets school-aged children and requires them to commit to
saving 20 gallons of water each day. Upon filling an online pledge form, located on the OCWD website, children will receive a water hero kit. The kit includes a water hero badge, a water waster “fix it” ticket pad, a water conservation tips magnet, a shower timer, a water hero flying disc, water activity sheets, water conservation tips stickers, and a parent pledge form. This program is only available to children who reside in one of the cities that the OCWD serves. Since the creation of the O.C. Water Hero program in 2007, over 4,000 participants have taken part in the program.

Water 101

The Orange County Water District offers a “O.C. Water 101” course. The free course takes place at the OCWD headquarters in Fountain Valley. It focuses on the basics of water, water issues related to population growth, and how the “water community is working to meet the demands of a growing Orange County”. Other topics that are covered include the global water crisis, water's impact on health, contemporary water issues in the state of California, and conservation. Participants in the course have included college students, professionals, and parents.
Water Education Festival

The Children’s Water Education Festival is an annual event organized by the Orange County Water District in conjunction with the Disneyland Resort, the National Water Research Institute and the Municipal Water District of Orange County. The Festival began in 1997 in the city of Anaheim; initially, it reached about 1,000 children. The idea of creating the Festival stemmed from the drought-like realities found in the Orange County region and, consequently, the need to educate residents about water conservation. 2011 will mark the 15th anniversary of the Children's Water Education Festival. The festival is set to take place March 23-24 at the Richard Nixon Presidential Library and Museum in Yorba Linda. The OCWD projects that about 5,000 students in fourth through sixth grade will attend in 2011. In its 13 years of existence, the Festival has reached over 75,000 children. In order to attend the spring festival on one of the
two days that are offered, teachers are required to submit an application on behalf of their class in early December. Subsidies are provided to classes and each participating class of students is required to complete pre- and post- tests upon visiting the Water Education Festival.

The Water Education Festival aims to inform students about “local water issues and help them understand how they can protect and preserve water and their environment”. In 2010, students from about 70 elementary school in 20 Orange County cities attended the festival. The festival is set up in a manner in which students have the opportunity to visit interactive presentations that educate them on water issues; the presentations are taught to “California State Science Standards”.

Speaker’s Bureau

The Orange County Water District provides its representatives for speaking engagements through the Speaker’s Bureau program. The program sends representatives of the OCWD to civic and community groups, technical associations, and educational institutions. The speakers visit there organizations and speak for either 10 minutes or 30 minutes about what the Orange County Water District does. The Speaker’s Bureau program addresses aspects of the OCWD’s programs including the GWR System, Prado Wetlands, water conservation, and Orange County existing water resources. Upon contacting the OCWD Public Affairs Department, organizations are assigned a board member or staff member to come and present to them.
Orange County Water Summit

The Orange County Water District organizes an annual conference titled the “Orange County Water Summit” in conjunction with the Municipal Water District of Orange County, the Disneyland Resort, and the Orange County Business Council. The conference brings together experts who address topics such as international water issues, social and economic water trends, and technology and innovation in regards to water use efficiency. Furthermore, the summit aims to provide a platform for individuals to engage with business, community and civic leaders in regards to water issues. The event is also meant to educate the public on “possible long-term solutions for water reliability and preserving the Bay-Delta River, California’s main source of water”.

The 2010 OC Water Summit was held in the Grand Californian Hotel in the Disneyland Resort on May 14th, 2010. The conference theme was “Capture the Flow” and brought together community members, water experts, and elected officials. Tickets to the conference were sold for $140, perhaps barring certain members of the community from attending due to the lack of affordability. The one-day conference provided lectures such as “Water Just Doesn’t Fall Out of the Sky: Innovative Solutions” and “The Global Perspective on the Water Crisis: What are Agencies Doing Locally and Around the World to Create and Conserve Water”. Through an analysis of the conference program, it is clear that there was a strong focus on water conservation; there is no mention of water quality and emerging contaminants.
Finally, the Orange County Water District reaches out to Orange County high school students through the L.E.A.F. contest. The Leaders of Environmental Action Films contest is presented by the OCWD in conjunction with Volcom, the Orange County Department of Education, the Newport Beach Film Festival, and others. The mission of L.E.A.F. is “to empower youth to become the environmental solutions within their own communities and beyond”.

The contest challenges high school students to create a 30-second or 60-second public service announcement; in addition, participants are required to write a two page summary about the subject they have chosen and corresponding references. The 2010 L.E.A.F. contest was held in April 9th, 2010. Five winners were selected from the contest participants and they received certificates and were featured in the Newport Beach Film Festival held on April 25, 2010. In summary, the contest appears to utilize students’ passion for arts such as film in order to encourage the dispersal of information about water issues.

**Hotel/Motel Water Conservation Program**

The OCWD has created a program that aims to educate members of the public on water issues during their stay in Orange County hotels and motels. The program allows hotels and motels to order free laminated towel rack hangers, bed cards or combination cards. The purpose of these cards is to encourage guests to be more environmentally aware by using their towels and bed linens more than once. In addition, other benefits of the program include helping hotels and motels to save water and money. Presently, there are over 230 hotels in the county that are enrolled in the program. Due to the large numbers of hotels and motels in the county near tourist attractions, the program aims to take advantage of the consistent tourist influx and to educate the public and encourage visitors to protect local water supplies by conserving potable water.
## Summary of OCWD Outreach Programs

<table>
<thead>
<tr>
<th>Outreach Program</th>
<th>Primary Audience</th>
<th>Type of Medium</th>
<th>Primary Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCWD Webpage</td>
<td>Everyone</td>
<td>Online</td>
<td>Educate public about OCWD’s operations and structure.</td>
</tr>
<tr>
<td>Twitter</td>
<td>Everyone</td>
<td>Online</td>
<td>Educate public, announcements.</td>
</tr>
<tr>
<td>Tours</td>
<td>Adults</td>
<td>In-person</td>
<td>Educate and expose to OCWD and the operation of the GWR system.</td>
</tr>
<tr>
<td>O.C. Water Hero</td>
<td>Children</td>
<td>Incentives</td>
<td>Educate and encourage students to conserve water.</td>
</tr>
<tr>
<td>O.C. Water 101</td>
<td>College students, professionals, and parents</td>
<td>In-person</td>
<td>Educate and expose to OCWD and current water issues.</td>
</tr>
<tr>
<td>Childrens Water Education Festival</td>
<td>Children</td>
<td>In-person</td>
<td>Educate students about water and encourage them to conserve.</td>
</tr>
<tr>
<td>Speakers Bureau</td>
<td>Community groups, technical associations, and educational institutions.</td>
<td>In-person</td>
<td>Educate groups and expose to water issues.</td>
</tr>
<tr>
<td>OC Water Summit</td>
<td>Water professionals</td>
<td>In-person</td>
<td>Professional networking and education.</td>
</tr>
<tr>
<td>L.E.A.F.</td>
<td>High school students</td>
<td>Incentives</td>
<td>Educate and encourage through contest.</td>
</tr>
<tr>
<td>Hotel/Motel Water Conservation Program</td>
<td>Tourists and hotels.</td>
<td>In-person/Incentives</td>
<td>Educate tourists.</td>
</tr>
</tbody>
</table>
Chapter III—Procedures

Interview with OCWD Representatives

In order to understand the outreach process that takes place within the OCWD and its effectiveness, interviews were conducted with representatives. The participants included two representatives of the OCWD: Eleanor Torres, Director of Public Affairs, and Gina DePineda, Principle Communications Specialist. In addition, Jeffrey Mosher, of the National Water Research Institute, participated.

The topics that were addressed included the broad communication process that takes place at the OCWD and the public outreach that takes place. The OCWD’s outreach spans many levels and groups, including the public as well as the local, state, federal, and international levels. One particular case study that was discussed concerned the Groundwater Replenishment System (GWRS) project. The GWRS was a large-scale project that had county-wide impacts. The interview touched upon how the OCWD communicated the impacts of the GWRS. A total of $4 million was spent directly on public outreach between 2001-2008 in order to inform the public about the project. The outreach was conducted in several languages and through 1,200 presentations. The interviewees were pleased to reflect upon how the outreach process for the project resulted in no organized opposition.
The OCWD and the Issue of Pharmaceuticals

A 2010 study by the National Water Research Institute tested Orange County water for the presence of pharmaceutical compounds. The results of the two-year, $300,000 study found traces of medicines, pesticides, flame retardant and other compounds in Orange County water supplies (Brennan, 2010). The levels found in the study were rather minute, equal to one drop in 20 Olympic-size pools. The traces of the compounds, while relatively small, indicate the reality that pharmaceutical compounds are an issue in the local context.

In its June 2008 E-Hydrospectives newsletter (now defunct), the OCWD published an article that addressed the issue of pharmaceuticals in the water supply. In an article titled “Pharmaceuticals in the Water Pose No Health Risk to Citizens”, the OCWD discusses the issues surrounding the issue. The District tested its water supplies for pharmaceutical compounds; the article examines the results of these tests: the levels of pharmaceuticals found were in “extremely low trace levels… more than 100 times lower than the most conservative safe levels determined by studies around the world”. The tests on the presence of pharmaceutical compounds in OCWD water supplies appear to illustrate low risks. However, the manner in which this information is dispersed to the public is nearly as significant as the scientific data that was assessed.

The one-paragraph article in the OCWD’s two-page online E-Hydrospectives newsletter is the only official communication that has taken place to date on the issue of pharmaceutical compounds in the water supply. The article itself addresses the reality
of public suspicion surrounding the issue noting that “the recent media scare
surrounding pharmaceuticals in the water may have caused alarm for some citizens”. 
Despite acknowledging the significance of the issue, the Orange County Water District
does not seem to have taken any other direct steps in informing the public on the issue
of pharmaceuticals in the water supply.

Public Perceptions on OCWD Communication Regarding Pharmaceutical Threats

The Orange County Register, the region’s main newspaper, has published several
articles on the issue of public suspicion regarding water quality. In an opinion article in
the “OC Watchdog” section of the newspaper titled “Drink the Water. Really. It’s Okay.
Go Ahead”, Teri Sforza addresses the issue of pharmaceuticals in the water supply.
Sforza, analyzes the aforementioned article published by the OCWD E-Hydrospectives
newsletter. She alerts readers to the reality that the OCWD’s tests for pharmaceuticals
only tested water produced the by the Ground Water Replenishment System. However,
this water is not the water that is supplied directly to the Orange County public; there
are multiple resources for the tap water provided to public consumers (OCR).

This Orange County Register article serves two main purposes: to analyze the OCWD
communication process regarding pharmaceuticals and to address public attention to
the issue. The article illustrates flaws of the OCWD in its one-paragraph communication
on the presence of pharmaceuticals in the water supply. In addition, the article serves to
address what it views as public suspicion and confusion regarding the issue. In doing
so, the article illustrates that, indeed, public concern regarding the issue of water quality exists in Orange County.
Chapter IV—Findings

Assessment of Individual Outreach Programs

The following section will evaluate the Orange County Water District’s existing public outreach programs:

The Orange County Water District’s primary form of communication is its website. Consequently, the website serves a primary role in the communication process with the public. The website itself is very informative, if the viewer is able to properly navigate the website. There are seven tabs at the top of the page: About, Board & Agendas, Conservation & Education, Environment, Programs & Projects, Government Affairs, and News. Each one of these tabs has links to several other sections. Then, each section leads to subsections. Essentially, the website provides a plethora of information; this results in a cluttered website that is somewhat difficult to navigate.

The OCWD’s use of the Twitter social networking website is an innovative and contemporary way of reaching out to segments of the population that may, otherwise, be uninformed about the water supply. Twitter appeals to people who utilize social networks as a primary source for their information and news. Nevertheless, the number of followers of the OCWD’s Twitter page illustrates a shortfall. As of March 2011, there are 900 people who subscribe to updates on
the OCWD Twitter page; in a county of 2.3 million people, this number is relatively low and could be increased exponentially.

There are two main tours offered by the Orange County Water District: the Groundwater Replenishment System and the Prado Dam. The former is in tune with the objective of communicating water science to the public. The Groundwater Replenishment System is an essential component in informing the public of the OCWD’s methods of water purification. This information is necessary to members of the public who would like to evaluate water quality. One weakness of the tour is that particular segments of society are left out; people who have difficulty walking for extended periods of time, such as young children and the elderly, would have difficulties participating in the rigorous tour. Another aspect of the tour that can be improved is its publicity. Presently, the main form of advertising for the tours is word-of-mouth. Consequently, the tours are inaccessible to people who are not in contact with someone who knows of them.

The O.C. Water Hero Program is an innovative outreach program on the OCWD’s part that targets children. It encourages these children to conserve water; this is done to asking them to adhere to a pledge to conserve 20 gallons of water a day. In return, participant children receive an incentive in the form of a kit that is delivered to their home that is abundant with water education toys. This
The O.C. Water 101 is a course offered to the public at the Orange County Water District headquarters. The course appears to focus on issues related to water strain and water conservation. The course has great potential in that it informs members of the public on issues related to water in a structured classroom setting and that it brings members of the public to the OCWD to see where everything takes place firsthand. However, the issues that the course addressed are not comprehensive. Issues related to water quality and contamination do not appear to be a part of the curriculum of the O.C. Water 101 course.

The annual Water Education Festival put on by the Orange County Water District is a fun and educational event that gives elementary school students an opportunity to become informed about water issues. The event is conducted in a manner that allows classes from various elementary school in Orange County to visit exhibition booths during one of the two days in which the festival takes place. A weakness on the part of the Water Education Festival is its inability to meet demand by elementary schools in Orange County. As published on its website, an application is required for classes who would like to visit the festival. The application is due several months in advance of the festival and waiting lists are a common reality. In order to meet demand, an expansion in the number of days of the festival could prove useful.
The OCWD's Speaker's Bureau program gives organizations an opportunity to come into contact with representatives of the District, who speak for 10 or 30 minutes about its activities. The topics that are addressed in the Speaker's Bureau include conservation and the Groundwater Replenishment System. One area that could be improved is the time period allotted for the OCWD representatives in which to speak. 10 minutes is far too brief of a period in which to provide comprehensive information about water issues.; even 30 minutes may not be sufficient if the audience expects an informative session on various aspects surrounding water quality. The reality that the Speaker's Bureau does not address water quality and contamination is another area that calls for improvement.

The annual O.C. Water Summit conference is an event that brings together water experts, politicians, and members of the public in order to create dialogue about water issues. Upon examining the issues presented in the 2010 O.C. Water Summit conference, it is apparent that the issue of water quality and contamination is not addressed. Instead, there is a tremendous focus on water conservation.

The Leaders of Environmental Action Films contest is an annual event organized by the Orange County Water District. The contest is an innovative way in which to encourage high school students to research and examine water issues. One
area of improvement could be to expand the contest to other forms of communication. For students who are, perhaps, inexperienced in film making, the contest could provide a category for artwork or for music.

**Overall Assessment**

The Orange County Water District has created several programs for outreach to the public. These programs serve as the foundation for the communication process regarding the water supply. Each program has strengths and weaknesses. While some outreach programs are targeted at younger segments of the population such as children or teenagers, other segments aim to educate and inform the adult public. Nevertheless, there is one weakness that is prevalent in nearly all of the OCWD outreach programs—an overwhelming emphasis on conservation and, consequently, a lack of focus on water quality.

In educating the public through its outreach programs, the Orange County Water District focuses on issues related to water conservation. Its programs that are directed at children, such as the O.C. Water Hero program, provide incentives for and encourage the reduction of water use. The other programs within the OCWD outreach have a similar weakness in the overemphasis on conservation. Issues related to water contamination and water quality go unmentioned in all of the programs, with the exception of the Groundwater Replenishment System tour. Consequently, the vast majority of the communication that the public receives from the Orange County Water District is related to the encouragement of water use reduction and conservation. For a
member of the public who seeks to learn about the quality of the water in Orange County, the vast majority of the OCWD’s public outreach is irrelevant.

General Findings

In general, the Orange County Water District has created several effective outreach programs that set out to inform the public of water and related conservation issues. The programs that exist are diverse and target different segments of the population. The programs range from O.C. Water Hero which targets children to the tours which target adults. The programs also differ in the manner in which they convey the intended message; some programs are completely internet based, such as the OCWD webpage and the Twitter application. On the other hand, some programs are completely on site such as O.C. Water 101.

While many positive aspects exist within the OCWD’s outreach programs, there are some aspects that can be improved. All of the outreach programs emphasize conservation. While conservation is important, an overemphasis on this aspect results in neglecting other aspects of water education such as water safety. In addition, many of the outreach programs are English-only in nature; in a county with a large foreign language speaking population, the utilization of translation services for outreach programs is a necessity that needs to be incorporated. Finally, a general discussion on how the OCWD can improve its outreach as well as the implications for the planning community follows.
Chapter V—Recommendations

Recommendations: A Focus on Conservation

All of the outreach programs that the OCWD has created have one thing in common: they educate on the importance of water conservation. Conservation is an important, if not central, aspect of each outreach program. Some programs, such as O.C. Water Hero focus on the reduction of consumption of gallons of water. Other programs such as the O.C. Water Summit bring water professionals together to contemplate conservation-related issues. While conservation is an essential water issue, other issues must be addressed just as comprehensively by the OCWD.

The OCWD programs can be improved by combining conservation education with educating about other water issues in the currently conservation-only programs. For example, an addition to O.C. Water Hero that incorporates education about other water issues could be effective. This can be done by adding a quiz component to the program that allows children to demonstrate their knowledge about water safety, contaminants, and actions to take in order to prevent the contamination of water. Essentially, the modification of the existing outreach programs in order to incorporate education about water safety and other issues would be a sufficient improvement to the existing programs.
One area that needs to be addressed by the OCWD is the language barrier that prevents numerous segments of the population from being properly informed and educated. According to the U.S. Census Bureau’s 2009 estimates, 17% of the population is Asian and 34% is Hispanic. These two particular segments of population contain many sub-segments. Furthermore, 41% of the population speaks a language other than English at home, illustrating the language diversity that exists in the county. As a result of this reality, it is necessary for the OCWD to provide most, if not all, of its outreach in several languages.

The OCWD does utilize translation for some of its outreach activities. For example, the Groundwater Replenishment System outreach process that took place before its inception relied heavily on information sessions that were conducted in several languages. However, other aspects of outreach lack the comprehensive multi-
lingual outreach that was seen in this particular case study. For example, outreach through Twitter and O.C. Water Hero is completely English-only.

The OCWD website is one of its most rich sources of information and outreach. The website serves as a form of education itself, containing information about water issues, conservation, and programs and projects. The website also serves as a link to the other forms of outreach that the OCWD conducts; in fact, the OCWD website is the only way to find out about several of the outreach programs. Consequently, the lack of translation of the website bars non-English speakers not only from accessing the information found on the website, but also from the other forms of outreach that the OCWD advertises on it.

A recommendation that could mitigate the language barrier is to provide translation of the OCWD website in the most commonly spoken foreign languages in Orange County. Since 34% of the population is Hispanic, Spanish translation is highly recommended. In addition, the high Asian population that exists in the county warrants translation in languages such as Chinese, Vietnamese, and Korean; although this would be a costly undertaking, the benefits of translation into multiple languages are significant. In addition to translating the OCWD website, advertisements for the other forms of outreach can be translated. For example, information regarding the L.E.A.F. contest can be translated. In addition, the O.C. Water 101 course can be offered in foreign languages in order to provide accessibility to segments of the population that may otherwise not be served effectively.
Risk Perception

The manner in which risks are communicated is essential in establishing a positive relationship between water agencies and the public. Risk perception experts agree with this sentiment; when the public is treated with fairness and honesty and the respect for its rights to make its own decisions is reinforced, it is a lot less likely to overestimate small hazards (Sandman). While there may be hazards that exist in relation to water supplies, the OCWD needs to ensure that it is keeping the public informed and up-to-date. Water related issues and news need to be conveyed in a timely manner by the OCWD in order to establish and maintain trust. A relevant area that needs to be addressed by the OCWD relates to the issue of pharmaceutical compounds in the water supply. As previously illustrated, information released by the OCWD in relation to this issue has been very limited. Thus, a key to improving the relationship between the OCWD and the public in relation to water safety is to provide more information about the presence of pharmaceutical compounds in the water supply and the potential corresponding impacts.

The American Water Works Association created several “risk communications tips” designed for public agencies to communicate about monochloramine (AWWA 2011). Although these tips have been designed for communication regarding a disinfectant in a water treatment, they are applicable to communication regarding water quality risks such as pharmaceuticals:

- **Be prepared.** This principle applies to preparation by the agency as a whole. All representatives of the OCWD who come into contact with the public, particularly
those involved with the outreach programs, need to be prepared to answer
questions regarding water quality.

- **Listen to the public’s specific concerns.** Representatives of the OCWD need
to listen to public concerns and respond with clarity and truthfulness.

- **Speak clearly and with compassion.** Representatives of the OCWD need to be
clear and convey and understanding of public concerns. This principle is
especially applicable to programs such as O.C. Water 101, where OCWD
representatives lecture and field public questions and concerns.

- **Embrace the public as a partner.** Outreach initiatives such as Twitter are
proactive and reach out to the public. The creation of further outreach initiatives
that target underrepresented segments of the population are especially vital.

- **Meet the needs of the media.** The OCWD needs to not only meet the needs of
the media in relation to questions about water quality; the agency should
embrace the media in a fashion that publicizes its outreach programs in order to
increase the population’s exposure to OCWD tenets and information.

- **Utilize credible third-parties to amplify the message.** The utilization of
credible third-parties, such as public health officials, is instrumental in conveying
clear information about water quality to the public.

**Broader Implications to the Planning Community**

Water is an ever-present aspect of urban planning. Water issues are reflected in
general plans, zoning, planning commission meeting, current planning, and nearly any
other planning tool or mechanism. In examining the relationship between the public and
the Orange County Water Agency, one can get a glimpse of the importance of outreach in this particular case study.

Planning, in general, relies heavily on communication between agencies and stakeholders. Agencies are expected to inform stakeholders of any potential impacts they may face as a result of projects. The issues that the OCWD faces in regards to its outreach programs are universal and apply to planning. For example, the language barrier found in Orange County is not limited to the relationship between the OCWD and the public. This exact same barrier applies to every agency that operates in the county. Every planning agency in Orange County, and any other U.S. county with a significant number of foreign-language speakers, needs to apply translation services and other techniques in order to ensure that otherwise neglected segments of the population are being reached.

The issue of risk perception is also universally applicable to planning. As many planners know, the introduction of a prospective project into a community is often met with suspicion, mistrust, and a lack of confidence in the lead agency. Planning agencies can take note from risk perception studies and ensure that the public is properly informed. The public needs to be aware of potential problems and difficulties it may face as soon as possible. Residents finding out that a project in their neighborhood will have severe environmental impacts six months into the process will create distrust that is rather difficult to overcome. The key, for the OCWD and any planning agency, is to be clear from the onset.
Conclusion

A thorough evaluation of the Orange County Water District’s public outreach program has been concluded. The findings illustrate areas that need improvement, such as an existing language barrier, risk perception, and an overemphasis on conservation. Nevertheless, there are many strengths found in the outreach program that should be commended and utilized by other planning agencies. In an era becoming increasingly internet-dependent, the OCWD has utilized social networking in order to reach out to the public and educate. The utilization of websites such as Twitter may appear unconventional; however, such out-of-the-box thinking is necessary in order to reach out to different segments of the population. In addition, the OCWD has ensured that it is reaching out to children through programs such as O.C. Water Hero and the Children's Water Festival. Reaching out to this particular segment of the population is especially important, as these children will grow up aware of water issues and will, as a result, be more conscious of water safety and the decision they make.

The OCWD’s outreach program can serve as an outstanding model for other water and planning agencies. Its existing outreach program, with the aforementioned suggested improvements, can serve as an example for how to effectively communicate environmental and planning issues to various segments of the population.
Chapter VI—References

Bibliography


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Chapter VII—Appendices

Appendix I: Interview with OCWD Representatives

Participants: Eleanor Torres, Gina Pineda, Jeffrey Mosher, Amira Yousef

Begin Interview:

Jeffrey Mosher: What class is this for?

Amira Yousef: I can give a general background on myself if that’s alright: I’m a second-year graduate student studying urban and regional planning. We do a professional report, similar to a thesis. The topic I selected is that I will be looking at the communication process between the general public and water agencies. I’ll be looking at the communication process in general.

JM: The OCWD communication process is very broad, with the public, government, agencies, etc. Focusing on the communication process with the public narrows it down. OCWD does not have retail customers. Thus, the various water agencies have a role in that.

AY: Would you mind sharing a bit about yourselves and what your position entails.
Eleanor Torres: I’m the director of public affairs. I handle communications with the general public. However, we don’t sell directly to customers. Public means if, for example, we’re doing maintenance to our pipelines we communicate with the public. If we’re monitoring for certain contaminants, then we’ll deal directly with residents in conjunction with retail agencies. We have 10 board members, 7 elected and three appointed by cities. Even though MWDOC does more extensive conservation programs, we communicate with students, parents, and teachers. We even do South County… we haven’t limited it. We deal with reporters… and depending on the issue, we can be the spokesperson. We also handle government affairs. We work directly with city councils, supervisors, the state, and federal government. We have legislative consultants at the state and federal levels. We have annual events, such as the water summit in May. We bring in businesspeople and folks in the water industry. Then, there’s the layer of working with different associations and professors like Dr. Cooper. We have memberships on the local, state, federal, and international levels. Since we’ve opened the GWRS (groundwater replenishment system), we’ve had an extensive tour program; we’ve been aligned with the GWRS system for three years. We’ve had over 12,000 people tour the facility. That’s a big part of our outreach program. Even though we haven’t publicized the tour much… it’s been word of mouth mostly. Residents, students, and members of different civic associations have come. We have social media such as Facebook and Twitter. We handle quite a bit. I’d be happy to share our outreach plan so you can see what we do. There’s so much more… that’s the great thing about it. It’s never the same thing over and over. It keeps you on your toes. What’s really helpful for
our department: the overall philosophy is to be proactive and to stay on issues before they become a problem. We are invested in being proactive and that makes our job easier. We have over 75 years of trust we’ve earned with the community. We’ve managed the groundwater basin very well compared to other basins in the US. We’ve built an exceptional reputation in the water industry, internationally. The smallest communication with residents can make or break a project.

JM: The only thing I would add to that is the GWRS was a tremendous outreach effort.

ET: There are a lot of myths and whatnot. The district spent about $4 million from 2001-2008 just for outreach on the GWRS project. This included consultant fees and information translated into different languages. That outreach project hosted 1,200 presentations. There was no organized opposition as a result. To date, there has been no organization or large group that has come out against the project.

GP: I work for Eleanor. I work on the outreach and education programs. We have a program called the OC conservation program. This includes OC water hero and tours; we partner with MWDOC on that grant. We have rebates that they primarily handle. I attend a lot of community events in the local area. Because we have facilities in Anaheim, we do outreach to the surrounding communities. We try to keep the message consistent and that’s very important to us. As is being very transparent. We have an electronic newsletter we get out through email. We also have events and there’s always a lot going on.
ET: We just got word we’ll be a part of an international study regarding communication. Well be implementing survey devices. Well be drafting questions to see how much people know before tours, etc. Then, we’ll survey afterwards to see how much they learned. We’ll use handheld devices. Part of the proposition 50 grant included funding for survey devices. We estimated we’ll be able to measure 10,000 people a year. This will aide us for grant applications. Many foundations want to see if their investments were good… this is a good way to demonstrate that. Another area Gina is working on is water quality issues. NWRI and Jeff have been good in helping that. Gina is looking at how to communicate about pharmaceuticals and to be transparent.

JM: There are regulated and unregulated contaminants. Retailers send out annually a list of all of the results of compliance monitoring. All OCWD results are complaint. There are two types of retailers: special districts and cities. They have a consumer survey. MWDOC and OCWD do not have retail customers. Unregulated contaminants such as pharmaceuticals… we came up with a brochure on it. The treatment here takes it out. But not everywhere has reverse osmosis. We (NWRI) try to facilitate some of the communication… we are considered independent. We are the research arm for agencies. They have a limited opportunity to do research. They do quite a bit… but it’s very directed to what they do as an agency. Another issue is salinity. It is an issue for the water quality point of view. It degrades pipes and to address it is very expensive. We work on source control and are geared towards recycled water, irrigation, and salinity. If you use recycled water for a plants and it dies, they may blame salinity. It’s a
significant issue. We have also looked at how we value water, how it’s an asset and how people look at it as cheap and always available. This is a concept that is important. If you look at a bushel of corn, if you export it you are also exporting water. It’s a value. It’s a broader concept of how to think about water. Communicating water is becoming more mainstream. If people think it’s valuable, they will invest in it.

AY: I had a question: you mentioned you will be coming up with a tool to measure surveys. What current tools do you use?

ET: A lot of it has to do with support letters. If people have referred other people to tours, then that counts. At large events, we have paper-based tools. We try to measure attitudes and what they have learned.

JM: One way is to do surveys after events. Also, focus groups.

ET: We haven’t done focus groups yet. It is something that is in the back of our minds.

JM: Most agencies do not do polling or evaluations.

ET: We also measure press and press outlets. I don’t know about the county… but we have extensive logs of press articles what we’ve seen on the GWRS, etc. We have also seen awards we have received. They are so many ways to measure.
AY: Are you aware of any research to measure public perceptions in Orange County?

ET: We have some survey results. The Water Resuse association is doing some broad things. It's not southern California. MWDOC has done some.

AY: You have outreach programs like twitter. What outreach programs do you have to reach out to underrepresentated segments of the population?

ET: We have a large segment of the population from South America, Mexico, and Vietnam. For the GWRS, we had outreach. We had materials printed in different languages. Also, culturally there are different experiences with water. Some distrust of government and poor water quality and no infrastructure is what they may have previously experience. These are some challenges we tried to address when communicating with them. Many in the Latino community go out of their way to purchase water and fill up bottles over and over. Educating then about that and how it's not sanitary and not safe. Reeducating people and giving real facts about water. That was a big effort. The Mesa Consolidated Water District did a large outreach project on that because they have a large Latino population.

AY: What kind of general goal are you trying to achieve from your communication program?
ET: That’s a really good question. That people understand how they get their water, the groundwater basin, what it takes to maintain water quality. The innovative ways in which we get water. The value of water and to understand that the imported water we relied on in the past can no longer be relied on. These are the key messages.

JM: To summarize: to get public support. You need it for large projects such as the GWRS. They want to expand the plant. When they have public hearings, they don’t want opposition. That will slow it down.

AY: I really appreciate your time and thank you.
Appendix II: OCWD Water Conservation Programs Factsheet

Water Conservation Programs

The Orange County region is at the forefront of water conservation. The Orange County Water District has made a commitment to practicing and instilling life-long water saving habits. The District’s conservation programs draw families’ attention to the state’s water needs and crisis, teaching them useful and simple ways to reduce water consumption, respect this natural resource and establish a life-long commitment to conserving water.

Children’s Water Education Festival

The Children’s Water Education Festival is a two-day educational event for Orange County’s fourth through sixth grade students. The mission of the Festival is to educate students about the importance of water and to be environmentally responsible in their actions. The Festival is hosted by the Orange County Water District Groundwater Guardian team, comprised of local educators, businesses, government and public agencies, and community volunteers. Disneyland Resort, Municipal Water District of Orange County and the National Water Research Institute have been presenting sponsors for more than 10 years. The Festival began in 1997 in the city of Anaheim, serving 1,000 children, and has grown to be the largest of its kind in the nation, serving over 5,000 children annually and more than 75,000 kids in 13 years.

The environmental issues that precipitated the development of the Festival were the drought-like conditions experienced in the semi-arid region of Orange County, California and the ongoing decrease in Southern California’s imported water supplies. Early on, these events prompted a call to action to educate residents about water issues. Throughout the years, the Festival has empowered children and teachers to help protect and preserve our local water supplies, and to begin a lifelong path of environmental stewardship.

O.C. Water Summit

The O.C. Water Summit provides a platform for individuals to engage with business, community and civic leaders to learn where our water comes from and about the water supply crisis and water quality challenges we face. The event educates the public on what temporary measures are in place to address these issues, as well as possible long-term solutions for water reliability and preserving the Bay-Delta River, California’s main source of water.

A collaborative effort between businesses, water agencies and local governments, the Summit provides a platform for individuals in the community to work with water utilities and legislators on creating and implementing solutions that will see Orange County through future water challenges. Topics for each Summit are determined according to the water climate.