



**W47-13:** Date: April 7, 2007 Time: 8:28am. Photographer: C. Hartman  
**Description:** Middle Basin- foamy prop wash **View:** Into water



**W47-14:** Date: April 7, 2007 Time: 9:25am. Photographer: C. Hartman  
**Description:** Dead coot along reeds, Middle Basin



**W47-15: Date:** April 7, 2007 **Time:** 9:28am. **Photographer:** C. Hartman  
**Description:** Bagging dead coot, Middle Basin



**W48-1 Date:** April 8, 2007 **Time:** 7:16am. **Photographer:** D. Owen  
**Description:** Aeration at Jefferson Bridge, East Basin **View:** Northeast



**W48-2 Date:** April 8, 2007 **Time:** 7:33am. **Photographer:** D. Owen  
**Description:** Aeration hose at south shoreline, East Basin **View:** South



**W48-3 Date:** April 8, 2007 **Time:** 13:38am. **Photographer:** C. Hartman  
**Description:** Reeds, Middle Basin



**W48-4 Date:** April 8, 2007 **Time:** 7:10am. **Photographer:** C. Hartman  
**Description:** Dead bird- Middle Basin



**W48-5 Date:** April 8, 2007 **Time:** 12:53pm. **Photographer:** C. Hartman  
**Description:** Coots on the water, Middle Basin



**W410-1 Date:** April 10, 2007 **Time:** 6:50am. **Photographer:** L. Campagna  
**Description:** Dead fish in Mid-Basin



**Date:** April 10, 2007 **Time:** 7:09am. **Photographer:** D. McCoy  
**W410-2 Description:** Great blue heron- East Basin



**W410-3** Date: April 10, 2007 Time: 7:24am. Photographer: D. McCoy  
Description: East Basin pilings View: Southwest



**W410-4** Date: April 10, 2007 Time: 8:17am. Photographer: D. McCoy  
Description: East Basin piling water level marker View: Southwest



**W410-5** Date: April 10, 2007 Time: 1211pm. Photographer: L. Campagna  
Description: Cattails Mid-Basin

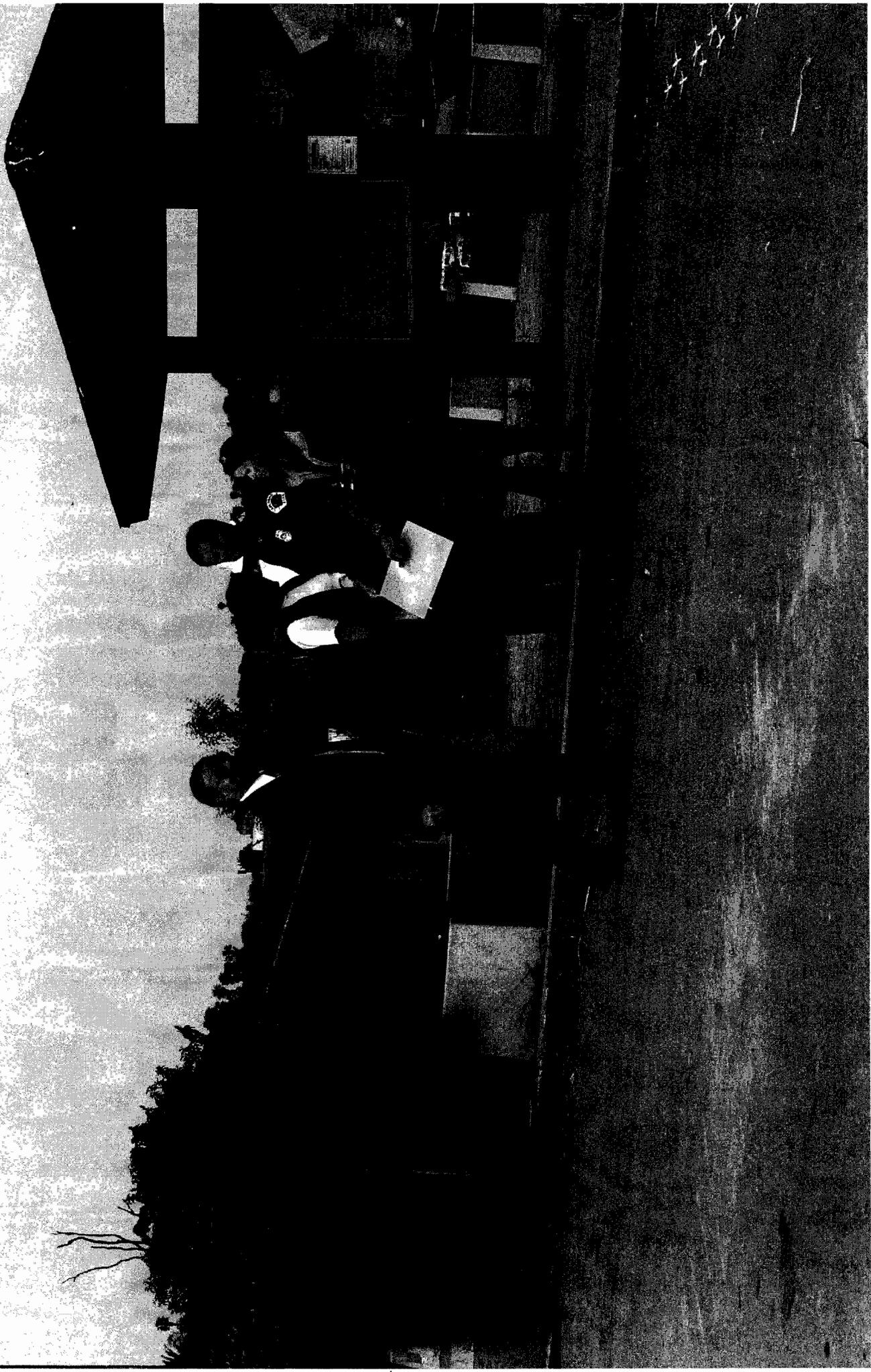


**W410-6** Date: April 10, 2007 Time: 1212pm. Photographer: L. Campagna  
Description: Mid-Basin backwater View: East

**Buena Vista Spill Photos  
City of Carlsbad - Non Relevant Photos**

<b>PHOTO #</b>
NR-1
NR-2
NR-3
NR-4
NR-5
NR-6
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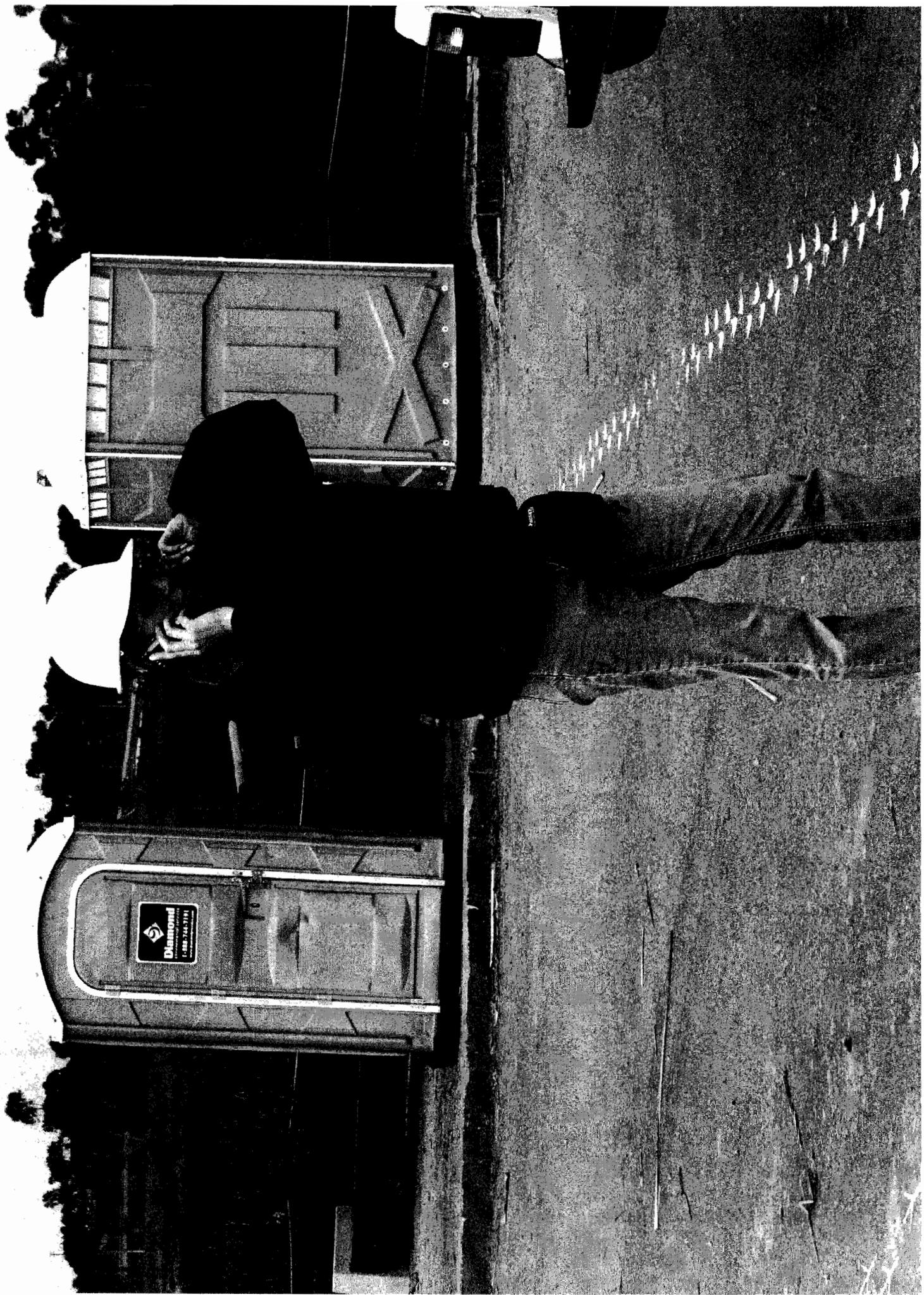
2e-1



2-22

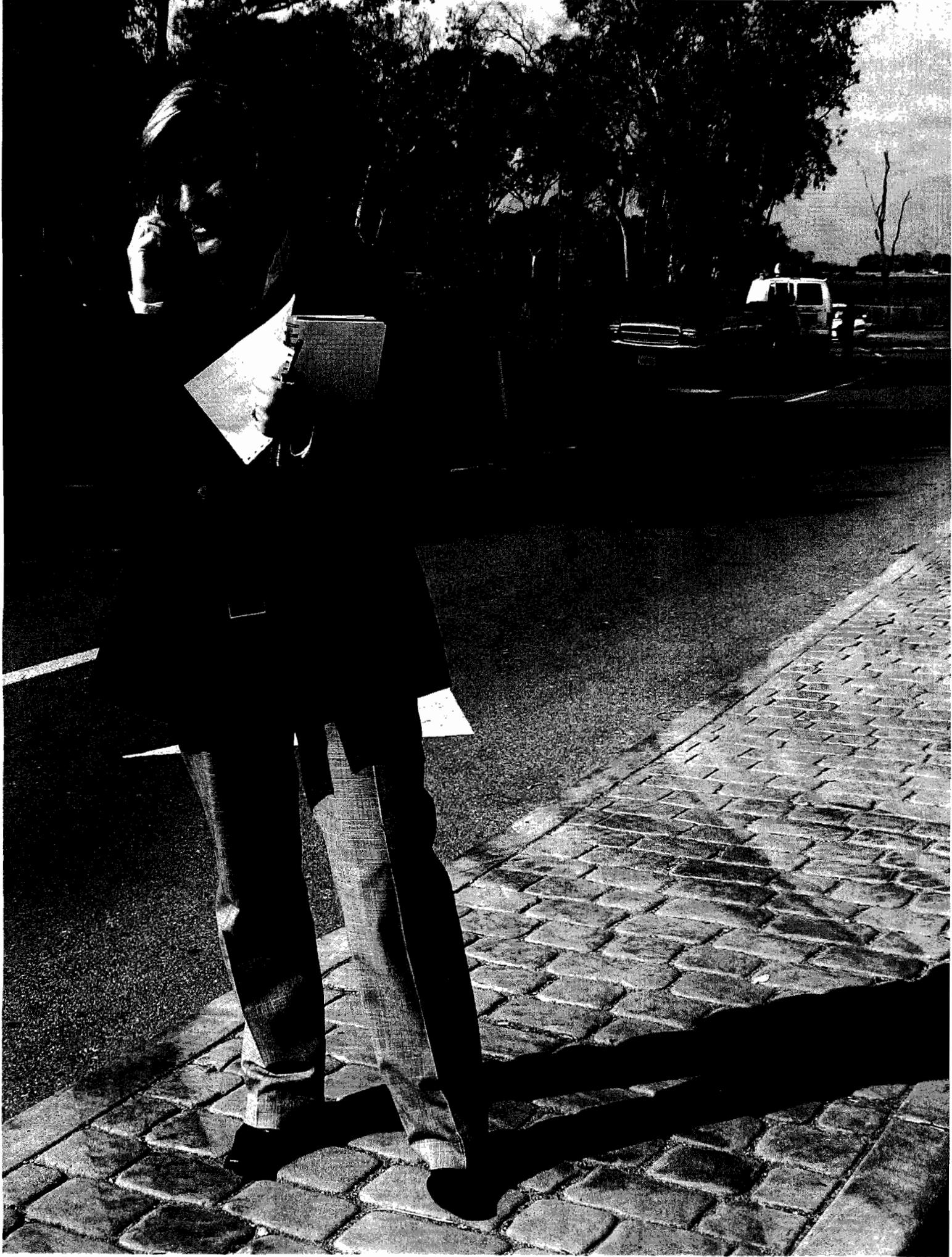


NR-3



NR4





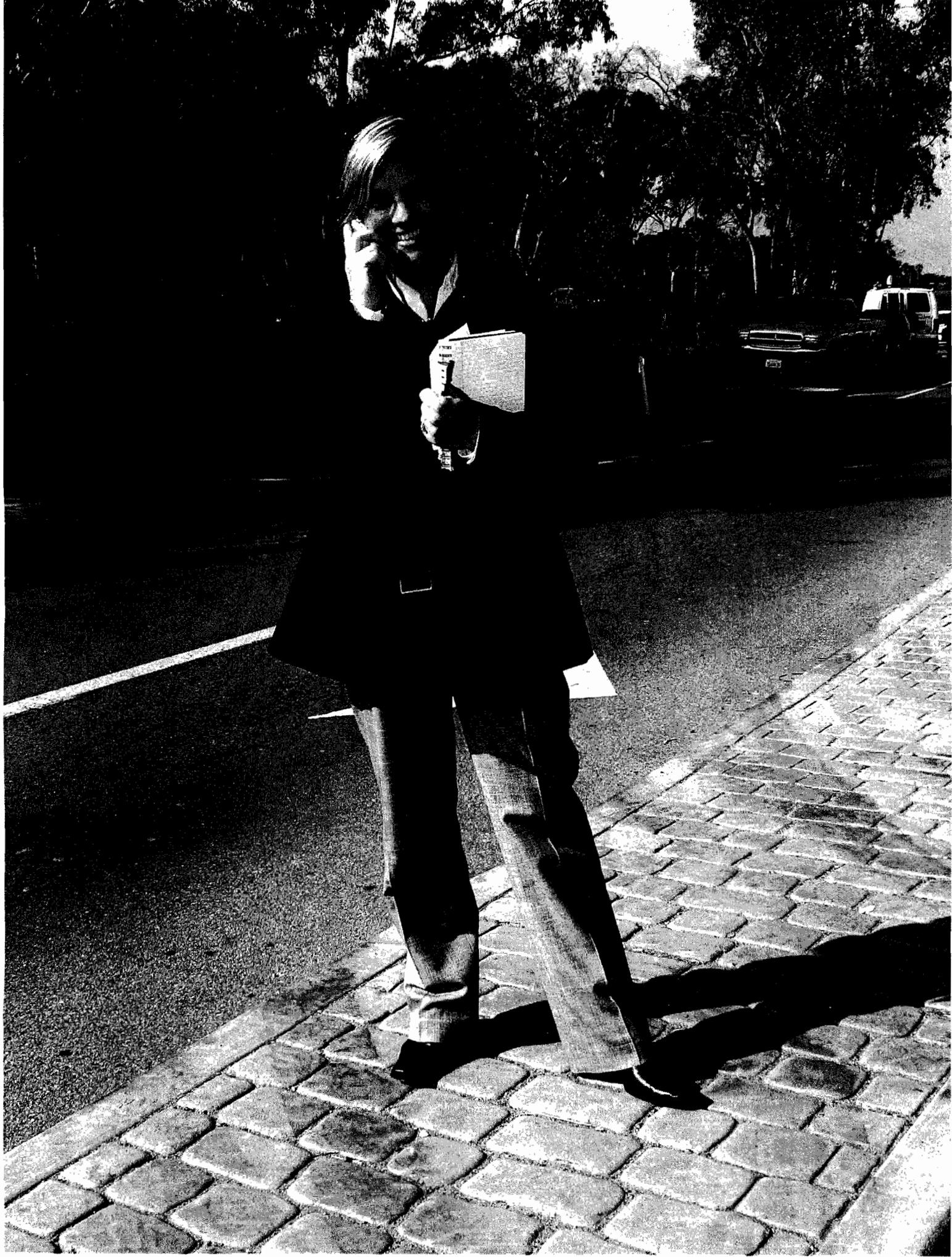
22-5



NR-4



NR-7



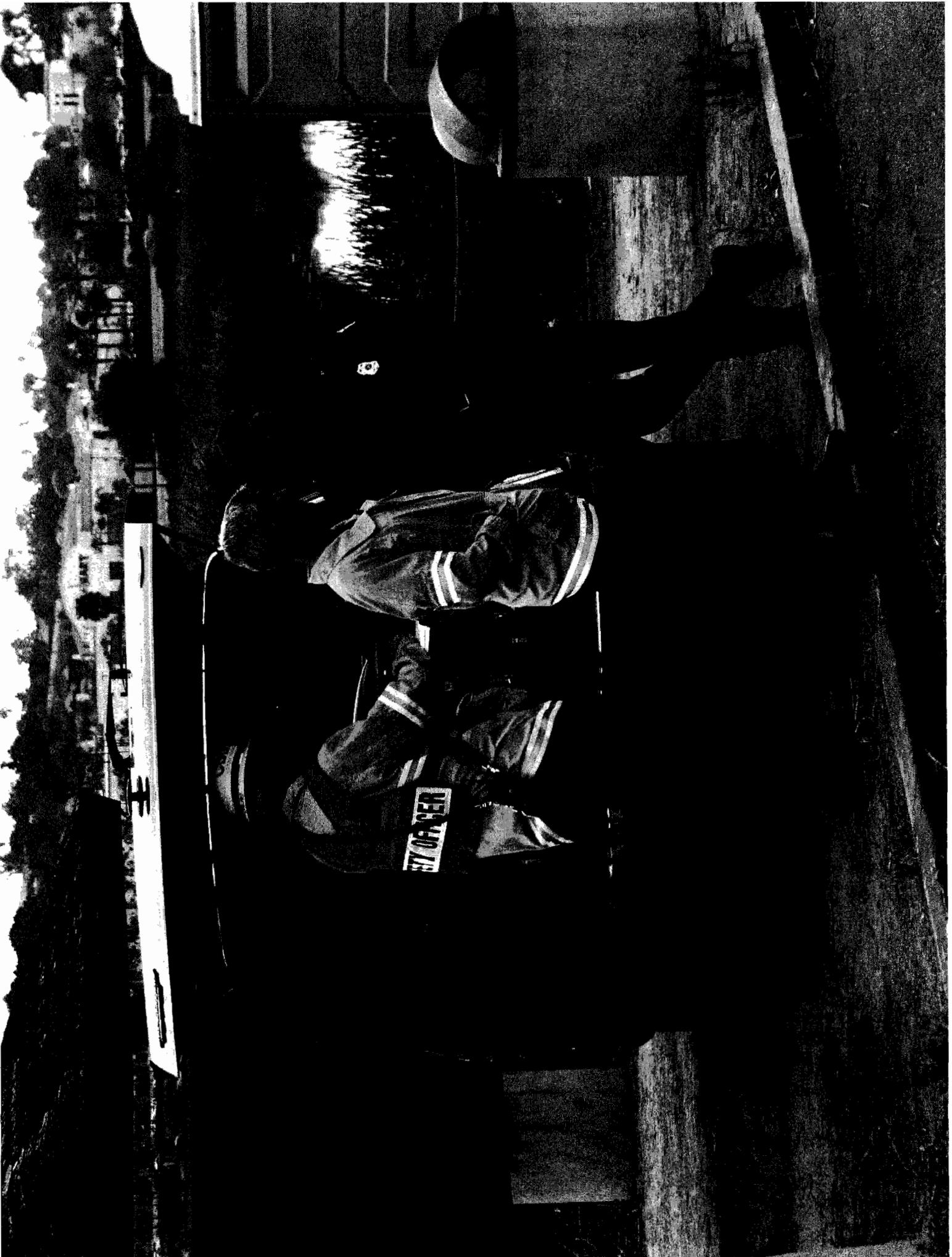
NR-8

NR-9

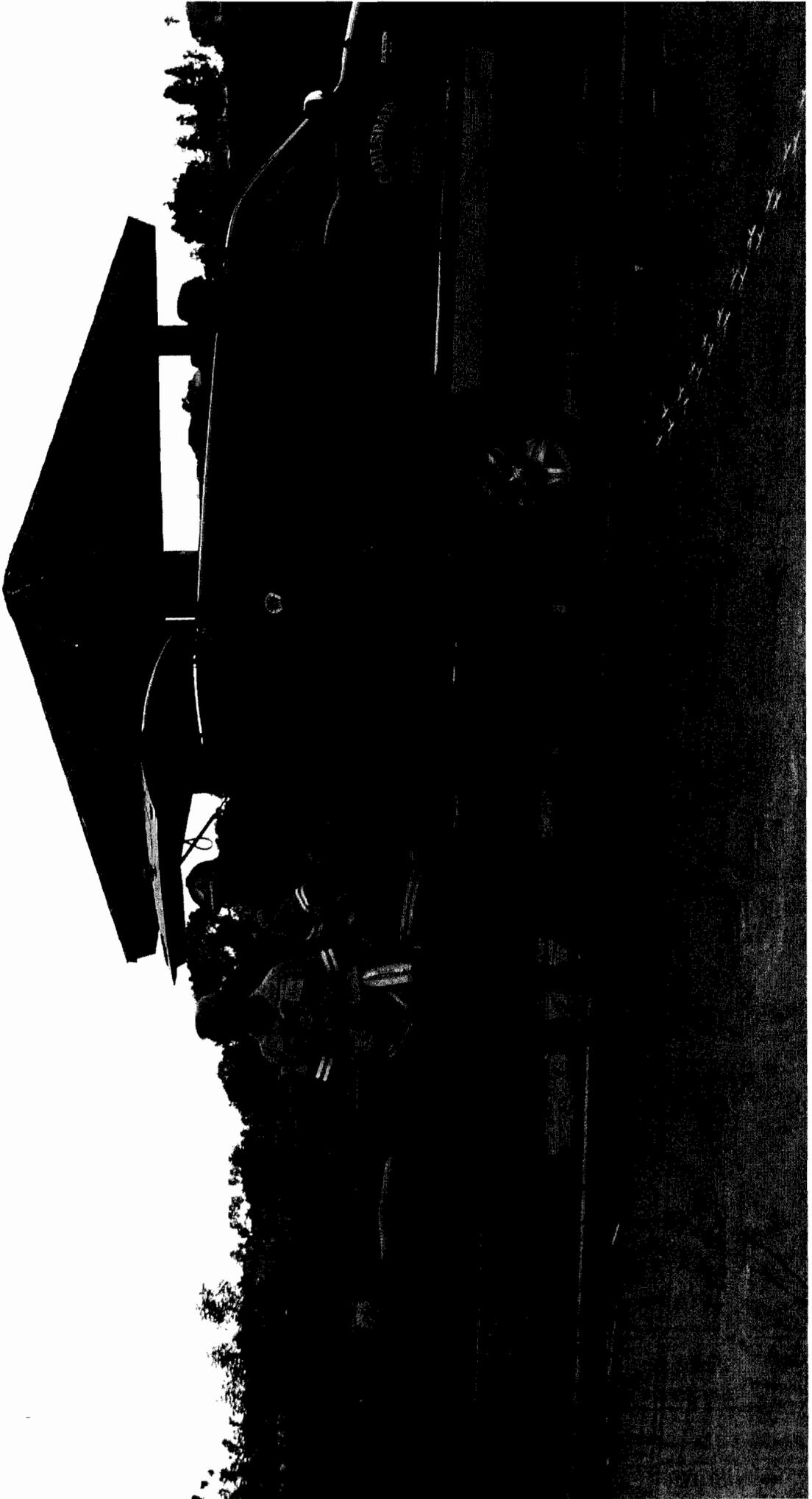


ADIRTY  
CIBOLA  
RIVE

NR 10



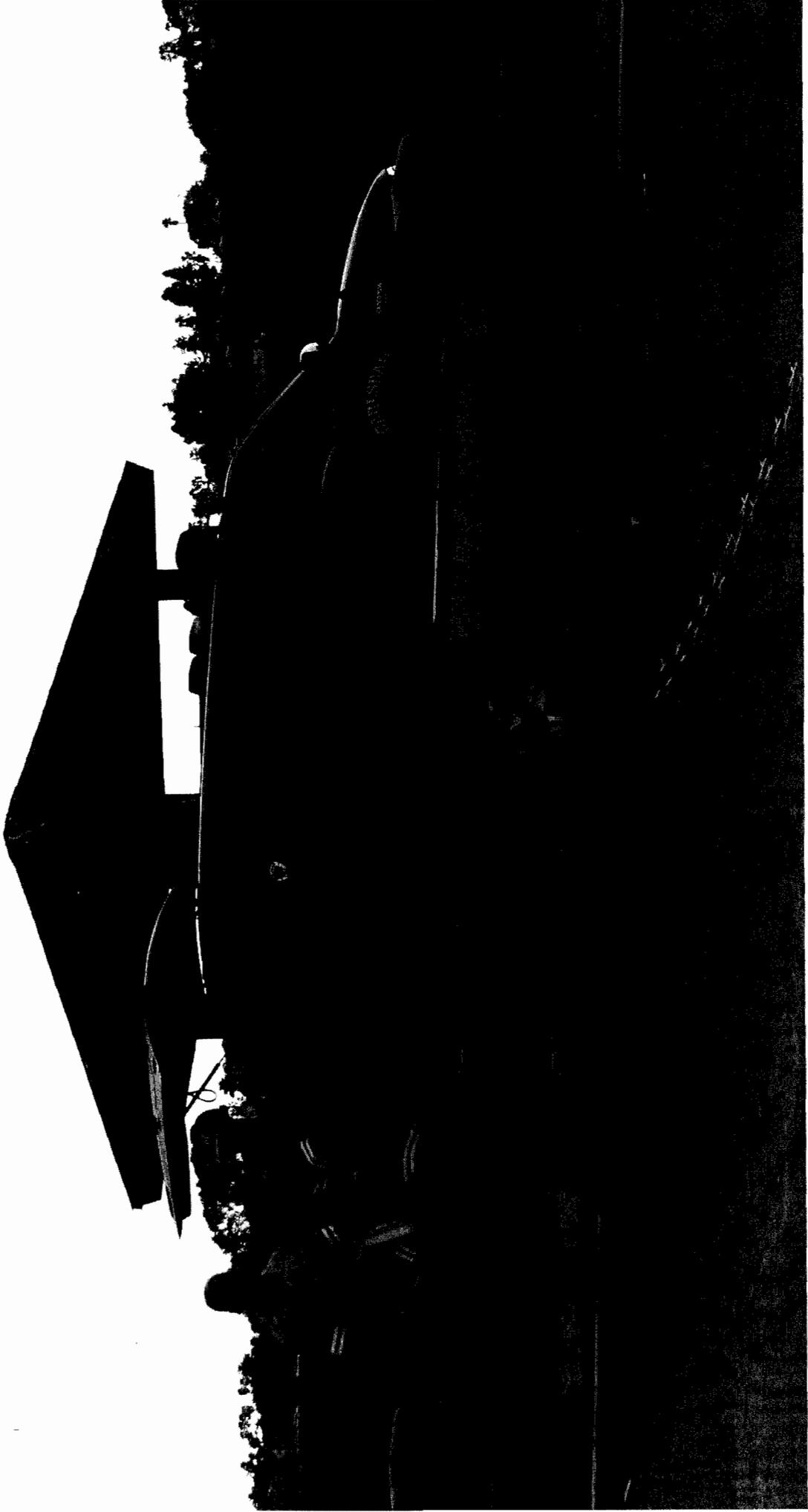
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NE-11

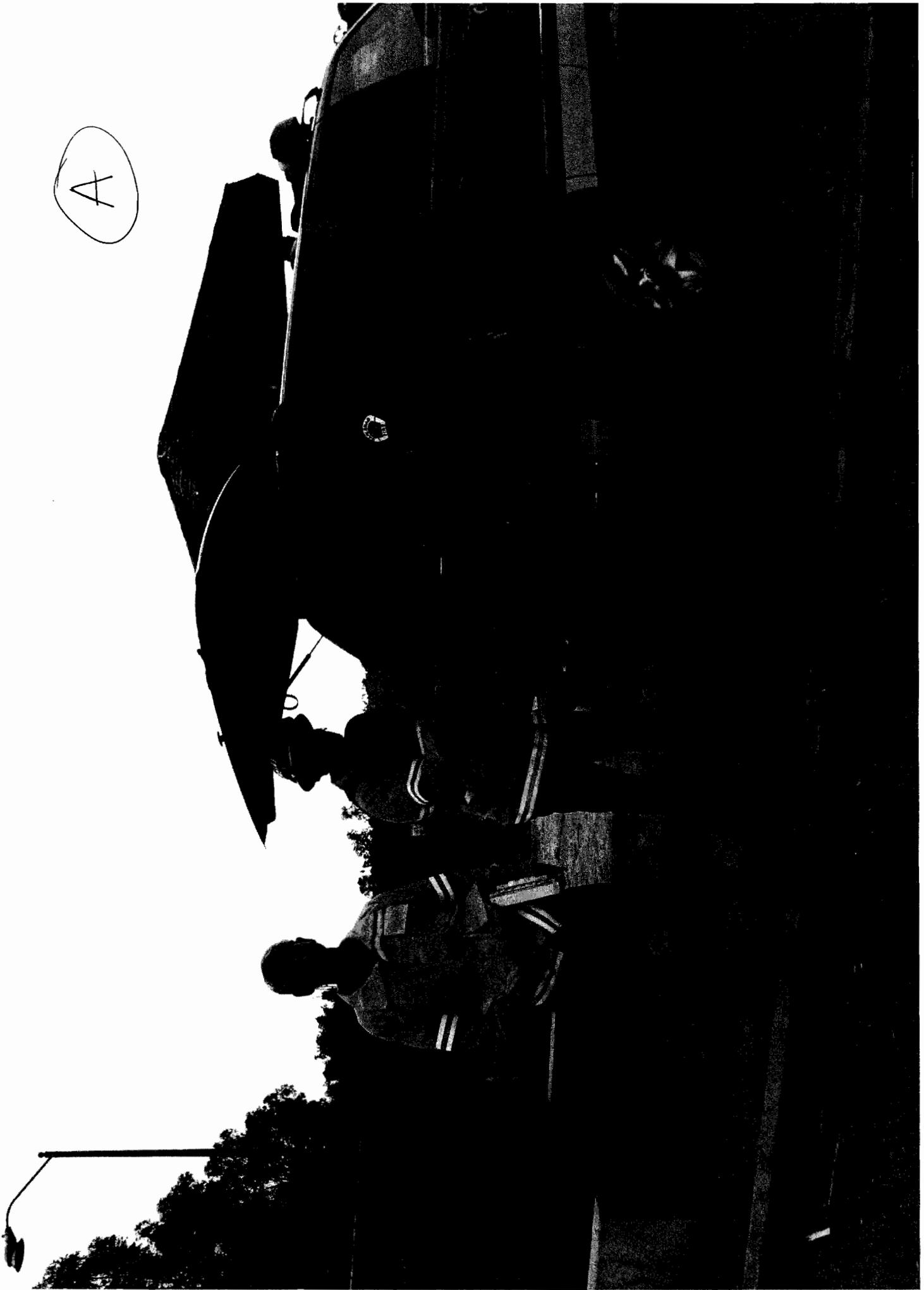
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NR-12



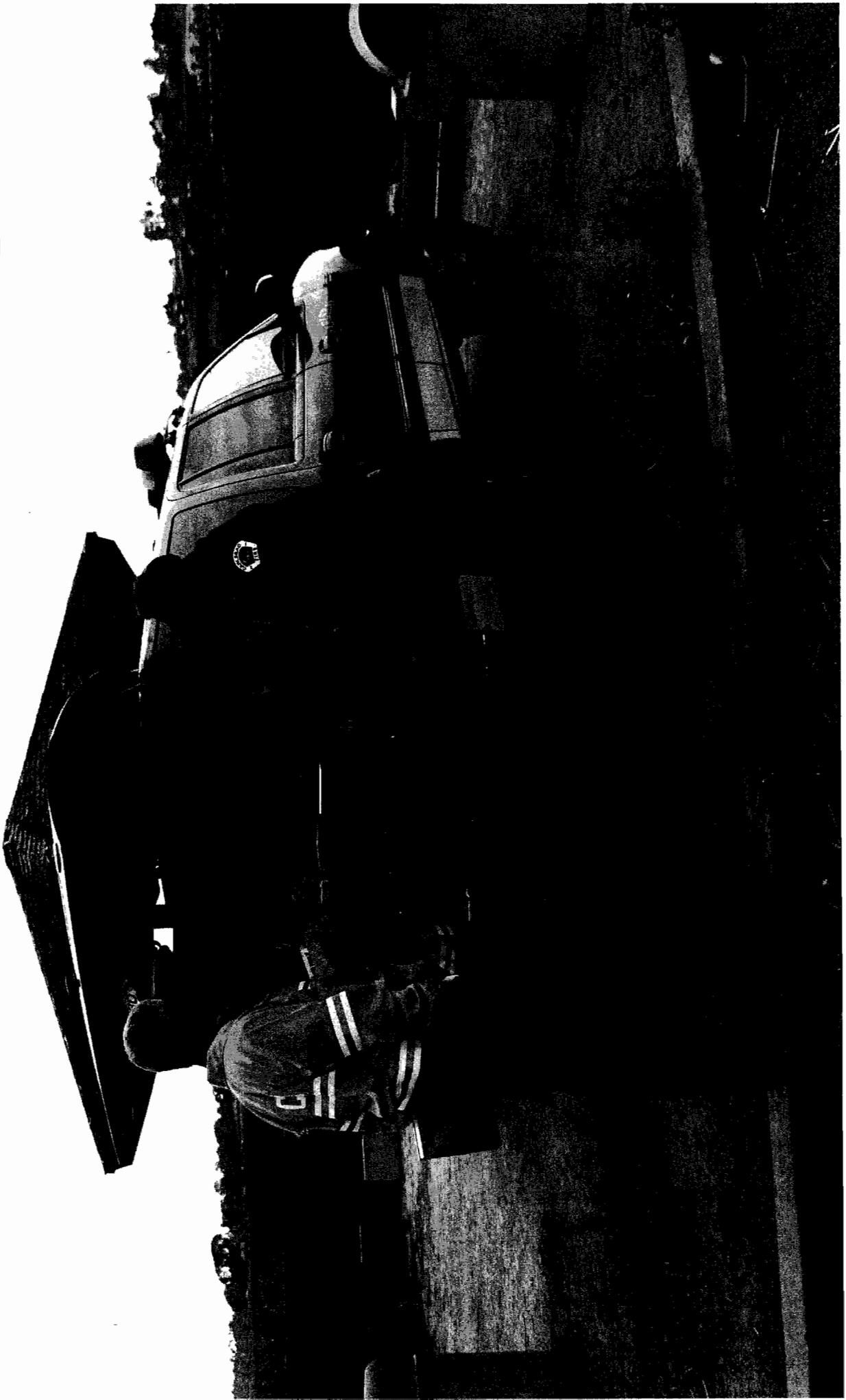
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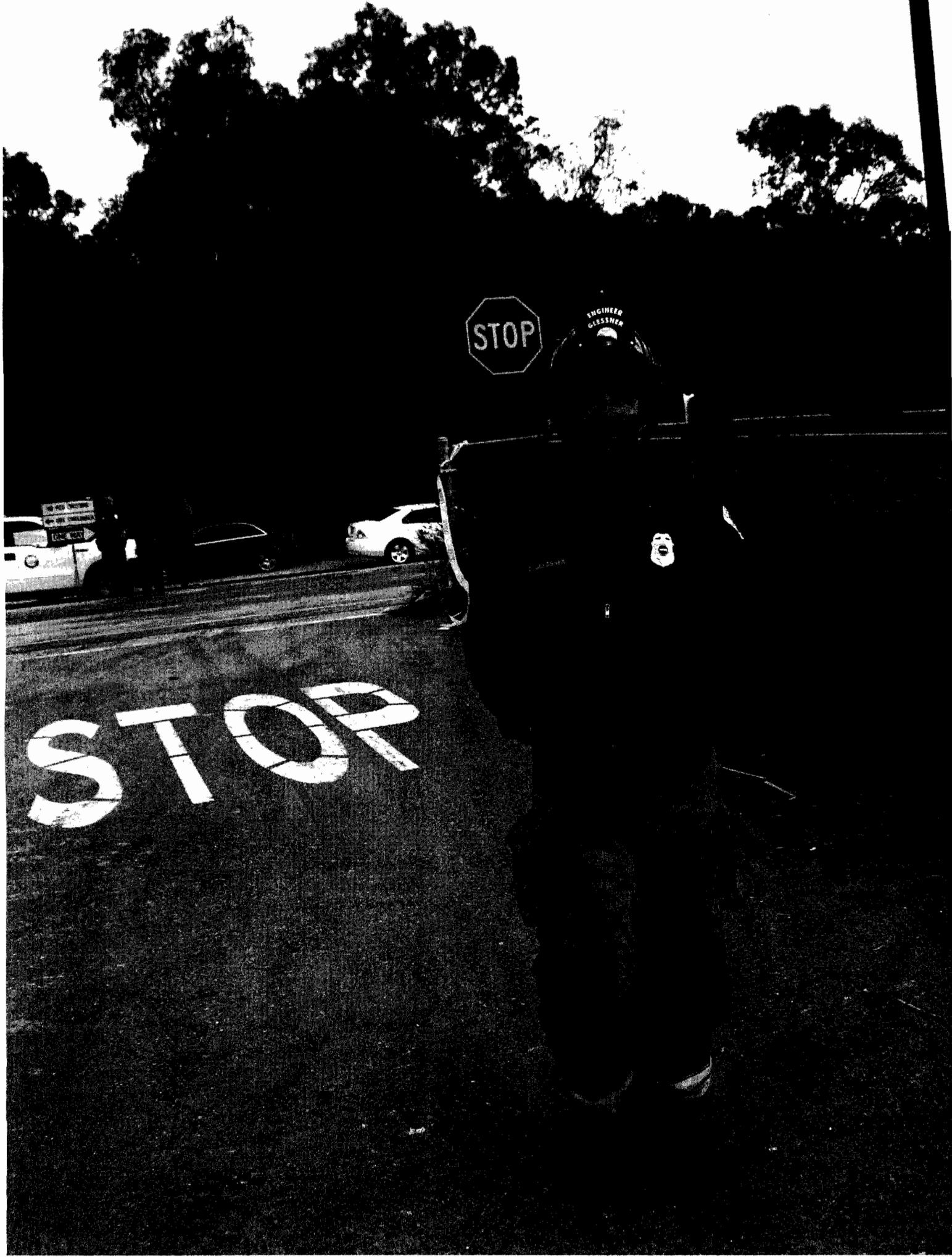
NR-13



(A)

202





STOP

ENGINEER  
GLESSNER

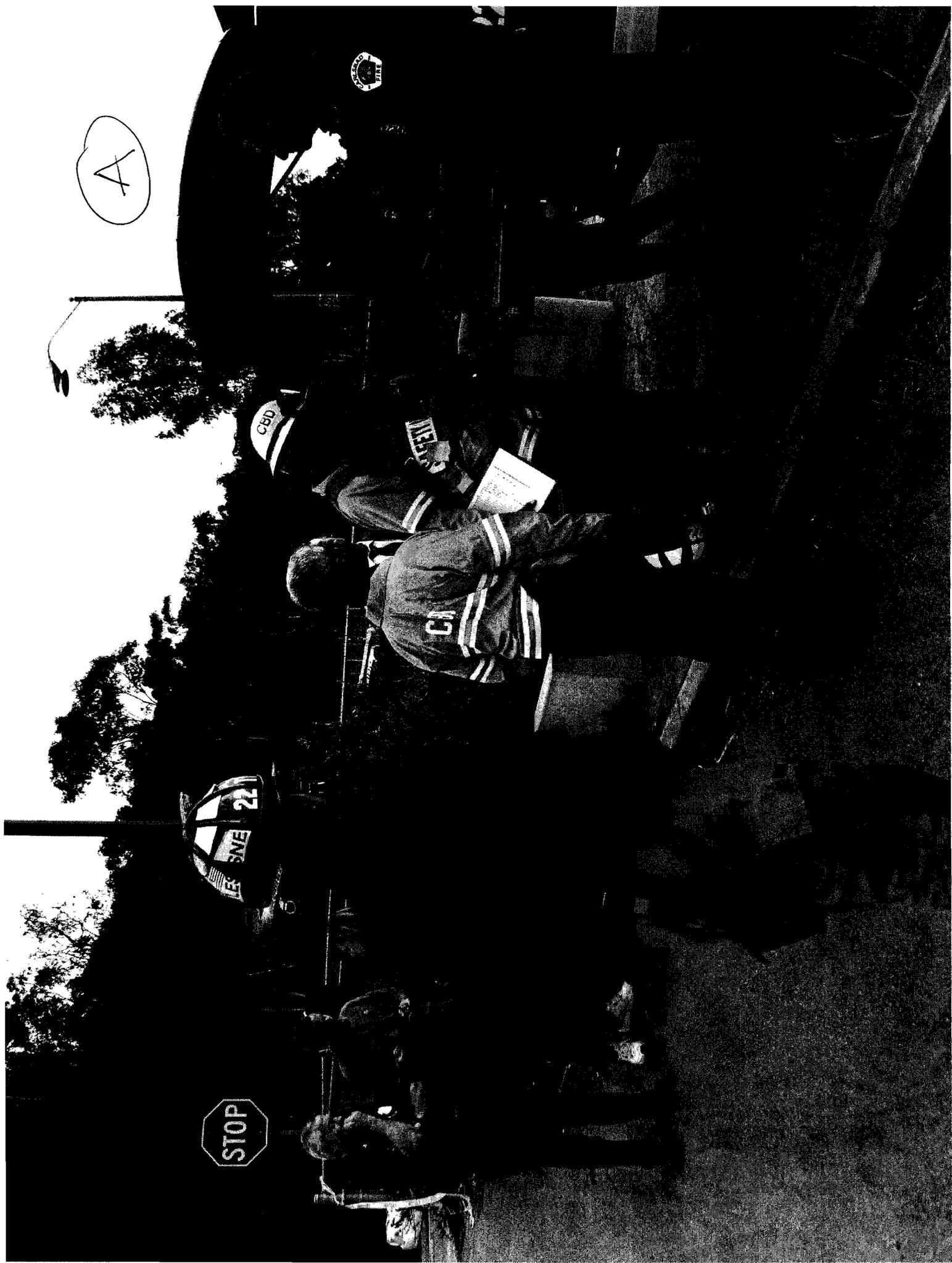
STOP

LAW OFFICE

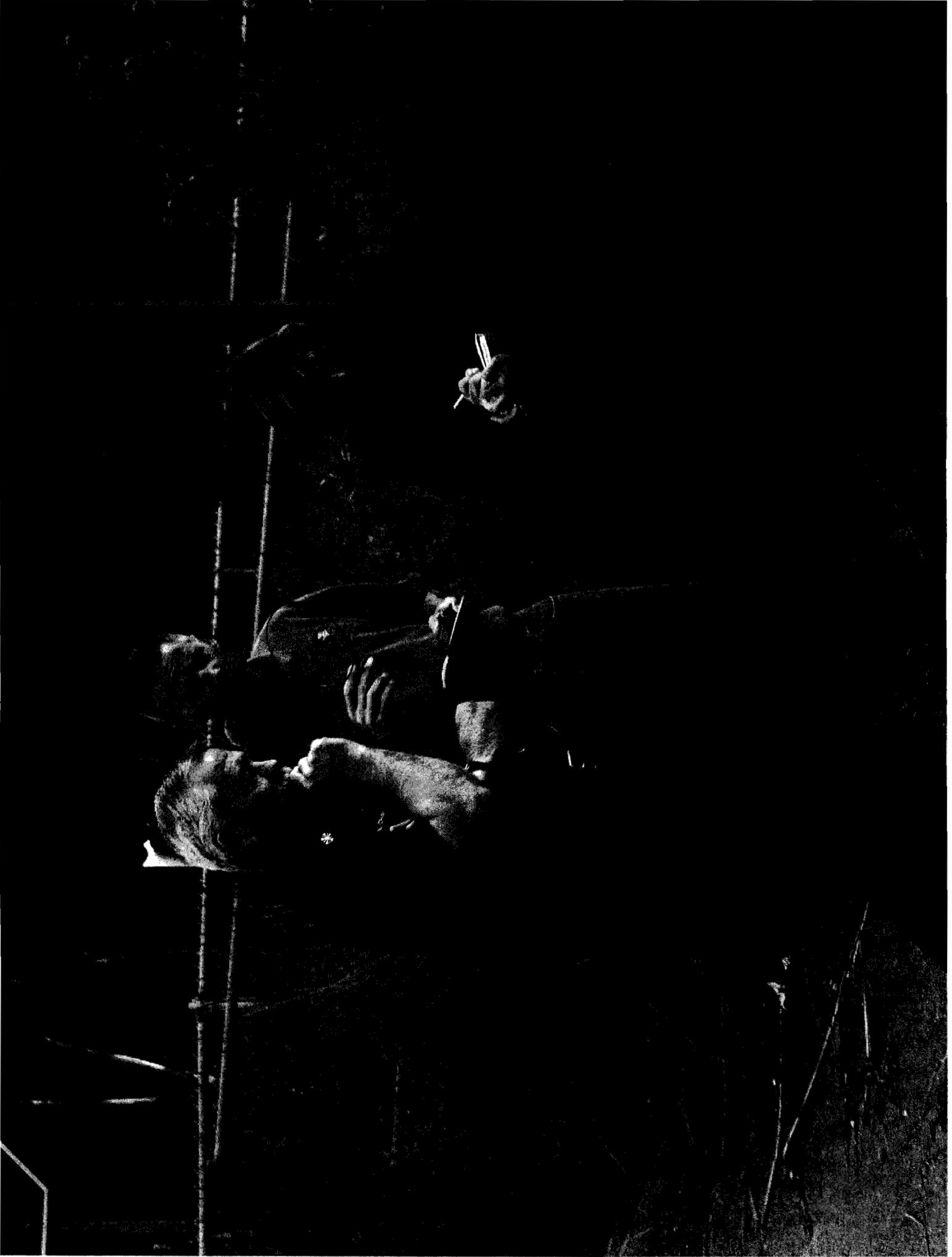
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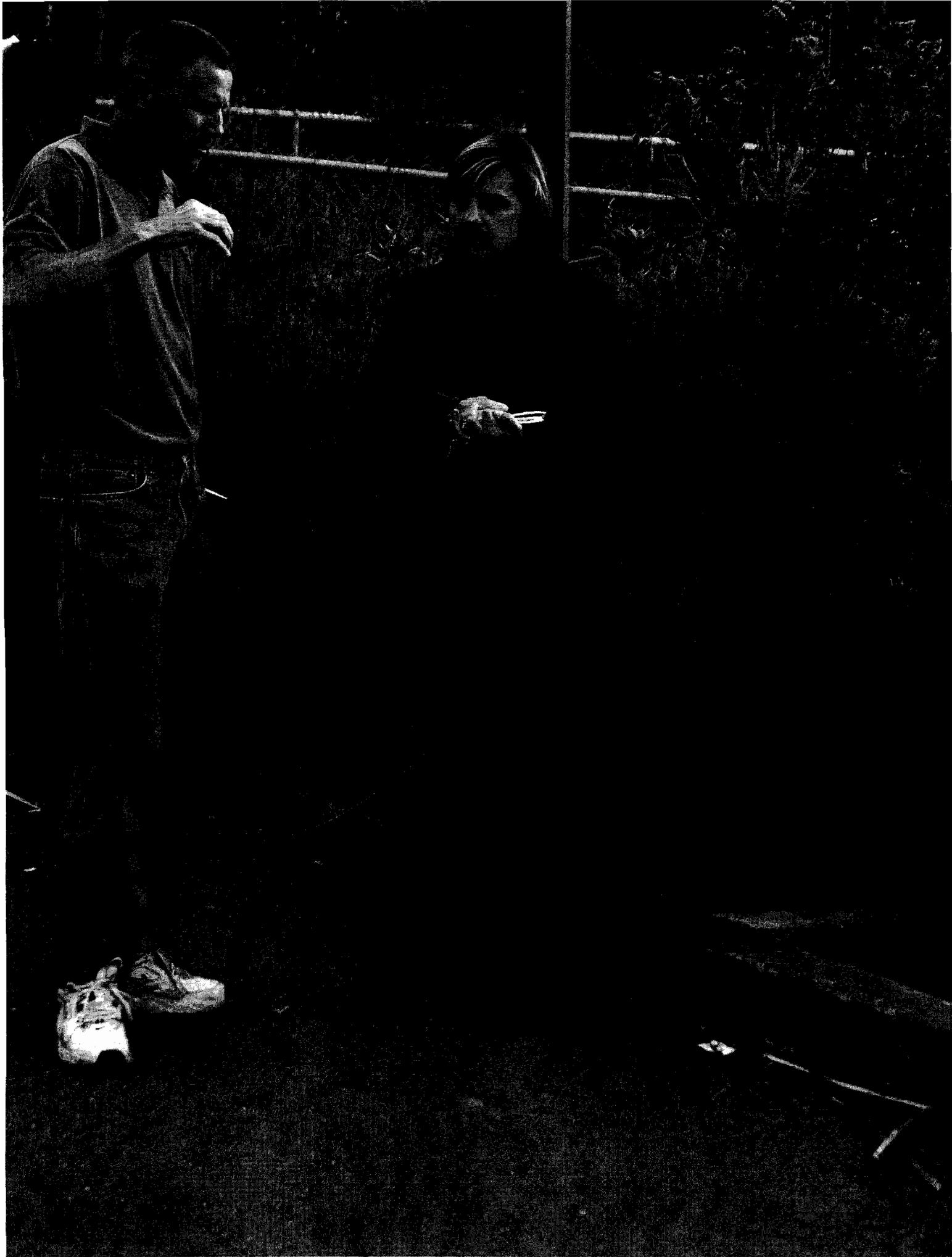
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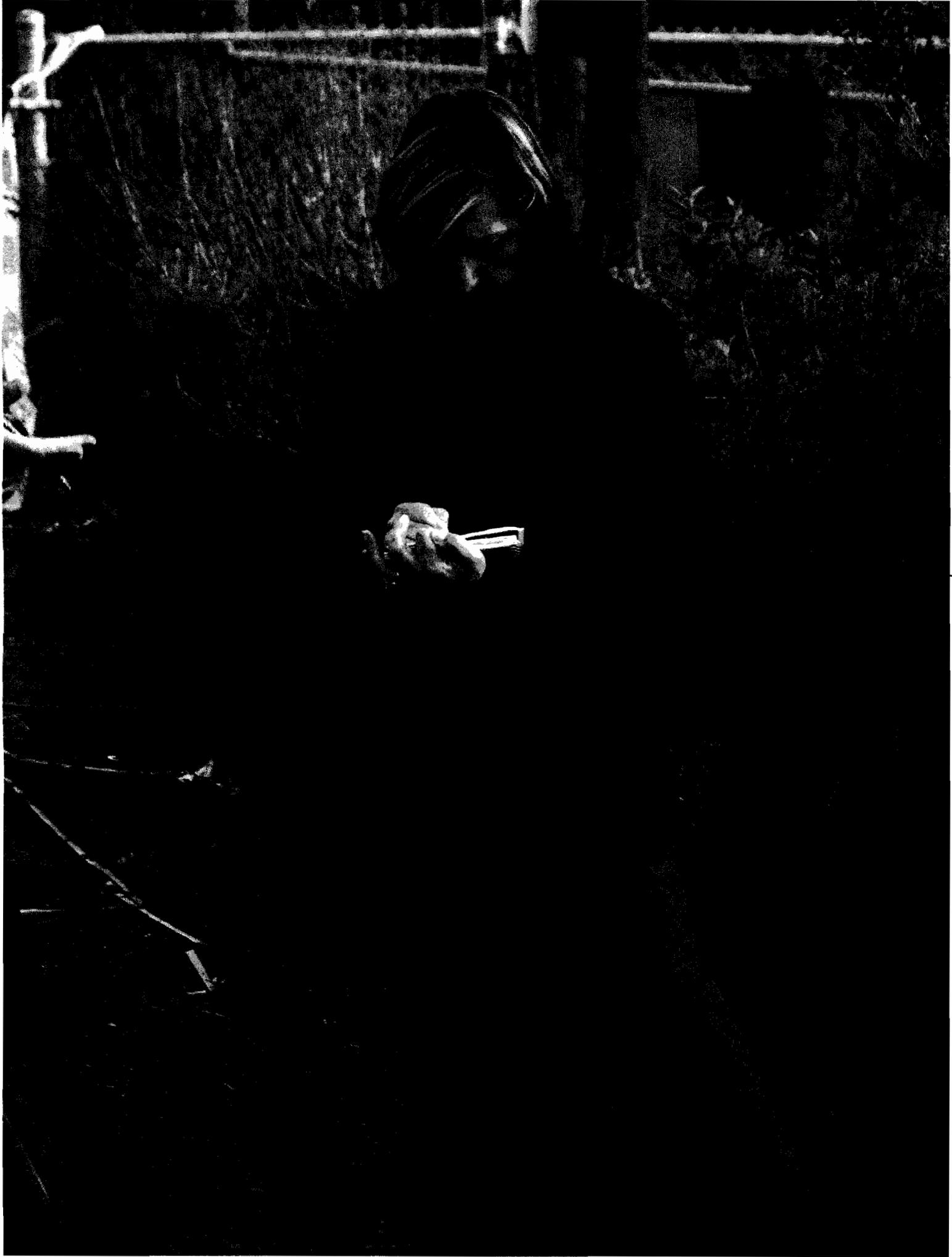


LI-22

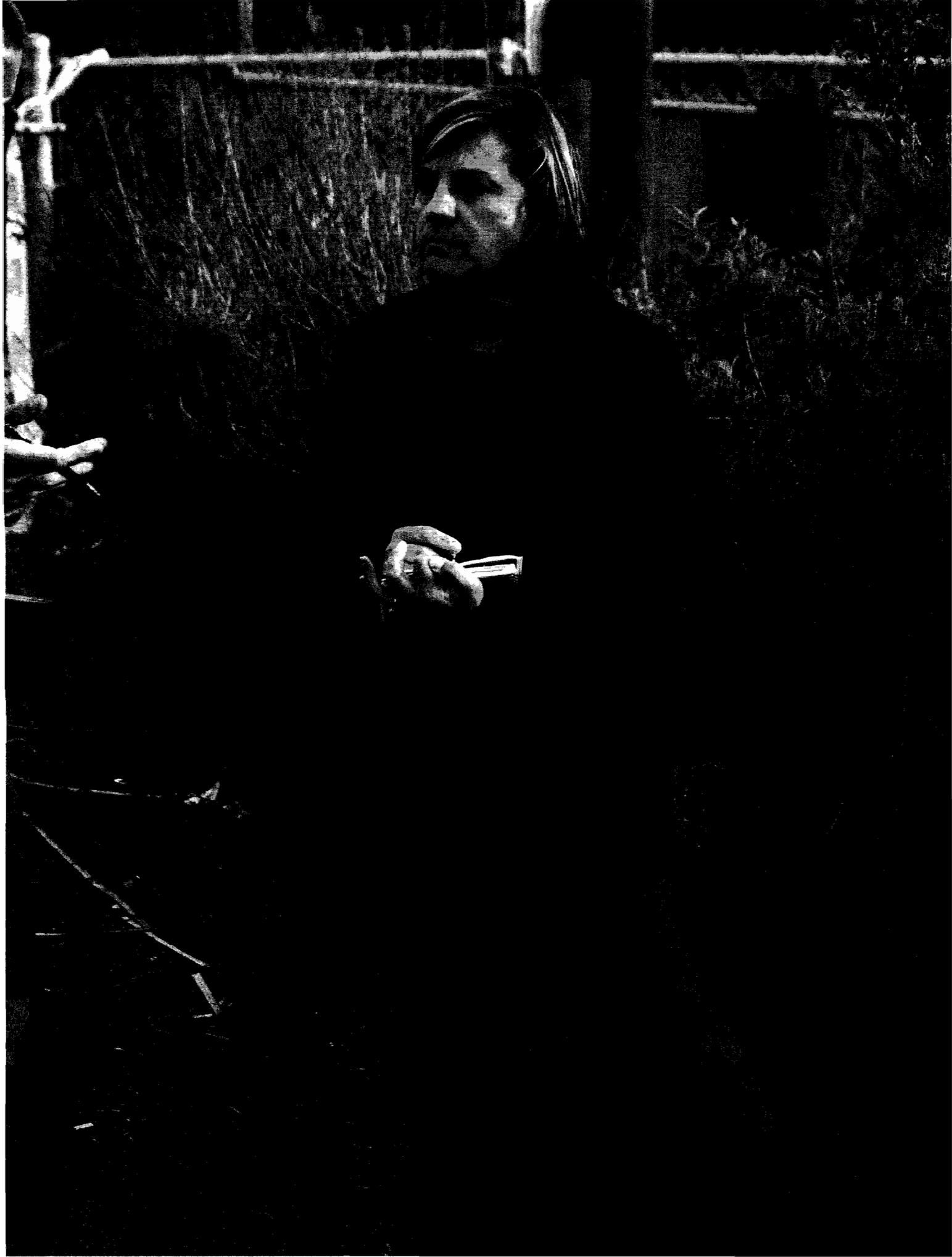




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152-19



NO-20



A

1e-21

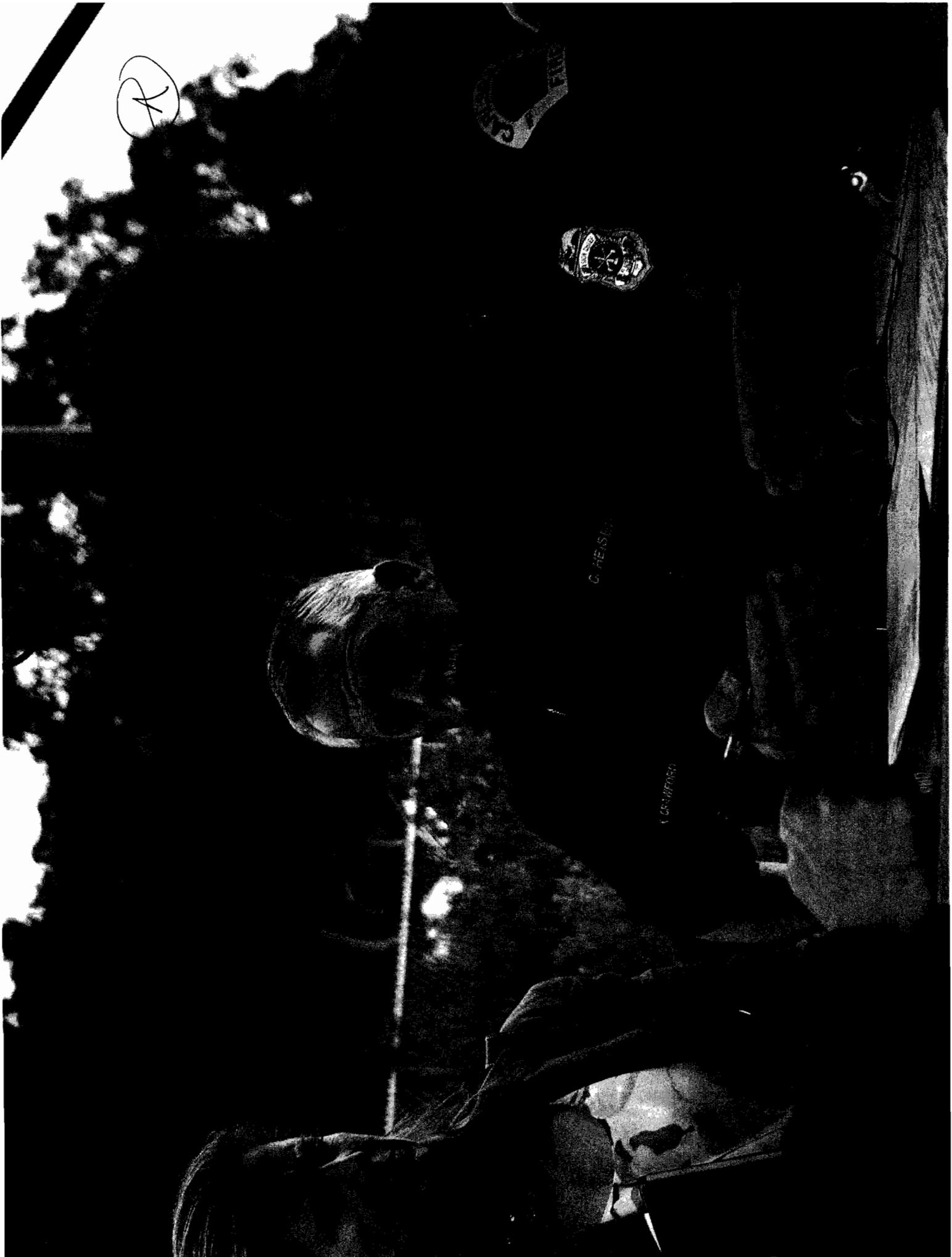


(X)

22-21

NL-23

A



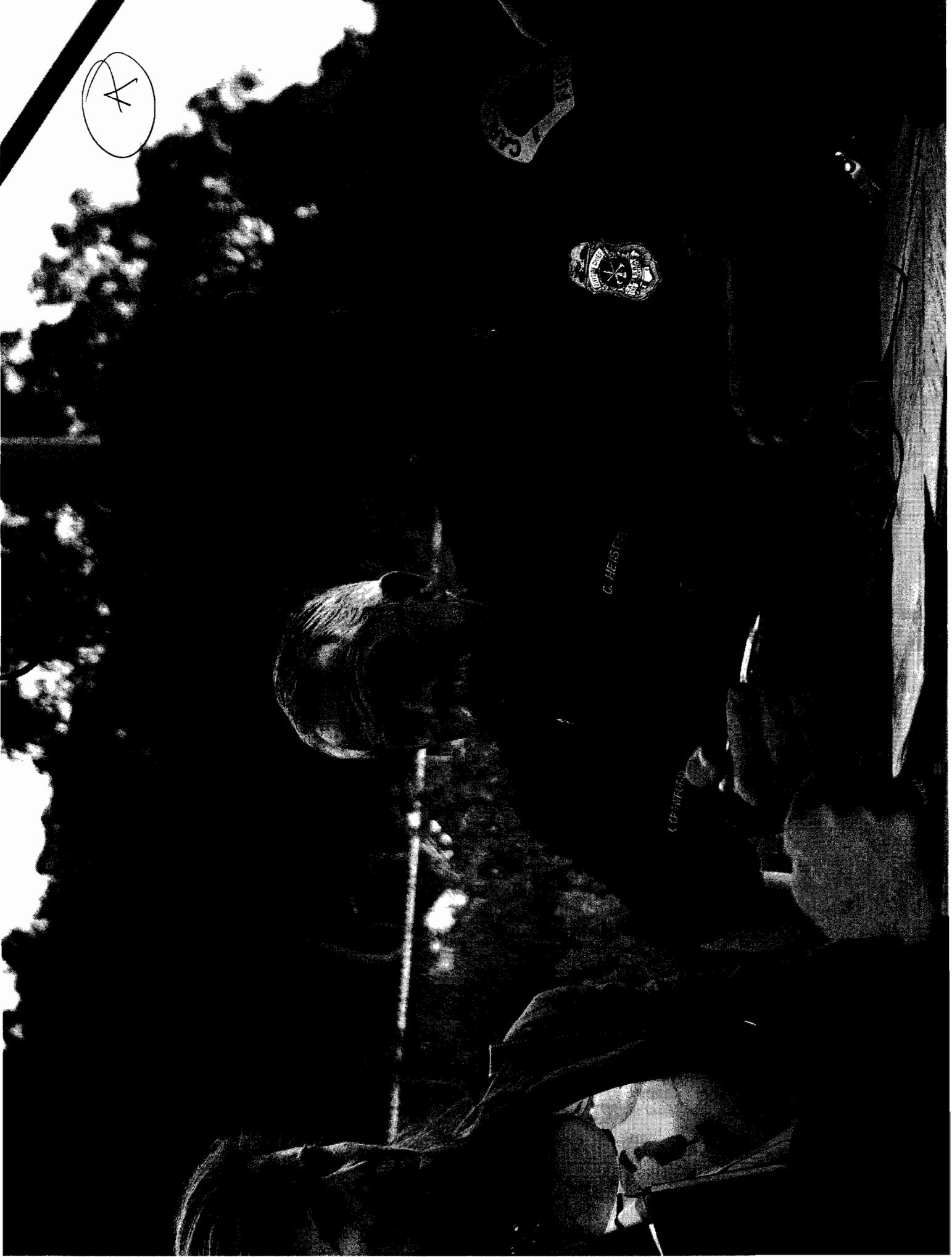
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(A)

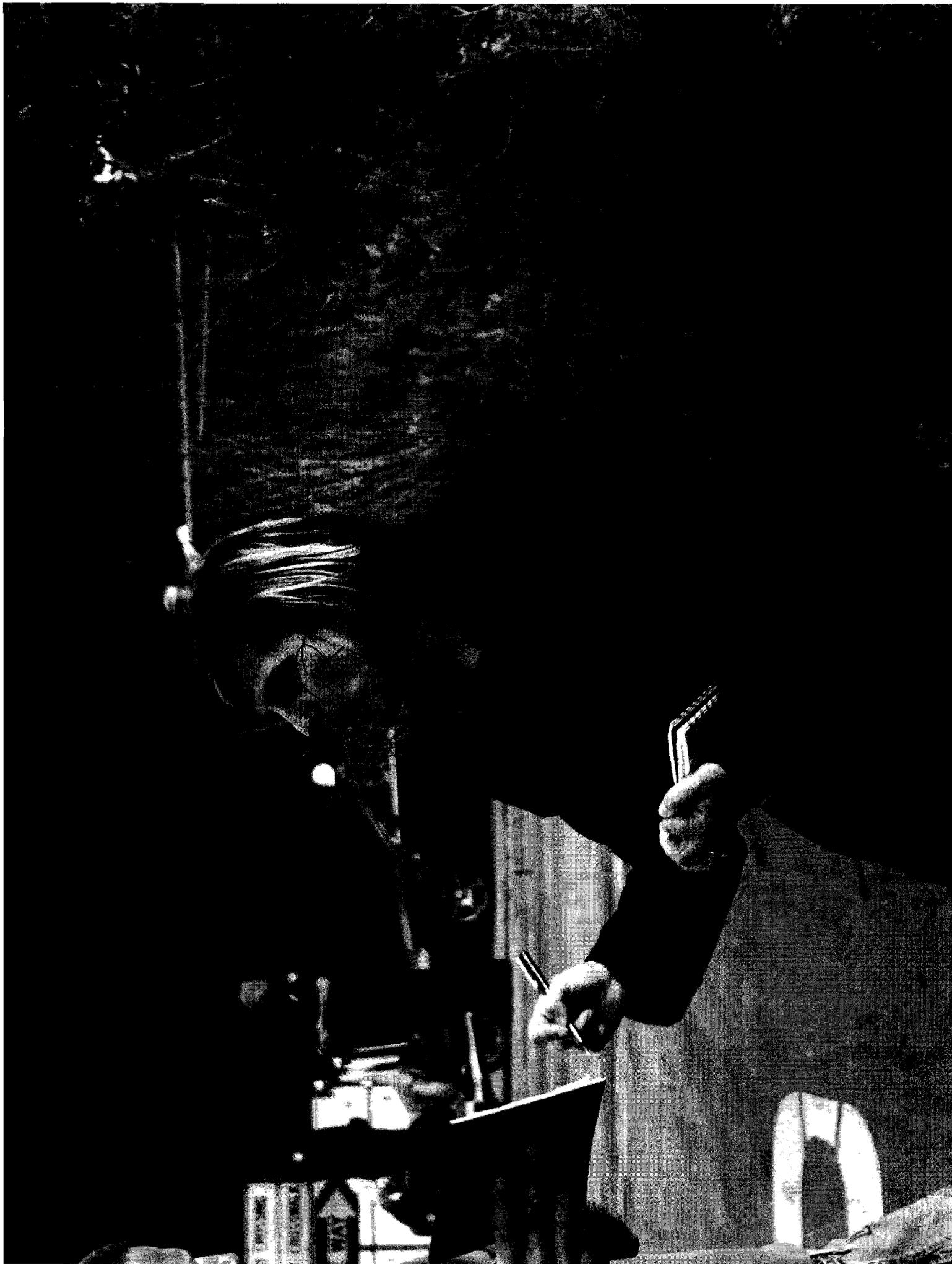


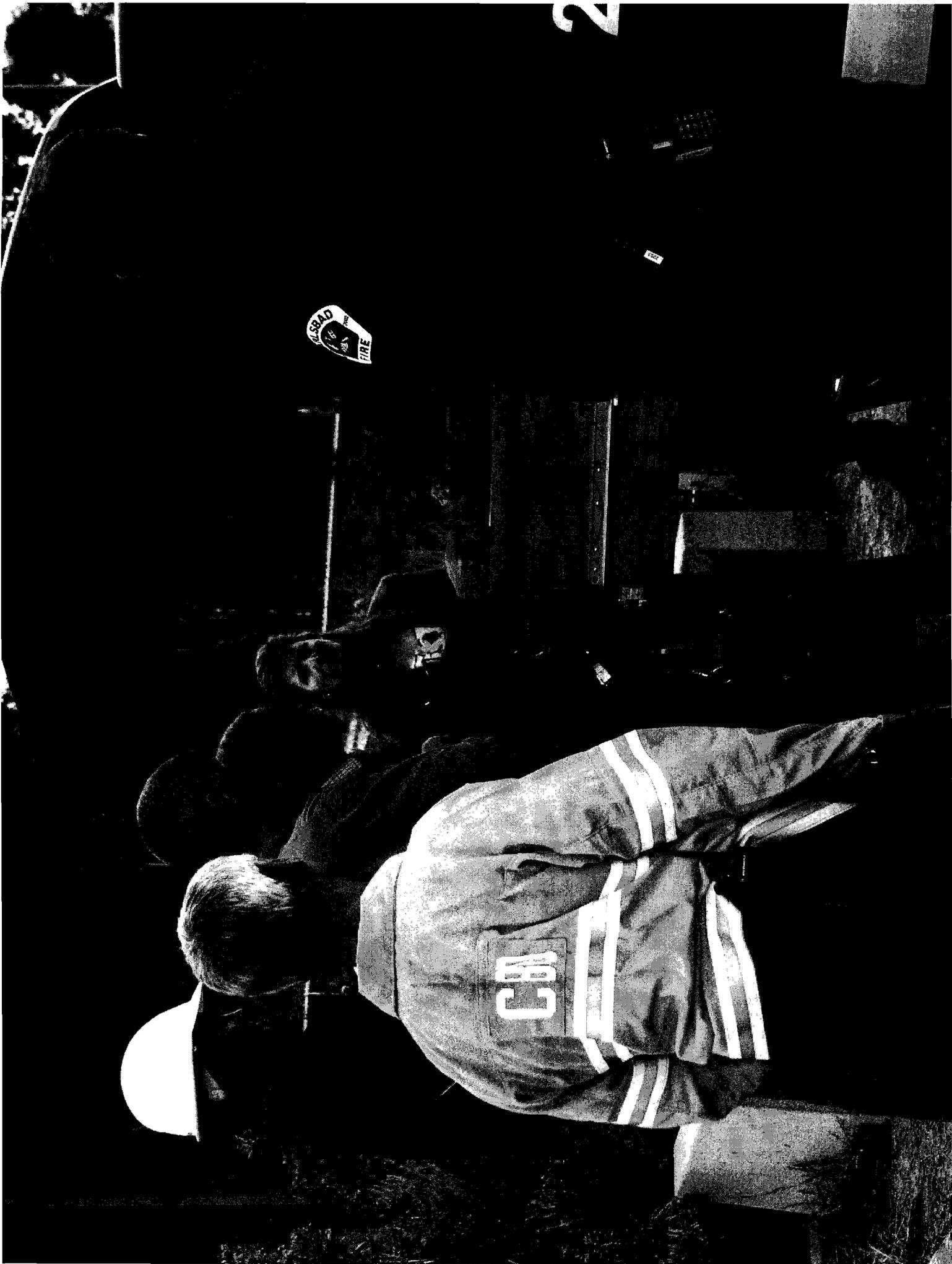
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NR 25



Ne 24





LENN

2

CALIFORNIA FIRE

83

RE-IN



NR-29



NR-30



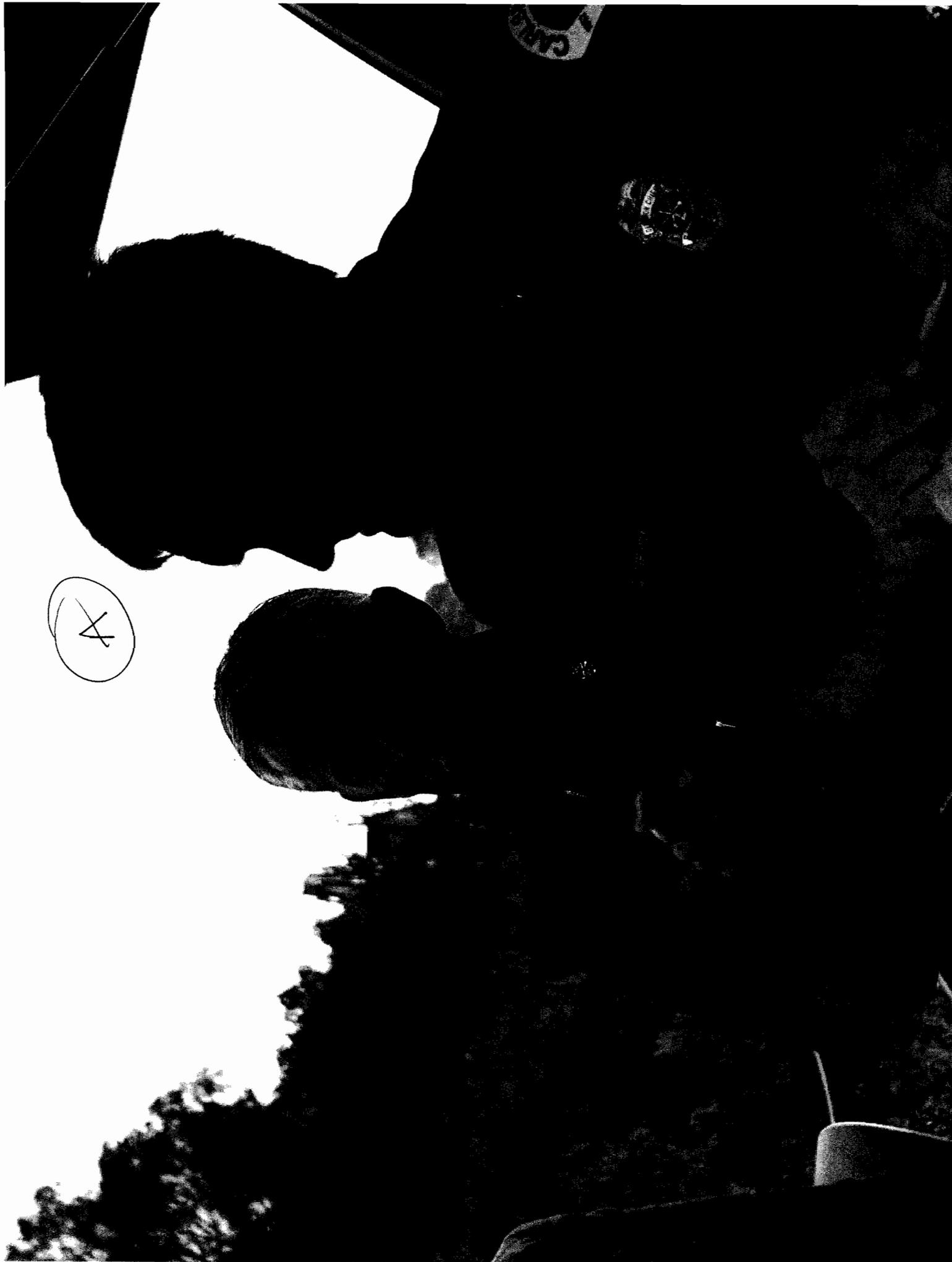
NR-31

(A)



NR-32

(X)



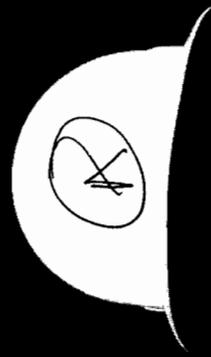
NR-33



NE 34

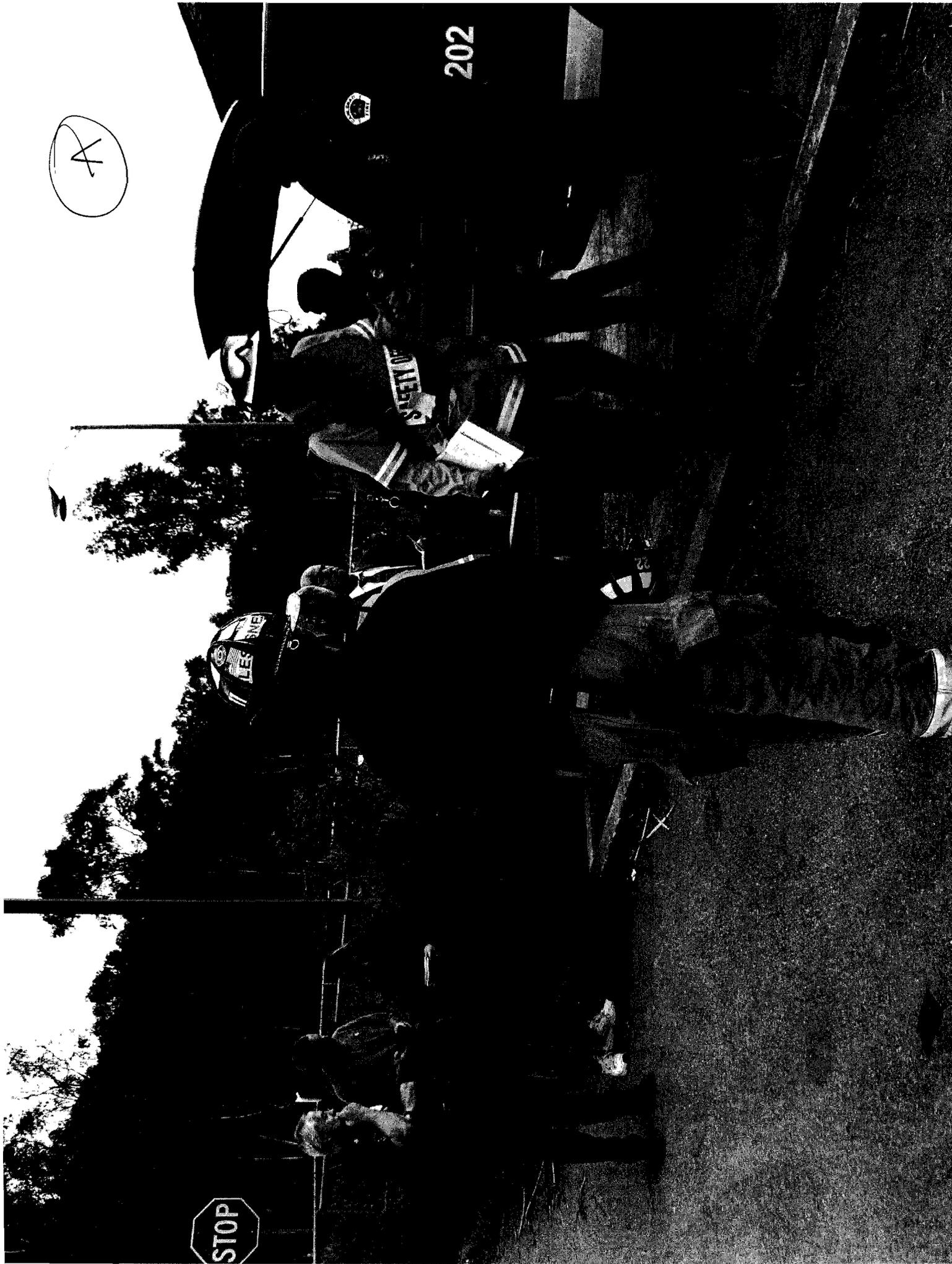
S

ROYALSBAD FIRE



NR-35

(A)



202

STOP



DL-36



NK-37

SHAW-WALKER

1111

BEFORE YOU DO ANY WORK  
THAT WILL SEND AN ALARM TO ENCINA  
CALL THE PLANT AND ENSURE THAT AN  
OPERATOR KNOWS WHAT TO EXPECT!

**DANGER**  
DO  
NOT  
OPERATE

1111-38

# **City of Carlsbad**



## **Sewer Overflow Prevention Plan**

## **Sewer Overflow Response Plan**

## **EPA Region 9**

Enclosure A

City of Carlsbad  
Section 308 Information Request  
CWA-308-IX-FY01-41

Unless otherwise specified below, within sixty days of receipt of this information request the City of Carlsbad shall submit to EPA Region 9 and the California Regional Water Quality Control Board, San Diego Region, the following information relating to its sanitary sewage collection system:

1. A description of the sanitary sewage collection system owned and operated by the City of Carlsbad that includes the following information:
  - a. description of the service area including names of cities and communities served,
  - b. approximate population served,
  - c. average daily flow,
  - d. the total length of sewers,
  - e. size range of pipe diameters,
  - f. number of and a description of sewage pump stations,
  - g. a map of the sewage collection system showing the locations of primary sewers (interceptor, outfall & truck sewers), and sewage pump stations, and
  - h. range and average age of sewers.
  
2. A description of your sewage collection system management, operations, and maintenance practices, including the following:
  - a. Management Program
    - i. The organizational structure of departments responsible for the sewage collection system.
    - ii. The legal authorities and ordinances governing use of the sewage collection system (brief description, not including the industrial pretreatment program).
    - iii. Adequacy of sewer system maps and availability of maps to maintenance crews. Do system maps accurately reflect sewer pipe locations and construction?
    - iv. Are sewer maps available in a Geographic Information System (GIS) format?
    - v. Describe the system used for tracking and responding to public complaints related to your sewage collection system.
    - vi. Describe how the annual maintenance budget is determined. If a list of maintenance requirements has been developed, describe the items on the list which remain unfunded due to budget shortfalls.
    - vii. Provide a summary of your annual budget for system operations, maintenance, and capital improvements.
    - viii. Provide your staffing levels for collection system management, administration, operations, and maintenance. Indicate if you use contractors to implement your system operations and maintenance tasks.

- b. **Spill Response, Reporting, and Record Keeping**
  - i. Provide copies of your spill response plans and spill reporting and record keeping procedures. If you do not have written plans and procedures, describe your practices.
  - ii. Describe measures to ensure that all sewage spills are detected and brought to the attention of spill response staff.
  - iii. Provide a list of emergency response equipment (such as portable pumps and generators) which you own or have access to for responding to sewage spills.
  - iv. Describe your procedures for protecting storm drains from sewage spills and notifying the storm water quality protection authorities of spills that impact their storm drains.
  
- c. **Sewage Pump Stations**
  - i. Indicate the number of spills from sewage pump stations in the last five years.
  - ii. Describe the reliability and adequacy of sewage pump station design and operations, including hydraulic capacity, redundant systems, alarms, and backup power.
  
- d. **Maintenance Program**
  - i. Describe the maintenance management system used, including procedures for identifying trends and problem areas and for prioritizing and scheduling routine, preventive, and corrective maintenance and cleaning. Indicate if you use a computerized maintenance management system.
  - ii. Provide the average miles of sewer pipe cleaned annually over the past five years (or fewer years if data not available), and provide the average percentage of your total sewer pipe miles cleaned at least once annually over the past five years (or fewer years if data not available). Provide the frequency in years in which you clean your entire collection system. (Include root removal or control in these figures).
  - iii. Provide the average miles of sewer pipe receiving root removal or control annually over the past five years (or fewer years if data not available), and provide the average percentage of your total sewer pipe miles receiving root removal or control at least once annually over the past five years (or fewer years if data not available).
  - iv. If you have identified trouble spots in your collection system, how often are the trouble spots cleaned?
  - v. Describe the system for tracking and responding to odor complaints. Describe the program for monitoring or assessing odors from your collection system. Describe identified odor problem areas and any ongoing efforts to control odors from your collection system.
  
- e. **Source Control Program**
  - i. Do you have an ordinance that limits or requires control of fats, oils, and grease introduced to your collection system by restaurants and food

- processing facilities? Provide a copy of your ordinance and related regulations, policies, and guidance.
- ii. Describe your current grease source control program, including implementation of any grease control ordinances, permitting, inspections and enforcement. Provide the number of staff working on your grease source control program. Of this number, how many spend half or more of their time directly implementing the grease source control program.
- f. **Sewer Inspection, Condition Assessment, and Rehabilitation Program**
- i. Describe the program and methods used to inspect and assess the condition of your sewers. Do you own or have access to Closed Circuit T.V. equipment for inspecting sewer pipes?
  - ii. For each method of sewer pipe inspection (visual, CCTV, etc.), indicate the miles and percentage of your sewage collection system inspected and assessed annually. Indicate the number of miles or percentage of your system for which you have completed a condition assessment. If you have completed a condition assessment of your entire system, indicate when this assessment was completed.
  - iii. Describe your program for rehabilitating or replacing defective or deteriorated sewers. Indicate the number of miles of sewer planned for rehabilitation or replacement over the next five years.
- g. **Capacity Assurance Program**
- i. Explain how sewer system hydraulic capacity is evaluated, including the effects of infiltration and inflow (I&I).
  - ii. Explain whether the system has experienced overflows resulting from capacity restrictions due to excessive I & I, dry weather flow increases, or undersized pipes or pump stations. Indicate the major cause of capacity related overflows in your system.
  - iii. Have you completed an assessment of infiltration and inflow in your collection system. Did the assessment address both groundwater infiltration and rainfall derived infiltration and inflow? Describe what methods were used to complete the I & I assessment (i.e., flow monitoring, smoke testing, etc.). Describe the major findings of your I & I assessment.
  - iv. Describe the system for monitoring flow in your collection system including permanent or temporary flow meters in the sewer pipes or at sewage pump stations.
  - v. Describe the model or other system for predicting flow and available capacity in your collection system.
  - vi. Describe the program used for planning, funding, and constructing additional capacity needed for your system.
  - vii. Indicate any plans over the next five years for constructing relief sewers.
- h. **Capital Improvement Program**
- i. Describe the program for identifying, prioritizing, funding, and constructing

# City of Carlsbad

## Public Works

### Section 1

- a. The majority of the city is covered in the service area. Leucadia W.D. serves the southern section of the city.
- b. The approximate population served is 17000 service connections.
- c. The average daily flow is 6.5 MGD.
- d. The approximate length of sewer lines is 214 miles.
- e. The range of pipe size is from 4" to 24".
- f. The city has 16 pump stations. 4 stations have three pumps. 12 stations have two pumps. The city has three pump stations with submersible pumps. Three stations that are above ground with self-priming pumps. Ten stations that have vertical dry-pit non-clog pumps.
- g. Attached are the maps of the sewage collection system and pump stations. (See exhibit "A")
- h. The range and average age of the system is 25 years.

### Section 2

#### a. Management Program

- i. Public Works Sanitation Operations and Public Works Construction / Maintenance Department. The operations crews maintain the pump stations and the maintenance crews clean and maintain the sewer lines.
- ii. The legal authorities and ordinances governing use of the sewage collection system are the City Engineer and Carlsbad Municipal Code ordinance Title 13 Chapters 13.04, 13.08, 13.10, 13.12, 13.16, and 13.20.
- iii. Adequate maps of the sewer system are available to all field crews. The existing maps reflect the locations of sewer pipe, trunk lines, and force mains. The mapping system will be upgraded to show new construction areas.

iv. The city's Engineering Division is in the process of transferring all maps to the GIS format.

v. The city uses a Microsoft Access Data Base to log all complaints and print out a hard copy for the field crew to respond.

vi. The annual maintenance budget is determined by past budgets and projected growth of the system.

vii. For the summary of the annual budget for system operations, maintenance, and capital improvements see exhibit "D".

viii. The staffing levels are Deputy Public Works Director, Public Works Managers, Public Works Supervisors, Senior Office Specialist, Sanitation Operations Crew, Construction / Maintenance Crew. Occasionally contractors are used to inspect sewer lines and perform maintenance on facilities.

### **b. Spill Response, Reporting, and Record Keeping**

i. See attached copy of Sewer Overflow Response Plan (See exhibit "B")

ii. See attached copy of Sewer Overflow Response Plan (See exhibit "B")

iii. See attached copy Emergency Phone Numbers (See exhibit "B")

IV. In the event that a spill may enter a storm drain the city crew will use sand bags or build a berm to protect the storm drain system. If the spill has entered a storm drain structure the city crew will notify the California Regional Water Quality Control Board (San Diego Region) by completing a Sanitation Sewer Overflow Report Form. Also if any waterways have been affected by the spill the city crew will post the effected area.

### **c. Sewage Pump Stations**

i. One. 6/24/97

ii. Reliability and adequacy; 12 of the pump stations have a two pump setup. It only requires one pump to maintain the flow. The other 4 have three pumps in which they have two as standby. All pumps are alternated daily to give adequate run time for each. (See exhibit "C")

### **d. Maintenance Program**

i. The city uses the Sussex Work Management System 7.1.19; this is a work order and inventory database. The criteria used to identify trend and/or problem areas are excessive grease, flat lines, low flows or siphons. If you refer to the City of Carlsbad Sewer Prevention Plan section I, topic II the criteria for the city's maintenance program is outlined.

ii. The city crews are cleaning on an average of 47 mile per year, which represents approximately 21% of the sewer system per year. With an average of 21% cleaned per year it will take approximately 5 years to clean the entire system.

iii. The city crews are removing or controlling roots in the system on an average of .84 miles per year, which represents approximately .003 % of the sewer system per year.

iv. There are 15 identified trouble spots within the sewer system. 2 of the locations are cleaned quarterly, the rest are cleaned bi-annually. While cleaning the identified locations the whole area that feeds into the trouble spot is cleaned.

v. The system in use to track and respond to odor complaints is the Microsoft Access Database. All odor complaints are tracked to find the source of the odors; air samples are monitored with an Atmospheric Tester and Hydrogen Sulfide Test kit. If the odor cannot be controlled at the source, the sewer access hole will be sealed. Identified odor problem areas are monitored by notification of customer by an educational letter (see attached copy in the Sewer Overflow Prevention Plan) this alerts the customer of their responsibility to maintain grease trap.

#### **e. Source Control Program**

i. Carlsbad Municipal Code 13.04.050 (2) see attached copy of ordinance and educational letter to the customers. (See exhibit "E")

ii. The city's grease control program consists of an educational letter (see exhibit "B" copy in Sewer Overflow Prevention Plan)

#### **f. Sewer Inspection, Condition Assessment and Rehabilitation Program**

i. The city crews inspect all sewer access holes when cleaning the pipes. Private contractors provide CCTV inspection of sewer pipes between access holes. The city owns 2 CCTV systems; these are used mostly for 4" to 6" laterals. Refer to attached Performance Standards for inspection policies.

ii. The city has about 14 miles of the sewer system inspected per year; this represents approximately 0.06% of the entire system. The inspections performed on the sewer system are an ongoing assessment of the system.

iii. The City contracted out a sewer inspection service to CCTV any pipelines that were 30 years or older. From this inspection the City identified any problem areas and prioritized these areas for repairs. Within the City's Capital Improvement Program there are approximately 5.78 miles due to be replaced or refurbished in the next five years.

#### **g. Capacity Assurance Program**

i. Hydraulic capacity evaluation: The major trunk sewers are evaluated in master plans, that are updated every five years, to determine if their size is adequate to convey peak flows from their tributary sewer service area. This is done by determining the number of equivalent dwelling units tributary to the sewer pipeline and multiplying the number of EDU's by a flow rate of 220 gallons per EDU. A peaking factor is then applied to this flow rate to determine the peak design flow for the trunk sewer pipeline. In addition to the modeling effort the flows in each trunk sewer is also measured at critical points to determine the actual depth of flow. This depth is measured against criteria to maintain the peak flow depth below  $0.75 D$ , where  $D$  is the diameter of the pipeline.

ii. Overflows: No overflows have occurred to the sewer system from I&I or other conditions.

iii. We have not completed an I&I study or assessment. The flow rates in the sewer pipelines are within capacity limits. We are aware the peaking factor increases to approximately 3 during wet weather periods. The trunk sewers suspected of contributing the high inflows during wet weather periods are presently being upgraded by either replacement with new pipelines or are being relined. The inflow problem is also caused by agencies upstream of Carlsbad that have their sewers connected to the Carlsbad sewer system.

iv. The City continuously monitors most of its trunk sewers using permanent meters installed at downstream points near the treatment plant and also at upstream points where other agencies connect to the trunk sewers. This way we know how much sewage is being generated by the City of Carlsbad on a daily basis. These flow rates are compared to the capacity of the pipelines at those locations. At other locations the City has two portable meters that we install in collector sewers to monitor flow rates at critical locations and where operations and maintenance staff determine that additional data is required. Finally, we periodically arrange for a consulting firm to measure flow rates in the larger diameter trunk sewers where the City has contractual limits on its capacity when

jointly used by other agencies. In addition to these meters each of the major sewer lift stations has a permanent flow meter installed on the discharge force main. These flow rates are compared to the pump capacities.

v. The sewer model used by the City is "Sewercad". The ultimate flow rates are updated annually by reviewing the existing and approved land development projects in terms of equivalent dwelling units and adding in projections on what future land development is estimated to add in terms of EDU's. This data is then converted to a flow rate by using a factor of 220 gallons per day and the result is then multiplied by an appropriate factor to generate flow rate tributary to the trunk sewers.

vi. The City has master planned the sewer system. Future collector sewers are the responsibility of the developer to construct in order to serve his development. Reimbursement agreements are entered into with a developer who is required to construct a sewer pipeline greater in size than is required for his project. When future developers connect to the oversized trunk sewers the City collects a fee per EDU from that future and reimburses the original developer for the over sizing. In addition, to the reimbursement agreement for over sizing, the City collects a connection fee for treatment capacity. This fee is used to expand the treatment plant when necessary to meet the requirements of the future land development projects. The connection fee is based on the cost for the ultimate size of the treatment plant for Carlsbad's needs divided by the projection of possible future connections that may occur. This fee is recalculated approximately every five years.

vii. The City is now constructing the last major trunk sewer to increase its size to meet ultimate sewage flows. There are no plans to construct any additional relief sewers because there are no capacity problems. Some sewers are experiencing deterioration from corrosion from hydrogen sulfide gases in the sewer pipelines. These sewers are being replaced as the condition warrants based on periodic review of the pipelines and access holes.

#### **h. Capital Improvement Program**

i. See attached exhibit "G"

ii. See attached exhibit "G"

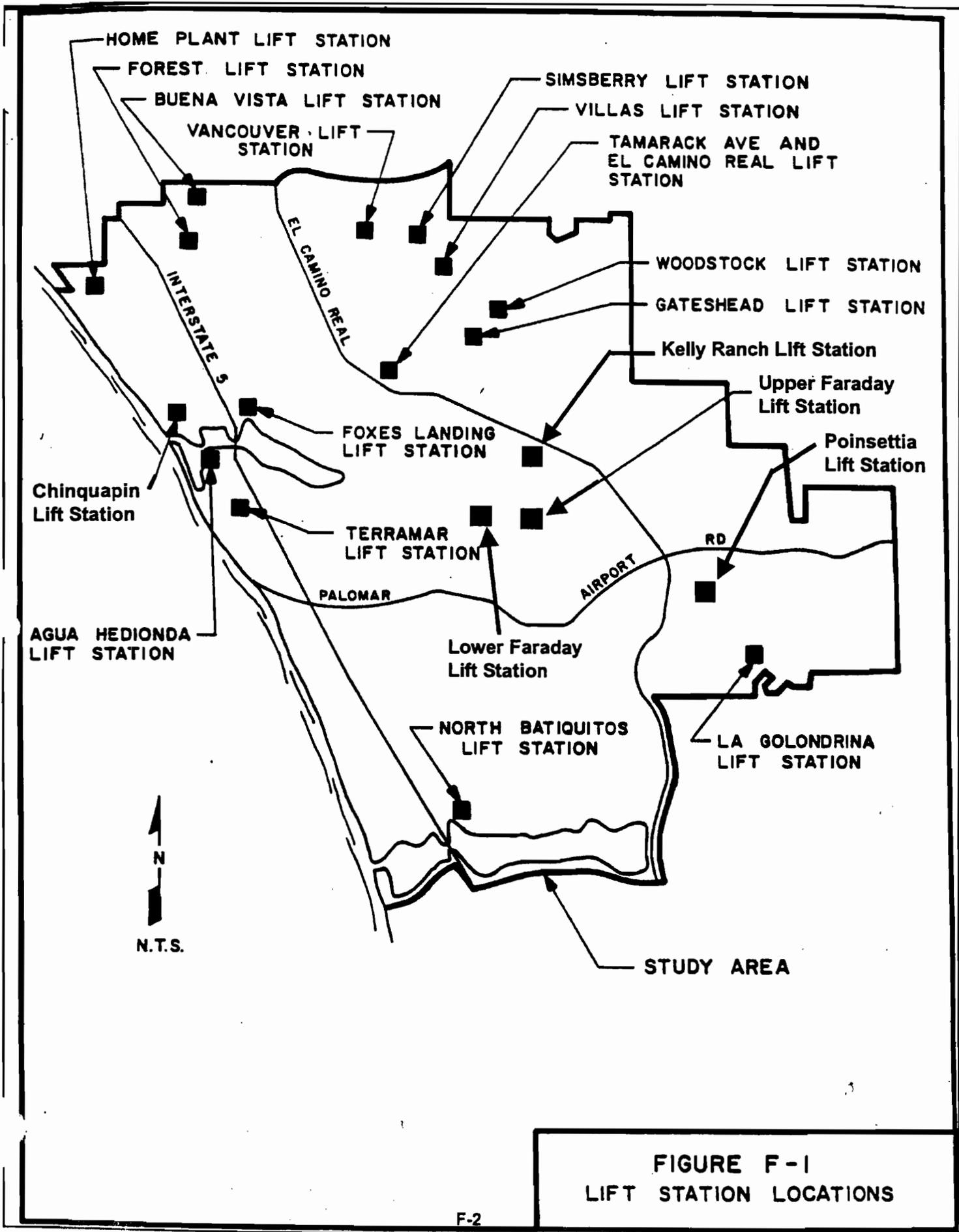
#### **Section 3**

See attached exhibit "F"

## **Section 4**

The City of Vista, Vallecitos Sanitation District, and Leucadia Sanitation District all have Sewer trunk lines that run through the CityofCarlsbad. The satellite agencies and the CityofCarlsbad jointly own the lines. These lines do not tribute to the City's system, but our system flows into their trunk lines. The contact numbers are as follows, Vista 760-726-1340, Vallecitos 760-744-0460 and Leucadia 760-753-0155. The CityofCarlsbad assumes some responsibility for maintenance for the lines that are jointly owned.

# **EXHIBIT A**



**FIGURE F-1**  
**LIFT STATION LOCATIONS**

##	Electric Meter Number			///	Address
#1	Home Plant ## 1411052	--- 729-7513		///	2359 Carlsbad Blvd.
#2	Fox's ## 1476686 ## 1037077-110	--- 434-3327		///	4155 Harrison St.
#3	Terramar ## 861108	--- 438-9178		///	300 Cannon Rd.
#4	Batiquitos ## 1568462	--- 603-8195		///	7382 Gabbiano Ln.
#5	Chinquapin ## 1005010	--- 434-0214		///	4010 Carlsbad Blvd.
#6	Forest ## 447146	--- 434-0398		///	1731 Forest Ave.
#7	Vancouver ## 1004907	--- 434-0412		///	2690 Vancouver St.
#8	Woodstock ## 25104773-10119773	--- 434-0168		///	4666 Woodstock St.
#9	Villas ## 84105526-1380435	--- 434-0513		///	2860 Winthrop Ave.
#10	Faraday (Upper) ## (32-729-132) 1306132	--- 438-8139		///	1711 Faraday Ave.
#11	La Golondrena ## 1024365	--- 931-0407		///	2516 La Golondrena St.
#12	Gateshead ## 1167543	--- 434-3018		///	4779 Gateshead Rd.
#13	Simsbury ## 918955	--- 434-0427		///	3086 Tamarack Ave.
#14	Faraday (Lower) ## ?	--- 929-0213		///	1507 Faraday Ave.
#15	Poinsettia ## 12938995	--- 918-9496		///	2425 Poinsettia Lane
#16	Knots ## 1359036	--- 438-8642		///	501 Knots Lane

Office; Telemetry Verbatim 438-2382      /// Computer #

# **EXHIBIT B**

# **CITY OF CARLSBAD**

**Section I: SEWER OVERFLOW PREVENTION PLAN (SOPP)**

**Section II: SEWER OVERFLOW RESPONSE PLAN (SORP)**

**Section III: EMERGENCY PHONE NUMBERS**

Sewer Overflow Prevention Plan (SOPP) and Sewer Overflow Response Plan (SORP)  
prepared by: Pat Guevara, Public Works Manager; Revised May, 2001

**SECTION I  
PREVENTION PLAN**

**CITY OF CARLSBAD**  
**SEWER OVERFLOW PREVENTION PLAN (SOPP)**

In accordance with California Regional Water Quality Control Board Order No. 96-04, a Sewer Overflow Prevention Plan (SOPP) shall be designed.

**Background:**

The City sewer service area consist of approximately seventy (70) percent of the City of Carlsbad. There are five (5) major sewage drainage basins as shown on Attachment 1.

The Carlsbad Wastewater Collection System utilizes about <sup>242</sup>145 miles of sanitary sewers and approximately 17,000 service laterals and 17 sewage lift stations for sewage conveyance and the Encina Wastewater Authority for treatment.

Currently, 4 major wastewater interceptor systems are within the City of Carlsbad. These interceptors are the Vista/Carlsbad, North Agua Hedionda, Buena/Vallecitos and the North Batiqitos. The City of Carlsbad owns and leases capacity in all of these interceptors servicing other agencies including; City of Vista, City of Oceanside, Vallecitos Water District, Leucadia County Water District and the Encinitas Sanitary District.

In general the Carlsbad sewage system was planned and constructed as dictated by watershed or topographic boundaries. Since sewer lines generally follow the low areas of a watershed, there are a number of gravity sewers which end at lagoons or near the ocean. Protection of these surface waters, recreational water and/or the health and safety of the public is Carlsbad's priority concern.

The intent of the Sewer Overflow Prevention Plan (SOPP) is to prevent or minimize the potential for sanitary sewer overflows by developing and implementing the following procedural programs:

- I. Inspection
- II. Prevention Maintenance
- III. Spill Response
- IV. Posting
- V. Emergency Response
- VI. Restoration
- VII. Documentation
- VIII. Reporting

Note: Items III through VIII are covered under the City of Carlsbad Sewer Overflow Response Plan (attached).

I. Inspection Procedures

Inspection of collection lines will be accomplished by the utilization of the following methods:

- a. Visually by line cleaning crews as they are working in the area. Completion of manhole inspection report (see Attachment 2).
- b. Use of video equipment.
- c. Additional observations during times of inclement weather.
- d. After receiving odor or lateral complaints that might be a result of a line blockage.
- e. After receiving complaints of vandalism such as children playing in or around manholes.
- f. Assuring manhole accessibility within construction areas.
- g. Daily sewer lift station checks.

II. Preventative Maintenance

Preventative maintenance will be an ongoing program by using the following methods:

- a. Daily sewer main cleaning by high velocity hydraulic cleaning (Vactor).
- b. Daily record keeping by inspection and cleaning crews (manhole inspection reports to detect deterioration of the cement structure before failure and work order documentation).
- c. Remove debris from manholes as soon as we become aware of them.
- d. Clean documented priority lines (excessive grease, flat lines or low flows) a minimum of two times a year.
- e. Mailing educational letters (see Attachment 3).
- f. Prioritize repairs.
- g. Completing repairs in a timely manner.
- h. Continuous training of staff.
- i. Each sewer lift station is fitted with alarm system.

III-VII

These items are addressed in the attached copy of our Sewer Overflow Response Plan (SORP).

ATTACHMENT "1"  
Drainage Basins

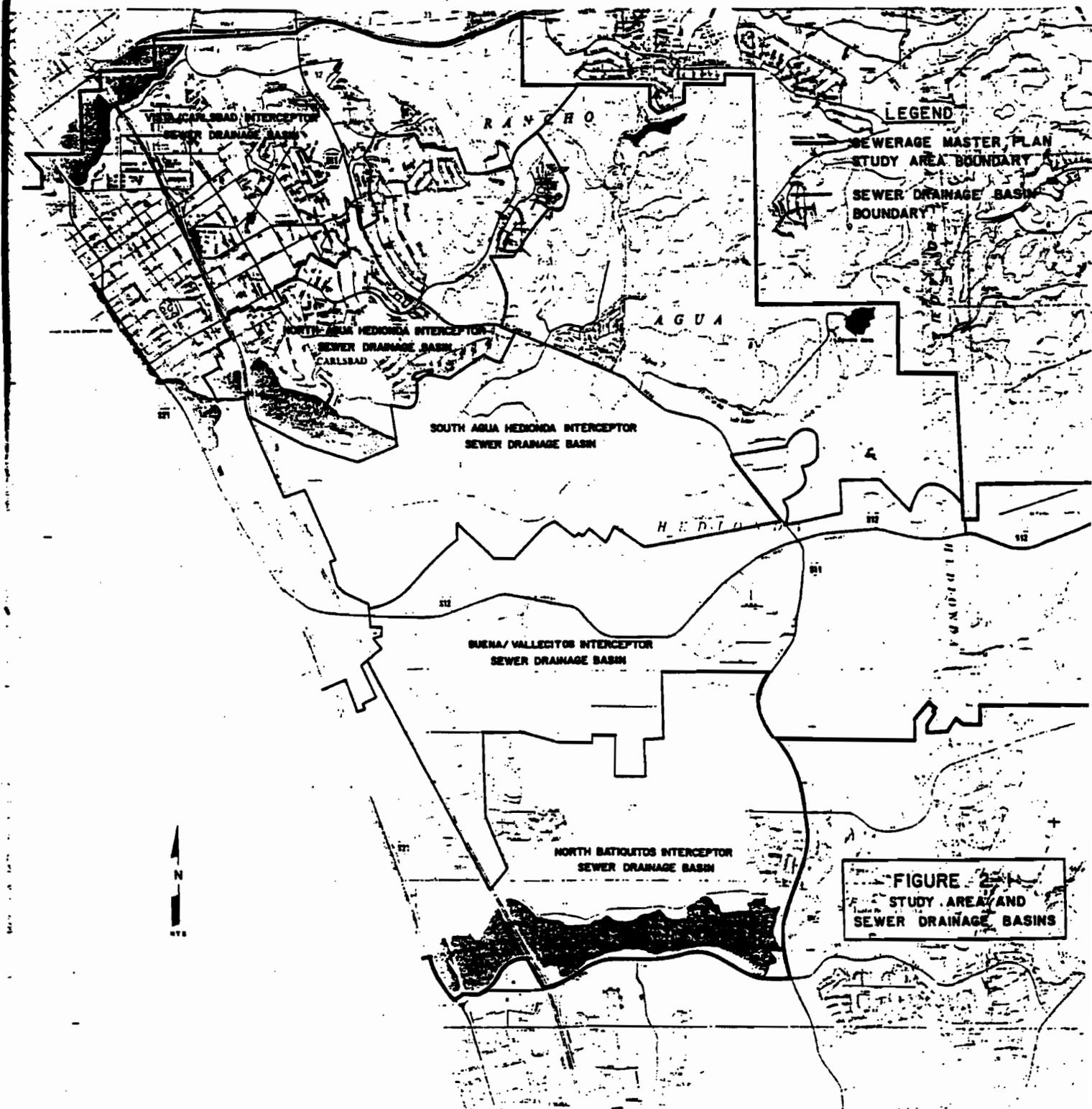


FIGURE 2-1  
STUDY AREA AND  
SEWER DRAINAGE BASINS

# MANHOLE INSPECTION REPORT

District No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ am/pm By: \_\_\_\_\_

Contract No. \_\_\_\_\_ Trunk Name: \_\_\_\_\_

Manhole Station: \_\_\_\_\_ Manhole Type: A, B, or C GW Seepage: YES/NO

Cross Streets On: \_\_\_\_\_ At/Near: \_\_\_\_\_

## CONDITION

<u>ITEM</u>	<u>GOOD</u> 0-10%			<u>FAIR</u> 11-25%			<u>POOR</u> 26-50%			<u>VERY POOR</u> >51%		
	TOP	MID	BASE	TOP	MID	BASE	TOP	MID	BASE	TOP	MID	BASE
EXPOSED AGG												
SOFTENING CONC												
EXPOSED STEEL												
BRICKS/MORTAR												

COVER SIZE: _____ BOLT DOWN: Y/N SEALED: Y/N	<u>GOOD</u>	<u>FAIR</u>	<u>POOR</u>	<u>VERY POOR</u>
GRADE RINGS				
FRAME/COVER				

COATINGS: PVC/ZEBRON/NONE FIBERGLASS OTHER:	<u>GOOD</u>			<u>FAIR</u>			<u>POOR</u>			<u>VERY POOR</u>		
BUBBLES	TOP	MID	BASE	TOP	MID	BASE	TOP	MID	BASE	TOP	MID	BASE
PEELING												
MISSING AREAS												

PIPE SIZE: \_\_\_\_\_ FLOW DEPTH: - 1/4 +/ - 1/3 +/ - 1/2 +/ - 2/3 +/ - 3/4 +/ FULL

H<sub>2</sub>S: \_\_\_\_\_ ppm (if entry is made)

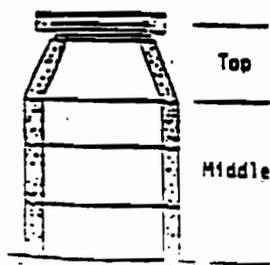
COMMENTS:

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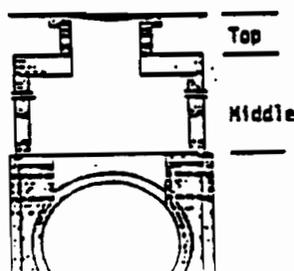


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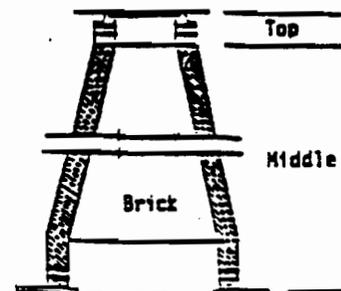
Type A



Type B



Type C



**ATTACHMENT "3"**  
**Educational Letter**

Dear Customer:

As a form of preventive maintenance, the City of Carlsbad wishes to remind you that Carlsbad Municipal Code No. 13.04.050, Section (g) states in part: "No person shall discharge or cause to be discharged any fats and greases to the sewer system if their concentration and physical dispersion results in separation and adherence to sewer structures and appurtenances";... Wastewater carrying such materials must be effectively pretreated by a process or device to effect removal from the flow before its discharge to the sewer system";... "All grease, oil and sand interceptors shall be maintained in continuously efficient operation at all times by the owner at the owner's expense.";... "In the maintaining of these interceptors, the owner shall be responsible for the proper removal and disposal by appropriate means of the captured material and shall maintain records of the dates, amounts and means of disposal, which are subject to review by the Deputy City Engineer."

Because of abnormally high concentrations of grease in the sewer system, we are requesting that all restaurants be aware of their responsibilities. This, along with our periodic sewer main cleaning, will help to eliminate main stoppages and untimely sewage backups in your establishments.

If we can be of assistance, please feel free to contact our office during regular business hours. Pat Guevara, our Public Works Manager, Construction Maintenance, will be happy to assist you. He can be reached at (760) 438-2722 extension 7132.

Respectfully,

**ROBERT J. GREANEY**  
Deputy Public Works Director

**SECTION II  
RESPONSE PLAN**

**CITY OF CARLSBAD**  
**SEWER OVERFLOW RESPONSE PLAN**

**PURPOSE**

The City owns and operates a diverse collection system which consists of pumping stations, gravity sewer pipelines, and sewage force mains. These facilities are well maintained and normally should not result in any sewage overflows/spills. However, the possibility exists that unforeseen accidents, unusual equipment failure or other events not controlled by the City could result in a sewage overflow/spill. This procedure provides a plan that when enacted in response to a sewer overflow/spill would reduce or eliminate public health hazards, prevent unnecessary property damage, and minimize the inconvenience of service interruptions.

**GENERAL**

Normal and routine maintenance of the collection system is the ounce of prevention that is worth a pound of cure. Nevertheless, there will be times when an overflow/spill will occur. This Sewer Overflow Response Plan will help facilitate a timely and technically correct response.

In order for response personnel to accurately assess the level of response, the potential for outside costs associated with cleanup, potential liability claims for property damage, and to accurately report overflow/spills to regulatory agencies, the following definitions shall apply.

**1. MINOR SPILL**

A minor spill is a sewage spill that is contained and can effectively and satisfactorily be cleaned up by City personnel, and does not require regulatory notification.

A minor **INSIDE** spill is one that:

- A. Is confined to the affected drain area and does not enter other rooms.
- B. Does not contaminate carpet, furniture or other homeowner belongings that require specialized cleaning and disinfection.
- C. Does not pose a threat to public health.

A minor **OUTSIDE** spill is one that:

- A. Is less than 50 gallons; or
- B. Is between 50 and 1000 gallons and does not occur within 50 feet of human habitation, does not contaminate public waters, does not pose a threat to public health and/or the environment, and can be cleaned up by City personnel.

## **2. MAJOR SPILL**

A major spill is a sewage spill that contaminates the homeowners property inside the home, can not be effectively and satisfactorily cleaned up by City personnel, and requires regulatory notification.

A major **INSIDE** spill is one that:

- A. Spreads beyond the immediate drain area into other living areas.
- B. Contaminates wall-to-wall carpets, furniture or other homeowner belongings that require specialized cleaning or disinfection.
- C. Poses a threat to public health.

A major **OUTSIDE** spill is one that:

- A. Is greater than 1000 gallons.
- B. Is more than 50 gallons but occurs within 50 feet of human habitation, contaminates public water and/or poses a threat to public health and/or the environment.

## **SAFETY**

Whenever City personnel respond to a report of an overflow/spill, they may encounter an emergency situation that requires immediate action. The most critical aspect of resolving an incident of this nature is to **safely and competently** perform the actions a necessary to return the damaged equipment or facility to operation as soon as possible.

The most important item to remember during this type of incident is that safe operations always take precedence over expediency or short cuts.

Depending on the nature or cause of the overflow/spill, personnel may be performing mechanical or electrical repairs at a pumping station, removing a mainline blockage with the Vactor or repairing a damaged section of pipeline (forcemain). At this point, it is essential that all applicable safety procedures are followed so that the response does not cause the situation to escalate.

Typical responses may require personnel to implement the following types of safety procedures:

- Lockout/Tagout of equipment for repairs
- Confined Space entry procedures
- Traffic control procedures at site
- Equipment and/or vehicle operation
- Use of personnel protective equipment

Another important aspect of responding to an overflow/spill is the ability to maintain adequate communication via two-way radio and/or cellular telephone. Responders may need to call for additional resources as the situation may warrant as well as to notify other personnel and supervisors of the situation.

## **PROCEDURES**

This section will provide the step-by-step procedures explaining the actions to be taken in response to an overflow/spill. This section is divided into three sections depending on the cause of the overflow/spill: Pipeline blockage, forcemain leak or pump station failure.

### **PIPELINE BLOCKAGE**

1. Contact property owner or person reporting overflow/spill and obtain information on location to determine if the spill is within the City's service area and for completion of reporting requirements.
2. Upon arrival at the scene, a determination must be made as to the source of the overflow/spill. Is it coming from a sewer pipe or is it from an individual building lateral or private sewer? **Contain spillage immediately**, if possible.
3. If it is determined that the overflow/spill is originating from a private lateral or sewer, the owner or property manager must be notified and informed that they are responsible for corrective action and any damages i.e., relieving the blockage. Chronic overflows/spills at the same property shall be referred to the County Department of Health Services and/or the respective Code Enforcement Division for resolution.
4. If an overflow/spill has originated from the mainline sewer, contain spill and secure the spill area by placing cones or barricades if needed around the site.
5. Contact the duty person for assistance at the site, and also check pump station condition if overflow structure is located in close proximity to a pump station. Be aware that a pump station failure can cause an overflow/spill in adjacent upstart structures.
6. Inspect flow conditions in structures upstream and downstream from the overflowing structure to determine location of blockage. Always set up Vactor at the next structure downstream from the overflowing structure.
7. Use Vactor to relieve blockage as soon as possible.

8. Once the blockage has been relieved or problem corrected and the overflow has ceased, every attempt should be made to contain the sewage that has spilled. If the spill can be contained by sandbagging storm drains or building a berm to capture or channel spill flow to a location which is accessible to the Vactor for vacuuming up the spill, do so.
9. If there is flooding or property damage, notify the Supervisor immediately.
10. Take necessary photographs of the affected area for City records.
11. To minimize health hazards and damage, provide proper cleanup by removing debris and sanitizing affected area.
12. Do not volunteer or disown City liability. Instead, simply state that you are looking into and trying to resolve the matter as quickly as possible. If the resident wants to discuss liability, let him/her know that liability cannot be addressed until all information on the overflow has been evaluated. Be polite and sympathetic to the property owner's concerns. Express that you understand how difficult the situation is and assure them that regardless of who is at fault, you are there to assist in expediting the cleanup.

A. If overflow is inside structure (major):

1. Call for emergency clean-up services (see phone numbers under "Homeowner/Occupant – Emergency Information"), confirm the estimated time of arrival, and let the resident know that they are on their way.
2. Take photographs of all areas in structure where overflow has reached.
3. If resident needs temporary living arrangements during clean-up, offer the hotel listed under "Homeowners/Occupant – Emergency Information" and arrange for a one night stay or until the next business day if necessary, using the City credit card.
4. Call Risk Management at (760) 602-2470 to report incident and status of homeowner/occupant.

**B. If overflow is inside structure (minor):**

1. Take photographs of existing damaged areas for assisting in settling potential claims.
2. The owner/occupant is to call outside professional cleaning service for cleaning, sanitizing, placing of blowers and/or dehumidifiers.

**C. If overflow is outside of structure (major or minor):**

1. If overflow is on the ground, remove debris by means of a rake and shovel.
  2. Wash area down (if possible) and disinfect with Pine-Sol per label instructions.
  3. Dispose of water/debris properly.
13. If there is damage to real estate and/or personal property, Public Works Manager or Supervisor will advise property owner/occupant that Risk Management will be in contact by the next business day to discuss property restoration or they may call Risk Management at (760) 602-2470.
14. Make certain that the City's main sewer is functioning properly before leaving area.
15. Complete all required reports with pertinent details including estimate of spill volume. Turn in reports and photos to the Public Works Manager by the start of the next workday.
16. All overflows/spills greater than 1000 gallons, or any sewer overflow/spill greater than 50 gallons that occurs within 50 feet of human habitation or poses a threat to public health and/or the environment are to be reported to the Regional Water Quality Control Board at 8:00 a.m. on the first work day following the incident. This report will be submitted by the Supervisor.

**FORCEMAIN LEAK**

In the event that a spill has occurred due to a leak from a force main, the following actions will be taken:

1. The leaking forcemain will be isolated and bypassed while emergency repairs are conducted to the pipeline. This bypassing may take one of the following forms:
  - Highline of temporary pipeline around affected area.
  - Bypassing of flow of parallel force main (Phase II & Phase III transmission lines only have this capability).
  - Use of pumps and tank trucks to convey flow
  - Use of Vactor to vacuum and transport flow (low flow conditions only).
2. Depending on the nature of the damage to the pipeline, location of leak, volume of flow being conveyed, and the depth of the pipeline emergency, repairs may be conducted by City personnel or by a contractor.
3. Due to the lack of service connections to the forcemains, it is highly unlikely that any flooding of personal property would occur as the result of a forcemain leak. The threat to the environment and the public health would still exist, and therefore, cleanup and containment efforts similar to those for a mainline blockage spill would be required.

#### PUMP STATION FAILURE

Each pump station is fitted with an alarm system that provides information to City operators in the event of a system failure. City staff shall respond immediately when an alarm message is received and utilize the following procedures.

1. Upon receiving an alarm message either at the Public Works, Maintenance and Operations Center or at home, the duty operator will respond immediately to the pump station from which the alarm has originated.
2. Based on the alarm condition and considering the type of alarm received, the responding operator shall determine the appropriate course of action and decide on the staff response.
3. In the event of a power outage, the "Power Outage Emergency Procedure" shall be implemented.
4. A determination shall be made as to the likelihood that the shutdown or equipment failure will result in the release of sewage. Mobilize the necessary personnel and/or equipment to correct the problem.
5. Notify the Public Works Manager of the situation.
6. Take the necessary steps to return the pump station to proper operation.
7. If an overflow/spill has occurred, proceed to step #8 of the above mainline blockage overflow/spill instructions.

## **RESPONSIBILITIES**

Public Works Manager, Sanitation Operations and Const/Maint. Supervisors are responsible to ensure all Operations and Maintenance personnel are trained in and follow these procedures.

All Operations and Maintenance personnel are responsible for following these procedures and completing reports with all pertinent information. These reports consist of the following and will be updated and maintained by the Public Works Manager.

- City of Carlsbad Overflow/Spill Report – Same as California Regional Water Quality Control Board Sewer Overflow Report (Attachment “A”)
- Daily Sign Check (if applicable, Attachment “B”)
- City of Carlsbad Incident Report (Attachment “C”)

Only the Public Works Manager, Deputy Public Works Director, Public Works Supervisors are authorized to volunteer or disown City liability or offer cleaning service or repairs to affected property. The incident coordinator during and/or after work hours shall be: Don Wasko, Public Works Supervisor, Const/Maint, (760) 438-2722 Ext. 7138/(760) 730-3376; Louie Montanez, Public Works Supervisor, Sanitation Operations (760) 438-2722 Ext. 7137/(760) 439-0308.

The Supervisor shall be responsible for notifying regulatory agencies of overflows/spills within the required time frame.

All major overflows/spills shall be reported via telephone/fax within 24 hours to the Prop. 65 Coordinator at the San Diego County Department of Health Services:

San Diego County  
Department of Health Services  
Prop. 65 Coordinator (Clay Clifton)  
P.O.Box 85261  
San Diego CA 92186-5261  
(619) 338-2386/fax (619) 338- 2174  
After Hours – County Communications  
(858) 565-5255 Request Environmental Health Specialist paged.

Re: Agua Hedionda Watershed  
Preharvest Shellfish Sanitation Unit  
Rolf Frankenbach  
(510) 540-3210 – work  
(916) 819-9084 – pager or

Gregg Langolis  
(510) 327-5590 - work  
(916) 819-0984 – pager

In addition, a written report shall be submitted to the California Regional Water Quality Control Board at the address below within five (5) working days from date of overflow/spill (attachment "A"). A copy of this report shall also be submitted to Prop. 65 Coordinator at the San Diego County Health Services Department.

California Regional Water Quality Control Board  
San Diego Region  
Suite B  
9771 Clairemont Mesa Boulevard  
San Diego CA 92124  
(619) 467-2952  
(619) 571-6972 FAX

#### **TRAINING**

This procedure shall be reviewed at semi-monthly safety meetings a minimum of twice per year. In addition, this procedure shall be used as the basis for a minimum of four tailgate training sessions per year by both the Operations and Maintenance Departments.

## **OPERATIONS/MAINTENANCE**

### **SEWER SPILL TRAINING**

1. Contain spill.
2. Correct the cause of the spill.
3. Contact Superintendent or Supervisor.

#### **The following will be completed by you or your supervisor:**

- A. Contact Health Department immediately if spill will reach any recreational area, beaches, lagoons, above ground water.

Clay Clifton - 24 hour phone number (619) 338-2386/Pager: (619) 492-9825

Fax: (619) 338-2174

1. The health department will give specific instructions of areas that need to be posted.
  2. Notify and post areas of contamination if Health Department cannot respond immediately.
  3. If posting is required, you must maintain a log on all signage locations (Attachment B).
  4. Signs will be checked at 7:00 a.m. and 3:00 p.m. daily, until ordered to be removed.
- B. Two forms need to be completed by you and turned into the office the next work day.
1. California Regional Water Quality Control Board, San Diego Region, Sewer Overflow Report Form (Attachment A)
  2. City of Carlsbad Incident Report (Attachment C)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

SANITATION SEWER OVERFLOW REPORT FORM

5/9/96

1. SANITARY SEWER OVERFLOW SEQUENTIAL TRACKING NUMBER: \_ \_ \_ \_ \_
  2. REPORTED TO: \_ \_ \_ \_ \_  
(ENTER FAX, VOICE MAIL, OR NAME OF REGIONAL BOARD STAFF)
  3. DATE REPORTED: \_ \_ / \_ \_ / \_ \_ (MM/DD/YY)  
TIME REPORTED: \_ \_ : \_ \_ (MILITARY OR 24 HOUR TIME)
  4. REPORTED BY: \_ \_ \_ \_ \_
  5. PHONE: ( \_ \_ ) \_ \_ \_ \_ \_
  6. RESPONSIBLE SEWER AGENCY: \_ \_ \_ \_ \_
  7. OVERFLOW START: DATE: \_ \_ / \_ \_ / \_ \_ (MM/DD/YY)  
TIME: \_ \_ : \_ \_ (MILITARY OR 24 HOUR TIME)
  8. OVERFLOW END: DATE: \_ \_ / \_ \_ / \_ \_ (MM/DD/YY)  
TIME: \_ \_ : \_ \_ (MILITARY OR 24 HOUR TIME)
  9. TOTAL OVERFLOW VOLUME: \_ \_ \_ \_ \_ (GALLONS)
  10. OVERFLOW VOLUME RECOVERED: \_ \_ \_ \_ \_ (GALLONS)
- SANITARY SEWER OVERFLOW LOCATION:
11. STREET: \_ \_ \_ \_ \_
  12. CITY: \_ \_ \_ \_ \_
  13. COUNTY: \_ \_ (SD, RI, OR)

14. ZIP CODE: \_ \_ \_ \_ \_

15. SANITATION SEWER OVERFLOW STRUCTURE I.D. :  
\_ \_ \_ \_ \_

16. NUMBER OF OVERFLOWS AT THIS LOCATION IN PAST 12 MONTHS \_ \_ \_

17. OVERFLOW CAUSE - - SHORT DESCRIPTION - - CIRCLE ONE

- |        |           |               |                      |
|--------|-----------|---------------|----------------------|
| ROOTS  | GREASE    | LINE BREAK    | INFILTRATION         |
| ROCKS  | BLOCKAGE  | POWER FAILURE | PUMP STATION FAILURE |
| DEBRIS | VANDALISM | FLOOD DAMAGE  | MANHOLE FAILURE      |
|        | OTHER     | CONSTRUCTION  |                      |

18. OVERFLOW CAUSE - - DETAILED DESCRIPTION OF CAUSE

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-----  
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-----  
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19. SANITARY SEWER OVERFLOW CORRECTION - - DESCRIPTION OF ALL PREVENTATIVE AND CORRECTIVE MEASURES TAKEN OR PLANNED.

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-----

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-----  
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**INITIAL AND SECONDARY RECEIVING WATERS:**

- 20. DID THE SANITARY SEWER OVERFLOW REACH SURFACE WATERS?\_ (Y OR N)
- 21. DID THE SANITARY SEWER OVERFLOW ENTER A STORM DRAIN? \_ (Y OR N)
- 22. NAME OR DESCRIPTION OF INITIAL RECEIVING WATERS. (IF NONE, TYPE NONE)

-----

- 23. NAME OR DESCRIPTION OF SECONDARY RECEIVING WATERS. (IF NONE, TYPE NONE)
- 24. IF THE SANITARY SEWER OVERFLOW DID NOT REACH SURFACE WATERS, DESCRIBE THE FINAL DESTINATION OF SEWAGE.

-----

**NOTIFICATION:**

- 25. WAS THE LOCAL HEALTH SERVICES AGENCY NOTIFIED: \_ (Y OR N)
- 26. IF THE OVERFLOW WAS OVER 1,000 GALLONS TO SURFACE WATER, WAS THE OFFICE OF EMERGENCY SERVICES (OES) NOTIFIED: \_ \_ (Y OR N) (NOT APPLICABLE, ENTER NA)

**AFFECTED AREA POSTING:**

- 27. WERE SIGNS POSTED TO WARN OF CONTAMINATION? \_ (Y OR N)
- 28. HOW MANY DAYS WERE THE WARNING SIGNS POSTED? \_ \_ \_

**29. REMARKS:**

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**NOTE: IF THE SANITARY SEWAGE OVERFLOW EVENT RESULTS IN A DISCHARGE OF MORE THAN 1,000 GALLONS TO SURFACE WATERS, THIS FORM MUST BE RECEIVED BY THE REGIONAL BOARD NO LATER THAN FIVE DAYS AFTER THE OVERFLOW START DATE.**

The following certification must be completed with the five day notice:

I swear under penalty of perjury that the information submitted in this document is true and correct. I certify under penalty of perjury that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

DAILY SIGN CHECK  
LOCATION OF SPILL  
DATE OF SPILL

\_\_\_\_\_  
\_\_\_\_\_

LOG-IN TIME DATE AND SIGN NO. MISSING

DATE

_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

COMMENTS: -----

CITY OF CARLSBAD  
INCIDENT REPORT

TYPE OF INCIDENT: \_\_\_\_\_  
DATE OF INCIDENT: \_\_\_\_\_ PREPARED BY: \_\_\_\_\_

LOCATION OF INCIDENT: \_\_\_\_\_

TIME OF INCIDENT: \_\_\_\_\_ POLICE CALLED: YES \_\_\_ NO \_\_\_

POLICE REPORT NUMBER: \_\_\_\_\_ OFFICER'S NAME \_\_\_\_\_

HOW DID THE INCIDENT OCCUR (BE SPECIFIC) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CONTACT PERSON OR AGENCY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

WITNESSES TO THE INCIDENT:

NAME	ADDRESS	PHONE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

(PLEASE USE ADDITIONAL SHEETS IF NEEDED)

WHAT ACTION STEPS WILL BE TAKEN TO PREVENT SUBSEQUENT INCIDENTS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SIGNED \_\_\_\_\_  
DATE \_\_\_\_\_

SUPERVISOR'S  
SIGNATURE \_\_\_\_\_  
DATE \_\_\_\_\_

**SECTION III**  
**EMERGENCY PHONE #'s**

**MEMORANDUM**

**April 25, 2001**

**TO: ALL CITY PERSONNEL**

**FROM: Public Works Manager Construction/Maintenance**

**RE: SANITATION/WATER EMERGENCY RESPONSE DISPATCH**

It has been brought to our attention that some water/sewer related calls have been routed through the Community Services office. In order to provide quality, responsive, customer service, please contact the following:

First response for any WATER related problems (i.e., no water, water running, broken water lines, etc.) or SANITATION related problems (i.e., sewer line stoppages or back-ups, dead animals in the city right-of-way, etc.), shall be handled by Water Construction/Maintenance personnel

**DURING WORKING HOURS:** CALL 438-2722, Ext. 7134, for immediate response.

**AFTER HOURS:** NEXTEL PHONE – (760) 802-8101 (Duty Personnel)  
(If no response to cellular number, dial (760) 802-4790.

For any SEWER PUMP STATION ALARMS, dial the cellular phone, (760) 802-4694.

Our people have been instructed that in the case of a mistaken call, they will take the message and contact the correct person or service district so as not to take up dispatcher time. We hope this will serve as a more efficient procedure and eliminate telephone tie-ups for dispatch and unnecessary time associated with contacting the proper department, as most emergency response situations can be associated with the described problems.

If there are any questions, please feel free to contact either Pat Guevara, ext 7132, or Kurt Musser, ext 7133.

Respectfully,

**PAT GUEVARA**  
Public Works Manager, Construction/Maintenance

# CITY OF CARLSBAD MUNICIPAL WATER DISTRICT

## EMERGENCY TELEPHONE LIST

### **OUTSIDE DISTRICTS**      **NUMBER**

LEUCADIA	753-0155
OCEANSIDE	435-3900 or 435-5890 Emergency or 435-4900 After hours or stand by or PD
OLIVENHAIN	753-6466
V.I.D.	806-3100 or 806-3120
VALLECITOS	744-0460
VISTA	726-1340 or After hours - Public Works Rancho Fire - 858-756-3006

### **OUTSIDE UTILITIES**

DANIELS CABLE T.V.	438-1145 or 931-7000
S.C. GAS CO.( R.R. RIGHT OF WAY)	1-800-640-9997
SDG&E	438-6200 or Trouble line 699-5120/After Hours 800-227-2600/Emergency 800-411-7343
KINDER MORGAN ENERGY (ECR PETRO PIPELINE)	1-213-624-9461 or 1-213-624-9462
TELEPHONE	611 or 800-332-1321
USA DIG ALERT	1-800-422-4133

### **OUTSIDE AGENCIES**

ANIMAL SHELTER	438-2312 or 1-619-278-9760
COUNTY HAZ-MAT	
CRWQCB-GLORIA	
ENCINA W.A.	438-3941 or Fax- 438-3861(Nancy Anson- Laboratory Manager)
HEALTH DEPT.-CLAY CLIFTON	1-619-338-2386 or PAGER- 1-619-492-9825 # 3776 or Fax 619-338-2174

### **GENERAL CONTRACTORS**

HUBBARD CONTRACTORS	736-3241 Home or 741-8705 or 1-619-890-0699
T.C. CONSTRUCTION	1-619-448-4560

### **WELDING CONTRACTORS**

HIGLEY WELDING	744-8907 or 433-0339 or Scott Cell phone 801-6330
JEFF SCRAPE WELDING	728-1308 or 1-619-969-1550 or 1-619-969-1547
RICK POST WELDING	598-1186 or 1-619-999-4241

### **ELECTRICAL CONTRACTOR**

ASCOT ELECTRIC	438-4663 or 753-2715 (Foremans Home) or 753-4982 (Owners Home - Ralph)
SLOAN ELECTRIC	745-5276 or 1-619-239-5174(Steve Watson)

### **CONCRETE CONTRACTORS**

ESCONDIDO READY MIX	727-1733 or 729-1329 or 745-0556 (dispatch)
MARCON PRODUCTS*	744-3355 or 1-619-214-8938 or 1-619-465-7682

### **CONCRETE CUTTING CONTRACTORS**

COMBAT CONCRETE CUTTING	603-9002 or 1-619-989-4557 or 931-8727
CONCRETE JUNGLE	434-4909 or 619-982-6366 pager
JOBE GAY CONCRETE	729-1329 or 729-3432 Home

# CITY OF CARLSBAD MUNICIPAL WATER DISTRICT

## EMERGENCY TELEPHONE LIST

### PIPE SUPPLIERS

AMERON PIPE (Manufacturing)	1-619-561-6363 or 1-909-899-1716 or 1-626-683-4000
INSITUFORM***	1-858-451-0977 or 760-468-2878 or 562-946-0046 fax 949-654-4830
MARCON PRODUCTS*	744-3355 or 1-619-214-8938 or 1-619-465-7682
MARDEN SUSCO	744-5600 or 489-9561 or 751-1992
PACIFIC PIPELINE SUPPLY	471-7473 or 471-4650 fax or 753-2861 Bob - owner
SANCON ENGINEERING***	1-714-891-2323 or 714-231-3630 Chuck Parson cell phone #

### EQUIPMENT( Rental )

ALLIDE BARRICADES	1-619-442-4401 or 1-619-442-4403
ATLAS PUMP TRUCKS	1-619-443-7867
NATIONS RENT	741-9272
EL CAMINO RENTAL	438-7368
HAWTHORNE(large equipment)	431-7000
RAIN for RENT(large pumps)	1-909-653-2171
TREBOR (traffic control devises)	1-619-286-9701 or 1-619-286-9700
TRENCHPLATE RENTAL	746-8564

### SMALL EQUIPMENT (Rental)

Wacker (Chris Voelker)	760-728-4274
Breezer (Dave Yungen)	760-210-0096

### MATERIAL & PARTS SUPPLIERS

MARCON	744-3355 or 1-619-214-8938 or 1-619-465-7682
MISSION ELECTRIC	476-0111 or fax 476-0110
HANSON	729-2090 or 802-6456 or 781-1723 fax
U.S. FILTER	781-5335
WYROC INC.	727-0878

### TOOL SUPPLIERS

GRAINGER	471-0400 or 1-800-225-5994
IDG (Industrial Distribution Group)	744-4313
STAR BUILDERS SUPPLY	744-3240

### OTHER SUPPLIERS & CONTRACTORS

PIONEER AMERICA	1-909-598-2165
CHLORINATORS & CONTROLS	746-5922 or 724-8631
QUIGLEY COMMUNICATIONS	433-6101 or 967-3718

### SANITATION STATION CONTRACTORS

SMITH & LOVELESS	1-913-888-5201
SLIVNICK MACHINE	744-8692 or 630-0744 or 1-619-977-8735

**SPECIALIST**

C&W DIVING SERVICES INC. 1-619-474-2700 or 1-619-526-2288

DIVE / CORR 1-213-439-8287

\*sewer M/H and main suppliers

\*\*sewer system suppliers

\*\*\*sewer system & M/H rehabilitators

**EMERGENCY CLEANUP SERVICES**

A-1 CARPET & CLEANING SER\ 746-6469 OR 619-748-8490

887 Rancheros Drive

San Marcos, CA 92069

LUTH & TURLEY 619-579-8673

1350 Hill Street

El Cajon, CA 92020

**HOTELS WITH KITCHENETTES**

RAMADA SUITES CARLSBAD 438-2285

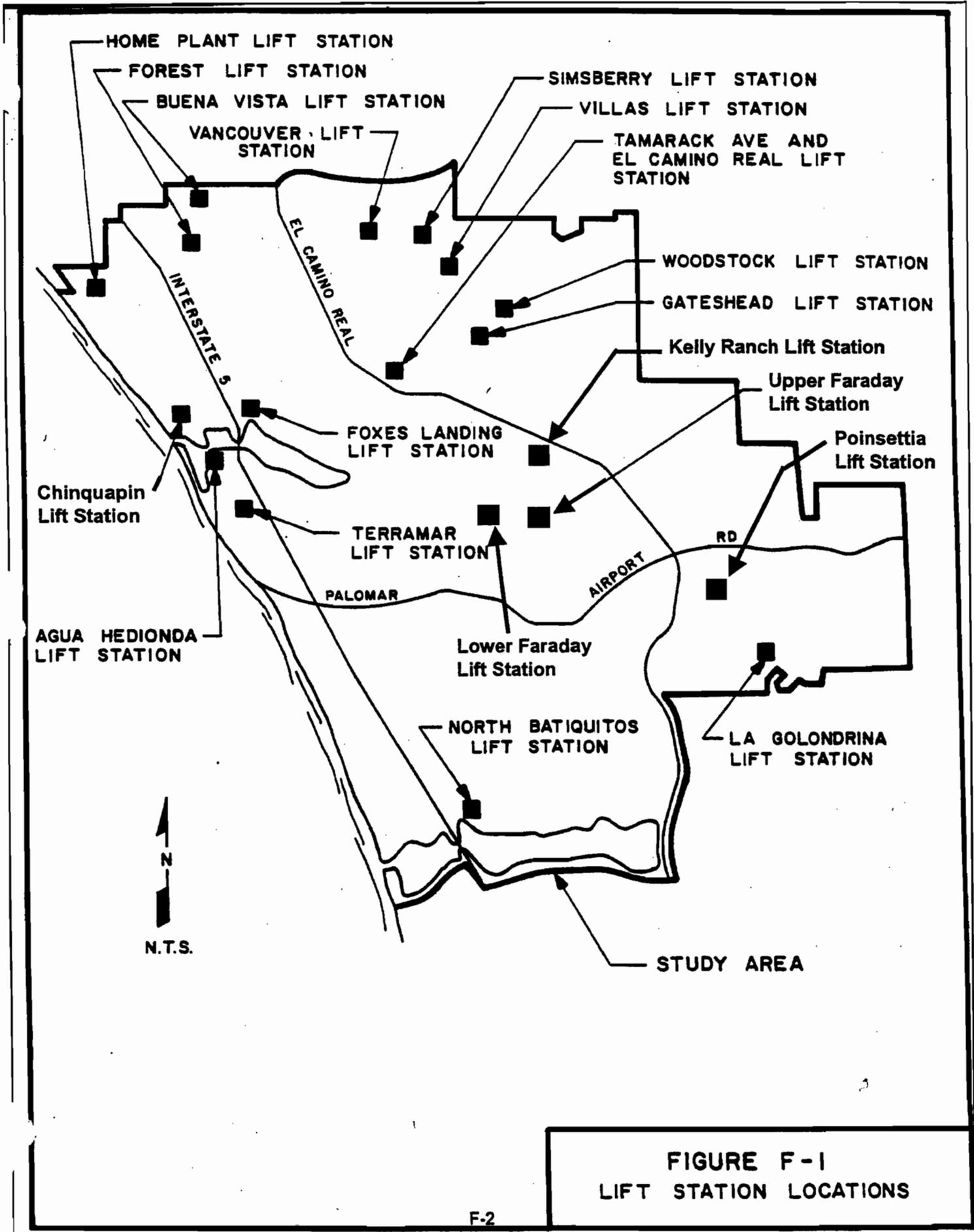
751 MACADAMIA DRIVE

CARLSBAD, CA 92009

RESIDENCE INN CARLSBAD 431-9999

2000 FARADAY AVENUE

CARLSBAD, CA 92008



**FIGURE F-1**  
LIFT STATION LOCATIONS

## = Electric Meter Number

#1	Home Plant ## 1411052	---	729-7513	///	2359	Carlsbad Blvd.
#2	Fox's ## 1476686 ## 1037077-110	---	434-3327	///	4155	Harrison St.
#3	Terramar ## 861108	---	438-9178	///	300	Cannon Rd.
#4	Batiquitos ## 1568462	---	603-8195	///	7382	Gabbiano Ln.
#5	Chinquapin ## 1005010	---	434-0214	///	4010	Carlsbad Blvd.
#6	Forest ## 447146	---	434-0398	///	1731	Forest Ave.
#7	Vancouver ## 1004907	---	434-0412	///	2690	Vancouver St.
#8	Woodstock ## 25104773-10119773	---	434-0168	///	4666	Woodstock St.
#9	Villas ## 84105526-1380435	---	434-0513	///	2860	Winthrop Ave.
#10	Faraday (Upper) ## (32-729-132) 1306132	---	438-8139	///	1711	Faraday Ave.
#11	La Golondrena ## 1024365	---	931-0407	///	2516	La Golondrena St.
#12	Gateshead ## 1167543	---	434-3018	///	4779	Gateshead Rd.
#13	Simsbury ## 918955	---	434-0427	///	3086	Tamarack Ave.
#14	Faraday (Lower) ## ?	---	929-0213	///	1507	Faraday Ave.
#15	Poinsettia ## 12938995	---	918-9496	///		2425 Poinsettia Lane
#16	Knots ## 1359036	---	438-8642	///		501 Knots Lane

Office; Telemetry Verbatim 438-2382      /// Computer #

# **EXHIBIT C**

## City of Carlsbad Lift Station Data

<b>Station</b>	Chinquapin Lift Station
<b>Address</b>	4020 Carlsbad Blvd.
<b>Capacity (gpm)</b>	360
<b>Drawing Numbers</b>	124-6; 124-6A
<b>Trunk Sewer</b>	Tributary to Vista Carlsbad

<b>Add New Station Data</b>	<b>Search for Lift Station Data</b>	
-----------------------------	-------------------------------------	--

### Information

<b>Number of Pumps (incl standb)</b>	2	<b>Pump 1 (gpm)</b>	380
<b>Number of Pumps Operating</b>	1	<b>Pump 2 (gpm)</b>	380
<b>Pump Type</b>	Wet Pit Submersible	<b>Pump 3 (gpm)</b>	
<b>Pump Manufacturer</b>	US Filter/EMU	<b>TDH (ft)</b>	50
<b>Pump Model</b>	FA 104-223	<b>Speed (rpm)</b>	1,740
<b>Motor HP</b>	7.5	<b>Drive</b>	Constant Speed

### Maintenances

<b>Generator Manuf</b>	Olympian	<b>Odor Control</b>	None
<b>Generator Model</b>	D25P2	<b>Wet Well Corr Protection</b>	T-lock
<b>Generator Capacity (kW)</b>	25	<b>Other Information:</b>	
<b>Ventilation - Dry Well (scfm)</b>	0	Upgrade completed June 2001	
<b>Ventilation - Wet Well (scfm)</b>	0		

Station	Faraday Lift Sation - Upper
Address	1759 Faraday Avenue
Capacity (gpm)	1,000
Drawing Numbers	264-6; 369-2D
Trunk Sewer	Ttributary to Vallecitos Int

Add New Lift Station Data	General Lift Station Data	4
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### Information

Number of Pumps (incl standb	2	Pump 1 (gpm)	1,000
Number of Pumps Operating	1	Pump 2 (gpm)	1,000
Pump Type	Vertical Non-dog	Pump 3 (gpm)	
Pump Manufacturer	Smith Loveless	TDH (ft)	55
Pump Model	6C3	Speed (rpm)	1,800
Motor HP	25.0	Drive	Constant Speed

### Maintenances

Generator Manuf	Kohler	Odor Control	None
Generator Model	125ROZ273	Wet Well Corr Protection	Versapox Epoxy
Generator Capacity (kW)	125	Other Information:	
Ventilation - Dry Well (scfm)	215	50 lb of granular chlorine added biannually.	
Ventilation - Wet Well (scfm)	0		

Station	Faraday Lift Station - Lower
Address	1705 Faraday Avenue
Capacity (gpm)	307
Drawing Numbers	369-2D
Trunk Sewer	Tributary to Vallecitos

<b>Information</b>			
Number of Pumps (incl standb	2	Pump 1 (gpm)	307
Number of Pumps Operating	1	Pump 2 (gpm)	307
Pump Type	Vertical Non-clog	Pump 3 (gpm)	
Pump Manufacturer	Smith Loveless	TDH (ft)	144
Pump Model	4C3	Speed (rpm)	1,760
Motor HP	25.0	Drive	Constant Speed

<b>Maintenances</b>			
Generator Manuf	Kohler	Odor Control	Air Injection
Generator Model	80ROZJ71	Wet Well Corr Protection	AH type Concrete
Generator Capacity (kW)	80	Other Information:	
Ventilation - Dry Well (scfm)	215	Air added to force main and wetwell for odor control	
Ventilation - Wet Well (scfm)	0		

Station	Forest Lift Station
Address	1731 Forest Avenue
Capacity (gpm)	360
Drawing Numbers	128-8
Trunk Sewer	Tributary to VC

<b>Information</b>			
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Number of Pumps (incl standb)	2	Pump 1 (gpm)	360
Number of Pumps Operating	1	Pump 2 (gpm)	360
Pump Type	Dry Pit Submersible	Pump 3 (gpm)	
Pump Manufacturer	Aurora/Hydromatic	TDH (ft)	43
Pump Model	S4HX750JC	Speed (rpm)	1,750
Motor HP	7.5	Drive	Constant Speed

**Maintenances**

Generator Manuf	Kato-Diesel	Odor Control	None
Generator Model	125 SR9 E	Wet Well Corr Protection	None
Generator Capacity (kW)	125	Other Information:	
Ventilation - Dry Well (scfm)	0		
Ventilation - Wet Well (scfm)	0		

Station	Foxes Landing Lift Station
Address	4155 Harrison Street
Capacity (gpm)	2,600
Drawing Numbers	133-9; 133-9B
Trunk Sewer	North Agua Hedionda

<a href="#">Add New Lift Station Data</a>	<a href="#">Search for Lift Station Data</a>	
---	--	---

**Pump Information**

Number of Pumps (incl standb	3	Pump 1 (gpm)	1,500
Number of Pumps Operating	2	Pump 2 (gpm)	1,500
Pump Type	Dry-Pit Submersible	Pump 3 (gpm)	1,500
Pump Manufacturer	Fairbanks-Morse	TDH (ft)	61
Pump Model	5-D5433WD	Speed (rpm)	1,755
Motor HP	38.7	Drive	VFD

### Maintenances

Generator Manuf	KOHLER	Odor Control	algon - Phoenix 100
Generator Model	135ROZJ	Wet Well Corr Protection	nemec Vinester 120
Generator Capacity (kW)	135	Other Information:	
Ventilation - Dry Well (scfm)	2,000	Pump Station upgrade in August 2001 16-inch HDPE force main	
Ventilation - Wet Well (scfm)	1,000		

Station	Gateshead Lift Station
Address	4779 Gateshead Road
Capacity (gpm)	40
Drawing Numbers	243-1
Trunk Sewer	Tributary to NAH

Add New Lift Station Data	Search for Lift Station Data	
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### Map Information

Number of Pumps (incl standb	2	Pump 1 (gpm)	40
Number of Pumps Operating	1	Pump 2 (gpm)	40
Pump Type	horizontal Self Priming	Pump 3 (gpm)	
Pump Manufacturer	Gorman Rupp	TDH (ft)	25
Pump Model	T3A3-B	Speed (rpm)	988
Motor HP	3.0	Drive	Constant Speed

**Maintenances**

Generator Manuf	Portable Unit	Odor Control	None
Generator Model		Wet Well Corr Protection	None
Generator Capacity (kW)		Other Information:	
Ventilation - Dry Well (scfm)	50	50 lbs of granular chlorine added every 6-8 weeks.	
Ventilation - Wet Well (scfm)	0		

Station	Home Plant Lift Station
Address	2359 Carlsbad Blvd
Capacity (gpm)	800
Drawing Numbers	315-2
Trunk Sewer	Vista Carlsbad

<a href="#">Add New Lift Station Data</a>	<a href="#">Search for Lift Station Data</a>	
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**Map Information**

Number of Pumps (incl standb	3	Pump 1 (gpm)	800
Number of Pumps Operating	2	Pump 2 (gpm)	800
Pump Type	Vertical Non-Clog	Pump 3 (gpm)	800
Pump Manufacturer	Paco	TDH (ft)	70
Pump Model	52-49514-NCP	Speed (rpm)	1,770
Motor HP	20.0	Drive	VFD

**Maintenances**

Generator Manuf	Kholer	Odor Control	None
Generator Model	60ROZJ71	Wet Well Corr Protection	None
Generator Capacity (kW)	60	<b>Other Information:</b>	
Ventilation - Dry Well (scfm)	615	One Muffin Monster (model 30002-32) with hydraulic 5HP motor. 5/30/01 - Sand deposits in wetwell. Currently under predesign to install sand removal system and upgrade of pump station.	
Ventilation - Wet Well (scfm)	1,035		

Station	La Golondrina Lift Station
Address	2516 La Golondrina Street
Capacity (gpm)	110
Drawing Numbers	211-6
Trunk Sewer	Tributary to Vallecitos

**Information**

Number of Pumps (incl standb	2	Pump 1 (gpm)	110
Number of Pumps Operating	1	Pump 2 (gpm)	110
Pump Type	Vertical Non-dog	Pump 3 (gpm)	
Pump Manufacturer	Smith Loveless	TDH (ft)	45
Pump Model	4B2A	Speed (rpm)	1,170
Motor HP	5.0	Drive	Contant Speed

**Maintenance**

Generator Manuf	Portable Unit	Odor Control	None
Generator Model		Wet Well Corr Protection	Versapox Epoxy
Generator Capacity (kW)		Other Information:	
Ventilation - Dry Well (scfm)	50	50 lb granular chlorine added biannually	
Ventilation - Wet Well (scfm)	0		

Station	North Batiquitos Lift Station
Address	7382 Gabbiano Lane
Capacity (gpm)	2,250
Drawing Numbers	306-6
Trunk Sewer	North Batiquitos Interceptor

Add New Lift Station Data	Search for Lift Station Data	4
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**Pump Information**

Number of Pumps (incl standb	3	Pump 1 (gpm)	1,210
Number of Pumps Operating	2	Pump 2 (gpm)	1,210
Pump Type	Vertical Non-Clog	Pump 3 (gpm)	1,210
Pump Manufacturer	ATT AC Pump	TDH (ft)	164
Pump Model	250	Speed (rpm)	1,785
Motor HP	100.0	Drive	Constant Speed

### Maintenances

Generator Manuf	Olympian	Odor Control	None
Generator Model	96A02053-S	Wet Well Corr Protection	T-lock
Generator Capacity (kW)	200	Other Information:	
Ventilation - Dry Well (scfm)	4,000		
Ventilation - Wet Well (scfm)	1,100		

Station	Poinsettia Lift Station
Address	2425 Poinsettia Lane
Capacity (gpm)	1,700
Drawing Numbers	331-1E
Trunk Sewer	Tributary to Vallecitos Interceptor

Add New Lift Station Data	Search for Lift Station Data
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### Information

Number of Pumps (incl standb	3	Pump 1 (gpm)	1,230
Number of Pumps Operating	2	Pump 2 (gpm)	1,230
Pump Type	Dry Pit Submersible	Pump 3 (gpm)	1,230
Pump Manufacturer	Chicago	TDH (ft)	247
Pump Model		Speed (rpm)	1,800
Motor HP	125.0	Drive	Constant Speed

**Maintenances**

Generator Manuf		Odor Control	None
Generator Model		Wet Well Corr Protection	T-lock
Generator Capacity (kW)		Other Information:	
Ventilation - Dry Well (scfm)			
Ventilation - Wet Well (scfm)			

Station	Simsbury Lift Station
Address	3531 Simsbury Dr.
Capacity (gpm)	382
Drawing Numbers	244-3
Trunk Sewer	Tributary to NAH

<a href="#">Add New Lift Station Data</a>	<a href="#">Search for Lift Station Data</a>	
---	--	---

**Pump Information**

Number of Pumps (incl standb	2	Pump 1 (gpm)	382
Number of Pumps Operating	1	Pump 2 (gpm)	382
Pump Type	Vertical Non-clog	Pump 3 (gpm)	
Pump Manufacturer	Smith Loveless	TDH (ft)	200
Pump Model	4D4A	Speed (rpm)	1,760
Motor HP	50.0	Drive	t start, Constant 5

### Maintenances

Generator Manuf	Kohler	Odor Control	None
Generator Model	80ROZ271	Wet Well Corr Protection	AH Type Concrete
Generator Capacity (kW)	94	Other Information:	
Ventilation - Dry Well (scfm)	178	50-100 lbs of granular chlorine added every 8-12 weeks.	
Ventilation - Wet Well (scfm)	0		

Station	Terramar Lift Station
Address	300 Cannon Road
Capacity (gpm)	100
Drawing Numbers	141-5 Sheet 13
Trunk Sewer	Terramar

Add New Lift Station Data	Search for Lift Station Data
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### Info Information

Number of Pumps (incl standb	2	Pump 1 (gpm)	100
Number of Pumps Operating	1	Pump 2 (gpm)	100
Pump Type	Vertical Non-Clog	Pump 3 (gpm)	
Pump Manufacturer	Fairbanks Morse	TDH (ft)	25
Pump Model	5412BK	Speed (rpm)	1,150
Motor HP	3.0	Drive	Constant Speed

### Maintenances

Generator Manuf	Portable Unit	Odor Control	None
Generator Model	Portable	Wet Well Corr Protection	None
Generator Capacity (kW)		Other Information:	
Ventilation - Dry Well (scfm)	230	5/30/01 - Wet well is severely corroded. Requires rehab and lining	
Ventilation - Wet Well (scfm)	0		

Station	Vancouver Lift Station
Address	2690 Vancouver Street
Capacity (gpm)	150
Drawing Numbers	189-5
Trunk Sewer	Tributary to NAH

### Information

Number of Pumps (incl standb	2	Pump 1 (gpm)	150
Number of Pumps Operating	1	Pump 2 (gpm)	150
Pump Type	Vertical Non-Clog	Pump 3 (gpm)	
Pump Manufacturer	Smith Loveless, Inc.	TDH (ft)	103
Pump Model	4B2A	Speed (rpm)	1,760
Motor HP	15.0	Drive	Constant Speed

**Maintenances**

Generator Manuf	Portable Unit	Odor Control	None
Generator Model		Wet Well Corr Protection	None
Generator Capacity (kW)		Other Information:	
Ventilation - Dry Well (scfm)	100	50 lbs of granular chlorine added weekly	
Ventilation - Wet Well (scfm)	0		

Station	Villas Lift Station
Address	2860 Winthrop Lane
Capacity (gpm)	125
Drawing Numbers	231-1B
Trunk Sewer	Tributary to NAH

<a href="#">Add New Lift Station Data</a>	<a href="#">Search for Lift Station Data</a>	
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**Information**

Number of Pumps (incl standb	2	Pump 1 (gpm)	125
Number of Pumps Operating	1	Pump 2 (gpm)	125
Pump Type	Horizontal Self Priming	Pump 3 (gpm)	
Pump Manufacturer	Gorman Rupp	TDH (ft)	90
Pump Model	T3A3-B	Speed (rpm)	1,912
Motor HP	15.0	Drive	Constant Speed

**Maintenance**

Generator Manuf	Portable Unit	Odor Control	None
Generator Model		Wet Well Corr Protection	urethane Spray on !
Generator Capacity (kW)		Other Information:	
Ventilation - Dry Well (scfm)	140	50 lb granular chlorine added weekly	
Ventilation - Wet Well (scfm)	0		

Station	Woodstock Lift Station
Address	4666 Woodstock Street
Capacity (gpm)	50
Drawing Numbers	219-9; 219-9B
Trunk Sewer	Tributary to NAH

<a href="#">Add New Lift Station Data</a>	<a href="#">Search for Lift Station Data</a>	
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**Pump Information**

## Appendix B

### Lift Station Summaries

Lift Station	Basin	Capacity (gpm)
Agua Hedionda	Vista/Carlsbad	21,500
Buena Vista	Vista/Carlsbad	16,063
Chinquapin	Vista/Carlsbad	360
Faraday (Upper)	South Agua Hedionda	1,000
Faraday (Lower)	South Agua Hedionda	307
Forest	Vista/Carlsbad	360
Foxes	North Agua Hedionda	2,300
Gateshead	North Agua Hedionda	40
Home Plant	South Agua Hedionda	800
La Golondrina	Buena/Vallecitos	110
North Batiquitos	North Batiquitos	2,250
Poinsettia	North Batiquitos	1,230
Simsbury	North Agua Hedionda	382
Terramar	Vista/Carlsbad	100
Vancouver	Vista/Carlsbad	150
Villas	Vista/Carlsbad	125
Woodstock	South Agua Hedionda	50

**CARLSBAD MUNICIPAL WATER DISTRICT**

**LIFT STATION SUMMARY FORM**

**STATION: Home Plant Lift Station # 1**

**Location:** 2359 Carlsbad Blvd.  
**Trunk Sewer:** Vista/Carlsbad  
**Basin:** 1G

**A. Flows**

**Capacity (gpm):** 800 (Largest unit out of service)  
**Projected Peak (gpm):** 1000

**B. Pumps**

**Number:** 3  
**Type:** Vertical Centrifugal non-clog pumps with Mechanical Seals  
**Manufacturer:** Paco  
**Model No.:** 52-49514-NCP  
**Serial Nos.:** 91C0646701C  
91C0646701A  
91C0646701B  
**Rated Flow:** 800 gpm  
**Head:** 70 (ft)  
**Speed:** 1770 rpm  
**Horsepower:** 20 HP

**C. Motors**

**Manufacturer:** General Electric  
**Model No.:** 5KS2560NL4JR2A  
**Serial Nos.:** 6P1233  
6P1234  
6P1235  
**Horsepower:** 20  
**Voltage:** 230  
**Frequency:** 3 Phase, 60 Hz VFD  
**Enclosure:** Code: G  
Frame: L356HP1  
Type: KS

**D. Drives**

Split shaft w/universal joint for flexible shaft with guide bearing.

### E. Controls

Type: Tesco Liquitronic IV = computer  
Features: VFD - Mitsubishi Transistor Inverter. By using Key Pad to set your points. All levels of water measured with air compressor. The VFD will only operate the lead pump.

### F. Alarms

Pump Fail: Yes  
Loss of Power: Yes  
Station Flooding: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

### G. Electrical Service

Voltage (volts): 230  
Transformer (kVa): Yes; 150, 50/60 Hz  
Main Breaker (amp): 200

### H. Telemetry

I/O Dutec to Modem communicator, to Compaq 590 computer with Wonderware Software.

### I. Standby Power

	ENGINE	GENERATOR
Manufacturer	John Deere	Kholer
Model No.	G	60ROZJ71
Serial No.	T04039, T369894	293438
Output	HP	kW 60
Speed	1800	
Voltage	n/a	240
Frequency	n/a	3PH, 60 Hz
Fuel Type	Diesel	
Fuel Consumption (gallons/hr)	5.6	
Fuel Storage (gallons)	50	
Rated Run Time (hrs) (with full tank)		

**I. Ventilation**

For VFD electrical Cooling fan; Dayton 240 cfm

	Dry Well	Wet Well
Fan Capacity (cfm)	615 (Supply & Exhaust)	1035 (Supply & Exhaust)
Air Changes (per hr)	6.7	12

**J. Odor Control**

None

**K. Structure**

Below ground two levels. Wet well and dry well are separated by concrete wall.

**L. Wet Well Corrosion Protection**

No.

**M. General**

Alarm call box is a Microtel 200. One Muffin Monster grinder in wet well channel. Each has its own hydraulic motor and controller. Model 30002-32, Motor. Hydraulic power pack driven with 5 HP motor. Volts 230, 3 Phase, 60 Hz. Controller = PC2040 with H.O.A. Selector switch & O/L Relay Enclosure Nema 4X F.R.P.

## COMMENTS

1. Ventilation fans for both dry and wet wells should run continuously to maintain the flammability of the interior space below 20% of the lower explosive limit (LEL).
2. Ventilation fans should be fitted with flow detection devices (flow switches) connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reaching 20% of the lower explosive limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Fire extinguisher should be provided for generator room.
6. Loose wirings touching other wirings should be separated and strapped to equipment supports or walls.
7. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe relay.

## COST ESTIMATE

The cost estimate for the above modifications ranges between \$15,000 to \$25,000.

# HOME PLANT LIFT STATION

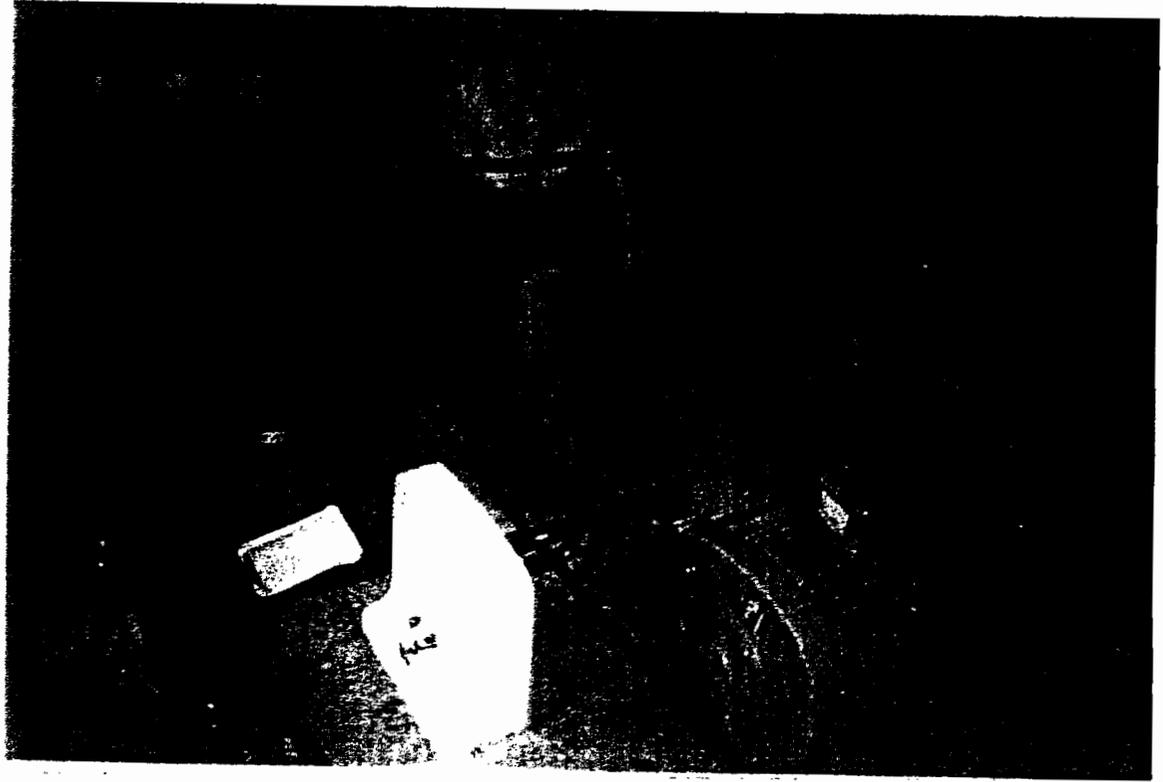


Entrance view.

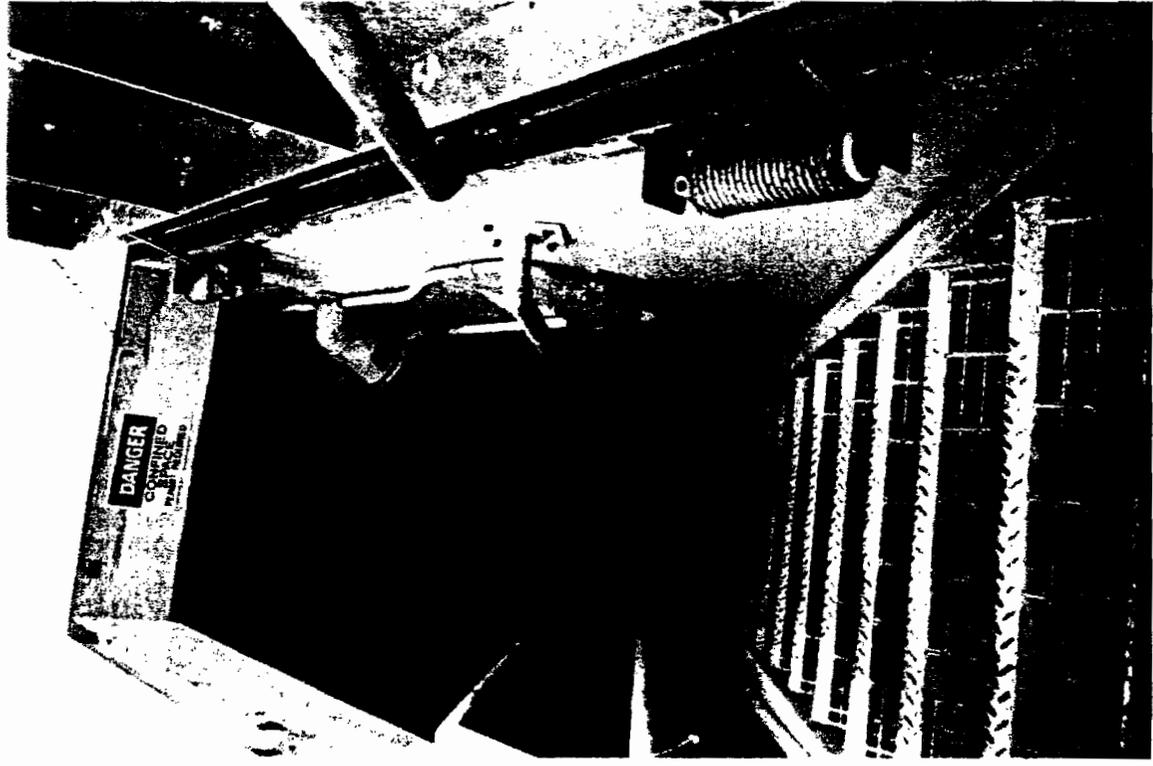


Wetwell - Class I Div. 1 requires corrosion protection

HOME PLANT LIFT STATION

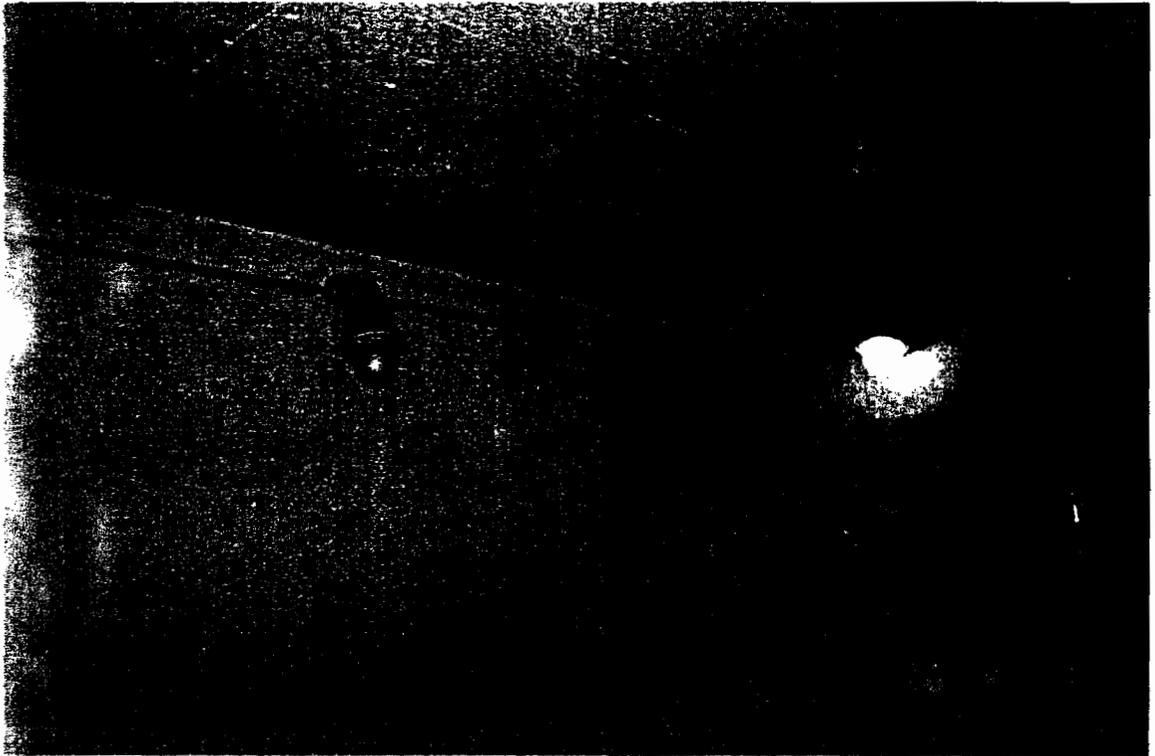


Drywell - Class 1 Div. 2

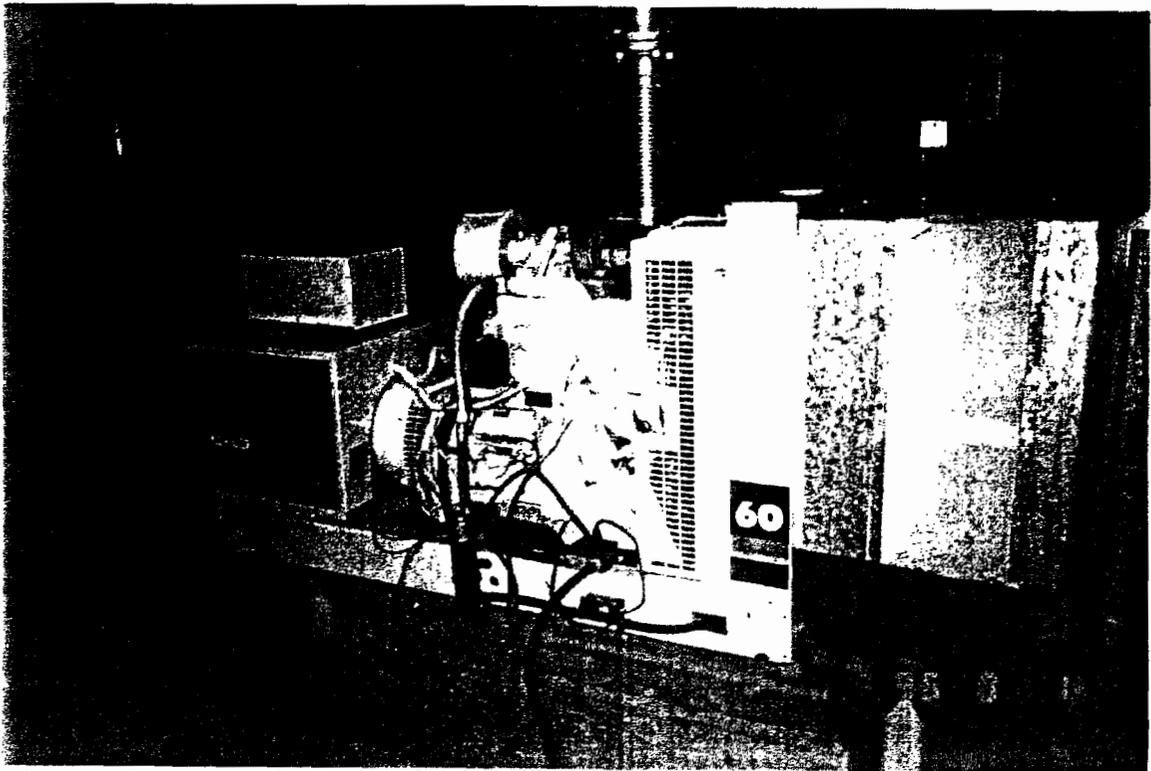


Metwell Entrance - electrical needs upgrade.

# HOME PLANT LIFT STATION



Wetwell - electrical needs upgrade



Standby generator

**CARLSBAD MUNICIPAL WATER DISTRICT**

**LIFT STATION SUMMARY FORM**

**STATION: Fox Plant Lift Station # 2**

**Location:** 4155 Harrison Street  
**Trunk Sewer:** North Agua Hedionda Lift Station  
**Basin:** 1L

**A. Flows**

**Capacity (gpm):** 2300 (Largest unit out of service)  
**Projected Peak (gpm):** 2300

**B. Pumps**

**Number:** 3  
**Type:** Vertical Centrifugal non-clog pumps with Mechanical Seals

Pumps	No. 1	No. 2	No. 3
Manufacturer	Chicago pumps	Chicago pumps	Fairbank Morse
Model No.	VOSOLC5	VOSOLC5	B5400
Serial No.	Unknown	P00015627	K3P1056991
Rated Flow (gpm)	1150	1150	1500
Head (ft)	65	65	65
Speed (rpm)	1185	1185	1175
Horsepower (HP)	30	30	40

**C. Motors**

Motors	No. 1	No. 2	No. 3
Manufacturer	Marathon Electric	Marathon Electric	Reliance Duty Master AC Motor
Model No.	365upTSV98AC		
Serial No.	2N916791	2N916792	1MAF27604-G1-ZM
Horsepower (HP)	30	30	40
Voltage	220	220	220
Frequency	3 Phase, Hz 60 Single Speed	3 Phase, Hz 60 Single Speed	3 Phase, HZ 60 Single Speed
Enclosure	Frame 365up, Type TSV-BE	Frame 365up, Type TSV-BE	Frame 364Hp, Design B

**D. Drives**

Vertical open-shaft, and universal joint for flexible shafting.

**E. Controls**

Type: Autocon Industries Inc. (Bubbler system)  
Features: Pressure Sensor control with Bellows operation and spring lever control.  
Alternator selector switch type. By Electric Switch corporation #31306A,  
Series 31. Motor starters No. 1 - Furnas 14HB32AA-11,  
No. 2 - Furnas 14HB32AC-71, No. 3 - Furnas 14IP32AA71.

**F. Alarms**

Pump Fail: No  
Loss of Power: Yes  
Station Flooding: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 220  
Transformer (kVa): No  
Main Breaker (amp): 400

**H. Telemetry**

n/a

**I. Standby Power**

See Chinquapin Lift Station #5

**J. Ventilation**

	Drywell	Wetwell
Fan Capacity (cfm)	300 (Exhaust Only)	300 (Exhaust Only)
Air Changes (per hr)	4.5	4.5

**K. Odor Control**

None. Clean wet well every 6 months.

**L. Structure**

Below ground two levels. Wet well and dry well are separated by concrete wall.

**M. Wet Well Corrosion Protection**

No.

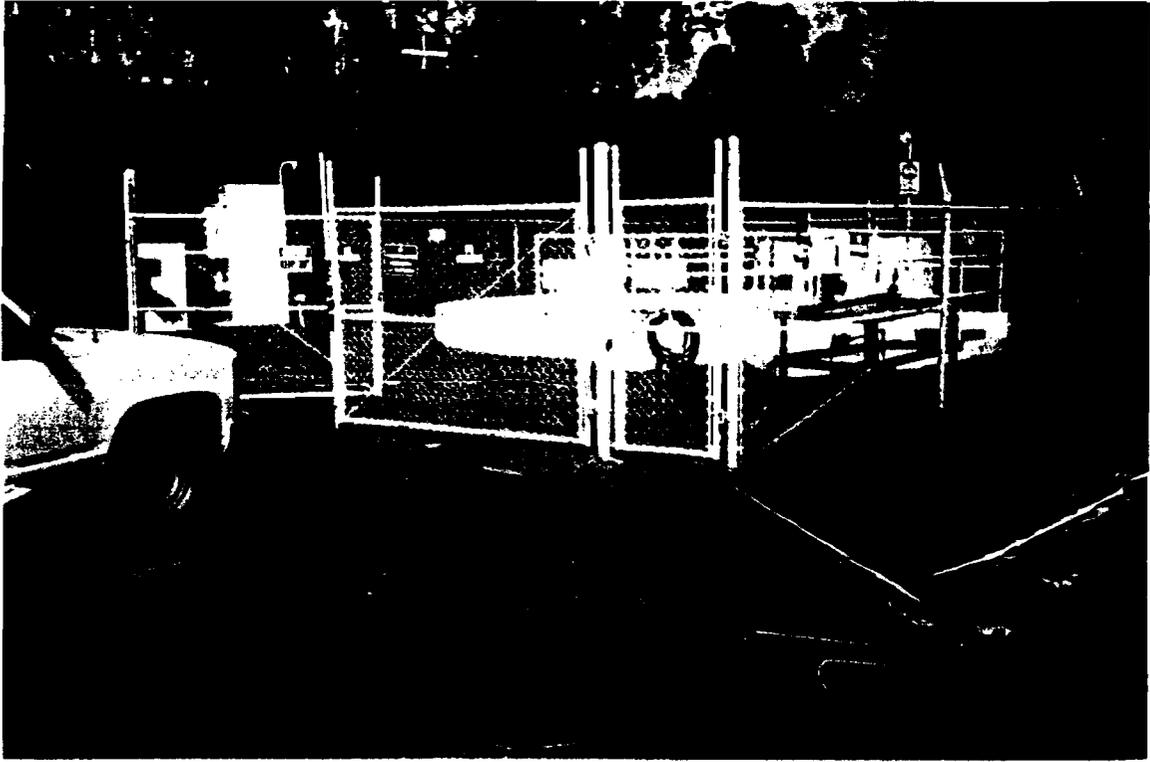
**N. General**

Alarm call box is a Microtel 200. Two Muffin Monster grinders in wet well channel. Each has its own hydraulic motor and controller. Model 30000-0032, Motor. Hydraulic power pack driven with 5 HP motor. Volts 230, 3 Phase, 60 Hz. Controller = PC2040 with H.O.A. Selector switch & O/L Relay Enclosure Nema 4X F.R.P.

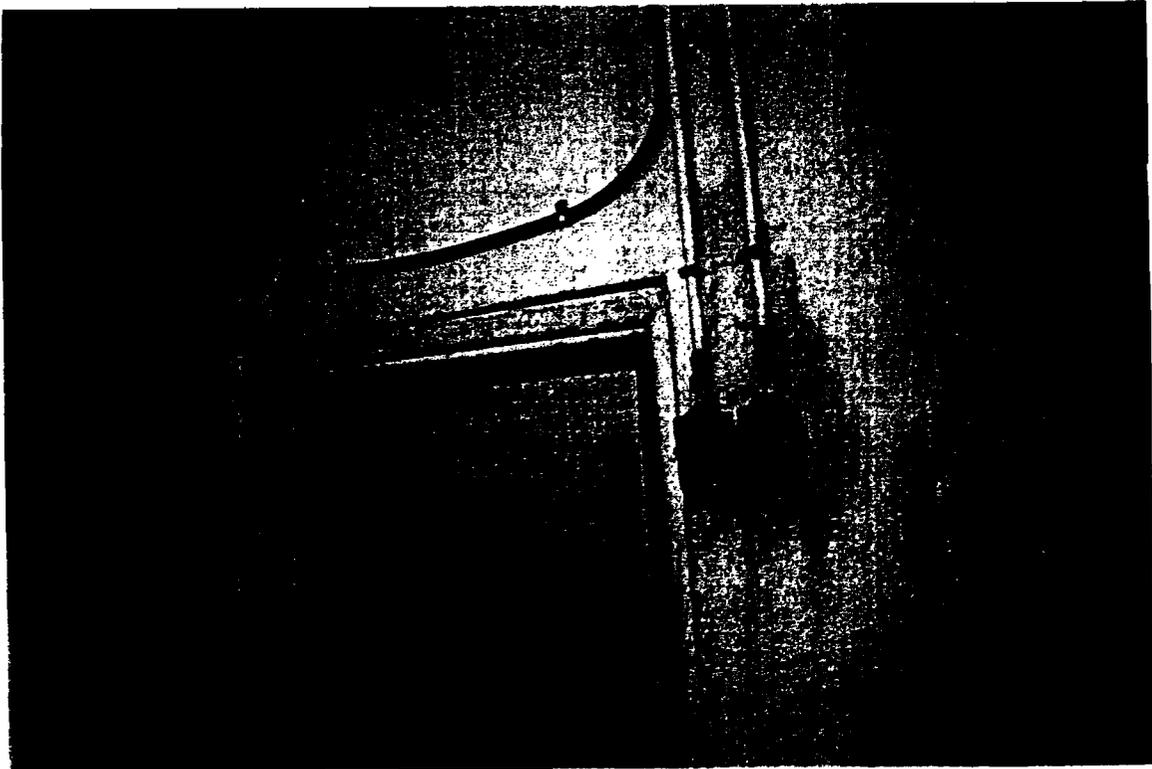
## COMMENTS

1. Existing exhaust fans capacities (cfm) are less than the required capacities to meet the electrical classification of the spaces (both dry and wet wells). These fans should be removed and replaced with new FRP fans with higher cfm capacities. The new supply and exhaust fans shall be rated for 2,000 cfm each.
2. New supply fans with the new exhaust fans for both dry and wet wells should be installed.
3. Odors generated from wet well are escaped to the atmosphere through the openings in the entrance door and uncovered grating at the top slab of the lift station. Therefore, to help control the odors, the uncovered gratings should be removed for both dry and wet wells, and the opening should be modified to allow for the installation of the new supply fans. Any remaining openings should be covered. Also, the entrance doors should be replaced with FRP doors.
4. Ventilation ducts should be removed and replaced with new FRP ducts. The exhaust ducts should extend 10 feet higher than the top slab grade level.
5. Ventilation fans for both dry and wet wells should be fitted with flow detection devices (flow switches) connected to alarm signaling system to indicate ventilation system failure.
6. Combustible gas detectors should be installed in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reaching 20% of the lower explosive limit (LEL).
7. Local and remote alarms for both ventilation systems failure and combustible gas detection should be provided.
8. Existing conduits and wiring installations should be upgraded in the wet well to meet Class 1, Div. 2 area.
9. Loose wirings touching other wirings should be separated and strapped to equipment supports, or walls.
10. Walls and stairs for both dry and wet wells should be inspected and evaluated for corrosion.
11. Wiring of the mercury float switch in the wet wells should be changed to intrinsically safe relay.

FOXES LIFT STATION



Entrance view.

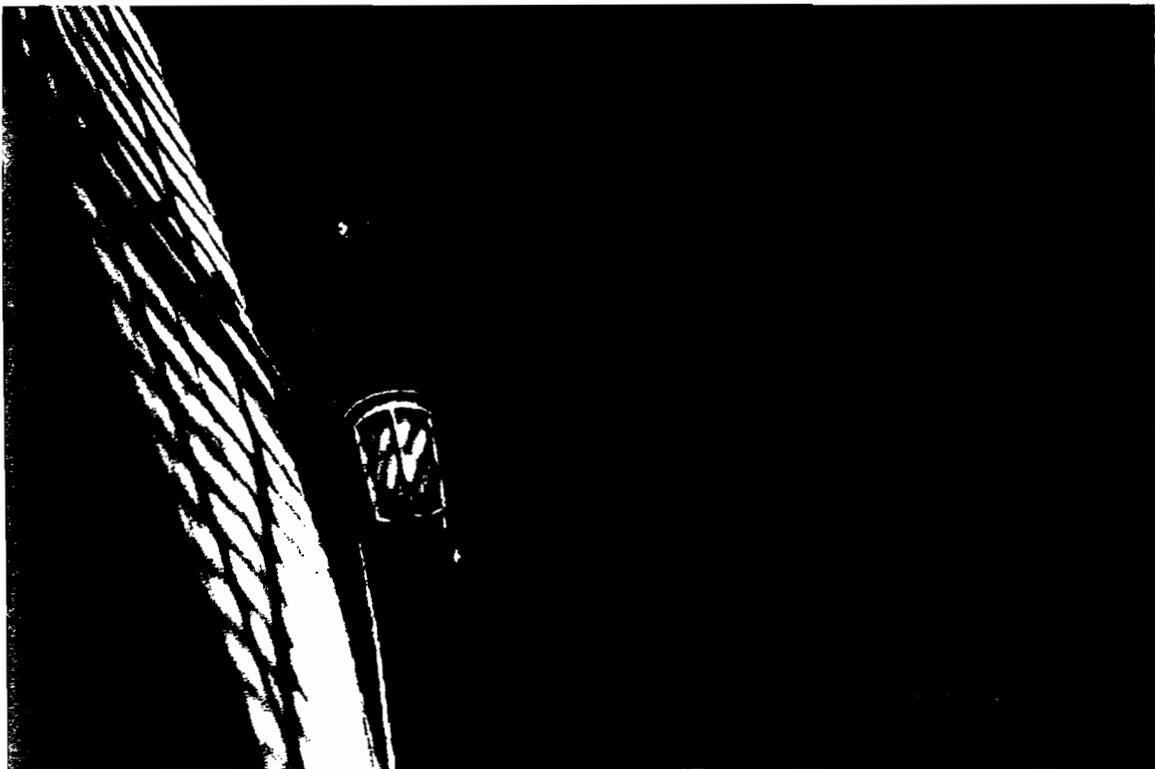


Wet Well - Class 1 Division 1 Electrical needs upgrade.

## FOXES LIFT STATION

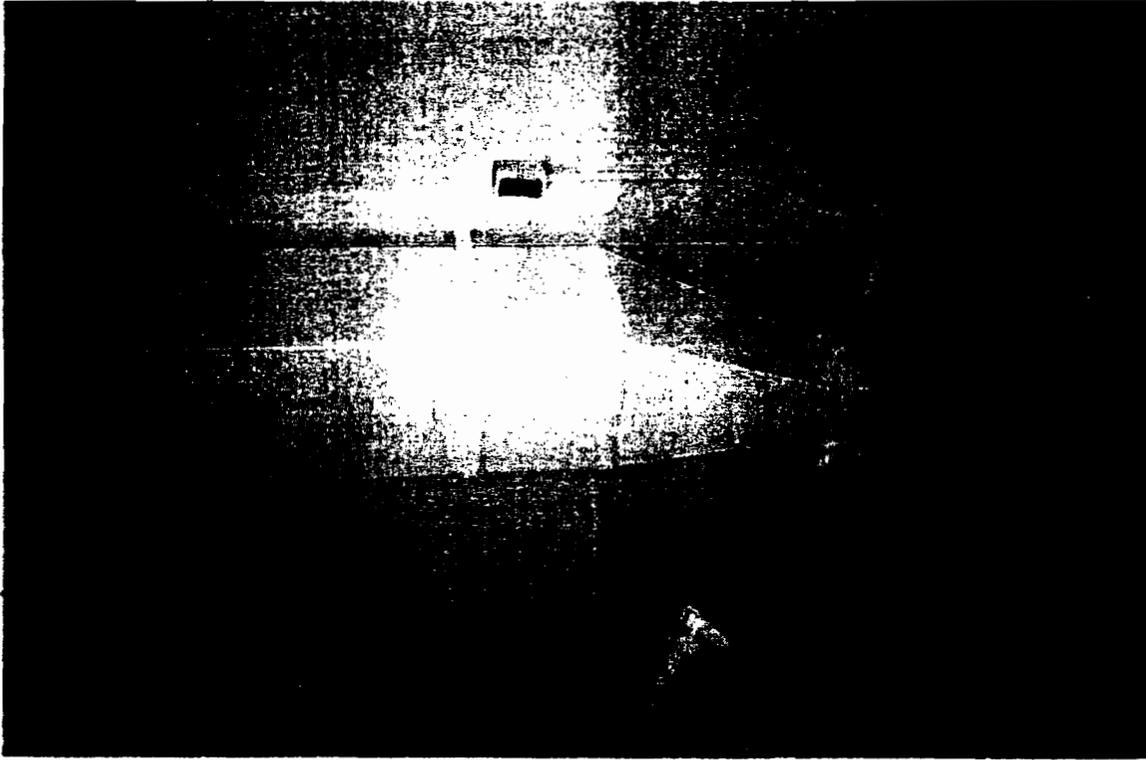


Wet Well - Class 1 Division 1  
Electrical controls need upgrade. Needs odor control.

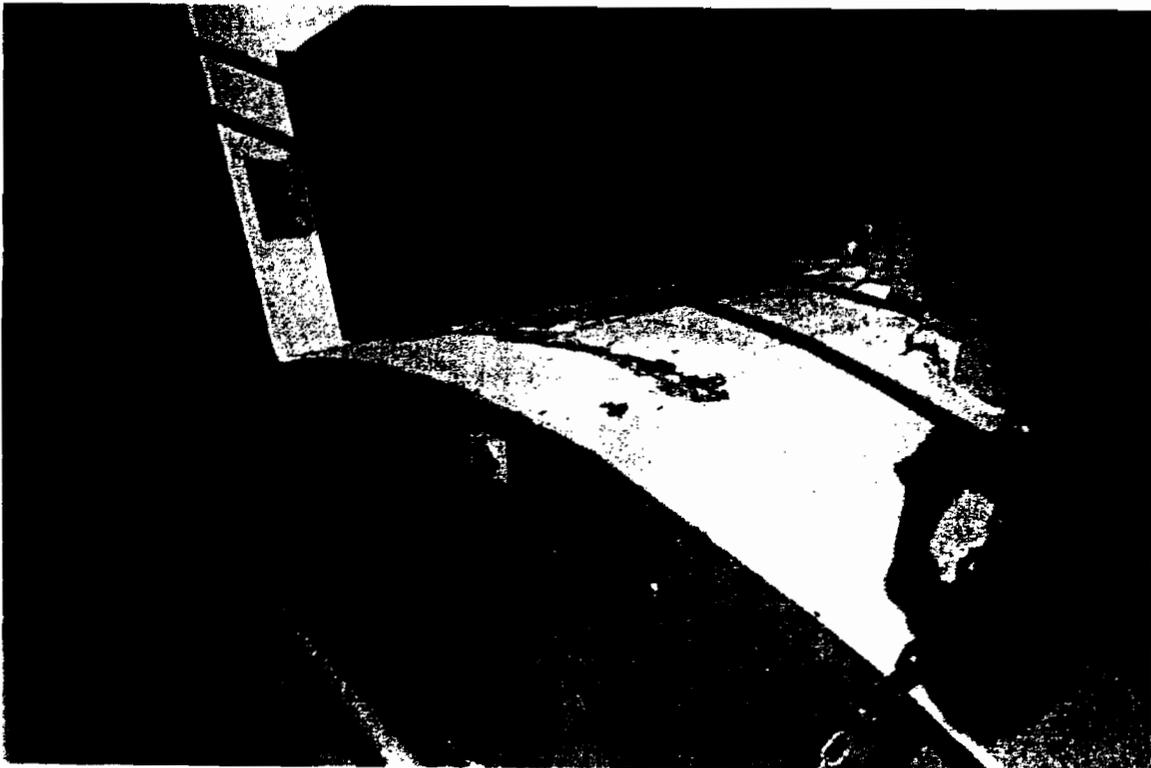


Wet Well - Requires corrosion protection.

FOXES LIFT STATION



Dry Well - Class 1 Division 2 exhaust fan.



Entrance to dry well requires corrosion protection

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** Terramar Lift Station #3

**Location:** South of Cannon East of El Arbol  
**Trunk Sewer:** Vista/Carlsbad  
**Basin:** 3A

**A. Flows**

**Capacity (gpm):** 100 (Largest unit out of service)  
**Projected Peak (gpm):** 100

**B. Pumps**

**Number:** 2  
**Type:** Vertical Centrifugal non-clog pumps with Mechanical Seals  
**Manufacturer:** Fairbank Morse  
**Model No.:** 5412BK  
**Serial Nos.:** K251021136  
K251021136-1  
**Rated Flow:** 100 gpm  
**Head:** 25 (ft)  
**Speed:** 1150 rpm  
**Horsepower:** 3 HP

**C. Motors**

**Manufacturer:** U.S. Motors  
**Model No.:** 1027  
**Serial Nos.:** 37482881  
3748377  
**Horsepower:** 3  
**Voltage:** 220  
**Frequency:** 3 Phase, 50 Hz  
**Enclosure:** Type: H  
Frame: 215P

**D. Drives**

Vertical open-shaft, with guide bearing and universal joint for flexible shafting.

**E. Controls**

**Type:** Autocon Industries Inc. (Bubbler System)  
**Features:** Pressure sensor control with bellows operation and spring lever action. Motor starters = Furnas 14CP32AC, Heater H-33

**F. Alarms**

Pump Fail: No  
Loss of Power: Yes  
Station Flooding: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 220  
Transformer (kVa): No  
Main Breaker (amp): 100

**H. Telemetry**

n/a

**I. Standby Power**

Portable Unit

**J. Ventilation**

	Dry Well	Wet Well
Fan Capacity (cfm)	230 (Exhaust Only)	NO
Air Changes (per hr)	6	

**K. Odor Control**

None. Clean wet well with Vactor every 4 months.

**L. Structure**

Concrete 3 levels down. Wet well within pump room. Wet well 3' wide 6'8" high.

**M. Wet Well Corrosion Protection**

No.

**N. General**

Alarm call box is a Microtel 200.

## COMMENTS

1. Ventilation fan for the dry well should run continuously to maintain the flammability of the interior space below 20% of the lower explosive limit (LEL).
2. Ventilation fan should be fitted with flow detection device (flow switch) connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reaching 20% of the lower explosive limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Loose wirings touching other wirings should be separated and strapped to equipment supports or walls.
6. Local and remote alarms for pump failure should be provided.
7. Wet well requires inspection and evaluation for corrosion.
8. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe relay.

# TERRAMAR LIFT STATION

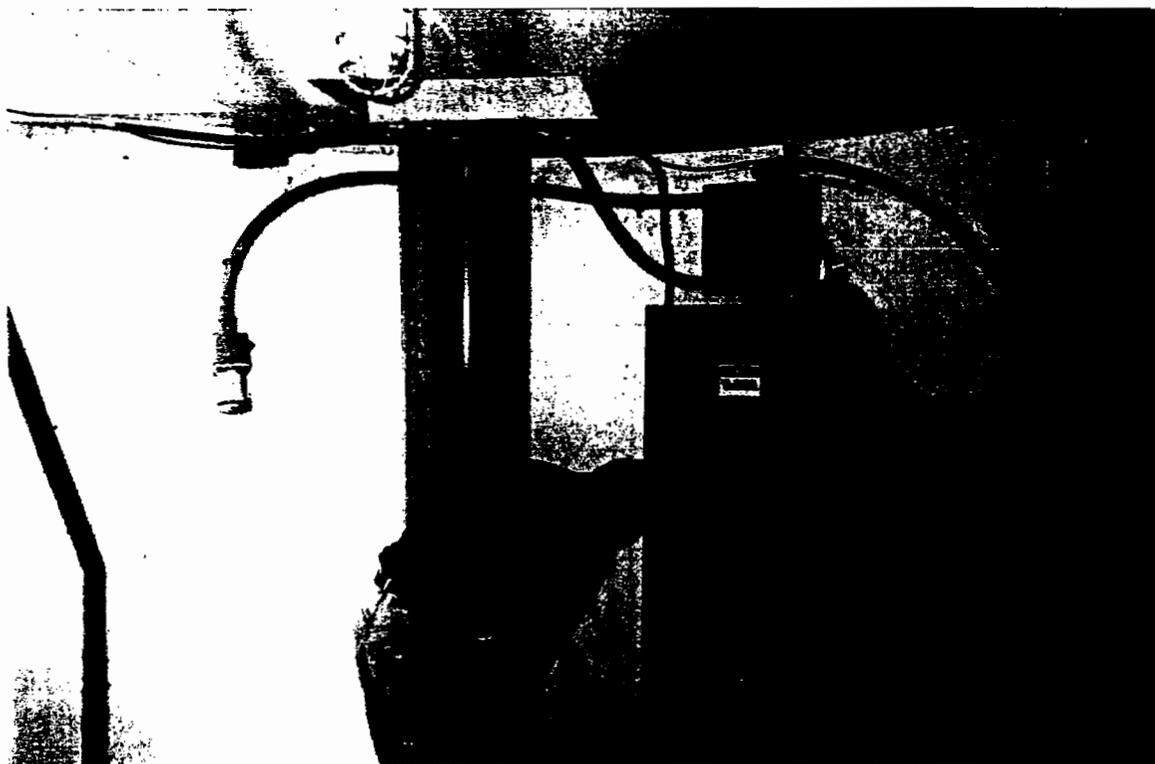


Entrance view.



Drywell - Class 1 Div. 2 exhaust fan.

# TERRAMAR LIFT STATION



Drywell- electrical controls

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** North Batiquitos Lift Station #4

**Location:** 7575 Batiquitos Dr.  
**Trunk Sewer:** North Batiquitos  
**Basin:** 19A

**A. Flows**

**Capacity (gpm):** 1210 (Largest unit out of service)  
**Projected Peak (gpm):** 2250, Existing La Costa station will be replaced and upgraded to this flow capacity

**B. Pumps**

**Number:** 3  
**Type:** Vertical close coupled non-clog centrifugal pumps with mechanical seals  
**Manufacturer:** ATT AC Pump  
**Model No.:** 250  
**Serial Nos.:** #1=1-74006-01-2  
#2=1-74006-01-3  
#3=1-74006-06-1  
**Rated Flow:** 1210 gpm  
**Head:** 164 (ft)  
**Speed:** 1785 rpm  
**Horsepower:** 100 HP

**C. Motors**

**Manufacturer:** Marathon Electric XRI  
**Model No.:** XM405TTF56050ANW  
**Serial Nos.:** #1=19-04409-11/13/01  
#2=19-04409-11/13/02  
#3=19-04409-11/13/03  
**Horsepower:** 100  
**Voltage:** 480  
**Frequency:** 3 Phase, 60 Hz, Single Speed  
**Enclosure:** Type: TFS  
Frame: 405 HPV

**D. Drives**

Vertical open-shaft, and universal joint for flexible shafting.

**E. Controls**

**Type:** Tesco Flex Control  
**Features:** Bubbler type. Alternating Relay, Derversified Electric ARA-120-ADA

## F. Alarms

Pump Fail: Yes  
Loss of Power: Yes  
Station Flooding: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

## G. Electrical Service

Voltage (volts): 480  
Transformer (kVa): Square D Class 9070 Type EZ-2, 480-120.  
Main Breaker (amp): 1200

## H. Telemetry

## I. Standby Power

	ENGINE	GENERATOR
Manufacturer	Caterpillar	Olympian
Model No.	3208	96A02053-S
Serial No.	5YF022862	2027503
Output	HP233	kW 200
Speed	1800	
Voltage	N/A	277/480
Frequency	N/A	3 ph. 60 Hz.
Fuel Type	Diesel	
Fuel Consumption (gallons/hr)	50% = 7.6 gals @ 100% = 14.8 gals	
Fuel Storage (gallons)	300	
Rated Run Time (hrs) (with full tank)	50% = 39 hrs @ 100% = 20 hrs	
Silencer		

**J. Ventilation**

	Dry Well	Wet Well
Fan Capacity (cfm)	3400 (supply) 4000 (exhaust)	1000 (supply) 1100 (exhaust)
Air Changes (per hr)	12	12

**K. Odor Control**

None.

**L. Structure**

Below ground concrete walls.

**M. Wet Well Corrosion Protection**

Polyvinyl chloride liner. (PVC) T-Lock Amerplate as manufactured by Ameron Corporate.

**N. General**

Alarm call box is a Microtel.

## COMMENTS

1. Ventilation fans for both dry and wet wells should run continuously to maintain the flammability of the interior space below 2% of the Lower Explosive Limit (LEL).
2. Ventilation fans should be fitted with flow detection devices (flow switches) connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in the dry well. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reaching 20% of the Lower Explosive Limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Fire extinguishers should be provided for dry well and generator room.
6. Wiring of the Mercury float switch in the wet well should be intrinsically safe relay.
7. Dry well ventilation fans capacities should be changed to read: Supply fan 4,000 cfm, Exhaust fan 3,400 cfm. This is to maintain the space under positive pressure.

# NORTH BATIQUITOS LIFT STATION



New Lift Station - under construction.



Entrance view.

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** Chinquapin Lift Station #5

**Location:** 4010 Carlsbad Blvd.  
**Trunk Sewer:** Vista/Carlsbad  
**Basin:** 1H

**A. Flows**

**Capacity (gpm):** 360 (Largest unit out of service)  
**Projected Peak (gpm):** 360

**B. Pumps**

**Number:** 2  
**Type:** Submersible explosion proof  
**Manufacturer:** Aurora/Hydromatic  
**Model No.:** S4HX750JC  
**Serial Nos.:** Unknown-1, S7676  
**Rated Flow:** 360 gpm  
**Head:** 43 (ft)  
**Speed:** 1750 rpm  
**Horsepower:** 7 ½ HP

**C. Motors**

**Manufacturer:** Aurora/Hydromatic  
**Model No.:** S4HX750JC  
**Serial Nos.:** Unknown-1=S7676  
**Horsepower:** 7 ½  
**Voltage:** 230  
**Frequency:** One Speed 3 Phase, 60 Hz  
**Enclosure:** C.L. Ins. - B  
**Design:** B  
**Code:** K

**D. Drives**

Submersible pumps/closed system

**E. Controls**

**Type:** Float and Rod System  
**Features:** Square D Mechanical Alternator. Motor starter Square D, Type #SD01, Heaters B-40.

**F. Alarms**

Pump Fail: Yes, Seal Failure  
 Loss of Power: Yes  
 Station Flooding: Yes  
 High Level: Yes  
 Low Level: Yes  
 Combustible Gas: No  
 H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 230  
 Transformer (kVa): N/R  
 Main Breaker (amp): 100

**H. Telemetry**

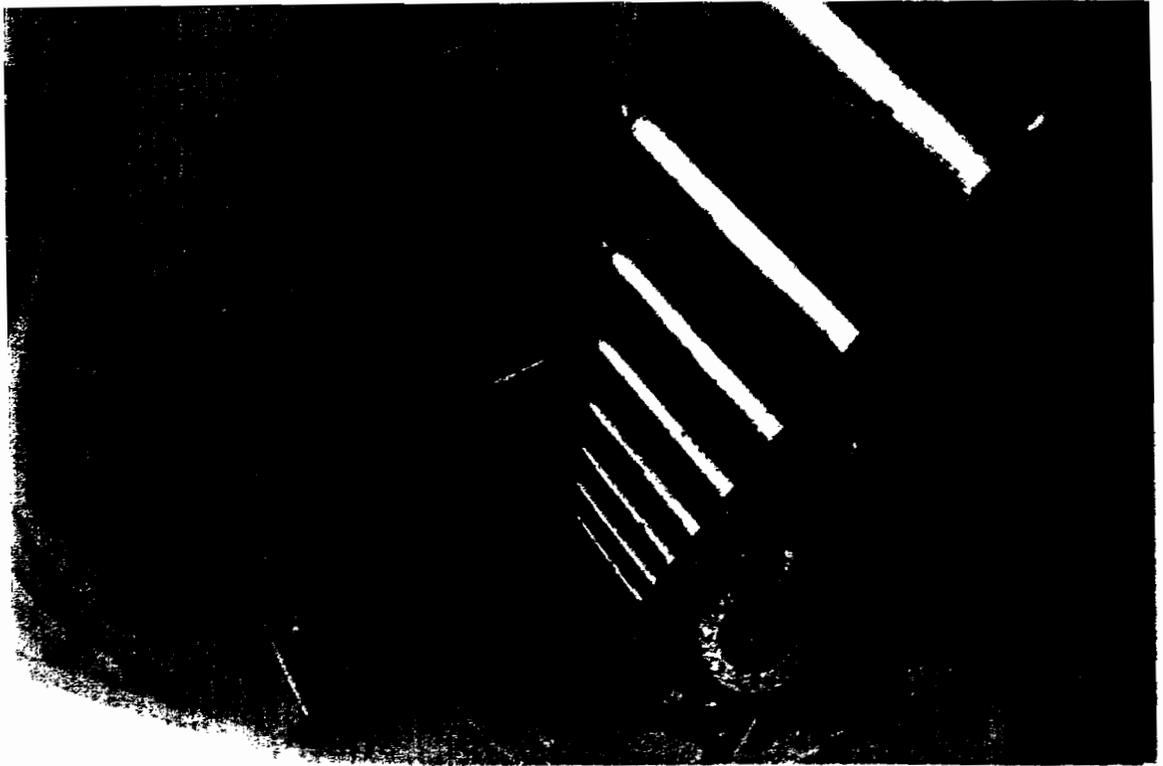
**I. Standby Power**

	ENGINE	GENERATOR
Manufacturer	Caterpillar	Kato-Diesel
Model No.	3606T	125 SR9 E
Serial No.	66D15626	73998
Output	HP	kW 125
Speed	1800	1800
Voltage	n/a	120/240
Frequency	n/a	3PH
Fuel Type	Diesel	
Fuel Consumption (gallons/hr)		
Fuel Storage (gallons)	125	
Rated Run Time (hrs) (with full tank)		
Silencer	Residential Kittell TRS-5	

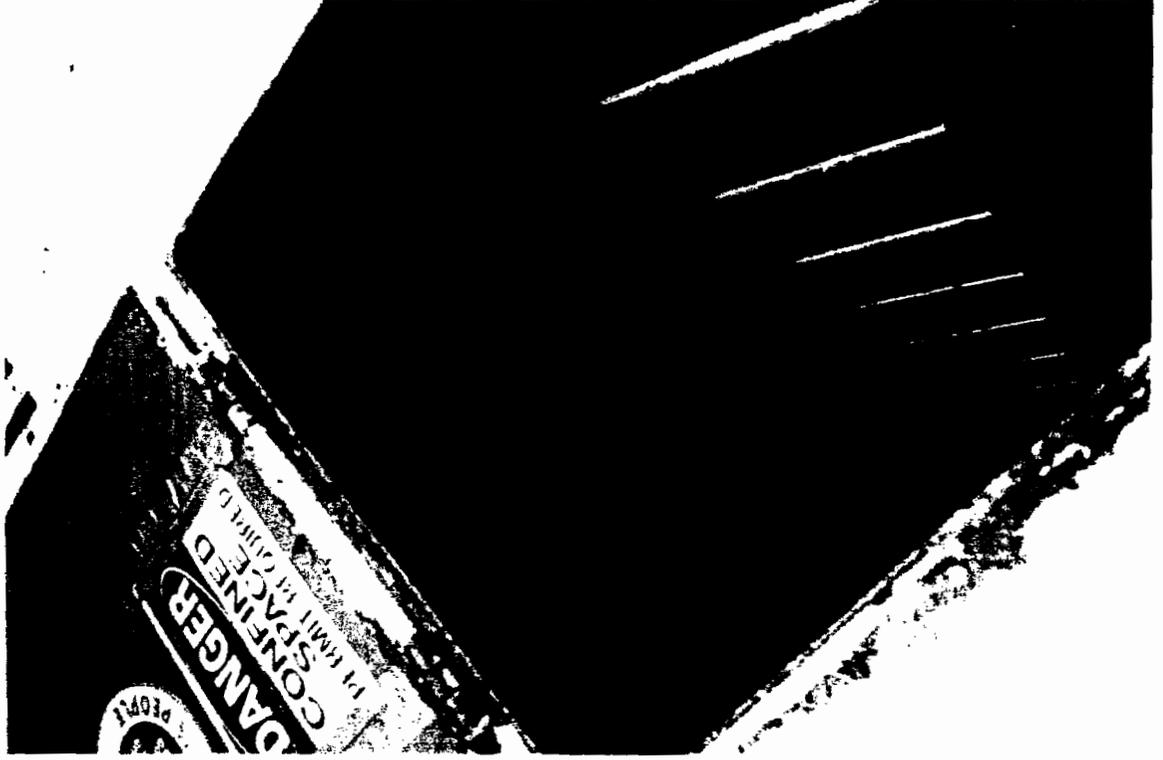
**J. Ventilation**

	Drywell	Wetwell
Fan Capacity (cfm)	No	No
Air Changes (per hr)		

FOREST LIFT STATION



Drywell and wetwell entrance



Drywell - Class 1 Div. 1 electrical needs upgrading  
Wetwell - Class 1 Div. 1.

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** Vancouver Lift Station #7

**Location:** 2990 Vancouver  
**Trunk Sewer:** Vista/Carlsbad  
**Basin:** 25

**A. Flows**

Capacity (gpm): 150 (Largest unit out of service)  
Projected Peak (gpm): 150

**B. Pumps**

Number: 2  
Type: Vertical close coupled non-clog centrifugal pumps with Mechanical seal.  
Manufacturer: Smith Loveless, Inc.  
Model No.: 4B2A  
Serial Nos.: 831138  
831139  
Rated Flow: 150 gpm  
Head: 103 (ft)  
Speed: 1760 rpm  
Horsepower: 15 HP

**C. Motors**

Manufacturer: Reuland Electric Co.  
Model No.: 16055-XX2980  
Serial Nos.: 833588F-10  
833588F-4  
Horsepower: 15  
Voltage: 460  
Frequency: 3 Phase, 60 Hz, Single Speed  
Enclosure: Frame AWO-284V  
Type VOND

**D. Drives**

Close coupled.

**E. Controls**

Type: Smith Loveless (bubbler system)  
Features: Spring loaded mercury switch for pump on-off cycle. Struthers Dunn #A311XRXP alternating relay. Motor starters, Westinghouse 4L330C, Heaters FH4B.

**F. Alarms**

Pump Fail: No  
Loss of Power: Yes  
Station Flooding: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 460  
Transformer (kVa): (2) 460 to 120 Vac  
Main Breaker (amp): 60

**H. Telemetry**

None

**I. Standby Power**

Portable unit.

**J. Ventilation**

	Dry Well	Wet Well
Fan Capacity (cfm)	100 (Exhaust Only)	No
Air Changes (per hr)	12	

**K. Odor Control**

None. Clean wet well every 8 weeks with Vactor. We add 50# of granular chlorine every 8 weeks.

**L. Structure**

36" entrance tube with pump landing 12'. Wet well and pumps separate. Wet well concrete. Pump structure coated with Versapox Epoxy. Wet well 5'11" diameter, and 17'3" deep.

**M. Wet Well Corrosion Protection**

No.

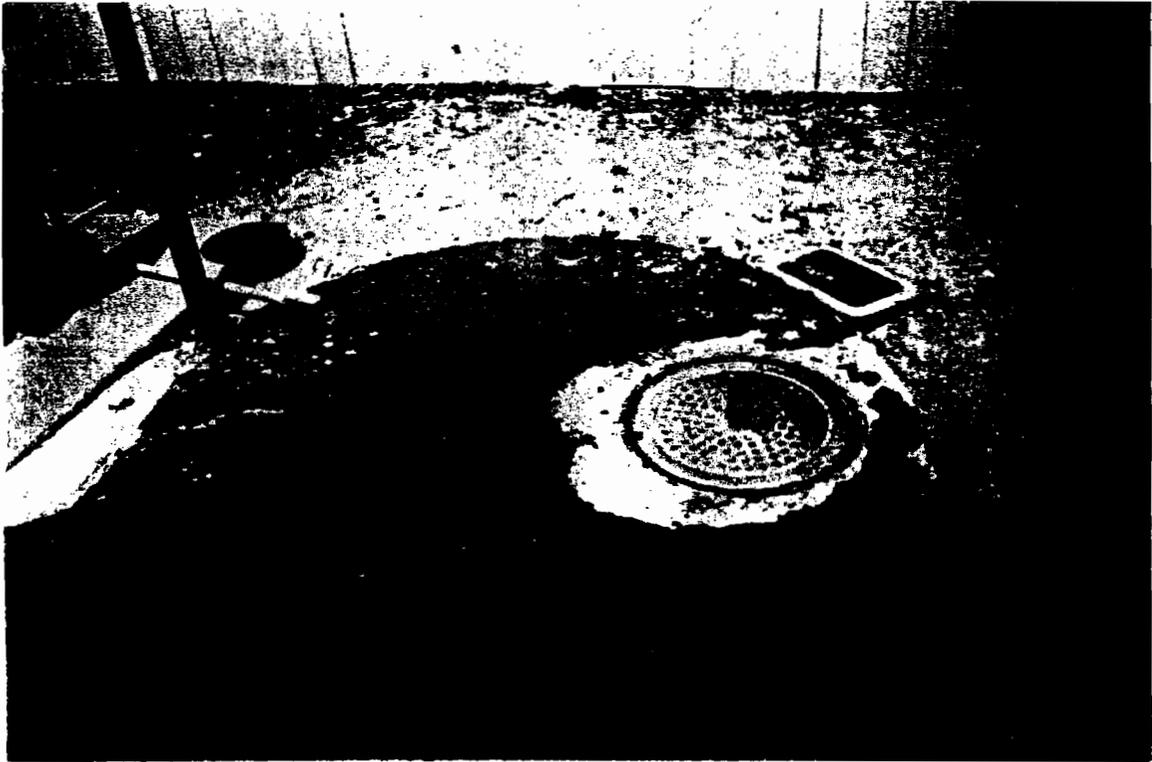
**N. General**

Alarm call box is a Microtel 200.

## COMMENTS

1. Ventilation fan for the dry well should run continuously to maintain the flammability of the interior space below 20% of the Lower Explosive Limit (LEL).
2. Ventilation fan should be fitted with flow detection device flow switch connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reach 20% of the Lower Explosive Limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Loose wirings touching other wirings should be separated and strapped to equipment supports or walls.
6. Local and remote alarms for pump failures should be provided.
7. Wet well requires inspection and evaluation for corrosion.
8. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe relay.
9. Some existing electrical conduits should be upgraded from PVC to Rigid steel conduits.

# VANCOUVER LIFT STATION



Wetwell entrance.



Wetwell - Class 1 Div 1 requires corrosion protection.

# VANCOUVER LIFT STATION

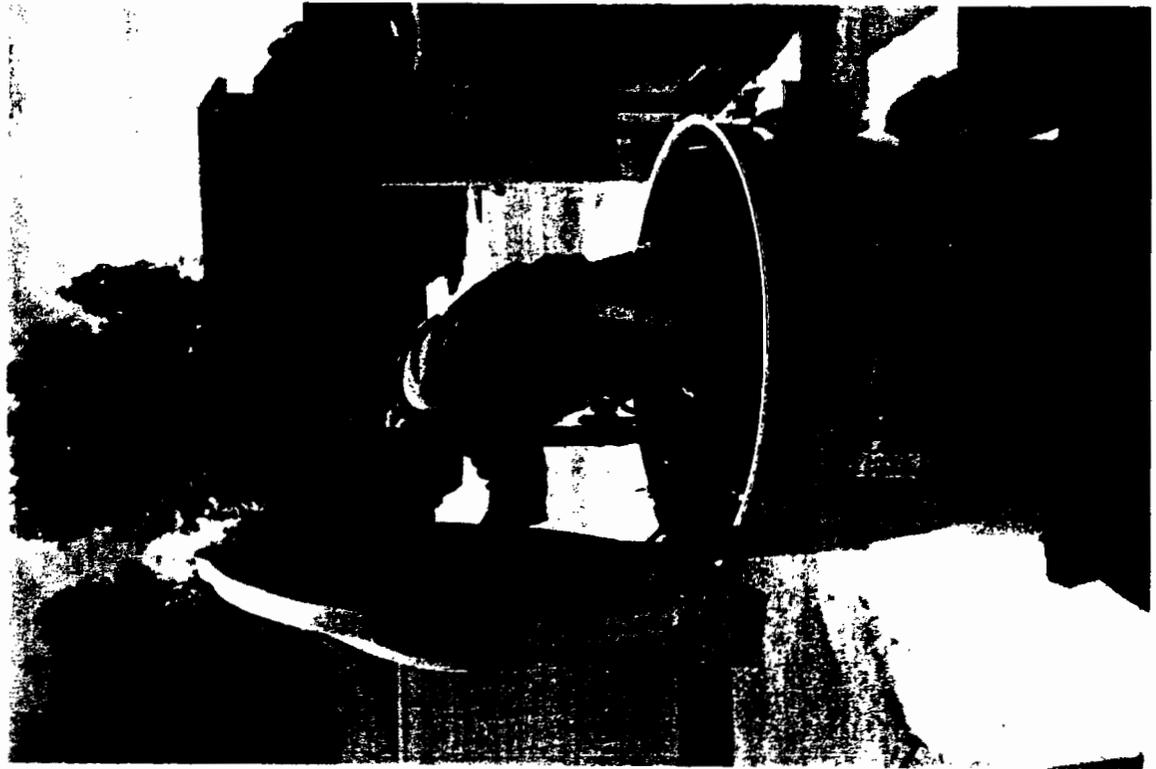


Drywell entrance - Class 1 Div 2



Entrance view

VANCOUVER LIFT STATION



Drywell entrance view.



Drywell entrance - Class 1 Div. 2.

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** Woodstock Lift Station #8

**Location:** 4666 Woodstock St.  
**Trunk Sewer:** South Agua Hedionda  
**Basin:** 7C

**A. Flows**

**Capacity (gpm):** 50 (Largest unit out of service)  
**Projected Peak (gpm):** 50

**B. Pumps**

**Number:** 2  
**Type:** Horizontal - Self-priming with Mechanical Seal  
**Manufacturer:** Gorman Rupp  
**Model No.:** T3A3-B  
**Serial Nos.:** 778268 & 778269  
**Rated Flow:** 50 gpm  
**Head:** 25 (ft)  
**Speed:** 974 rpm  
**Horsepower:** 2 HP

**C. Motors**

**Manufacturer:** Sterling  
**Model No.:** 82-40193  
**Serial Nos.:** none  
**Horsepower:** 2  
**Voltage:** 230  
**Frequency:** Single Phase, 60 Hz, Single Speed  
**Enclosure:** Frame 254T, Code G

**D. Drives**

V-Belt drive, two belts per pump.

**E. Controls**

**Type:** Gorman Rupp Company (Bubbler system).  
**Features:** Bubbler control with mercury pressure switch. \*\*Motor circuit breaker - ITE 30 amp. #EEZ-B030. \*\*Magnetic starter, Allen Bradley #709-BOT, Size 1, Heaters W-53.

**F. Alarms**

Pump Fail: Yes  
Loss of Power: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 230  
Transformer (kVa): N/R  
Main Breaker (amp): 100

**H. Telemetry**

None.

**I. Standby Power**

	ENGINE	GENERATOR
Manufacturer	Generac	Generac
Model No.	V-Twin	V-Twin
Serial No.		
Output	HP 16	kW 8000 - Max 10,000
Speed		
Voltage	N/A	240
Frequency	N/A	Single Phase
Fuel Type	Gas	
Fuel Consumption (gallons/hr)	5.3 at 1/2 Load	
Fuel Storage (gallons)	4.3	
Rated Run Time (hrs) (with full tank)		
Silencer		

**J. Ventilation**

Automatic Operation, Thermostatically Controlled.

	Dry Well	Wet Well
Fan Capacity (cfm)	140 (Exhaust Only)	No
Air Changes (per hr)	38	

**K. Odor Control**

None. Clean wet well every 4-8 weeks. We also add 50# of granular chlorine every 6-8 weeks.

**L. Structure**

Station above ground. Wet well below concrete structure. A.H. type.

**M. Wet Well Corrosion Protection**

No.

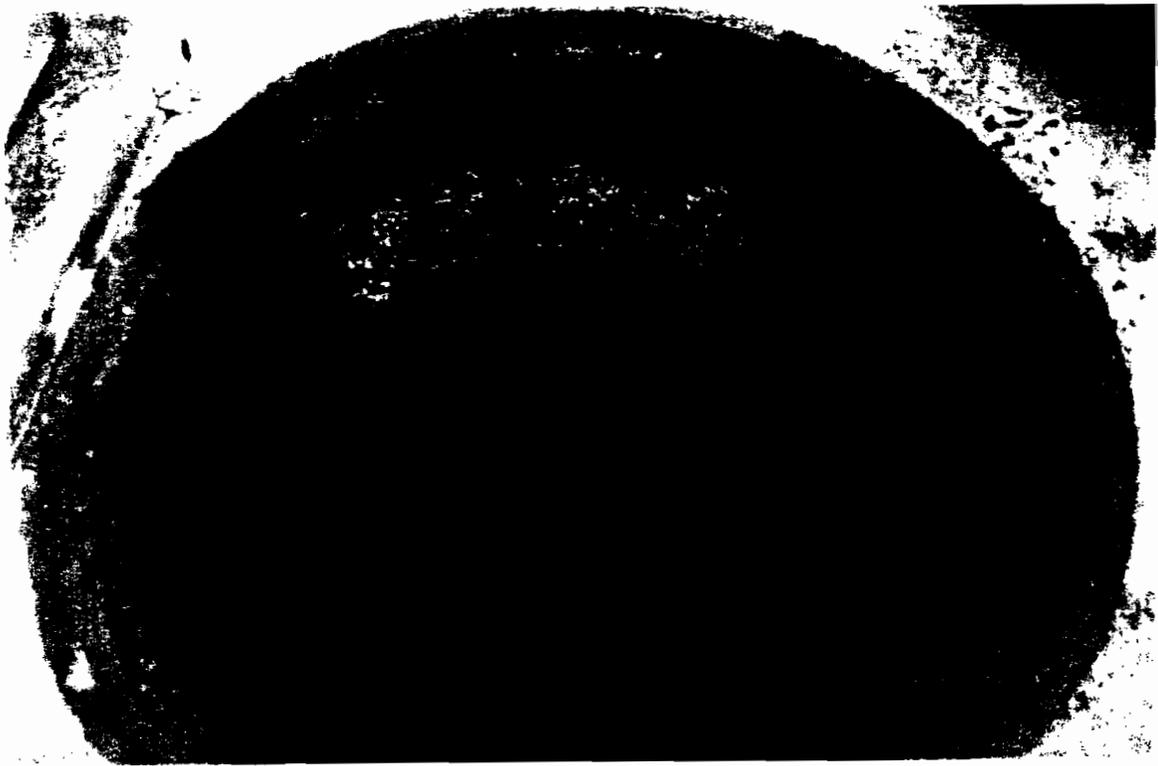
**N. General**

Alarm call box is a Microtel 200.

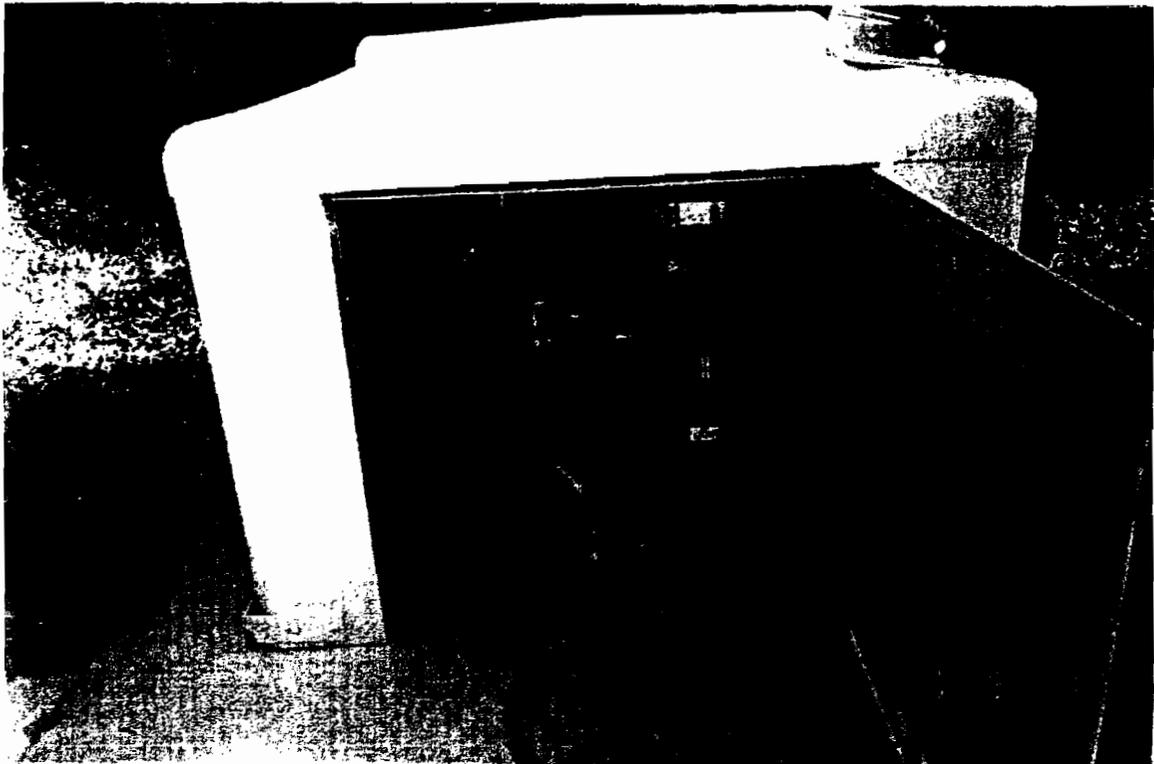
## COMMENTS

1. Ventilation fan for the dry well should run continuously.
2. Ventilation fan should be fitted with flow detection devices (flow switch) connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reaching 20% of the Lower Explosive Limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Loose wirings touching other wirings should be separated and strapped to equipment supports, or walls.
6. Wet well requires inspection and evaluation for corrosion.
7. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe relay.

# WOODSTOCK LIFT STATION



Wetwell - Class 1 Div 1 requires corrosion protection.



Drywell - Class 1 Div 2.

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** Villas Lift Station #9

**Location:** 2860 Winthrop Avenue  
**Trunk Sewer:** Vista/Carlsbad  
**Basin:** 7A

**A. Flows**

**Capacity (gpm):** 125 (Largest unit out of service)  
**Projected Peak (gpm):** 125

**B. Pumps**

**Number:** 2  
**Type:** Horizontal - Self priming centrifugal pump with Mechanical Seal.  
**Manufacturer:** Gorman Rupp  
**Model No.:** T3A3-B  
**Serial Nos.:** #1=779644  
#2=None (unknown)  
**Rated Flow:** 125 gpm  
**Head:** 90 (ft)  
**Speed:** 1912 rpm  
**Horsepower:** 15 HP

**C. Motors**

**Manufacturer:** Siemens Allis  
**Model No.:** 51-324-900  
**Serial Nos.:** None  
**Horsepower:** 15  
**Voltage:** 208  
**Frequency:** 3 Phase, 60 Hz, Single Speed  
**Enclosure:** Frame: 245T  
Code: G

**D. Drives**

V-Belt drive, two belts per pump.

**E. Controls**

**Type:** Gorman Rupp Company (bubbler system)  
**Features:** Bubbler control with mercury pressure switch. Motor circuit breaker Square D, 70 amp, #FAL32070. Magnetic motor starter, Allen Bradley #709-D0D16, Size 3, Heaters W-67.

**F. Alarms**

Pump Fail: Yes  
Loss of Power: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 200  
Transformer (kva): 2 kVa, 200 volts primary to 115 volts  
Main Breaker (amp): 100

**H. Telemetry**

None

**I. Standby Power**

Portable Unit

**J. Ventilation**

Thermostatically controlled fan for automatic operation

	Dry Well	Wet Well
Fan Capacity (cfm)	140 (exhaust only)	No
Air Changes (per hr)	12	--

**K. Odor Control**

None. Clean wet well every 4-8 weeks. We also add 50# of granular chlorine every 6-8 weeks.

**L. Structure**

Station above ground. Wet well below concrete structure. A.H. Type.

**M. Wet Well Corrosion Protection**

Coated May 1994 by National Plant Services. Material used Poly Urethane spray on type.

**N. General**

Alarm call box is a Microtel 200.

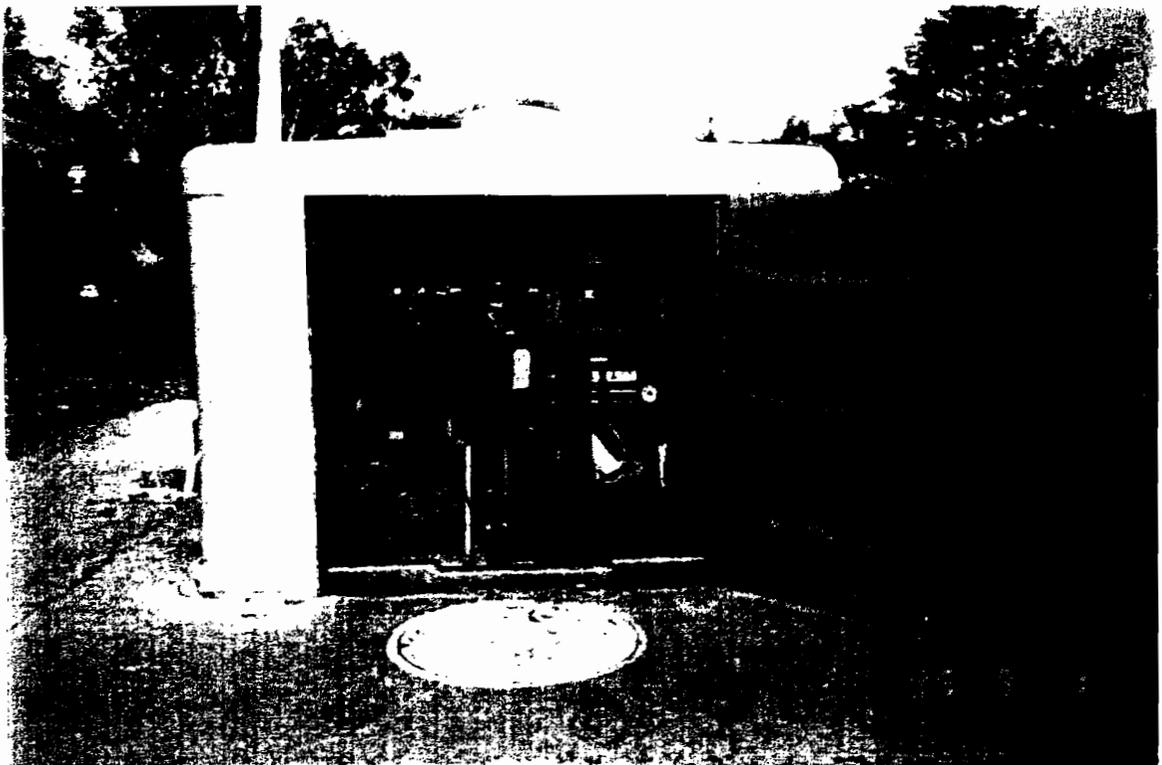
## COMMENTS

1. Ventilation fan for the dry well should run continuously.
2. Ventilation fan should be fitted with flow detection device (flow switch) connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reach 20% of the Lower Explosive Limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Loose wirings touching other wirings should be separated and strapped to equipment supports or walls.
6. Wet well requires inspection and evaluation for corrosion.
7. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe relay.

# VILLAS LIFT STATION



Entrance view.



Drywell - Class 1 Div. 2  
Wetwell - Class 1 Div. 1

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** Faraday Lift Station #10 (Upper)

**Location:** 1759 Faraday  
**Trunk Sewer:** South Aqua Hedionda  
**Basin:** 5B & 24C

**A. Flows**

**Capacity (gpm):** 1000 (Largest unit out of service)  
**Projected Peak (gpm):** 1000

**B. Pumps**

**Number:** 2  
**Type:** Vertical close couple, non-clog centrifugal pumps with Mechanical Seal.  
**Manufacturer:** Smith Loveless  
**Model No.:** 6C3  
**Serial Nos.:** 890849  
890850  
**Rated Flow:** 1000 gpm  
**Head:** 55 (ft)  
**Speed:** 1800 rpm  
**Horsepower:** 25 HP

**C. Motors**

**Manufacturer:** G.E. for Smith Loveless  
**Model No.:** 5K284DP6712ANO  
**Serial Nos.:** 035222  
035225  
**Horsepower:** 25  
**Voltage:** 460  
**Frequency:** 3 Phase, 60 Hz, Single Speed

**D. Drives**

Close coupled.

**E. Controls**

**Type:** Smith Loveless  
**Features:** Pump Alternator - ARA-120-ADA, Diversified Electronics  
Emergency transfer switch, automatic, Kohler Ser. No. K24650  
Spring loaded mercury switch for On/Off cycles  
Motor starter, Westinghouse 610C51605, Heaters FH54

**F. Alarms**

Pump Fail: Yes  
Loss of Power: Yes  
Station Flooding: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 480  
Transformer (kVa): Primary 240/480 to 120/240  
Main Breaker (amp): 225

**H. Telemetry**

None

**I. Standby Power**

	ENGINE	GENERATOR
Manufacturer	Cummins	Kohler
Model No.	505CID8-3LTR	125ROZ273
Serial No.	442283260	234749
Output	HP	kW 125
Speed	1800	1800
Voltage	n/a	460
Frequency	n/a	3 Phase, 60 Hz
Fuel Type	Diesel	
Fuel Consumption (gallons/hr)		
Fuel Storage (gallons)	125	
Rated Run Time (hrs) (with full tank)		

**J. Ventilation**

	Dry Well	Wet Well
Fan Capacity (cfm)	215 (Exhaust Only)	No
Air Changes (per hr)	12	

**K. Odor Control**

None. Clean wet well every 3-5 weeks, add 50# of granular chlorine every 6 months

**L. Structure**

42" entrance tube, 12' length/pump landing 11'10" diameter and 9'5" high. Wet well and pumps separate

Wet well concrete 8' diameter, 17' depth. Coated with Versapox epoxy.

**M. Wet Well Corrosion Protection**

No.

**N. General**

Alarm call box is a Microtel 200.

## COMMENTS

1. Ventilation fan for the dry well should run continuously to maintain the flammability of the interior space below 20% of the Lower Explosive Limit (LEL).
2. Ventilation fan should be fitted with flow detection device (flow switch) connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reach 20% of the Lower Explosive Limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Loose wirings touching other wirings should be separated and strapped to equipment supports or walls.
6. Wet well requires inspection and evaluation for corrosion.
7. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe relay.
8. Existing intake air for the dry well should be plugged and the entrance tube should be modified to allow for intake air form the opposite side which prevents short circuiting between exhaust and intake air.

# FARADAY LIFT STATION (UPPER)



Entrance view.

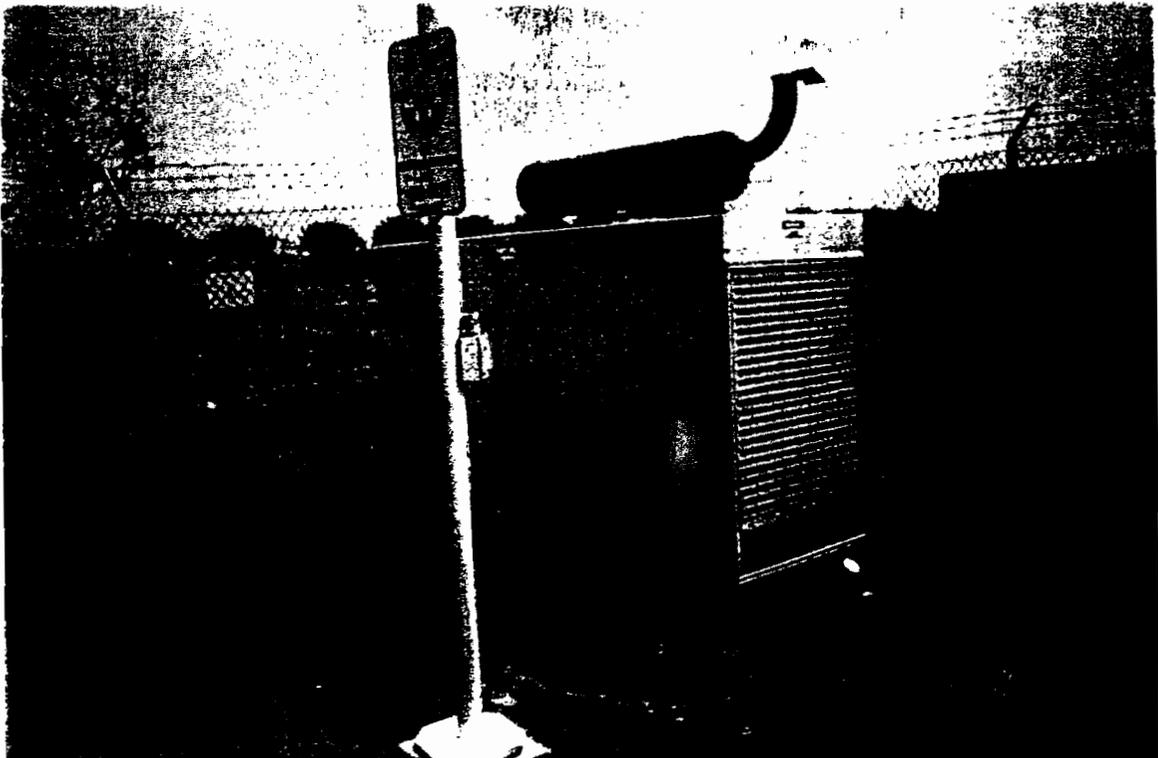


Drywell - Class 1 Div. 2

## FARADAY LIFT STATION (UPPER)



Wetwell - Class 1. Div. 1.



Standby generator.

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** La Golondrina Lift Station #11

**Location:** 2516 La Golondrina  
**Trunk Sewer:** Buena/Vallecitos  
**Basin:** 6B

**A. Flows**

Capacity (gpm): 110 (Largest unit out of service)  
Projected Peak (gpm): 110

**B. Pumps**

Number: 2  
Type: Vertical close couple, non-clog centrifugal pumps with Mechanical Seal.  
Manufacturer: Smith Loveless  
Model No.: 4B2A  
Serial Nos.: 831104  
831103  
Rated Flow: 110 gpm  
Head: 45 (ft)  
Speed: 1170 rpm  
Horsepower: 5 HP

**C. Motors**

Manufacturer: Smith Loveless  
Model No.: 8264-XX2978  
Serial Nos.: 834658A-6  
834658A-4  
Horsepower: 5  
Voltage: 230  
Frequency: 3 Phase, 60 Hz, Single Speed  
Enclosure: Frame: AWO-L210  
Type: VONO

**D. Drives**

Close coupled.

**E. Controls**

Type: Smith Loveless  
Features: Spring load mercury switch for pump on/off  
Struthers Dunn #211XBX-PR alternating relay  
Motor Starters - 8011B3951-14, Heathers FH46  
Roto-Phase Rotary Generator - Input 1 ph., 230 volts; Output 3 ph., 230 volts  
max. System H/P 10, Model DBR, Ser. No. 55607-LN

**F. Alarms**

Pump Fail: No  
Loss of Power: Yes  
Station Flooding: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 230, 1 ph.  
Transformer (kVa): No  
Main Breaker (amp): 100

**H. Telemetry**

None

**I. Standby Power**

Portable unit

**J. Ventilation**

	Dry Well	Wet Well
Fan Capacity (cfm)	50 (Exhaust Only)	No
Air Changes (per hr)	12	

**K. Odor Control**

None. Clean wet well every 6 months, add 50# of granular chlorine every 6 months.

**L. Structure**

36" entrance tube, 11' pump landing. Wet well and pumps separate. Wet well concrete. Coated with Versapox epoxy. Wet well 4' diameter, depth 21'6".

**M. Wet Well Corrosion Protection**

No.

**N. General**

Alarm call box is a Microtel 200.

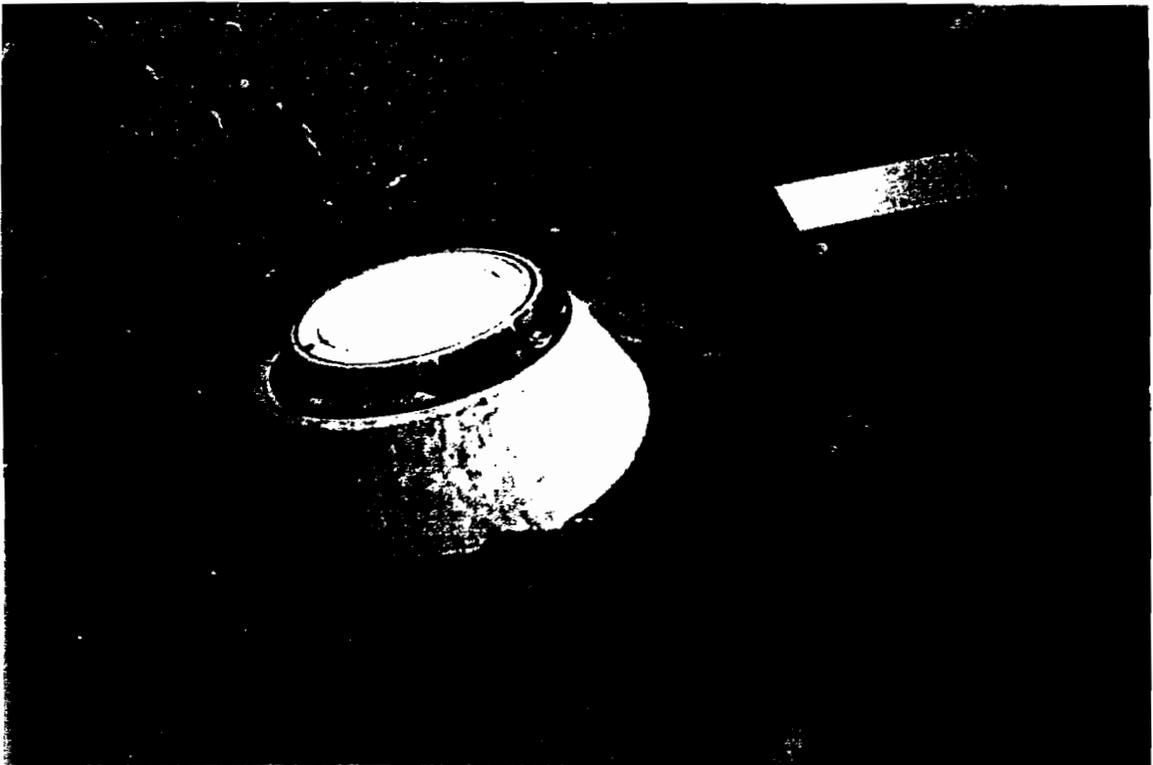
## COMMENTS

1. Ventilation fan for the dry well should run continuously to maintain the flammability of the interior space below 20% of the Lower Explosive Limit (LEL).
2. Ventilation fan should be fitted with flow detection device (flow switch) connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reach 20% of the Lower Explosive Limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Loose wirings touching other wirings should be separated and strapped to equipment supports or walls.
6. Local and remote alarms for pumps failure should be provided.
7. Wet well requires inspection and evaluation for corrosion.
8. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe.
9. Connection for standby generator should be provided.

# LA GOLONDRINA LIFT STATION



Entrance view.



Wetwell entrance - Class 1 Div. 1.

# LA GOLONDRINA LIFT STATION



Drywell entrance - Class 1 Div. 2.

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** Gateshead Lift Station #12

**Location:** 4779 Gateshead Road  
**Trunk Sewer:** North Agua Hedionda  
**Basin:** 7C

**A. Flows**

**Capacity (gpm):** 40 (Largest unit out of service)  
**Projected Peak (gpm):** 40

**B. Pumps**

**Number:** 2  
**Type:** Horizontal - Self priming centrifugal pump with Mechanical Seal.  
**Manufacturer:** Gorman Rupp  
**Model No.:** T3A3-B  
**Serial Nos.:** #1=828939  
#2=828940  
**Rated Flow:** 40 gpm  
**Head:** 25 (ft)  
**Speed:** 988 rpm  
**Horsepower:** 3 HP

**C. Motors**

**Manufacturer:** Siemens Allis  
**Model No.:** 51-391-087  
**Serial Nos.:** None  
**Horsepower:** 3  
**Voltage:** 230  
**Frequency:** 3 Phase, 60 Hz  
**Enclosure:** Frame: 182T  
Code: K

**D. Drives**

V-Belt drive, two belts each pump.

**E. Controls**

**Type:** Gorman Rupp Company (bubbler system)  
**Features:** Controls with bubbler Electronic Pressure switch. Main Control board Solid State. Motor Starters Square D 20 Amp. #FAL 32020 Heaters W50.

**F. Alarms**

Pump Fail: Yes  
Loss of Power: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 230  
Transformer (kVa): (2) 230 volts primary to 115 volts  
Main Breaker (amp): 100

**H. Telemetry**

None

**I. Standby Power**

Portable Unit

**J. Ventilation**

	Dry Well	Wet Well
Fan Capacity (cfm)	50 (Exhaust Only)	No
Air Changes (per hr)	6	

**K. Odor Control**

None. Clean wet well every 4-8 weeks. Also add 50# of granular chlorine every 6-8 weeks.

**L. Structure**

Station enclosures & entrance tube; fiberglass reinforced Isophthalic Polyester Resins.  
Station Nominal diameter 7'6", Height 9', entrance tube 36". Wet well 7' diameter,  
25'6" deep.

**M. Wet Well Corrosion Protection**

No.

**N. General**

Alarm call box is a Microtel 200.

## COMMENTS

1. Ventilation fan for the dry well should run continuously to maintain the flammability of the interior space below 20% of the Lower Explosive Limit (LEL).
2. Ventilation fan should be fitted with flow detection device (flow switch) connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reach 20% of the Lower Explosive Limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Loose wirings touching other wirings should be separated and strapped to equipment supports or walls.
6. Wet well requires inspection and evaluation for corrosion.
7. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe relay.

GATESHEAD LIFT STATION

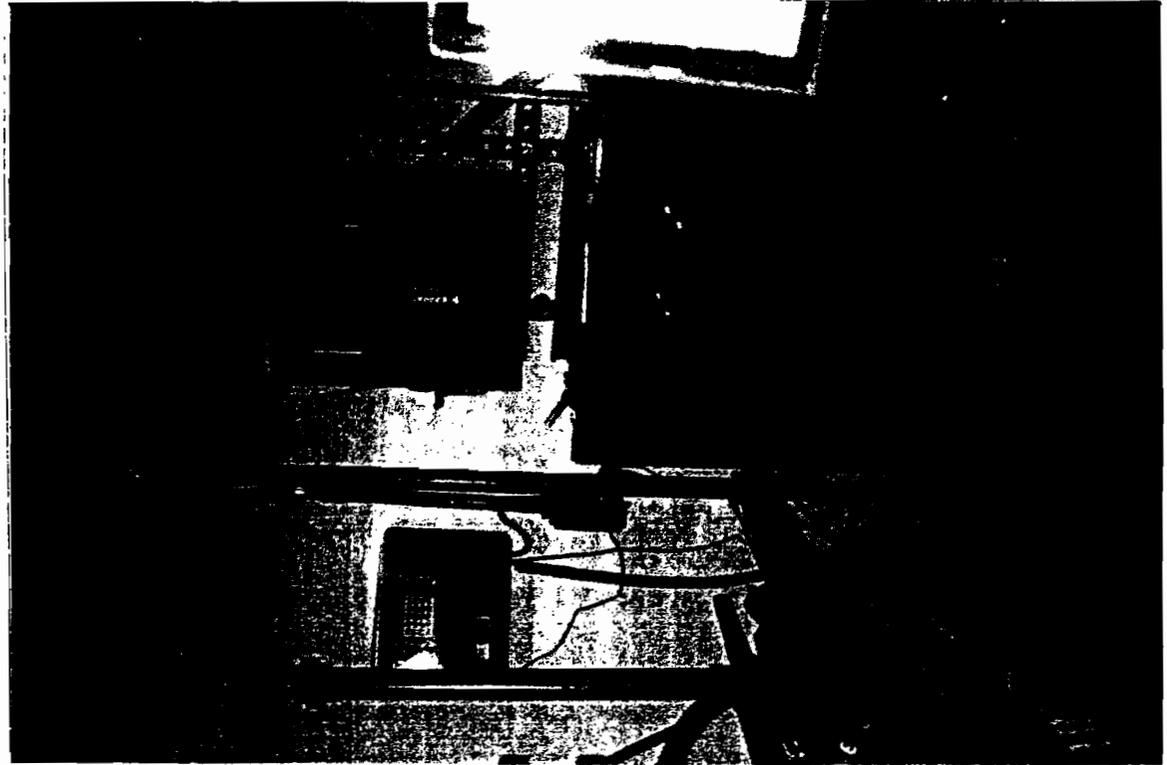


Entrance view.



Drywell - Class 1 Div. 2

GATESHEAD LIFT STATION



Drywell - Class 1 Div. 2 electrical pump controls



Drywell - Class 1 Div. 2 exhaust fan

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:**     **Simsbury Lift Station #13**

**Location:**       3531 Simsbury Dr.  
**Trunk Sewer:**   North Agua Hedionda  
**Basin:**           7A

**A. Flows**

Capacity (gpm):               382 (Largest unit out of service)  
Projected Peak (gpm):        382

**B. Pumps**

Number:            2  
Type:               Vertical close coupled non-clogged centrifugal pumps with mechanical seals.  
Manufacturer:     Smith & Loveless, Inc.  
Model No.:         4D4A  
Serial Nos.:       #1-851053  
                      #2-851054  
Rated Flow:        382gpm  
Head:               200 (ft)  
Speed:             1760 rpm  
Horsepower:        50 HP

**C. Motors**

Manufacturer:     Reuland Electric Co.  
Model No.:        189 24-XN5363A  
Serial Nos.:       #1-855363-A-1  
                      #2-855363-A-3  
Horsepower:       50  
Voltage:           460  
Frequency:        3 Phase, 60 Hz, Single speed, soft start.  
Enclosure:        Frame: 365 U-AFU  
                      Type: VONO  
                      Code: H

**D. Drives**

Close coupled.

**E. Controls**

Type:             Smith & Loveless (bubbler type system)  
Features:         Spring loaded mercury switch for lead on/off. Struthers Dunn pump alternator relay. Motor starters, Westinghouse #A201K3CA, Size 3, Heaters FH 83. Automatic Transfer Switch #RMT 1504CE Russ electric.

**F. Alarms**

Pump Fail: No.  
Loss of Power: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 460  
Transformer (kVa): (2) 480 volts to 130 volts  
Main Breaker (amp): 200

**H. Telemetry**

None

**I. Standby Power**

	ENGINE	GENERATOR
Manufacturer	Cummins	Kohler
Model No.	6BTS5.9	80ROZ271
Serial No.	21550018HCH	172803
Output	HP 126	kW 94
Speed	1800	
Voltage	n/a	480
Frequency	n/a	3 ph., 60 Hz
Fuel Type	diesel	
Fuel Consumption (gallons/hr)	6.2 at 100%	
Fuel Storage (gallons)		
Rated Run Time (hrs) (with full tank)		
Silencer	Muffler	

**J. Ventilation**

	Dry well	Wet well
Fan Capacity (cfm)	178 (Exhaust Only)	No
Air Changes (per hr)	6	

**K. Odor Control**

None. Clean wet well every 8 weeks. Also add 50# to 100# of granular chlorine every 8-12 weeks.

**L. Structure**

Generator is housed in brick building. Pump room below ground concrete structure. Wet well A.H. type concrete. Diameter 8', depth 13'8". Concrete overflow tank W 23' x L 14' x D 13'8".

**M. Wet Well Corrosion Protection**

No.

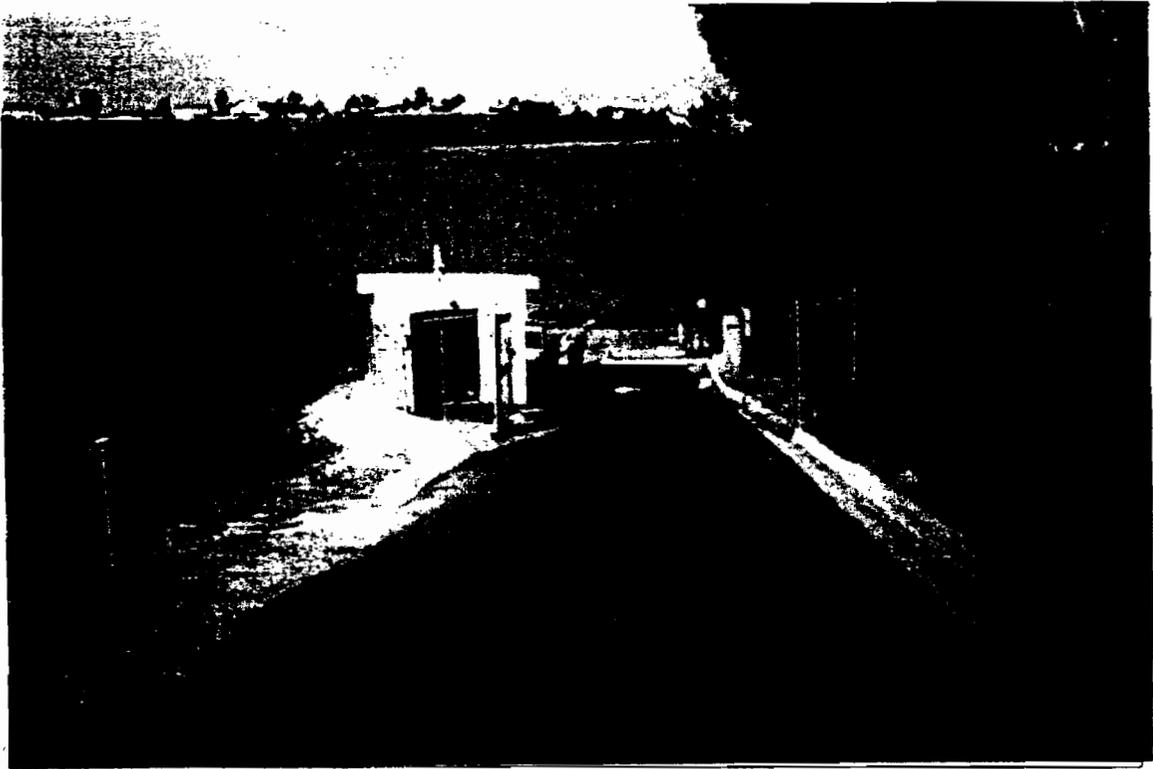
**N. General**

Alarm call box is a Microtel 200.

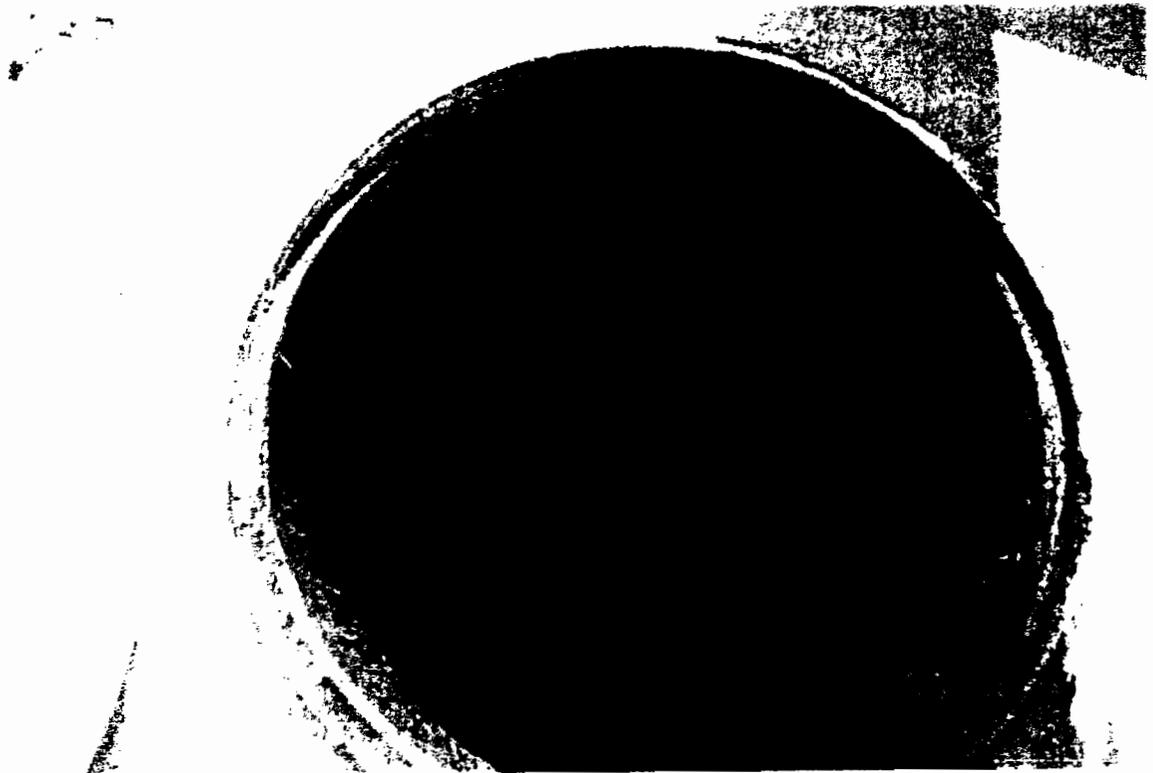
## COMMENTS

1. Ventilation fan for the dry well should run continuously to maintain the flammability of the interior space below 20% of the Lower Explosive Limit (LEL).
2. Ventilation fan should be fitted with flow detection device (flow switch) connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reach 20% of the Lower Explosive Limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Loose wirings touching other wirings should be separated, and strapped to equipment supports or walls.
6. Wet well requires inspection and evaluation for corrosion.
7. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe relay.

# SIMSBURY LIFT STATION

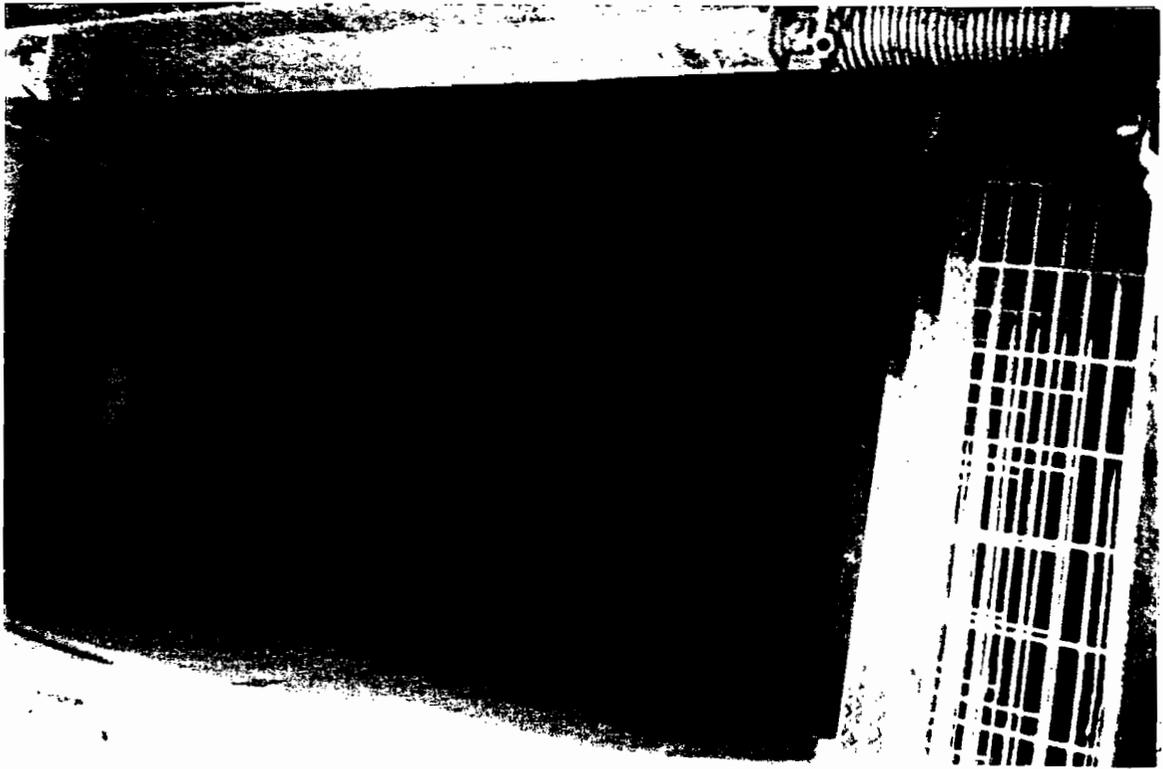


Entrance view.

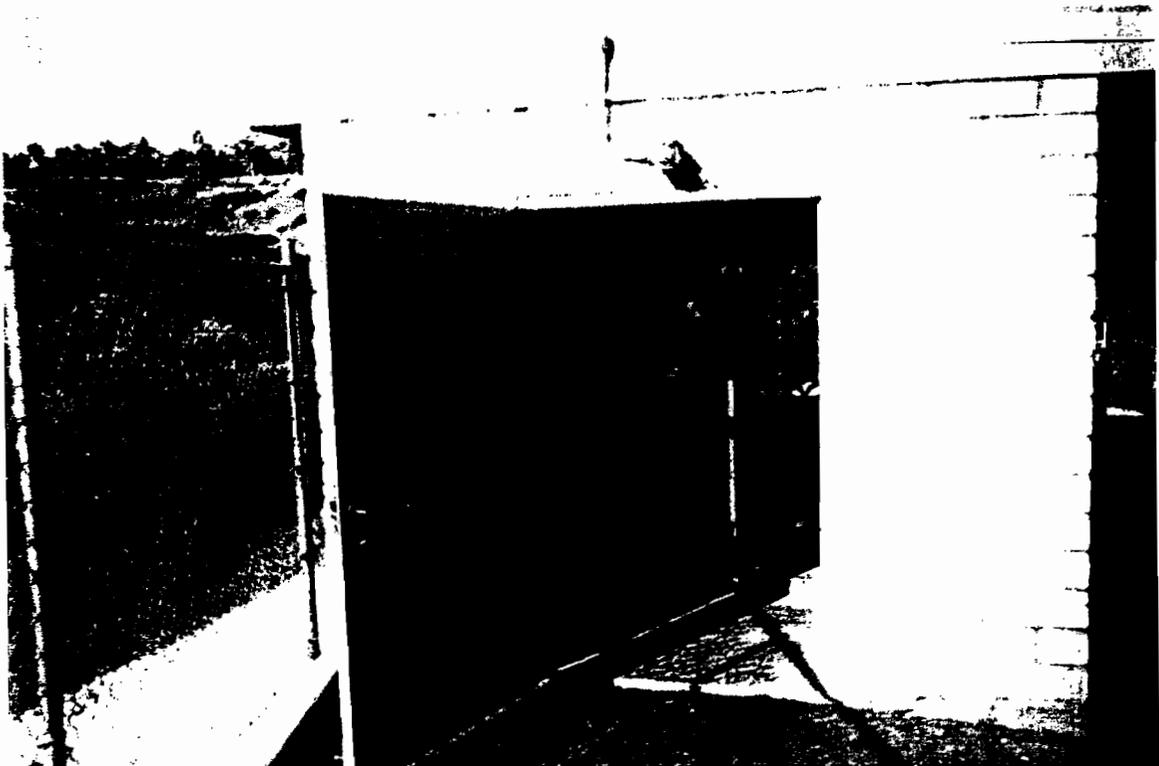


Wetwell - Class 1 Div. 1 requires corrosion protection

# SIMSBURY LIFT STATION

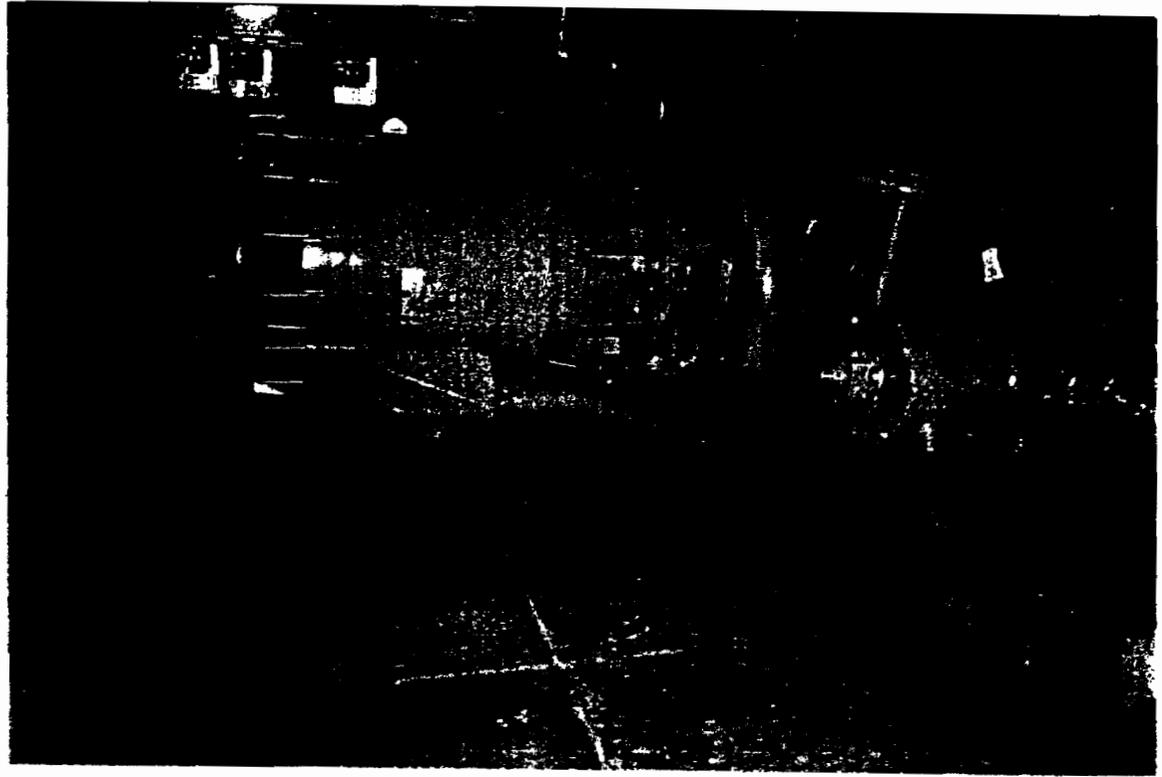


Drywell entrance.

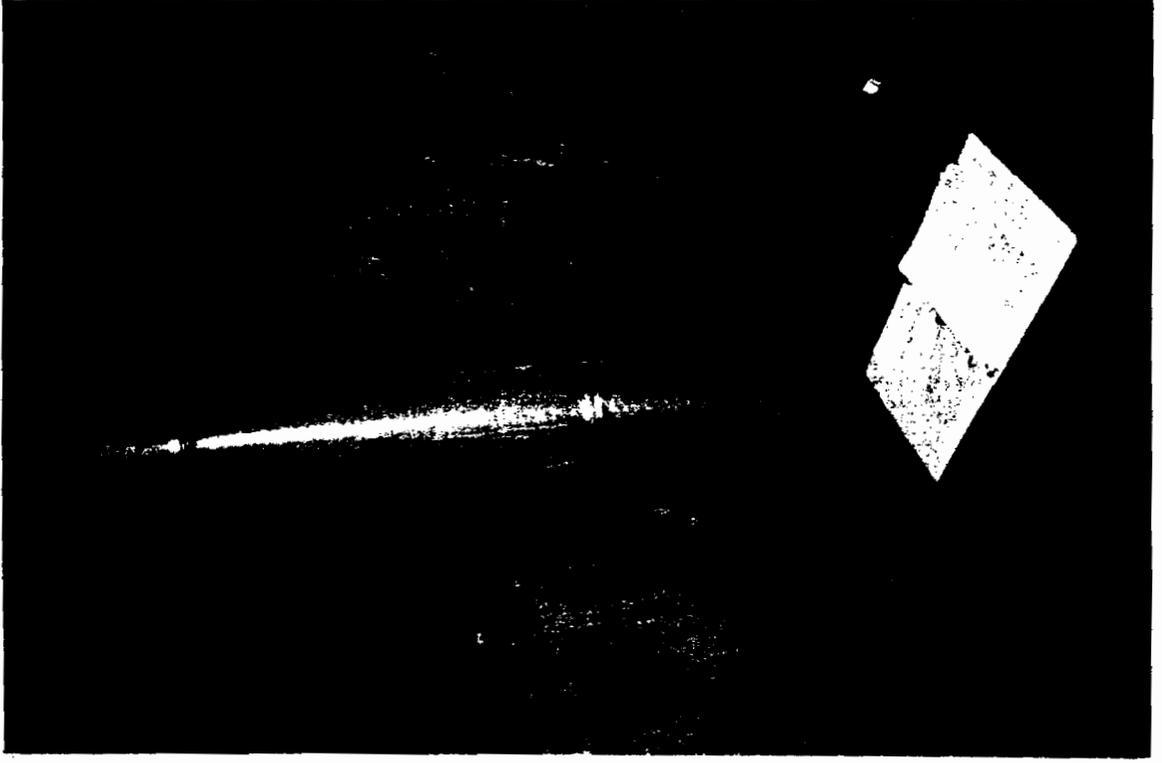


Standby generator room.

SIMSBURY LIFT STATION



Drywell - Class 1 Div. 2.



Drywell - Class 1 Div. 2 exhaust fan.

CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** Faraday Lift Station #14 (Lower)

**Location:** 1507 Faraday  
**Trunk Sewer:** South Agua Hedionda  
**Basin:** 8

**A. Flows**

**Capacity (gpm):** 307 (Largest unit out of service)  
**Projected Peak (gpm):** 382

**B. Pumps**

**Number:** 2  
**Type:** Vertical close coupled non-clogged centrifugal pumps with mechanical seals.  
**Manufacturer:** Smith & Loveless, Inc.  
**Model No.:** 4C3  
**Serial Nos.:** 950751  
950752  
**Rated Flow:** 307gpm  
**Head:** 144 (ft)  
**Speed:** 1760 rpm  
**Horsepower:** 25 HP

**C. Motors**

**Manufacturer:** Smith & Loveless  
**Model No.:** 2C284TTD8634BP  
**Serial Nos.:** #1-42453290-3/22.02  
#2-42453270-3/22.02  
**Horsepower:** 25  
**Voltage:** 460  
**Frequency:** 3 Phase, 60 Hz, Single speed.  
**Enclosure:** Frame: 284HPHVZ  
Type: TDR  
Code: H

**D. Drives**

Close coupled.

**E. Controls**

**Type:** Smith & Loveless (bubbler type system)  
**Features:** Transfer switch Kohler #K-5666541-150. Ser. #K62095. Motor Starters Allen Bradley #150-A35NBD. Air Pressure spring adjusting control for pump on/off.

**F. Alarms**

Pump Fail: Yes  
Loss of Power: Yes  
High Level: Yes  
Low Level: Yes  
Combustible Gas: No  
H<sub>2</sub>S: No

**G. Electrical Service**

Voltage (volts): 460  
Transformer (kVa): #9, 480 volts to 208/120  
Main Breaker (amp): 100

**H. Telemetry**

None

**I. Standby Power**

	ENGINE	GENERATOR
Manufacturer	John Deere	Kohler
Model No.		80ROZJ71
Serial No.	CD6059T220023	367275
Output	HP	kW 80
Speed	1800	
Voltage	n/a	460
Frequency	n/a	3 ph., 60 Hz
Fuel Type	diesel	
Fuel Consumption (gallons/hr)		
Fuel Storage (gallons)	125	
Rated Run Time (hrs) (with full tank)		
Silencer		

**J. Ventilation**

	Dry well	Wet well
Fan Capacity (cfm)	215 (Exhaust Only)	No
Air changes (per hr)	12	

**K. Odor Control**

Air injection system. Air to wet well and to force main.

**L. Structure**

42" entry tube with 11'10" pump landing area. Height is 9'5". Steel with Versapox Epoxy Coating. Wet well separate from pumps. Wet well concrete structure A.H. type. Diameter 5' depth 20'.

**M. Wet Well Corrosion Protection**

No.

**N. General**

Alarm call box is a Microtel 200.

## COMMENTS

1. Ventilation fan for the dry well should run continuously to maintain the flammability of the interior space below 20% of the Lower Explosive Limit (LEL).
2. Ventilation fan should be fitted with flow detection device connected to alarm signaling system to indicate ventilation system failure.
3. Combustible gas detectors should be provided in both dry and wet wells. Means should be provided to automatically de-energize all electrical sources of ignition in the well in the event the interior atmosphere of the well reach 20% of the Lower Explosive Limit (LEL).
4. Local and remote alarms for both ventilation system failure and combustible gas detection should be provided.
5. Loose wirings touching other wirings should be separated, and strapped to equipment supports or walls.
6. Wiring of the Mercury float switch in the wet well should be changed to intrinsically safe relay.



CARLSBAD MUNICIPAL WATER DISTRICT

LIFT STATION SUMMARY FORM

**STATION:** Pointsettla

**Location:**

**Trunk Sewer:**

**Basin:** 10A & B

**A. Flows**

Capacity (gpm): 1,230 (Largest unit out of service)  
Projected Peak (gpm): 1,700

**B. Pumps**

Number: 2 installed, ult. 3  
Type: Centrifugal non-clog pumps with Mechanical Seals  
Manufacturer: Unknown  
Model No.: Unknown  
Serial Nos.: Unknown  
Rated Flow: 850 gpm  
Head: 247 (ft)  
Speed: 1,800 rpm  
Horsepower: 125 HP  
Comminutor: 5 HP

**C. Motors**

Engine and Generator Set: 250 kW

# **EXHIBIT D**

GL Side GL-GENERAL LEDGER WB-WORKING BUDGET

SELECT FUND: 511 ; ACCOUNT TYPE: XP

ORG KEY	Title	Director	FY	Qt	Pe
5116310	SEWER OPERATIONS		02	01	2
OBJECT	Description	Budget	Actual	Encumbrance	Balance
6100	REG SALARIES	499,100.00	44,334.97	0.00	454,765.03
6150	IOD	0.00	572.83	0.00	-572.83 OVR
6200	OVERTIME	53,280.00	4,387.09	0.00	48,892.91
6300	PARTTIME	0.00	0.00	0.00	
6400	TEMP HELP	8,000.00	0.00	0.00	8,000.00
6501	HEALTH INSUR	72,200.00	7,987.38	0.00	64,212.62
6510	LIFE INSURANCE	2,800.00	318.64	0.00	2,481.36
6520	VISION INSUR	0.00	70.37	0.00	-70.37 OVR
6530	MEDICARE	3,900.00	539.48	0.00	3,360.52
6653	FINAL VAC PAY	0.00	0.00	0.00	
6655	DISABILITY	7,800.00	804.40	0.00	6,995.60
6656	UNEMPLOYMENT	500.00	61.86	0.00	438.14
6657	WORKER'S COMP	14,460.00	1,205.00	0.00	13,255.00
6720	PERS	32,500.00	3,992.35	0.00	28,507.65
6741	DEF COMP MATCH	0.00	357.66	0.00	-357.66 OVR
7111	MACH /EQ RENT	31,080.00	0.00	0.00	31,080.00
7120	MISC LEASES	7,770.00	0.00	0.00	7,770.00
7211	COMMUN EQ MAINT	0.00	0.00	0.00	
7220	VEHICLE MAINT	0.00	0.00	0.00	
7230	MNR BLDG MAINT	0.00	0.00	0.00	
7241	ASPHALT REPAIRS	20,000.00	0.00	0.00	20,000.00
7435	ADMINISTRATIVE	0.00	0.00	0.00	
7490	MISC PROF SERVIC	52,000.00	0.00	54,720.00	-2,720.00 OVR
7500	ENCINA SERVICES	2,303,706.00	0.00	0.00	2,303,706
7550	MISC OUTSIDE SER	227,360.00	730.00	0.00	226,630.00

GL Side GL-GENERAL LEDGER WB-WORKING BUDGET

SELECT FUND: 511 ; ACCOUNT TYPE: XP

ORG KEY Title Director FY Qt Pe  
 =====  
 5116310 SEWER OPERATIONS 02 01 2

OBJECT	Description	Budget	Actual	Encumbrance	Balance
7556	MISC SERVICES	0.00	0.00	0.00	
7558	UNIFORM MAINT	2,220.00	51.31	0.00	2,168.69
7710	ADS AND PUBLISHI	0.00	0.00	0.00	
7711	DUES & SUBSCRIP	3,330.00	0.00	0.00	3,330.00
7712	BOOKS/PUBLIC	0.00	0.00	0.00	
7715	PRINTING	13,875.00	0.00	0.00	13,875.00
7720	POSTAGE	24,420.00	0.00	0.00	24,420.00
7725	OFF SUPP	1,110.00	0.00	0.00	1,110.00
7730	SOFTWARE	13,519.56	0.00	13,519.56	*EQ
7731	MISC COMP HARDWR	0.00	0.00	0.00	
7750	HEAT AND LIGHT	119,350.00	7,517.57	0.00	111832.43
7751	TELE & COMM	15,540.00	0.00	0.00	15,540.00
7752	WASTE DISPOSAL S	0.00	0.00	0.00	
7753	WATER	5,550.00	461.95	0.00	5,088.05
7801	BUILDING MAINT	2,775.00	0.00	0.00	2,775.00
7821	PARTS-EQUIP	30,274.03	0.00	2,524.03	27,750.00
7830	ROCK/MINERAL	20,618.81	0.00	618.81	20,000.00
7850	SMALL TOOLS	3,885.00	0.00	0.00	3,885.00
7851	SAFETY EQUIP	8,880.00	181.82	0.00	8,698.18
7853	METERS/FITTINGS	0.00	0.00	0.00	
7857	PERS PROT EQUIP	0.00	0.00	0.00	
7880	GAS AND OIL	0.00	0.00	0.00	
7899	MISC SUPP	50,932.51	874.09	10,692.51	39,365.91
8130	TRAINING/TR TRVL	3,000.00	70.00	0.00	2,930.00
8500	DEPRECIATION	1,443,000.00	0.00	0.00	1,443,000

GL Side GL-GENERAL LEDGER WB-WORKING BUDGET

SELECT FUND: 511 ; ACCOUNT TYPE: XP

ORG KEY Title Director FY Qt Pe  
 =====  
 5116310 SEWER OPERATIONS 02 01 2

OBJECT	Description	Budget	Actual	Encumbrance Balance
8520	CONFERENCE TRVL	2,000.00	0.00	0.00 2,000.00
8522	MISC MEALS/MILES	2,000.00	0.00	0.00 2,000.00
8700	CONTINGENCIES	33,435.00	0.00	0.00 33,435.00
8810	VEHICLE MAINT	50,027.00	3,800.00	0.00 46,227.00
8811	VEHICLE REPLACE	36,700.00	3,000.00	0.00 33,700.00
8830	GENERAL LIAB	22,090.00	1,840.83	0.00 20,249.17
8860	INFO TECH	56,080.00	4,673.33	0.00 51,406.67
8890	MISC INTERDEPT	155,840.00	12,986.67	0.00 142,853.33
8892	UTLTY BILLING CB	157,820.00	13,151.67	0.00 144,668.33
8910	FISCAL AG FEES	2,775.00	0.00	0.00 2,775.00
8911	ARBITRAGE	0.00	0.00	0.00
9020	CAP-COMP EQ	47.60	0.00	47.60 *EQ
9022	CAP-OTHER EQ	53,452.13	0.00	4,402.13 49,050.00

\*\* Total Expense Accounts \*\*  
 5,671,002.64 113,971.27 86,524.64 5,470,507 \*\*

GL Side GL-GENERAL LEDGER WB-WORKING BUDGET

SELECT FUND: 511 ; ACCOUNT TYPE: XP

ORG KEY	Title	Director	FY	Qt	Pe
**GRAND**	**Grand Totals**				

OBJECT	Description	Budget	Actual	Encumbrance	Balance
		6,345,502.64	170,179.60	86,524.64	6,088,798 **
	**** GRAND TOTAL EXP ACCTS ****				

**ENGINE WATER POLLUTION CONTROL FACILITY**

34891	BUILDING IMPROVEMENTS	SEWER CONN	1,787,249	510,799	182,515
34111	CAPITAL ACQUISITIONS - UNIT I	SEWER CONN	3,290,986	357,670	122,230
36691	CAPITAL PLANNING /SERVICES	SEWER REPL	1,655,512	57,566	190,892
	COGENERATION REHABILITATION	SEWER REPL	581,447		
36681	FLOW EQUALIZATION PROJECT	SEWER CONN	5,646,518	159,310	73,486
	PHASE IV EXPANSION - DEBT SERVICE	SEWER CONN	13,082,183		
38071	PHASE V EXPANSION	SEWER CONN	11,682,762	87,886	701,973
38061	PHASE V EXPANSION - INTERIM CAPACITY	SEWER CONN	222,298	129,029	93,269
34491	PLANT REHABILITATION	SEWER REPL	2,983,947	1,093,309	327,608
36701	PUMP STATION INTERFACES	SEWER REPL	42,849	25,000	636
36661	TECHNOLOGY MASTER PLAN	SEWER CONN	1,160,942	113,705	227,515

**SEWER COLLECTION SYSTEM**

35811	AVENIDA ENCINAS GRAVITY SEWER	SEWER REPL	175,000		
33221	BUENA VISTA LIFT STATION	SEWER CONN	502,132	245,211	256,921
	BUENA VISTA LIFT STATION PUMP ADDITION	SEWER CONN	233,000		
	CARLSBAD TRUNK SEWER REACHES VCT1A, VCT1B, VCT1C (SB)	SEW BENEF	455,000		
34941	CHINQUAPIN SEWAGE LIFT STATION	SEWER REPL	450,000	446,013	3,987
36224	FARADAY AVENUE - ORION TO MELROSE SEWER	SEWER REPL	110,200	110,200	
34951	FOREST GRAVITY SEWER	SEWER REPL	800,000	19,652	280,348
36561	FOXES SEWAGE LIFT STATION UPGRADE	SEWER REPL	2,185,000	2,121,764	63,236
NEW	HOME PLANT LIFT STATION	SEWER REPL	285,000		
	LA COSTA MEADOWS SEWER EXTENSION	SEWER REPL	175,000		
	LA GOLONDRIA SEWER EXTENSION	SEWER REPL	150,000		
	NIGHTSHADE GRAVITY SEWER EXTENSION	SEWER CONN	150,000		
35371	NORTH AGUA HEDIONDA INTERCEPTOR REHABILITATION	SEWER REPL	1,487,600	60,483	589,517
NEW	NORTH AGUA HEDIONDA INTERCEPTOR REHAB - EL CAMINO RE	SEWER REPL	720,000		
	NORTH AGUA HEDIONDA TRUNK SEWER REACH NAHT1A	SEWER REPL	1,533,200		
35381	NORTH BATIQUITOS INTERCEPTOR REHABILITATION	SEWER REPL	1,000,000	928	399,072
39091	NORTH BATIQUITOS SEWAGE LIFT STATION MODIFICATIONS	SEWER REPL	332,000		
3391	PALMER WAY SEWER EXTENSION	SEWER REPL	125,000	70,472	54,528

PROJECT JOB KEY	PROJECT TITLE	FUND	TOTAL BUDGET	PRIOR EXP/ENC	BALANCE FORWARD
38101	POINSETTIA LANE SEWER RELOCATION	SEWER REPL	400,000	7,740	392,260
NEW	POINSETTIA SEWAGE LIFT STATION ODOR/NOISE ABATEMENT	SEWER REPL	221,800		
34511	SEWER ACCESS HOLE REHABILITATION	SEWER REPL	2,800,000	73,322	726,678
38081	SEWER CONNECTION FEE UPDATE	SEWER CONN	15,000	5,851	9,149
38401	SEWER LIFT STATION REPAIRS AND UPGRADES	SEWER REPL	235,380	207	179,793
34521	SEWER LINE REFURBISHMENTS/REPLACEMENT	SEWER REPL	7,850,000	642,959	907,041
NEW	SEWER MASTER PLAN UPDATE	SEWER CONN	181,000		
33241	SEWER MONITORING PROGRAM	SEWER CONN	549,075	26,931	142,144
35831	SOUTH AGUA HEDIONDA INTERCEPTOR PHASE II	SEW BENEF	5,561,495	1,381,512	2,013,983
	SOUTH AGUA HEDIONDA INTERCEPTOR PHASE II (VISTA)	OTHER	610,000		
38281	SOUTH AGUA HEDIONDA INTERCEPTOR PHASE III	SEW BENEF	2,100,000	417,901	582,099
	SOUTH AGUA HEDIONDA INTERCEPTOR PHASE III (VISTA)	OTHER	600,000		
38551	VISTA/CARLSBAD INTERCEPTOR - PAVEMENT OVERLAY	TRANSNET-LOC	695,880		695,880
34921	VISTA/CARLSBAD INTERCEPTOR AGUA HEDIONDA LIFT STATION	SEWER CONN	6,250,000	83,825	266,175
31821	VISTA/CARLSBAD INTERCEPTOR REACH VC5A, 5B TO VC11A	SEWER CONN	12,223,433	2,424,733	9,798,700
31822	VISTA/CARLSBAD INTERCEPTOR REACH VC5A, 5B TO VC11A	SEWER REPL	702,020		702,020
	VISTA/CARLSBAD INTERCEPTOR REACH VC11B	SEWER CONN	2,900,000		
	VISTA/CARLSBAD INTERCEPTOR REACH VC13 TO VC15	SEWER CONN	10,200,000		
NEW	VISTA/CARLSBAD INTERCEPTOR REHAB REACHES 1 THROUGH	SEWER REPL	327,075		
	<b>SUBTOTAL SEWER PROJECTS</b>		<b>107,436,783</b>	<b>10,673,978</b>	<b>19,983,655</b>

	1,093,935						
144,543	124,050	124,050	124,050	124,050	657,868	1,512,475	
112,099	112,099	112,099	112,099	52,101	276,135	630,422	
					259,016	322,431	
2,542,735					2,870,987		
942,161	936,199	936,256	939,581	936,394	4,871,045	3,720,547	
	7,467,810					3,435,093	
68,987	74,430	74,430	74,430	74,430	394,479	803,844	
17,013							
					375,127	444,595	
							175,000
							233,000
							100,000
							355,000
							500,000
	35,000	250,000					
		50,000	125,000				
		50,000	100,000				
		50,000	100,000				
	837,600						
100,000	620,000						
	158,000	1,375,200					
							600,000
34,800	297,200						

YEAR 1 2001-2002	YEAR 2 2002-2003	YEAR 3 2003-2004	YEAR 4 2004-2005	YEAR 5 2005-2006	YEAR 6-10 2006-2011	BUILDOUT 2011 +
	21,700	200,100				
100,000	100,000	100,000	100,000	100,000	500,000	1,000,000
55,380						
300,000	300,000	300,000	300,000	300,000	1,500,000	3,300,000
181,000						
		20,000	20,000	20,000	100,000	220,000
						2,188,000
						610,000
						1,100,000
						600,000
		769,380	5,130,840			
300,000	2,600,000					
		500,000	4,700,000	5,000,000		
327,075						
5,223,793	14,778,023	4,911,495	13,200,800	6,961,975	11,837,657	19,865,407

# **EXHIBIT E**

obtaining a permit from the city pursuant to Chapter 13.10, and without having first paid all fees required by this title; and no substance shall be placed, discharged or disposed of in the sewer system except substances of waste materials originating on the premises to which a sewer connection permit has been issued. (Ord. 7060 § 1 (part), 1980)

**13.04.050 Restrictions relating to use of public sewers.**

(a) No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, unpolluted industrial process water, roof runoff, subsurface drainage, or any waters from an uncontaminated cooling system, swimming pool, decorative fountain or pond, into any public sewer or any private sewer which is connected to the public sewer without written permission in conformance with adopted regulations.

(b) No person shall enter, obstruct, uncover or tamper with any portion of the public sewer, or connect to it, or dispose anything into any sewer and/or sewer manhole without the written permission of the city engineer.

(c) No person or party shall remove or demolish any building or structures with plumbing fixtures connected directly or indirectly to the public sewer without first notifying the city engineer of such intention. All openings in or leading to the public sewer line or lines caused by such work shall be sealed watertight and inspected by the city engineer before being backfilled.

(d) No person shall fill or backfill over, or cause to cover, or obstruct access to, any sewer manhole.

(e) No person shall erect any improvements, structures, or buildings over public sewers without the written permission of the city engineer.

(f) Except as hereinafter provided in this section, no person shall discharge or cause to be discharged any of the following described substances, waters or wastes into any public sewers:

(1) Liquid or vapor having a temperature

higher than one hundred forty degrees Fahrenheit;

(2) Water or waste which may contain more than 200 mg/l concentration of fats, oils, or grease or more than thirteen pounds of such substances per day after pretreatment by a grease interceptor, whichever is less, or containing substances which may solidify or become viscous at temperatures between thirty-two degrees and one hundred fifty degrees Fahrenheit;

(3) Gasoline, benzene, naphtha, fuel oil, or other flammable or explosive liquid, solid or gas;

(4) Toxic, noxious or malodorous liquid, solid, or gas deemed a public hazard and nuisance;

(5) Garbage that has not been properly shredded to a size of one-fourth inch or less so that all particles will be carried freely under normal flow conditions in the public sewers;

(6) Ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, paunch manure, paper substances or normally dry, solid wastes capable of causing obstruction to the flow in or damage to sewers or other interference with the proper operation of the sewerage works;

(7) Water or wastes having a pH lower than 5.5 or higher than 9.5 or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the sewerage works;

(8) Water or wastes containing any substance in sufficient quantity to discolor, injure, disrupt or interfere with the normal operation of any sewage treatment process, constitute a hazard to human or animal life, create a public nuisance, or significantly lower the quality of the receiving waters;

(9) Water or wastes containing suspended solids of such character or quantity that unusual attention or expense is required to handle such materials at a sewage treatment plant;

(10) Any unusual volume of flow or concentration of wastes constituting "slugs" as defined in subsection (21) of Section 13.04.010;

(11) Radioactive wastes or isotopes of such

# **EXHIBIT F**

DISK

# **EXHIBIT G**

**CITY OF CARLSBAD  
Municipal Water District**

**Sewer and Manhole Rehabilitation Project  
Summary Report**

**DRAFT**

**November 1998**

*Prepared by:*

**Montgomery Watson  
750 B Street, Suite 1610  
San Diego, California 92101**

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# Section 1

## Introduction

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### INTRODUCTION

This report presents the results of two sewer video inspections conducted by Precision Pipeline Services and Video Inspection Specialists, and the manhole inspection by Sancon Engineering for the City of Carlsbad, California. The Carlsbad Water District (District) provided Montgomery Watson (MW) with the television inspection project notebooks, mapping and videocassettes. Using this information, MW summarized the video inspection examinations into an electronic database spreadsheet. The database identifies and locates the problem areas for easy reference from the reports prepared by the two firms. This information was prioritized in terms of scheduling of any needed repairs.

Approximately 45 of the 115 miles of sewer pipeline within the system were examined by the video inspectors. The sewer lines were identified by District map sheets. Each video inspector firm was given designated areas to evaluate. The majority of the pipeline is 6-inch and 8-inch vitrified clay pipe; some of the pipeline was built as early as 1930.

The purpose of this report is to:

- Define the logic of the sewer database
- Present sewer deficiencies
- Discuss the nature of the problem
- Provide prioritization for repair schedule
- Recommend improvements and their estimated costs.

The arrangement of the summary report first discusses the sewer and manhole inspection database in Section 2. Throughout this section, the Sewer and Manhole Rehabilitation Database is referred. This database is provided as a separate document from the summary report. From the database, sewer and manhole problems were identified and prioritized in Section 3. A recommendation for repairs and cost estimate is presented in Section 4. Also included in this report, is Sancon's manhole summary report and prioritization, and sewer contractor submittal information, provided in the Appendix.

# Section 2

## Database

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### DATA PROCESSING

#### Report Review

The first part of this assignment was to review the reports by Precision Pipeline and Video Inspection Specialists to identify the format that each firm established in recording their sewer observations. Both firms used similar criteria in identifying each run and problem by listing the nearest street address, the entering manhole number, the pipe length with noted conditions, and the exiting manhole number. However, Video Inspection Specialists used their own manhole numbering system, which had to be correlated to the existing manhole numbers used by the District.

#### Sewer Database

Two databases were initially constructed from the report of each sewer inspector. The database was designed to supply all the information found in the inspector reports, to relate the information to the current District map sheet number and to easily identify sewer problems. The database provides the following information:

- Street Location
- District To/From Manhole Number
- Video Inspector Reference To/From Manhole Number
- Pipe Length and Diameter
- Sewer Deficiencies
- Comments

Since the date of the video inspections, the District's manhole numbering system has been modified. Therefore, the old manhole numbers used in the inspector's reports were converted to the District's new quadrant manhole numbers. The old manhole numbers are provided in the electronic database, along with the new manhole numbers. Use of the new, old and video inspector manhole numbers provide reference to obtain sewer information under any circumstance. The order of the database utilized the District's manhole mapping sheets. This allowed a logical ascending sewer pipeline location by area using the map sheet number then the quadrant manhole location within the sheet.

The two inspector databases were merged, edited and sorted according to map sheet number and new manhole number. The combination of the two inspector databases and any correcting edits form the master sewer database. From the master list, a sewer database and an unidentified sewer list was established. Those sewer runs that could not be determined by MW and the District were removed from the sewer database.

The sewer database is reported in two modes, sewer deficiencies and comments. The first section of the database identifies sewer problems from the reports into categorized groups:

- Cracks
- Root Intrusion
- Grease
- Damaged Pipe
- Blocked Pipe
- Infiltration/Heavy Flow
- Flat Area

For each run, the deficiencies were identified by a check box, as shown in the Sewer and Manhole Rehabilitation Database under Sewer Database. The purpose of the check box is to provide a way of sorting the sewer deficiencies so that a particular problem or sets of problems could be evaluated and prioritized for the locations. A Sewer Deficiencies Summary Sheet is provided at the beginning of the Sewer and Manhole Rehabilitation Database as a quick reference of all the sewer problems for every map sheet.

The second part of the database is a comment section. This is the last column in the electronic database and follows sewer database in the Sewer and Manhole Rehabilitation Database under Sewer Comments. Sewer problems and the location in linear feet along the pipe reach where the problem was discovered are defined under comments. This section is useful because it's an accumulation of all observations from the sewer inspection reports for the entire sewer line.

When the inspector reports were joined, all duplicate runs were eliminated by combining all reported information for the same run into one line of the master database. Any references that could not be located by new, old, or Video Inspection Specialist manhole number were removed from the master database and placed in an Unidentified Location Table. The list of undefined runs is 23 out of 805, or 3 percent. The Unidentified Table is also composed of the same sections, a deficiency section followed by a comment section, and can be found following the sewer database and sewer comment sections in the Sewer and Manhole Rehabilitation Database.

### **Manhole Database**

A hard copy of the Inspection of Existing Manhole Summary Report by Sancon in June of 1994 is provided in Appendix A of this report. An electronic master manhole database was developed by MW using the information provided in the summary report. Similar to the sewer database, the master manhole database was separated into a manhole database and an unidentified list.

The manhole condition and comments is provided in the Sewer and Manhole Rehabilitation Database under Manhole Database. Each manhole was evaluated for existing condition and structural integrity, summarized by five categories:

- Frame/Cover
- Grade Ring
- Steps
- Walls
- Base

Sancon rated each manhole by excellent, good, fair, corroded, poor and very poor for every category. A comment section was also provided.

The inspector provided the street address along with an independent manhole numbering system. Therefore, like Video Inspection Specialists, MW found the majority of the manholes evaluated and provided the modified District map sheet and manhole number equivalent to the inspector manhole number. Of the 327 manholes examined, 11 were not identified. The list of unidentified manholes is provided at the end of Manhole Database in the Sewer and Manhole Rehabilitation Database.

# Section 3

## Prioritization

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### ANALYSIS

#### Prioritization of Sewer Deficiencies

The District advised MW to help classify the critical and less critical sewer deficiencies for sewer rehabilitation prioritization. The problems were rated on the direct affects of sewer flow, on the ease of repair and the period of time it would take to solve the problem. Of the seven sewer deficiency categories, the following three conditions were found most immediate:

- Roots
- Grease
- Debris

Simple techniques can be used to eliminate these problems. The sewer line can be rehabilitated using high-pressure water (jetting), and/or root cutting. Each process can be used with or without chemicals. Jetting removes blockages and possibly light roots by the turbulent action of high-pressurized water through a specially designed nozzle that scours the sewer line. Hydrowashing with chemicals can be used to kill roots and dissolve grease. For root removal and grease buildup, root cutting with and without chemicals can establish a clear sewer line and remove debris. The root cutting technique can be a circular blade the size of the pipe diameter or slightly smaller if obstructions (i.e. protruding laterals) are found or a type of hammer that pounds through blockages. These techniques may be conducted by District staff or contracted out to companies that specialize in these particular sewer problems.

#### Sewer Deficiencies

In order to evaluate the areas that contain the three high priority sewer problems of roots, grease and debris, an electronic sort was conducted and compiled in **Table 3-1**. The first column of the table presents the District map sheet number in ascending order. For each District map sheet, the total lengths to be cleaned for heavy and light roots, grease and debris were summarized. The table lists all the examined sewer areas within the inspectors evaluation. If a root ball was noted, it was considered as heavy roots and is added into the total of each sheet.

**TABLE 3-1**  
**Pipe Deficiencies by District Map Sheet**

Map Sheet	Heavy Roots (ft)	Light Roots (ft)	Grease (ft)	Debris (ft)
4D	1,785	990	300	675
5C	3,327	3,390	906	150
5D	280	5,339	0	0
6C	0	771	0	0
9A	1,554	201	0	0
9B	3,139	3,261	1,699	892
9C	927	0	0	0
9D	1,425	3,786	2,697	750
10B	0	5,929	0	0
10C	5,423	5,259	300	267
10D	289	3,338	233	0
11A	292	2,345	0	0
11C	1,239	6,204	0	0
15B	3,352	1,480	0	1,127
15D	810	199	0	0
16A	2,283	5,260	272	1,614
16B	340	4,166	0	0
16C	2,446	3,487	0	350
16D	701	2,265	0	0
17A	453	2,368	0	211
17C	0	1,047	0	0
17D	0	1,774	0	0
18C	0	320	0	0
21B	0	0	0	0
21D	0	0	0	0
22B	0	665	0	0
27A	225	518	0	150
27D	1,593	620	0	0
<b>Totals</b>	<b>31,883</b>	<b>64,982</b>	<b>6,407</b>	<b>6,186</b>

This table provides the information used to prioritize the sewer lines. Additionally, it shows a comparison between map sheets and types of problems. There are several problems identified in each sheet, some of which are within the same sewer line. This is important to recognize because it is possible to clean the sewer line only once for all the sewer deficiencies.

### Prioritization for Rehabilitation

The sewer problems identified may restrict flow. The most apparent is a heavy root or root ball, but grease buildup and debris could cause a significant problem with conveyance. Light roots are recognized as a potential problem, but are considered a less critical item compared to the other sewer problems.

Using Table 3-1, the subsequent tables were constructed to evaluate each sewer deficiency separately. This step provides separate attention to those areas with significant damage from each priority sewer deficiency. The District map sheets are prioritized by the amount of cleaning required.

Table 3-2 presents the priority list for heavy root intrusion.

**TABLE 3-2**  
**Heavy Root Removal Prioritization**

Priority Order	Map Sheet	Heavy Root Removal (ft)
1	10C	5,423
2	15B	3,352
3	5C	3,327
4	9B	3,139
5	16C	2,446
6	16A	2,283
7	4D	1,785
8	27D	1,593
9	9A	1,554
10	9D	1,425
11	11C	1,239
12	9C	927
13	15D	810
14	16D	701
15	17A	453
16	16B	340
17	11A	292
18	10D	289
19	5D	280
20	27A	225
	Total	31,883