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1 FENNEMORE CRAIG, P.C. 2006 OCT 27 P 12: 52  
 2 Jay L. Shapiro (No. 014650)  
 3 Patrick J. Black (No. 017141) AZ CORP COMMISSION  
 3003 N. Central Ave. DOCUMENT CONTROL  
 Suite 2600  
 4 Phoenix, Arizona 85012  
 5 Attorneys for Gold Canyon Sewer Company

Arizona Corporation Commission  
**DOCKETED**  
 OCT 27 2006  
 DOCKETED BY

**BEFORE THE ARIZONA CORPORATION COMMISSION**

8 IN THE MATTER OF THE APPLICATION  
 9 OF GOLD CANYON SEWER COMPANY,  
 10 AN ARIZONA CORPORATION, FOR A  
 11 DETERMINATION OF THE FAIR VALUE  
 12 OF ITS UTILITY PLANT AND PROPERTY  
 AND FOR INCREASES IN ITS RATES  
 AND CHARGES FOR UTILITY SERVICE  
 BASED THEREON.

DOCKET NO: SW-02519A-06-0015

**NOTICE OF FILING WITNESS SUMMARIES**

14 Gold Canyon Sewer Company ("Gold Canyon") hereby submits this Notice of  
 15 Filing in the above-entitled matter. Attached hereto as Attachment 1 is the Summary of  
 16 Testimony of William Hare, an employee of ADEQ. Attached hereto as Attachment 2 is  
 17 the Summary of Testimony of Steven J. Davidson, P.E., an employee of Brown and  
 18 Caldwell. Mr. Hare and Mr. Davidson are expected to testify on the first day of hearing  
 19 in this docket, Wednesday, November 1, 2006.

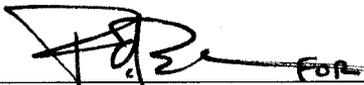
20 Witness summaries for Charles Anthony Hernandez, Greg Sorensen, and Thomas  
 21 J. Bourassa, three witness whose testimony was prefiled in this docket, will be filed on  
 22 Monday, October 30, 2006.

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DATED this 27th day of October, 2006.

FENNEMORE CRAIG, P.C.

By  \_\_\_\_\_  
Jay L. Shapiro  
Patrick J. Black  
3003 North Central Avenue, Suite 2600  
Phoenix, Arizona 85012  
Attorneys for Gold Canyon Sewer Company

ORIGINAL and thirteen (13) copies of the foregoing were delivered this 27th day of October, 2006, to:

Docket Control  
Arizona Corporation Commission  
1200 W. Washington St.  
Phoenix, AZ 85007

A copy of the foregoing was hand-delivered this 27th day of October, 2006, to:

Chairman Jeff Hatch-Miller  
Arizona Corporation Commission  
1200 W. Washington Street  
Phoenix, AZ 85007

Commissioner William A. Mundell  
Arizona Corporation Commission  
1200 W. Washington Street  
Phoenix, AZ 85007

Commissioner Mike Gleason  
Arizona Corporation Commission  
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1 Commissioner Kristin K. Mayes  
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7 Dwight D. Nodes  
8 Assistant Chief Administrative Law Judge  
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11 Phoenix, AZ 85007

11 Keith Layton  
12 Legal Division  
13 Arizona Corporation Commission  
14 1200 W. Washington Street  
15 Phoenix, AZ 85007

14 Dan Pozefsky  
15 Residential Utility Consumer Office  
16 1110 W. Washington Street, Ste. 200  
17 Phoenix, AZ 85007

17 A copy of the foregoing was mailed  
18 this 27th day of October, 2006, to:

19 Andy Kurtz  
20 MountainBrook Village at Gold Canyon Ranch Association  
21 5674 South Marble Drive  
22 Gold Canyon, Arizona 85218

22 Mark A. Tucker  
23 2650 E. Southern Ave.  
24 Mesa, AZ 85204

24 By: *Maria Sanjore*  
25 1849775.1/41452.015

26

# **Attachment 1**

**Summary of Testimony  
of  
William Hare**

**GOLD CANYON SEWER COMPANY**

**Docket No. SW-02519A-06-0015**

**Summary of Testimony of William Hare**

Mr. William Hare is employed by ADEQ in the Water Quality Field Services Unit. Mr. Hare has conducted several inspections of Gold Canyon Sewer Company's wastewater treatment facilities, including inspections in May and October, 2006, in response to odor complaints. See June 2006 Report at 6-7, Attachment A, and October 19, 2006 Report, Attachment B.<sup>1</sup> Mr. Hare will be called to testify regarding ADEQ's inspections of the Company's facilities and his written reports in response to odor complaints.

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<sup>1</sup> ADEQ's June 13, 2006 Report is also attached to the prefiled Rebuttal Testimony of Charles Anthony Hernandez at Hernandez Rebuttal Exhibit 1. The non-compliance items reported at that time were unrelated to odors and have since been resolved. See Rejoinder Testimony of Charles Anthony Hernandez at Hernandez Rejoinder Exhibit 2.

# **Attachment A**

**to William Hare's Testimony Summary**

**ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY  
 WATER QUALITY DIVISION - WATER QUALITY COMPLIANCE SECTION  
 Field Services Unit**

**SUMMARY OF INSPECTION - WASTEWATER**

**Facility:** Gold Canyon Sewer Company

**Place ID:** 8561

**Aquifer Protection Permit (APP) No:** P100217

**AZPDES Permit No:** N/A

**Reuse Permit No:** R100217

**Inventory No:** 100217

**Inspected by:** William J. Hare, E.P.S.

**Inspection Date:** May 10, 2006

**Start Time:** 9:00am

**End Time:** 12Noon

**Accompanied by:** See List below

**Report Date:** June 13, 2006

YES   NO   N/A   UNKNOWN

1. WWTF quality meets the following permit requirements:
  - A. Aquifer Protection Permit
  - B. Reuse Permit
  - C. AZPDES Permit
2. A certified operator is employed by the owner per ADEQ regulations.
3. This system meets permit requirements for operation and maintenance.

	X*		
	X**		
		X	
X			
X			

\* The facility was found to be non compliance with the contingency requirements in the APP.

\*\* The facility was found to be furnishing reclaimed water to several golf courses with a valid Reclaimed Water General Permit.

Facility Description

The permittee is authorized to operate a 1.9 million gallons per day (MGD) wastewater treatment plant (WWTP), using two treatment trains. The facility has undergone a major expansion and a permit amendment has elevated the design rate and flow limit to 1.9 MGD. The facility has a new headworks with a two staged chemical wet scrubber, two extended aeration treatment trains each consisting of nitrification, clarification and disc filtration. The facility utilizes liquid chlorine for disinfection. Sludge is dewatered in a belt press with a drum thickener and stored onsite in large rolloffs. The sludge from the rolloffs is hauled to an approved disposal facility. Effluent is disposed by reuse and/or recharged. When it is reused, it is pumped to effluent

storage ponds located at the various permitted reuse sites (golf courses), and then used for irrigation under a valid reclaimed water permit. When effluent is recharged, it is disposed in three recharge basins or vadose zone wells. The current APP authorizes disposal of effluent for recharge if the effluent has been denitrified.

#### Inspection Purpose and Scope:

This was a compliance and odor complaint inspection. ADEQ has recently received numerous odor complaints regarding septic odors near the WWTP in the vicinity of the nearby strip mall which is located west of the WWTP. The inspection was conducted to determine compliance with A.A.C. Title 18-9-B201.J., which requires that the owner of a WWTP shall not operate the facility so that it emits an offensive odor on a persistent basis beyond the setback distances applicable to the sewage plant which is 350 feet at Gold Canyon.

The inspection also entailed an examination of the self monitoring report forms (SMRFs) and compliance with the most recently issued Aquifer Protection Permit and Reuse Permits.

#### Individuals present during the inspection with titles:

Gary Burkhead-Operator; Charles Hernandez-General Manager; Bill Hare ADEQ Inspector  
Scott Hershberger- ADEQ Inspector; Reg Glos, Director, Pinal County Health Department

#### Summary of Inspection

##### Permit Status:

On December 1, 2005 ADEQ's Water Permits Section issued an amended APP to the Gold Canyon Sewer Company with LTF No. 32629. The amended permit implemented several changes including elevating the design rate from 1.0 to 1.9 MGD. The effluent was reclassified from B to A+ and monitoring parameters and requirements were changed to A+. The permit also implemented a Compliance Schedule in Section 3.0 which required the construction of an up-gradient monitoring well designated a POC #2. This well was to have been constructed by March 1, 2006 which is 90 days from the signature date of the APP.

The permit also established the AL and AQL in the POC monitoring well No. 1 as 8mg/L and 10 mg/L. Contingency requirements for AL and AQL exceedances were listed in Section 2.62 of the APP.

#### APP Inspection

##### Pre-Inspection File Review of the self monitoring report forms (SMRFs):

A review of the SMRFs revealed elevated levels of Total Nitrogen during effluent monitoring regarding the rolling geometric mean for the months of July – October of 2005. This occurred under Permit LTF No. 29699, which has been superseded by LTF No. 32629. The previous permit, LTF No. 29699, did not have a discharge limit (DL) for Total Nitrogen when the old

treatment plant was in use. The values for this parameter varied from 10.91 – 11.96 mg/L during July – October 2005.

Effluent monitoring for the 1<sup>st</sup> quarter of 2006 was much improved and the rolling geometric mean for Total Nitrogen has ranged from 6-8 mg/L. The DL for Total Nitrogen in Permit LTF No. 32629 is 10 mg/l.

The pre-inspection file review also noted that the facility exceeded the alert level (AL) and the Aquifer Quality Limit (AQL) for Total Nitrogen in the groundwater POC well No. 1 during the 1<sup>st</sup> Quarter of 2006. The AL is listed in the permit as 8 mg/L and the AQL is 10mg/L. The values varied from 10.9 mg/L in January, 9.71 mg/L in February and 8.2 mg/L in March of 2006. The facility had failed to implement the contingency requirements in the APP for AL and AQL exceedances.

#### Reuse Permit Status Inspection:

The facility furnished water data regarding the amount of reclaimed water that is being pumped to several golf courses. At the time of the inspection 100% of the effluent was being utilized for irrigation of the golf courses and no recharge projects were underway. The facility continues to furnish reclaimed water to the following golf courses:

**Mountain Brooke** (one 18 hole golf course) – daily rates vary from 100,000 – 150,000 g.p.d. in the summer months. (R100217-expired on June 15, 2004)

**Gold Canyon Resort** (two 18 hole golf courses) – daily rates vary from 160,000 – 240,000 g.p.d. in the summer months. (R100217-expired on June 15, 2004)

**Gold Canyon RV Resort** (one 9 hole golf course) – daily rates vary from 85,000 – 131,000 g.p.d. in the summer months. (R100217-expired on June 15, 2004)

**Superstition Mtn. Resort** (two 18 hole golf courses) – daily rates vary from 136,000 – 304,000 g.p.d in the summer months. - R105605 was issued on March 8, 2005 and is still valid.

It is noted that Individual Reuse Permit No. R100217 has expired on June 15, 2004. This permit had authorized the discharge of reclaimed water to Mountain Brooke, Gold Canyon Resort and the Gold Canyon RV Resort Golf Courses. The General Manager advised that the utility is in the process of applying for a General Reclaimed Water Permit. The facility was advised that providing reclaimed water to a golf course with a valid Reclaimed Water Permit was a violation of the Arizona Administrative Code, R18-9-704(A).

The Golf Course at the Gold Canyon RV Park was visited at the time of the site visit. The manager advised that about 95% of the water utilized for irrigation of the golf course is furnished by the Gold Canyon Sewer Company. The inspection noted that more signage is needed along the golf course ponds cautioning about the utilization of Reclaimed Water. This particular golf course was inspected because of allegations by golf course employees that reclaimed water was causing a rash on their arms and a related Workers Compensation Claim. The manager stated that he suspected that the use of Copper Sulfate as an algacide in the pond water might have been a factor in the rash that has occurred on the arms of the employees at the park.

The ADEQ inspector informed the manager that the point of compliance (POC) for effluent monitoring is the effluent wetwell at the WWTP as listed in APP No. P100217 and not the golf course ponds. The manager advised that he had obtained services from a private laboratory to have the golf course pond water tested for various parameters.

Site Inspection of the WWTP Components:

The inspection of the operational components did not reveal any deficiencies. The headworks room was found to be functioning adequately. The aeration in the aerobic units was noted to be uniform. The clarifier(s) and the sand filter(s) were also functioning adequately. The turbidity was noted to be 1.27 NTU at the time of the inspection. The effluent was observed to be very clear.

At the time of the inspection the operator was utilizing the sludge belt press. The device was found to be functioning adequately. No offensive odors were noted during the operation of this device. The operator noted that the belt press is utilized 2 times a week at 4 hours per session. Each 4 hour session generates about 20 cubic yards of filter cake which is 13% solids. The sludge is hauled offsite within 24 hours of the cessation of the belt press process. This is done to minimize odors, although the filter cake did not generate any offensive odors at the time of the inspection.

Compliance Schedule for Construction of POC Monitoring Well No. 2

The inspection noted that POC Well No. 2 had been constructed in January of 2006. The well was constructed at the same depth as POC Well No. 1, which is believed to be > 300 feet below surface (fbs). The operator noted that the facility had been unable to obtain sufficient water from this well to commence groundwater sampling as required in the APP Compliance Schedule. The facility will be preparing a report to ADEQ's WPS regarding this issue and whether or not construct this well at a greater depth.

Odor Inspection:

Within the last 30 – 45 days, ADEQ has received several complaints from Gold Canyon residents regarding septic odors that have been detected near the WWTP. These complaints address septic odors detected in the vicinity of the WWTP. Most of the complaints address septic odor detected at the golf course greens and nearby strip mall during the early morning and late evening hours. These areas are beyond the 350 foot setback requirements in the Arizona Administrative Code (AAC) Title 18-9-B201.I. ADEQ has received several complaints during the last 30 days.

The following areas were inspected during a tour of the WWTP and nearby areas:

- The two stage wet scrubber and headworks areas were inspected along with other operational components at the WWTP. The inspection noted that each component of the WWTP was covered. Negative air pressure was engineered within each component that has allowed septic odors from the referenced components to be piped to a two stage

chemical scrubber. This included all components within the WWTP including the headworks building and sludge processing areas, where most of the septic odors originate. **No septic or otherwise offensive odors were detected during a tour of the WWTP.**

- The inspection noted that even when the door to the headworks building was opened, NO septic odors were detected due to the negative air pressure within the building. The two stage chemical scrubber was found to be operating adequately. In addition, the secondary scrubber which consists of activated charcoal for the sludge processing area, was also found to be functioning adequately. **No septic or otherwise offensive odors were detected during a tour of the WWTP.**
- The gold course greens near and around the WWTP were toured in an effort detect any septic odors. This included the 12<sup>th</sup>, 13<sup>th</sup>, 14<sup>th</sup> and 15<sup>th</sup> greens. **No septic or otherwise offensive odors were detected during the tour.**
- The strip mall was also inspected including the area immediately in front of Basha's grocery store which was reported to periodically have septic odors. **No Septic or otherwise offensive odors were detected.**
- The Basha's liftstation was inspected. **No septic or otherwise offensive odors were detected during the inspection. However, the operator noted that during the early morning and late evening hours this liftstation can emit septic odors.** The owner of the strip mall has been contacted and is in the process of installing a odor scrubber on the liftstation.
- The area of the De La Cruz restaurant was inspected. Some grease tubs were stored in the back area and were emanating some offensive odors. The manager was contacted who agreed to have the spent grease containers picked up on a more frequent basis.

#### Findings:

The inspection did not specifically identify the source of septic odors that were reported by Gold Canyon residents during the previous weeks. The odor scrubbing devices at the sewer plant were found to be functioning adequately. In addition, no septic odors were detected during a tour of the various sites near and around the WWTP. A 'musty' or 'earthy' odor was detected on the golf course greens possibly originating from the sludge belt press assembly. However, this odor was not found to be offensive by the inspection team.

#### Compliance Summary

**1. Monitoring and Reporting Requirements. (A) Aquifer Protection Permit -** The inspection found that the facility failed to comply with the contingency requirements of the APP which required verification sampling after the occurrence of an exceedance. The facility experienced AQL exceedances of Total Nitrogen from the POC well. **Rating: Non Compliance.**

**1.(B) Reclaimed Water General Permit** – The inspection found that the facility had furnished reclaimed water to three golf courses without a valid Reclaimed Water General Permit.

**Rating: Non Compliance**

**2. Operator Certification Requirements.** The WWTP is classified as a Class 3 WWTP and the collection system is classified as a Class 2 Collection System. Gary Burkhead is the operator and holds a Grade 4 WWT and a Grade 3 WWC license issued by ADEQ.

**Rating: Compliance**

**3. Maintenance (O&M) Requirements.** The facility was in compliance with the various O & M requirements of the APP No. P100217. This includes the various treatment plant components including the air scrubber devices within the WWTP. **Rating: Compliance**

**End of Report**

# **Attachment B**

**to William Hare's Testimony Summary**



Janet Napolitano  
Governor

# ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007  
(602) 771-2300 • www.azdeq.gov



Stephen A. Owens  
Director

October 19, 2006

Charles Hernandez, Operations Manager  
Algonquin Water Resources of America Inc.  
5301 South Superstition Mountain Drive  
Gold Canyon, AZ 85218

**Re: Odor complaint inspection of the Gold Canyon Sewer Company Wastewater Treatment Plant (WWTP), APP No. P100217, Reuse Permit No. R100217, Inventory No. 100217, Middle Gila River Watershed, Inspection ID 92929**

Dear Mr. Hernandez:

The Water Quality Field Services (WQFSU) of the Arizona Department of Environmental Quality (ADEQ) has enclosed an inspection report regarding the odor complaint inspection conducted at the above referenced facility on October 4, 2006. The inspection was conducted to determine compliance with Arizona Revised Statute (A.R.S.) Title 49, Chapter 2, Article 3 and Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, and pursuant to the authority in A.R.S. §49-203(B)(1) and A.A.C. R18-9-110 (A).

As indicated in the enclosed "Summary of Inspection," no significant sources of odor were identified during the inspection. There were some areas of faint or intermittent odor that were identified at the Bashas Gold Canyon Shopping Center as well as at the Gold Canyon Sewer Plant. There are recommendations noted at the end of the report.

ADEQ thanks you for your efforts in protecting the public health and the environment.

Sincerely,

William J. Hare, E.P.S.  
Water Quality Field Services Unit

cc: Pinal County Health Department  
Mr. James P. Gilligan, Owner, Bashas Gold Canyon Shopping Center, P. O. Box 14567  
Scottsdale, AZ 85260

CTS# 140710

Northern Regional Office  
1801 West Route 66 • Suite 117 • Flagstaff, AZ  
86001

Southern Regional Office  
400 West Congress Street • Suite 433 • Tucson, AZ  
85701

**ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY  
 WATER QUALITY DIVISION - WATER QUALITY COMPLIANCE SECTION  
 Field Services Unit**

**SUMMARY OF INSPECTION - WASTEWATER**

**Facility:** Gold Canyon Sewer Company

**Place ID:** 8561

**Aquifer Protection Permit (APP) No:** P100217

**AZPDES Permit No:** N/A

**Reuse Permit No:** R100217

**Inventory No:** 100217

**Inspected by:** William J. Hare, E.P.S.

**Inspection Date:** October 4, 2006

**Start Time:** 10:00 a.m.

**End Time:** 12 Noon

**Accompanied by:** Charlie Hernandez

**Report Date:** October 19, 2006

YES   NO   N/A   UNKNOWN

1. WWTF quality meets the following permit requirements:
  - A. Aquifer Protection Permit
  - B. Reuse Permit
  - C. AZPDES Permit
2. A certified operator is employed by the owner per ADEQ regulations.
3. This system meets permit requirements for operation and maintenance.

X*			
X*			
		X	
X			
X			

\* This was an odor complaint inspection and the APP and Reuse Permits were not addressed.

Facility Description

The permittee is authorized to operate a 1.9 million gallons per day (MGD) wastewater treatment plant (WWTP), using two treatment trains. The facility has undergone a major expansion and a permit amendment has elevated the design rate and flow limit to 1.9 MGD. The facility has new headworks with a two staged chemical wet scrubber, two extended aeration treatment trains each consisting of nitrification, clarification and disc filtration. The facility utilizes liquid chlorine for disinfection. Sludge is dewatered in a belt press with a drum thickener and stored onsite in large rolloffs. The sludge from the rolloffs is hauled to an approved disposal facility. Effluent is disposed by reuse and/or recharged. When it is reused, it is pumped to effluent

storage ponds located at the various permitted reuse sites (golf courses), and then used for irrigation under a valid reclaimed water permit. When effluent is recharged, it is disposed in three recharge basins or vadose zone wells. The current APP authorizes disposal of effluent for recharge if the effluent has been denitrified.

#### Inspection Purpose and Scope:

This was a compliance and odor complaint inspection. ADEQ has recently received several odor complaints regarding septic odors near the WWTP and in the vicinity of the nearby shopping center which is located west of the WWTP. The inspection was conducted to determine compliance with A.A.C. Title 18-9-B201.J., which requires that the owner of a WWTP shall not operate the facility so that it emits an offensive odor on a persistent basis beyond the setback distances applicable to the sewage plant which is 350 feet at Gold Canyon.

#### Summary of Inspection

##### Site Inspection of the WWTP Components:

The inspection of the operational components did not reveal any deficiencies. The headworks room was found to be functioning adequately. The aeration in the aerobic units was noted to be uniform. The clarifier(s) and the sand filter(s) were also functioning adequately. The turbidity was noted to be 2.0 NTU at the time of the inspection. The effluent was observed to be very clear.

The operator noted that he removes the "screenings" from the headworks building about 1-2 times per week. The garage door to the headworks building is opened for a small amount of time, 10-15 minutes. The "screenings" are not stored onsite and are removed on the same day. This process is performed while negative air pressure is functional within the headworks building.

At the time of the inspection the air scrubber was undergoing a 30 minute routine maintenance procedure. A moderate of septic odors were detected in and around the headworks building. After the air scrubber device was operational the septic odors were no longer detected. This maintenance is performed on the air scrubber on a quarterly basis.

At the time of the inspection the operator was not utilizing the sludge belt press. The operator noted that the belt press is utilized 2 times a week at 4 hours per session. Each 4 hour session generates about 20 cubic yards of filter cake which is 13% solids. The sludge is hauled offsite within 24 hours of the cessation of the belt press process. This is done to minimize odors, although the filter cake did not generate any offensive odors at the time of the inspection. The facility only operates the digester in aerobic modes. No decant process is necessary as the facility utilizes a polymer thickener to increase the percentage to solids within the filter cake.

It should be noted that occasional pockets of musty or earthy odors were detected while walking near the WWTP components. These odors were faint and intermittent and not considered offensive.

Odor Inspection of the Shopping Center:

The inspection entailed a tour/inspection of the shopping center. Most of the complaints address septic odor detected at the nearby strip mall during the early morning and late evening hours and near residential areas located just north of the WWTP. Some of these areas are within the 350 foot setback requirements in the Arizona Administrative Code (AAC) Title 18-9-B201.I.

The following areas were inspected during a tour of the WWTP and nearby areas:

- The front parking lot area was inspected including the area immediately in front of Basha's grocery store which was reported to periodically have septic odors. No Septic or otherwise offensive odors were detected.
- The Basha's liftstation was inspected. No septic or otherwise offensive odors were detected during the inspection. However, the operator noted that during the early morning and late evening hours this liftstation can emit septic odors. The owner of the strip mall has been contacted and had previously agreed to install an odor scrubber on the liftstation. To date, the odor scrubber had not been installed.
- The area behind the shopping center was inspected. Some areas of concern were noted. However these areas were not suspected as the source of odor complaints because the odor was faint from the below listed sources:
  1. Waste grease tubs were full and emitted some odors.
  2. The dumpster was overflowing trash and waste. Some very minimal odors were present.
  3. There was staining on the newly resurfaced asphalt indicating some discharge of wastewater from the back area of the shopping center to a storm water drain. The vault in the drain emitted some minor odors. This was in the northwest corner of the back area.
  4. An area near the Jack in the Box Restaurant contained a small grease pit and emitted a very minimal odor.

Findings:

The inspection did not specifically identify the source of septic odors that were reported by Gold Canyon residents during the previous weeks. Some minimal and intermittent odors were detected at the WWTP, but these odors were not offensive. There were also faint odors from several areas in the back portion of the nearby shopping center. These areas were also not considered the source of ongoing complaints from Gold Canyon residents.

Compliance Summary

**1a. Monitoring and Reporting, Not inspected.**

**1b. Reuse Permit Requirements. Not inspected.**

**2. Operator Certification Requirements.** The WWTP is classified as a Class 3 WWTP and the collection system is classified as a Class 2 Collection System. Charlie Hernandez is the operator and holds a Grade 4 WWT and a Grade 4 WWC license issued by ADEQ.

**Rating: Compliance**

**3. Maintenance (O&M) Requirements.** The facility was in compliance with the various O & M requirements of the APP No. P100217. This includes the various treatment plant components including the air scrubber devices within the WWTP.

Recommendation:

The utility should install H<sub>2</sub>S monitors on the perimeter of the property with low detection limits in an effort to verify if any of sulfide gases are being emitted from the WWTP.

**End of Report**

# **Attachment 2**

**Summary of Testimony  
of  
Steven J. Davidson, P.E.**

## **GOLD CANYON SEWER COMPANY**

**Docket No. SW-02519A-06-0015**

### **Summary of Testimony of Steven J. Davidson**

Mr. Steven J. Davidson is a Project Engineer with Brown and Caldwell. He has over 33 years of experience designing, operating, and constructing environmental control systems for industrial and municipal facilities. He serves as one of Brown and Caldwell's senior odor control experts, and has extensive experience in air emission control, sulfide and odor control chemistry, wastewater treatment, HVAC and energy conservation, and air handling systems. Mr. Davidson's Resume is included as Attachment A.

Brown and Caldwell was hired by Gold Canyon Sewer Company in response to concerns expressed by the Commission over continued complaints by residents over odors. Mr. Davidson inspected the Company's facilities to conduct an odor evaluation. Brown and Caldwell's report entitled *Gold Canyon Water Reclamation Plant Odor Control Survey, October 2006*, is included as Attachment B. Brown and Caldwell's analysis concludes that the Company's facilities are designed to achieve "very high odor removal" and that "odor containment is virtually 100 percent effective". Attachment B at 3. Mr. Davidson will be called to testify to the results of his inspection and the written report.

# **Attachment A**

**to Steven J. Davidson's Testimony Summary**

## Experience Summary

Steve Davidson has over 33 years of experience designing, operating, and constructing environmental control systems for industrial and municipal facilities. He serves as one of Brown and Caldwell's senior odor control experts, and has extensive experience in air emission control, sulfide and odor control chemistry, wastewater treatment, HVAC and energy conservation, and air handling systems. Mr. Davidson served on the WEF Volatile Organic Compounds (VOCs) Task Force.

### Assignment

*Principal Engineer*

### Education

*M.B.A., University of Colorado, 1974*

*B.S., Chemical Engineering, University of Colorado, 1972*

### Registration

*Professional Engineer 81508, Arizona, 1997*

*Professional Engineer 14997, Colorado, 1977*

### Training/Certification

*Qualified Environmental Professional (QEP), Institute of Professional Environmental Practice*

### Experience

*33 years*

### Joined Firm

*1982*

## Wastewater

### **Southern Ave. Interceptor Odor Control Study and Treatment Design, Phoenix, Arizona**

**Project Manager.** Conducted a comprehensive evaluation of odor and sulfide conditions along a 15-mile length of the Southern Avenue Interceptor. The project included a comprehensive odor and wastewater characterization, sewer headspace pressure analysis, analysis and testing of chemical sulfide controls, testing foul extraction of the sewer headspace, evaluation of foul air treatment alternatives, and conceptual design of odor abatement stations.

### **91st Avenue Wastewater Treatment Plant (WWTP) Odor Control Facilities, Phoenix, Arizona**

**Project Manager.** Responsible for the design of \$10 million of foul air containment and treatment facilities at the 190-mgd 91st Avenue WWTP. Project includes upstream chemical treatment evaluation and chemical addition facilities, 60,000 square feet of new tank and channel cover systems in the WWTP headworks processes, and treatment through two dual stage scrubbers. Systems also include a new two-stage scrubber handling highly concentrated (up to 500 ppm H<sub>2</sub>S) from the plant's Solids Handling Facility.

### **Southeast Water Reclamation Plant (SEWRP) Odor Control Systems, Mesa, Arizona**

**Project Engineer.** Responsible for the evaluation and design of odor control measures for the SEWRP, which is housed in the center of the Superstition Springs Golf Course. Primary sedimentation basins and both aeration basins are covered and the foul air is treated in multistage odor scrubbers. Covered secondary clarifiers are ventilated to an activated carbon odor adsorber. Ferrous chloride addition system was designed to pre-treat sludge returned to the Baseline Road Interceptor sewer line.

### **Randolph Park Water Reclamation Facility Odor Control Systems, Pima County, Tucson, Arizona**

**Project Engineer.** Responsible for the evaluation and design of odor control systems at the Randolph Park Water Reclamation Facility (WRF), and associated influent pumping station. The facility is a 3-mgd membrane facility that will provide A+ reuse water for Randolph Park Golf Course and other Pima County facilities. Being located in the center of Tucson,

this project required extremely effective odor control to be achieved with very limited space. Two, packaged multistage scrubbers are utilized to insure the Plant and lift station are odor free.

**Greenfield Water Reclamation Plant, Phase 2 Expansion, Solids Treatment Processes, City of Mesa, Arizona**

**Odor System and HVAC Design Manager.** Responsible for the design and implementation of the solids handling odor control systems. Project included a new, 40,000 cfm, two stage wet chemical scrubber system and chemical handling facility for centrifuge and sludge handling equipment odor control. NFPA classification analyses were developed in this work. HVAC design included multiple make-up air systems for the solids building, digester galleries, and boiler facility; and new air conditioning and air filtration systems for new control centers and electrical rooms.

**Baseline Road Siphon Biofilter Evaluation and Reconstruction, City of Mesa.**

**Project Manager.** Conducted a detailed evaluation of a poorly performing packaged biofilter, treating foul air from a 30 MGD 3-barrel siphon. Study included headspace pressure analysis and reduce sulfur testing to determine compounds that were not adequately treated in the biofilter. Managed the subsequent design and construction phases to replace the original biofilter emissions control system with a combined bioscrubber/biofilter treatment system suitable to handle H<sub>2</sub>S concentrations of up to 400 ppm.

**Littleton/Englewood Wastewater Treatment Plant Upgrade, Colorado**

**Odor and HVAC Systems Design Manager.** Over the past 15 years, completed all odor and HVAC system designs for 3 major plant upgrades. Significant project elements include foul air collection and treatment involving all major process areas using chemical wet scrubbers (2 systems), trickling filter ventilation with headworks foul air, foul air conveyance from off-site interceptor siphons to the plant odor systems, and two nitrifying trickling filters treating DAFT and solids handling facility foul air. All systems underwent extensive evaluation and testing after completion, and were the basis for technical papers authored by Mr. Davidson.

**Sioux City Odor Control, Sioux City, Iowa**

**Project Manager/Design Manager.** Responsible for a wastewater treatment plant modification and improvements program initiated to reduce odors and improve sludge handling. Project included installing gravity belt thickening equipment, modifying the facility's sludge lagoons to reduce lagoon odors, covering rectangular clarifiers to convey and treat clarifier off-gases, evaluating and implementing upstream chemical addition for dissolved sulfide, and odor and corrosion control.

**WWTP Improvement Projects for Evaluating and Reducing Odor and Corrosion**

As a senior level odor expert in the company, conducted or contributed to several odor projects in the capacity of either senior technical advisor, project manager, or design engineer. These projects focused on plant and collection systems sulfide and odor assessments, liquid chemical treatments, and collection and treatment of foul air. Project locations include:

- Central Valley WWTP, Salt Lake City, Utah
- King County, Seattle, WA
- Greeley, Colorado
- Northglenn, Colorado
- Colorado Springs, Colorado
- El Paso, Texas
- Wichita, Kansas
- MCES (Minneapolis), Minnesota
- Edmonton, AB, Canada
- Contra Costa Sanitation District
- Omaha, NB
- Lincoln, NB

**Climax Metals Company, Empire, Colorado**

**Project Manager.** Responsible for a peer-review evaluation of mine wastewater treatment feasibility study for the design and construction of a new water treatment plant. The new plant was being evaluated to provide improved water treatment and sludge disposal, improved reliability, and a less operator-intensive operation. Study included evaluation of process alternatives, water chemistry, process flow and mass balances, equipment selection, and process economics. It included analysis of wastewater pipelines, surge pond impoundments, facility siting, equipment layout, permitting, water quality, and sludge Toxicity Characteristic Leaching Procedure (TCLP).

**CRC Wastewater System Evaluation, Colorado Refining Company, Colorado**

**Project Manager.** Responsible for a refinery wastewater treatment plant evaluation of plant waste streams, treatment capabilities, effluent guidelines, and stream standards relative to achieving toxicity reduction and conformance with biomonitoring regulations.

**Moffat Water Filter Plant Upgrade, Denver Water Board, Lakewood, Colorado**

**Project Engineer.** Responsible for chemical treatment systems upgrade at a 210-mgd water treatment plant. Project included evaluating and designing new alum, lime, polymer, caustic soda, and potassium permanganate chemical systems.

**Sioux City Water Treatment Plant Chemical Facility, Iowa**

**Project Manager.** Responsible for a new water plant chemical handling and treatment facility. Provide advanced automated chemical handling and feed systems for chlorine, potassium permanganate, hydrofluoric acid, and caustic soda.

Air Emissions

**Confidential Client, Phoenix, Arizona**

**Design Manager.** Conducted a VOC emissions evaluation of an EPS manufacturing process, and completed a fast track design and construction of an emission control system (ECS). The ECS consisted of regenerative thermal oxidizer, fume hoods, ducting, product enclosure, and associated monitoring and safety systems.

**IEC Test Facility, Electric Power Research Institute, Arapahoe County, Colorado**

**Field Project Manager.** Managed field testing and operation of a 15,000-cfm coal-fired boiler, flue gas treatment pilot plant. System included fabric filters, spray dryer, wet scrubber, electrostatic precipitators, air heater, and supporting liquid cleanup and air handling equipment. Evaluated environmental control inter-relationships and equipment performance in handling gaseous, liquid, and solid emissions and waste products from coal-fired generating facilities. This project received the 1988 Excellence in Environmental Engineering Award from the American Academy of Environmental Engineers.

**Confidential Client, Salt Lake City, Utah**

**Project Manager.** Managed and directed work for a petroleum refinery wastewater system evaluation and design of VOC vapor recovery system. Project included characterization and mapping of refinery process sewers, stormwater sewers, sewer and API separator headspace gas analysis, and design of stormwater surge tanks, pump station, and vapor control system.

**ARCO, Anaconda Division, Denver, Colorado**

**Lead Staff Engineer.** Responsibilities included design and evaluation of dust control, materials handling, Heating, Ventilation and Air Conditioning (HVAC) systems used at open pit coal mines, and crushing and loadout facilities in the Wyoming Powder River Basin. Principal assignments included feasibility studies for improving ventilation and dust control in coal processing and storage areas, as well as preliminary design and evaluation of explosion suppression and venting systems for coal handling equipment.

**Other Experience Includes Engineering and Design of Air Pollution Control and Process Air Handling Systems, Principally:**

- Design and construction of several fume and dust collectors including a 350,000-cfm fabric filter for control of emissions from high temperature ore dryers in Newfoundland, Canada.
- Design of phenolic and resinous fume control systems for several types of process ovens in Kansas, California, and elsewhere.

- Incinerator design for methyl ethyl ketone destruction in Texas.

### **Air Handling/Energy**

Designed HVAC systems for several major wastewater and water treatment facilities and laboratories in:

- Boulder, Colorado
- Colorado Springs, Colorado
- Littleton/Englewood, Colorado
- Central Valley, Utah
- Moffat Water Filter Plant, Colorado

Evaluated process heating and air handling systems at several manufacturing facilities including:

- Commercial Roof Board Manufacturing Facility, Mississippi, Virginia, Illinois
- Gypsum Board Manufacturing Plant, Colorado
- Insulated Firebrick Plant, Pennsylvania
- Fiberglass Insulation Manufacturing Plants, Kansas and California
- Coal Preparation Facilities, Wyoming

Performed energy conservation surveys and analysis for facilities employing ovens, dryers, kilns, and other fuel fired process equipment, including:

- Commercial Roofing Board Multi-Deck Dryers, Mississippi, Virginia, Illinois
- Insulated firebrick kilns and dryers, Pennsylvania
- Fiberglass curing ovens, Kansas and California
- Rotary kiln type ore dryers, Newfoundland, Canada
- Rotary kilns for curing insulated cement admixtures, California

### **Memberships**

American Society of Heating, Refrigerating and Air Conditioning Engineers  
Water Environment Federation

### **Publications/Presentations**

- "Design Challenges in Sewer Foul Air Extraction and Treatment," with E. Lamb, J. Mann, and J. Green.
- "Relationship of Particulate Control, SO<sub>2</sub> Removal, and Waste Management," with J. Edward Cichanowicz and Patrick M. Maroney.
- "Control of Odor Emissions at the Littleton/Englewood Wastewater Treatment Plant," with M.P. Lutz and D.W. Stowe.
- "Evaluation and Control of Air Emissions from Industrial Wastewater Systems," with B. Douglas.

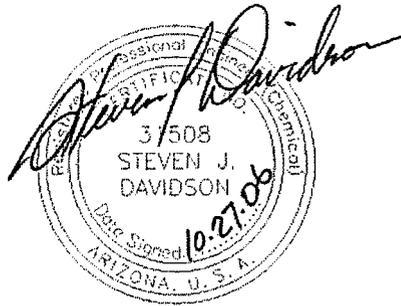
# **Attachment B**

**to Steven J. Davidson's Testimony Summary**

GOLD CANYON SEWER COMPANY

GOLD CANYON WATER  
RECLAMATION PLANT  
ODOR CONTROL SURVEY

OCTOBER 2006



Prepared by

BROWN AND  
CALDWELL

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Phoenix, Arizona 85004

GOLD CANYON SEWER COMPANY  
GOLD CANYON WATER RECLAMATION PLANT  
ODOR CONTROL SURVEY

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FIGURE 1   OCTOBER 16<sup>TH</sup> – 19<sup>TH</sup> 2006 (OdaLOG: OL50125685) ..... Follows Page 3

# GOLD CANYON WATER RECLAMATION PLANT ODOR CONTROL SURVEY

## EXECUTIVE SUMMARY

Brown and Caldwell was retained by Gold Canyon Sewer Company to conduct an odor evaluation at the Gold Canyon Water Reclamation Facility (GCWRF). This evaluation consisted of determining fenceline hydrogen sulfide (H<sub>2</sub>S) concentrations, conducting continuous H<sub>2</sub>S monitoring, and evaluating the Plant's main odor control facilities.

## ODOR DATA EVALUATION AND SUMMARY

Data was obtained over 4 days during the week of October 16, 2006. Forty-eight fenceline measurements were obtained that indicated H<sub>2</sub>S concentrations averaging approximately 4 ppb (ppb). These levels are insignificant, and barely within the accuracy level of the instrument. There were no significant differences in H<sub>2</sub>S concentration upwind or downwind of the Plant treatment systems.

Continuous H<sub>2</sub>S monitoring at the fenceline, over a 3-day period, was consistently 0.00 parts per million (ppm) for the entire monitoring period. By way of perspective, many wastewater treatment plants in Maricopa County have fenceline H<sub>2</sub>S limitations of 30 ppb (0.030 ppm). The GCWRF fenceline concentrations were well below that limit.

On two occasions a faint, short-lived odor was observed directly downwind of the odor control scrubber stack. We believed this occurred due to a malfunctioning chemical feed system that was originally misconstrued as an instrument problem. This fault may have caused a 10 to 15 percent reduction in scrubber efficiency. The chemical feed problem was corrected and produced an immediate increase in scrubber efficiency to greater than 99 percent H<sub>2</sub>S removal.

## CONCLUSIONS

Based on this evaluation, our conclusions are as follows:

- The odor control system is clearly designed for, and capable of, very high levels of odor control. All potential odor sources are enclosed, covered or hooded, and connected to odor control devices. Low fenceline H<sub>2</sub>S concentrations and high scrubber efficiency demonstrate that the system effectively controls odor.
- Other potential odor sources in the adjacent shopping maybe contributing some odors. However, our observations and data did not seem to implicate these businesses as major odor contributors.
- The odor scrubber is an integral part of treatment process. The Plant staff would benefit from obtaining a H<sub>2</sub>S analyzer to periodically check the scrubber exhaust.

B R O W N   A N D  
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# GOLD CANYON WATER RECLAMATION PLANT ODOR CONTROL SURVEY

## INTRODUCTION AND PURPOSE

Brown and Caldwell was retained by Gold Canyon Sewer Company to conduct an odor evaluation at the GCWRF. The odor evaluation activities began on Tuesday, October, 10<sup>th</sup> and were completed October 19, 2006. The odor evaluation consisted of field measurements with high sensitivity H<sub>2</sub>S analyzers, qualitative odor observations on the Plant site and at nearby off-site locations, and an overall assessment of the Plant systems relating to odor control. The objective of the study was to provide a professional assessment of odor conditions at GCWRF with a specific focus on providing analytical data reflecting odor conditions at the Plant.

## Background

The GCWRF is located off U.S. Highway 60 between Superstition Mountain Drive and Mountain Brook Drive. Most of the Plant service area extends about 6 miles to the north and east of the GCWRF.

The area immediately to the northeast of the Plant is a dry wash and a shopping area anchored by a Basha's food store. The area immediately to the north, northwest and west of the Plant are several holes of the Mountain Brook golf course. To the east and southeast is highway U.S. 60. Beyond U.S. 60 to the southeast are RV resorts.

Flow to the Plant is largely by gravity sewers with a few upstream pump stations at various points in the collection system. A small pump station is just north of the Plant fence line handling flow from the Basha's shopping area. A small odor adsorption unit is provided at this pump station. Another pump station at Peralta Road brings flow to the Plant through a force main.

Liquid treatment facilities consist of a headworks building, blower building, primary clarifiers, aeration basins, final clarifiers, and disinfection and recharge basins. Solids are thickened and digested in aerobic digesters. A solids belt press and holding bin are provided for solids handling. Solids dewatering and removal is typically conducted once a week, at which time dewatered biosolids are removed from the site. Liquid treatment occurs continuously and results in reclaimed water that is used for golf course irrigation or recharged through on-site basins.

Odor control facilities include a wet chemical scrubber serving the headworks building, primary clarifiers and aeration basins. An activated carbon system serves the aerobic digesters, solids thickener, solids belt press and final clarifiers. All process areas of the Plant through the final clarifiers are either total enclosed by a building, totally covered by flat aluminum covers or tank domes, or provided with exhaust hoods.

B R O W N   A N D  
C A L D W E L L

GOLD CANYON WATER RECLAMATION PLANT  
ODOR CONTROL SURVEY

## Data Collection

*Data Collection Plan.* The data collection plan was to conduct a "fenceline" odor survey with a high sensitivity H<sub>2</sub>S analyzer. H<sub>2</sub>S is the predominate odorant in wastewater treatment. In liquid treatment processes, it usually constitutes at least 90 percent of the odorous constituents in foul air. It is characterized as a "rotten egg" odor and is highly objectionable. While foul air contains other odorous constituents, H<sub>2</sub>S concentration is typically the best indicator of actual odor conditions. The analyzer we used is the Jerome 631X H<sub>2</sub>S analyzer. This analyzer is recognized throughout the municipal odor control field as the only analyzer with reasonable capability to determine H<sub>2</sub>S concentrations near the odor detection and recognition threshold. It is considered reasonably accurate to within a few ppb H<sub>2</sub>S concentration, and will detect H<sub>2</sub>S at approximately 3 ppb accuracy. A data sheet on the Jerome Analyzer is included in an Appendix to this report.

The Jerome analyzer is a handheld analyzer requiring an individual to activate the instrument to sample at given locations. Thus, the fenceline survey requires an individual to walk around the perimeter of the facility and sample several times with the instrument. It is customary in these surveys to differentiate between upwind and downwind odors; particularly when extremely low concentrations are being measured near the accuracy limit of the analyzer. This type of survey provides an accurate indication of odors at the time the data is obtained.

Odors in wastewater treatment plants are highly variable, and therefore, instantaneous data collection, as provided by a Jerome analyzer, may not decipher odors occurring at other times. Therefore, a second instrument was used that provides continuous concentration data. This instrument is a low-range Odalogger and logs a H<sub>2</sub>S concentration value at 10-minute intervals. The unit is battery powered and provides anywhere from 1 to 14 days of continuous data. The concentration range of the unit is from 10 ppb to 2.0 ppm (2,000 ppb) This unit is placed on a Plant location which represents a good downwind location from Plant processes. This maximizes the chance that odors will be registered on the instrument if they occur at any hour of the day. For these tests, the Odalog was placed at the north fenceline, as southerly winds were observed. This location also placed the Odalog directly downwind of the Plant odor scrubber primary clarifiers and aeration basins.

The test plan called for four distinct fenceline surveys to be conducted on at least 2 different days. Each fenceline survey would encompass measurements at approximately 12 different locations on the Plant perimeter. These locations reflect both upwind and downwind conditions, relative to the treatment system. The Odalog was to be run for at least 3 days.

*Odor Survey Results - October 10<sup>th</sup> through 13<sup>th</sup>.* The initial odor survey began on October 10<sup>th</sup>. During that visit, a Plant familiarization tour was done and adjacent areas were visited to determine all potential odor sources in the area. In the course of the odor inspection we noticed the scrubber circulating pumps were off; perhaps experiencing a malfunction. We noted this condition and advised the Plant staff that we would delay further testing until appropriate repairs were complete. On October 13<sup>th</sup> we were notified that the circulation pumps were operating and that testing could resume.

B R O W N   A N D  
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GOLD CANYON WATER RECLAMATION PLANT  
ODOR CONTROL SURVEY

*Odor Survey Results - October 16<sup>th</sup> through October 19<sup>th</sup>.* On October 16<sup>th</sup> testing resumed at the GCWRF. The Odalog H<sub>2</sub>S analyzer was set and started, and the first of four fenceline surveys were completed. Table 1 summarizes all of the fenceline H<sub>2</sub>S data. A total of 48 data point locations were checked with over 100 individual analyzer readings utilized to produce the data. Fenceline H<sub>2</sub>S concentrations were consistently below 6 ppb as measured by the Jerome 631X analyzer. No significant differences were noted between upwind and downwind measurements.

The Odalog data reflected 0.00 ppm H<sub>2</sub>S throughout the entire duration of the test work. Figure 1 shows the Odalog chart. The visible line on the chart is air temperature and measured off the right vertical axis. The actual H<sub>2</sub>S concentrations are measured off the left axis and are reflected by tick marks which are all located at the 0.00 ppm H<sub>2</sub>S level.

### ODOR CONTROL SYSTEM ANALYSIS

Over the 4 days in which fenceline data was obtained, we detected a faint odor on two occasions downwind of the scrubber exhaust stack. Each situation lasted for just a few seconds and did not produce a noticeable change in analyzer readings. These instances of a faint, intermittent odor are the result of a lack of sodium hypochlorite in the odor scrubber circulating solution. The indicator for sodium hypochlorite presence is oxidation reduction potential (ORP) in the scrubber circulating solution. At the time of these occurrences the scrubber ORP was about minus 400 millivolts (mv), which reflects little, if any, sodium hypochlorite. It was thought that the scrubber ORP instrument reading was in error. However, further testing indicated the instrument readings were correct and that sodium hypochlorite pumping problems were occurring. Negative ORP values reflect low concentration of sodium hypochlorite and would typically account for about a 10 to 15 percent reduction in overall scrubber efficiency. Once this problem was resolved, scrubber ORP values increase from -400 mv to over +700 mv. Exhaust H<sub>2</sub>S concentrations were reduced from approximately 1.5 ppm to 0.04 ppm.

### CONCLUSIONS

The following summarizes our conclusions from the odor survey.

- Our overall assessment of the odor control system design is that it is capable of achieving very high odor removal. The level of odor control was adequate to produce negligible fence-line odors during our odor surveys. Odor containment is virtually 100 percent effective because all odor producing sources are enclosed, covered or hooded, and connected to odor control devices. Scrubber performance is excellent. Our data reflect H<sub>2</sub>S concentrations were reduced from about 5 ppm to approximately 0.04 ppm in scrubber. Thus, 99.2 percent H<sub>2</sub>S removal efficiency was obtained when all scrubber operating parameters were within their recommended ranges.

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GOLD CANYON WATER RECLAMATION PLANT  
ODOR CONTROL SURVEY

TABLE 1

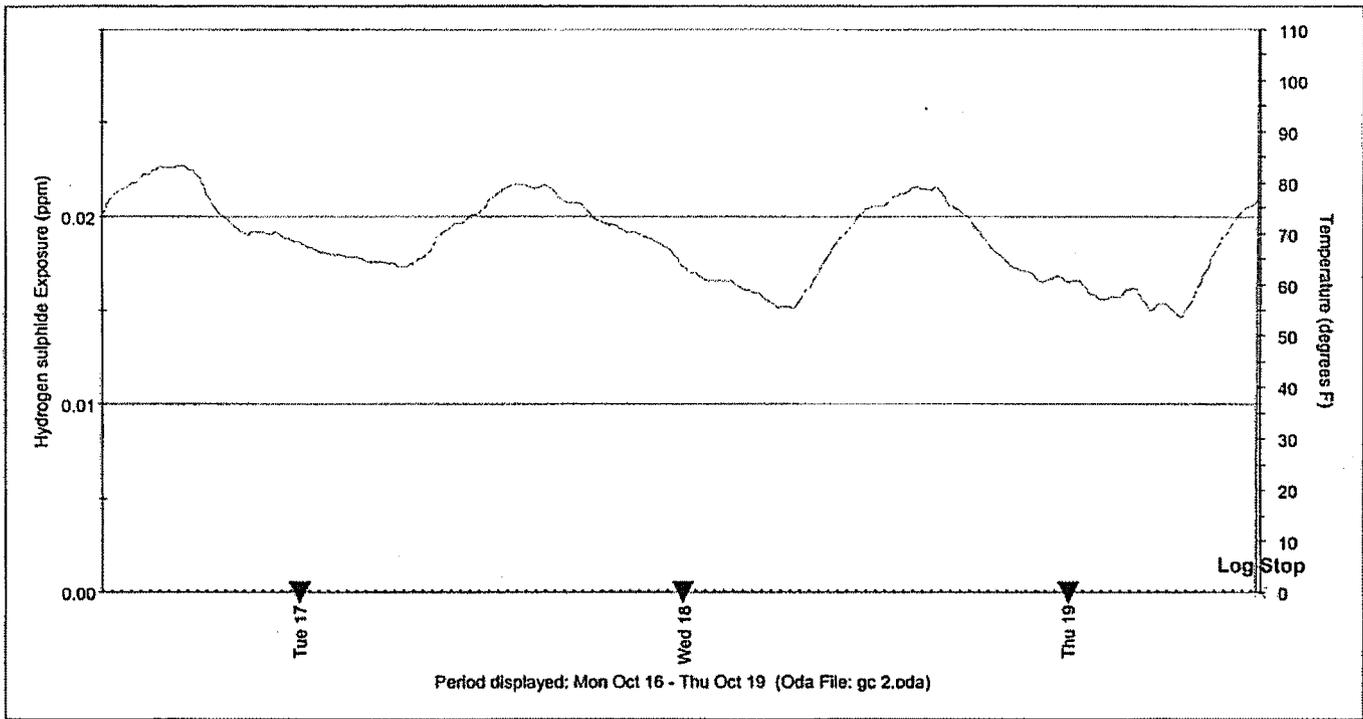
Location	August 16, 2006		August 17, 2006		August 18, 2006		August 19, 2006	
	Average H <sub>2</sub> S (ppb)	Wind <sup>1</sup>	Average H <sub>2</sub> S (ppb)	Wind <sup>1</sup>	Average H <sub>2</sub> S (ppb)	Wind <sup>1</sup>	Average H <sub>2</sub> S (ppb)	Wind <sup>1</sup>
N.W. Corner	3	Downwind	4.5	Lateral to wind	1	Lateral to wind	7	Downwind
West F/L - middle	3	Downwind	3.5	Downwind	3	Downwind	6	Downwind
West F/L at fence jog	3	Downwind	4.5	Downwind	3	Downwind	6.5	Downwind
West F/L behind Odalog	3	Downwind	4	Downwind	6	Downwind	6	Downwind
N.E. Corner behind blower bldg.	5	Downwind	4	Downwind	4.5	Downwind	4	Downwind
North F/L midway	1	Downwind	4.5	Lateral to wind	3	Downwind	4.5	Downwind
North F/L at fence jog	3	Lateral to wind	3	Lateral to wind	4	Lateral to wind	3	Lateral to wind
F/L behind sec. clarifiers	4	Lateral to wind	4	Lateral to wind	3	Lateral to wind	4	Lateral to wind
N/S fence at trailer	3	Upwind	3	Upwind	3	Upwind	3	Upwind
South Point of F/L	4	Upwind	3.5	Upwind	4	Upwind	6	Upwind
Southeast F/L - midway	4	Upwind	4	Upwind	4	Upwind	7	Upwind
Southeast F/L at entry gate	4.5	Upwind	3	Upwind	1	Upwind	4	Upwind

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p:\gold canyon sewer company\131555 - gc odor analysis\deliverables\reports\report.doc\10/27/2006\sjw

FIGURE 1

Gold Canyon WRP - October 16th - 19th, 2006 (OdaLog: OL50125685)



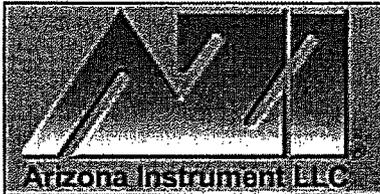
INST : Min (0.00 ppm) Max (0.03 ppm) ▼ Day Transition ..... Average (0.000 ppm) x Event — Temperature

GOLD CANYON WATER RECLAMATION PLANT  
ODOR CONTROL SURVEY

- Other potential odor contributors in the area may be contributing some odors, overall. However, our data and odor observations did not seem to implicate these as serious odor sources, although areas around Basha's trash bins and recovered oil drums are clearly odorous if one is close enough to these areas.
- If the scrubber is not performing correctly, it may be difficult for Plant operators to notice any unusual odor conditions. The reason for this is that the exhaust velocity from the scrubber fan stack results in the odor plume being 40 to 50 feet in the air rather than at ground level. For this reason it is appropriate for the Plant staff to consider on-line instrumentation, or hand-held analyzers to periodically check scrubber exhaust  $H_2S$  concentration. A wide variety of analyzers are available ranging in cost from \$4,000 to over \$20,000.

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**APPENDIX**



Home - Products - Customer Service - International - Contact -

**Related Information**

**Information Request**

Brochures:

English: [Jerome 631](#)

Español: [Jerome 631](#)

Manual: [700-0037](#)

**Jerome Communications Software**

**Field Carrying Case**

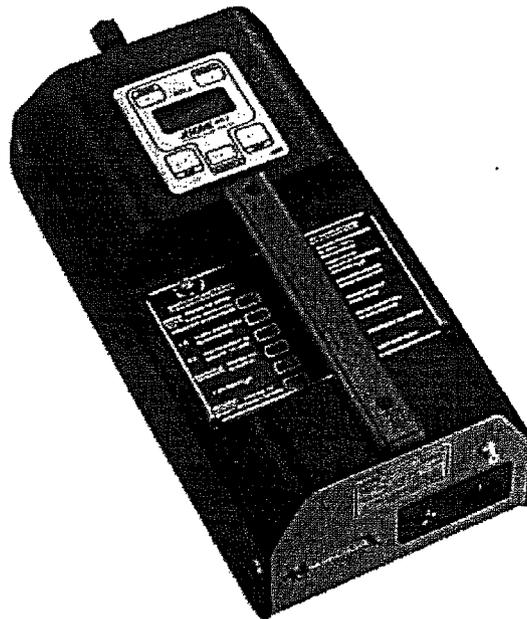
**Hard Carrying Case**

**Jerome Rentals**

Problems opening documents?  
You may need to install the latest  
Adobe Acrobat Reader.



## Jerome<sup>®</sup> 631-X Hydrogen Sulfide Analyzer



With the push of a single button the Jerome 631-X hydrogen sulfide analyzer displays concentrations in just seconds. The instrument measures concentrations of 0.003 - 50 ppm for odor and leak detection in such industries as water treatment, oil and gas, pulp and paper, and food processing. This simple-to-use instrument weighs only 1.5 lbs and has an internal rechargeable battery. It is easily carried to suspected sour gas locations for detection and measurement. The Jerome 631-X automatically displays hydrogen sulfide concentrations as quickly as every 10 seconds.

The Jerome 631-X utilizes a patented sensor that uses the sensor's selectivity to hydrogen sulfide to ignore interferences from sulfur dioxide, carbon monoxide, and water vapors. When the "Measure" button is pressed, an internal pump draws a sample of air into the sensor. Any hydrogen sulfide in the sample is detected by the sensor which registers a proportional resistance. The hydrogen sulfide concentration is then displayed on the LCD, where it

remains until the next sample is taken.

Additional accessories are available to customize the Jerome 631-X to meet your specific needs. For unattended sampling, the instrument can be programmed by a computer using the Jerome Communications Interface (JCI) software. A data logger plugs into the back of the instrument for data acquisition during portable surveys or unattended sampling without a computer. The data can be downloaded later to the computer using the JCI software for analysis printout and record keeping. An internal option board allows autozeroing, DC power operation, timed sampling during prolonged unattended sampling periods. The option board also provides for fresh air solenoid support and 4-20 mA or 0-2 V analog output. Instrument can be used in the field using the Functional Test Module (FTM). A molded hard carrying case is available to add versatility and organized storage for the instrument and its accessories.

### 631-X Features

- Accurate analysis of hydrogen sulfide in seconds
- Rugged and easy to operate

- Rechargeable internal battery pack for portability
- Automatic backlight for LCD during low light conditions
- Microprocessor ensures a linear response throughout the entire range
- Survey mode for rapid source detection of hydrogen sulfide concentration
- Wide detection range allows multiple applications
- Pressure sensitive membrane switch operation
- Inherently stable gold film sensor

### Optional Accessories

- **Data Logger** to record field monitoring information
- **JCI Software Kit** for downloading information from the data logger to point sampling
- **Option Board** for external fresh air solenoid support, auto-zeroing, DC regeneration, 4-20 mA or 0-2 V analog output, and timed sampling
- **FTM** for sensor calibration verification in the field
- **Hard or soft Field Carrying Cases** for versatile handling and additional protection
- **Maintenance Kit** for routine maintenance and upkeep

### Applications

- Ambient Air Analysis
- Odor Nuisance Monitoring
- Regulatory Compliance
- Control Room Corrosion Monitoring
- Quality Control
- Scrubber Efficiency Testing
- Accuracy Check for Monitors and Controllers
- Hydrogen Sulfide Source Detection
- Leak Detection
- Applied Research and Development

### Specifications

<b>Resolution</b>	0.001 at Range 0 to 0.1 ppm at Range 3	
<b>Detection Range</b>	0.003-50 ppm	
<b>Precision</b>	5% Relative Standard Deviation	
<b>Accuracy</b>	Range 0: $\pm 0.003$ ppm at 0.050 ppm Range 1: $\pm 0.03$ ppm at 0.50 ppm Range 2: $\pm 0.3$ ppm at 5.0 ppm Range 3: $\pm 2$ ppm at 25 ppm	
<b>Response Time</b>	Sample Mode:	Survey Mode:
	10-50 ppm in 13 s	10-50 ppm in 13 s
	1.0-10.0 ppm in 16 s	1.0-10.0 ppm in 16 s
	0.10-1.00 ppm in 25 s	0.10-1.00 ppm in 25 s
	0.001-0.100 ppm in 30 s	0.001-0.100 ppm in 30 s
<b>Flow Rate</b>	150 cc/min or 0.15 l/min	
<b>Power Requirements</b>	100-120 V $\sim$ 50/60 Hz, 1 A or 220-240 V $\sim$ 50/60 Hz	
<b>Internal Battery Pack</b>	Rechargeable nickel-cadmium	
<b>Environmental Range</b>	0-40 °C, noncondensing, nonexplosive	
<b>Interfaces</b>	RS-232 PC using JCI software	
<b>Dimensions</b>	6" W x 13" L x 4" H	
<b>Weight</b>	7 lb	
<b>Warranty</b>	One year, factory parts and labor	
<b>Certifications</b>	European Communities (CE) for 220-240 V $\sim$ 50/60 Hz	