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CITY OF SACRAMENTO
CALIFORNIA

OFFICE OF THE
CITY MANAGER

CITY HALL
915 I STREET - 95814
(916) 449-5704

November 20, 1980

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: Communications Master Plan - Fire Alarm Box Retention and Communication Center Location

SUMMARY

On March 4, 1980 the City Council approved the Communications Master Plan submitted by the consultant, Fieler and Associates. Authorization was given to the architect (Marian J. Varner & Associates) to proceed with design work for construction of a Communications Center. The City Council tentatively identified Winn Park as the site for the center. Final approval of the site was deferred until comments were received from neighborhood residents.

This report examines communication center locations and retention of the Gamewell Fire Alarm Box System. It recommends that the existing fire alarm boxes be retained but not expanded and that the City Engineer be directed to perform an engineering and environmental review of the Sacramento Water Treatment Plant as the site for the new Communications Center. New development should be served by the more modern radio alarm box systems.

BACKGROUND

The City Council reviewed and approved the final Communications Master Plan submitted on March 4, 1980. At the same meeting the City Council also authorized the consultant to begin the second phase of the Master Plan which was to proceed with the design and construction of the Communications Center.

Subsequent work by the architect, the communications consultant (Ken Fieler), the City Communications Task Force and comments from two community meetings, identified two key issues: retention or elimination of the City's existing fire alarm boxes and the location of the Communications Center in Winn Park or some less disruptive location.

The following is a chronology of events after the March 4, 1980 Council approval:

Chronology of Significant Events Following the March 4, 1980 Council Approval

1.	March 13, 1980	First meeting with the architect and Ken Fieler, the communication consultant. Authorization was given to proceed with the design of the Communications Center.
2.	April 3, 1980	Concept meeting with the architect to review alternative sketches of the proposed communications building.
3.	May 8, 1980	Final concept meeting with the architect to review the alternative schematic building designs.
4.	June 5, 1980	First community meeting with Councilwoman Anne Rudin, City staff, and Winn Park neighborhood residents - Subject: schematic designs of the proposed Communications Center and location.
5.	June 11, 1980	City staff reviews input from the first community meeting with Winn Park residents.
6.	June 26, 1980	Staff meeting to review alternative for designs of the Communications Center building.
7.	July 1, 1980	Task force meeting to prepare for July 17th community meeting.
8.	July 17, 1980	The second community meeting with the Winn Park neighborhood residents to review their concerns and bring the residents up-to-date on the latest changes to the communications plan.

The two community meetings with the Winn Park neighborhood residents exposed serious neighborhood opposition to any alteration or construction in Winn Park.

A second closely related issue concerned the effectiveness of the current fire alarm box system.

Retention of the Present Gamewell Fire Alarm Box System

The issue of maintaining the present fire alarm system has been previously examined (see Attachment A and B). Attachment C is the most recent report on the issue by Joe Yee, Harry Powell, and Fire Chief William Powell to the Communications Task Force. The following analysis sets forth the major factors effecting elimination or retention of the system. The comparison argues persuasively that the City should keep the Gamewell Alarm System.

Advantages

1. Provide a back-up system if the telephone is out of service for any reason.

2. The present system is in good operating condition.

3. Most alarm boxes are located in areas normally not occupied at night, consequently there are no residents to report fires during this period. Private alarm boxes and systems for schools and public buildings are connected to the Gamewell Box System and give an automatic notification of fire. Also, persons passing by will be able to use the fire alarm boxes to report fires.

4. Without a back-up alarm system, higher fire losses can be expected and fire insurance rates would increase.

5. Ken Fieler, communication consultant, recommended the retention of the existing Gamewell Alarm Box System until a radio alarm box system could be phased in over an extended period of time.

6. If the Gamewell System is abandoned, all fire alarm boxes, hardware, lines and poles must be dismantled. The estimated cost to do this would be approximately $1 million.

7. Although a high percentage of false alarms were received from alarm boxes (2468 out of 2733 were false last year), 265 calls were for real fire incidents. For example, one incident involved a 3 alarm fire at a warehouse at 1236 C Street where the box alarm was the only report received.

Disadvantages

1. Only 10% of all calls received via the Gamewell Box Alarm System during 1979 were real alarms; 90% of the calls were false alarms.

Total Calls	2,733
False Alarms	2,468
Real Fire Alarms	265

2. Present maintenance cost for the system for 1980-81 is approximately $100,000. This could be deleted if the Gamewell system were dismantled or abandoned.

Location of the New Consolidated Communication Center

If the Gamewell Fire Alarm Box System is retained, then the policy calling for discontinuance of new Gamewell Fire Box installation in residential areas and phasing-in radio alarm boxes in commercial or industrial areas should be reaffirmed. The cost of installing new radio alarm boxes should be paid by the developers.

The following table summarizes key factors effecting the location of the Communications Center building.

ALTERNATIVE CONSOLIDATED COMMUNICATION CENTER SITES

	Winn Park	Alternative 1 Sacramento River Treatment Plant	Alternative 2 American Treatment Plant	Alternative 3 Florin Reservoir Site	Alternative 4 Meadowview Plant Site
Basic Building Construction Cost	Same for all Alternatives	Same	Same	Same	Same
Demolition of Alarm Station	$5,000	-0-	-0-	-0-	-0-
Land Acquisition	None	None	None	None	Must be negotiated with County Sanitation District
EIR or Negative Declaration Required	E.I.R.	N.D.	N.D.	N.D.	N.D.
Landscaping Cost	Major - Added cost + $20,000	Minor	Minor	Minor	Minor
Site Grading Cost	Minor	---	---	---	---
Parking Problems	Yes	No	No	No	No
Location close to Center of City	Good	Good	Good	Fair	Poor
Disruption of Site Use or Operations During Construction	Major Would reduce availability of park space during construction	Minimum Disruption	Minimum Disruption	Minimum Disruption	Minimum Disruption
Additional Cabling Cost from alarm station to new location	Minimal	Minimal	Major	Very Major	Greatest Cost
Additional Hardware cost necessary to support unit converter	-0-	$54,000	$54,000	$54,000	$54,000
Cost of removing existing Gamewell alarm boxes	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Removal cost can be phased over X Years	10 years or more	10 years or more	10 years or more	10 years or more	10 years or more
Security	Fair	Very Good	Good	Good	Good
Installation cost for 553 new radio alarm boxes	$1,382,500	$1,382,500	$1,382,500	$1,382,500	$1,382,500

Alternative 1, the Sacramento River Water Treatment Plant, emerges as the most advantageous site for the consolidated Communication Center when considering additional cost only. It requires only a $54,000 additional expenditure for additional hardware over the Winn Park alternative offset by a $20,000 savings in landscaping and $5,000 in demolition costs.

The only overall disadvantage of Alternative 1 in comparison with the Winn Park location would be an additional $29,000 cost. That cost appears to be relatively modest to preserve a downtown park. This is especially evident if viewed in the perspective of the useful life of the Communications Center (20+ years).

Alternatives 2, 3 and 4 would all be much more costly options than either Alternative 1 or Winn Park. However, the City Engineer should complete an engineering and environmental study before the Sacramento River Treatment Plant is definitely selected as the site for the new Communications Center.

FISCAL DATA

The following outline of the two issues discussed above provides an analysis, in fiscal terms, of the relationship between retention of the Gamewell Fire Alarm Box System and the location of the Communications Center.

Decision 1	Expense	Savings
Abandon Gamewell Box Alarm System	$1,000,000	
Eliminate Gamewell Fire Box Alarm System Maintenance		$100,000/year
Decision 2		
All alternatives in this option - remove and replace 553 Gamewell Fire Alarm Boxes with 553 radio alarm boxes installations.	$2,382,500	
or		
Same as above except phase out over a 10-year period.	$ 250,000/ year approximately	
or		
Continue maintenance of Gamewell Fire Alarm Box System and add only new radio boxes for new commercial or industrial developments at the developer's expense.	$ 100,000/ year	
Winn Park Alternative		
Landscaping Costs	$ 20,000	
Demolition Costs	$ 5,000	

Alternative 1 - Sacramento River Plant

Additional Hardware Cost	$	54,000

Alternative 2 - American River Plant

Additional Hardware Cost	$	54,000
Additional Cabling Cost		Major

Alternative 3 - Florin Reservoir Site

Additional Hardware Cost	$	54,000
Additional Cabling Cost		More than Alt. 2 above

Alternative 4 - Meadowview Plant

Additional Hardware Cost	$	54,000
Additional Cabling Cost		More than Alt. 3
Acquisition Cost for Land (owned by County Sanitation District)		Must be negotiated

It appears clear that the City should not rely solely on the telephone as a fire-reporting device. Also, the dismantling and removal of the Gamewell Box System would be expensive - $1,000,000. Replacement of the system with radio boxes raises the cost to about $2,382,500.

Cabling for the Gamewell Fire Alarm System was not a serious consideration when the Communication Master Plan was approved in October 1978 because the Winn Park location would not require significant cabling. The cabling problem arose when other potential sites were considered. The consultant was subsequently able to find a way to convert the Gamewell System signals so that two pairs of dedicated existing lines could be used rather than cabling if the Center is located at the Sacramento River Treatment Plant. All but one of the alternative sites would require considerable additional cabling cost.

RECOMMENDATION

It is recommended that the City Council:

1. Retain the Gamewell Fire Alarm Box System for the immediate future.
2. Provide for radio alarm boxes in new commercial industrial development at developer expense.
3. Approve the Sacramento Water Treatment Plant as the best site for the new Communication Center pending a final engineering and environmental review.
4. Instruct the City Engineer to complete an engineering and environmental review of the Sacramento Water Treatment Plant for the new Communication Center.

Respectfully submitted,

William R. Redmond

William R. Redmond
Senior Management Analyst

Recommendation Approved:

Walter J. Slipe

Walter J. Slipe, City Manager

December 1980

ATTACHMENT A

CITY OF SACRAMENTO

DEPARTMENT OF FIRE
915 "I" STREET SACRAMENTO, CALIF. 95814
CITY HALL - ROOM 3 TEL. (916) 449-5267

WILLIAM R. POWELL
FIRE CHIEF

June 23, 1978

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: FIRE ALARM BOX SYSTEM

As requested by the City Council this is a report on our fire alarm system. I apologize for the length of this report knowing how many reports you have been required to view however, I feel due to the complexity and impact of any change in this system that it was necessary.

BACKGROUND INFORMATION:

1. ALARM BOXES

The City of Sacramento presently has 551 Fire Alarm Boxes with 321 miles of wire and cable terminating at the Alarm Station at 1616 - 28th Street.

2. MASTER BOXES

Of these boxes, there are 87 boxes called Master Boxes. These boxes have a dual function in that besides being a box that a public can use, they are tripped by a fire alarm system in a nearby building. The following type of occupancies are connected to these Master Boxes:

Schools	45
City Buildings	7
County Buildings	2
Federal Buildings	2
State Buildings	11
Private Buildings	20
	87

3. DEPENDABILITY:

The boxes are installed on a looped circuit so that if a circuit is broken the alarm will still be transmitted on the other half of the circuit. Circuits are protected by lightning arresters. The power supply is backed up by a battery system and also an auxiliary generator. Manual tests of the power supply for box and dispatch circuits are made under constant electrical supervision to give prompt warning of conditions adversely affecting reliability. All street boxes are tested manually once every six weeks. Alarms are received by an audible device and a permanent visual recording device is provided for each box circuit. Alarm boxes are designed to transmit satisfactorily their codes even when up to four boxes are pulled at or about the same time. The first box will transmit; the second box pulled will run but will not transmit until the first box is finished, etc.

4. LOCATIONS:

Generally speaking a fire alarm box is located near the entrance to every school, hospital, nursing home, and place of public assembly. They are also located in the vicinity of any commercial, industrial or manufacturing business.

5. BOX TYPE

The modern wired telegraph type box is actuated by depressing a lever accessible through a small door. Depressing the lever starts a spring wound clockwork mechanism which transmits a code number by a rotation of a code wheel causing the circuit to open and close. As the code number transmitted is different for each box, the location of the box transmitting the alarm is definitely known.

6. ACCESSIBILITY OF PUBLIC TELEPHONES:

The public telephone system, widely used for reporting fires, performs a very valuable function. Telephones, however, are not always accessible for reporting fires. In business districts where stores and offices are closed at night, on Sundays, and holidays, telephones might not be accessible. A coin-operated telephone, regardless of location, is also not "accessible" to the person lacking the proper coin necessary to contact the operator.

7. DEPENDABILITY OF PUBLIC TELEPHONE SYSTEMS:

> Telephone circuits may be "swamped" during an extreme emergency or when the public telephone system may be inoperative because of strikes or storm conditions. Just a few months ago the south part of Sacramento was totally without phone service due to a storm condition. The only alarm system available was our fire alarm boxes. In a few years all of Sacramento's phone circuits will go through one cable to Concord to the phone companies computer for switching and then back through one cable. If the cable were damaged all of Sacramento could be out of phone service for a long period of time.

Some Cities are removing their fire alarm systems.

The one major problem with fire alarm boxes is the false alarm problem. During 1977 we received 2.249, some of which were unintentional. Some Cities are removing their systems completely, others are changing to radio alarm boxes which allows the dispatcher to talk to the person pulling the box to determine if it is a legitimate alarm.

As you can see there are a number of important buildings which tie into our system. I think however that the important thing to remember is that when the telephone system goes out of service, be it storm, vandalism, or earthquake the main source of reliability will be our alarm system.

Los Angeles City removed their system and the box which the last alarm was received from was kept for posterity. Ironically this box is reported to have sent the alarm for the explosion of a ship which completely destroyed a dock area at their port.

Until a better back-up system is available to the telephone system I would request that the fire alarm system be left intact.

Respectfully,

WILLIAM R. POWELL
Fire Chief

WRP/cc

APPROVED:

William H. Edgar
Assistant City Manager

CITY OF SACRAMENTO

ATTACHMENT B

DEPARTMENT OF FIRE
915 "I" STREET SACRAMENTO, CALIF. 95814
CITY HALL - ROOM 3 TEL. (916) 449-5267

WILLIAM R. POWELL
FIRE CHIEF

February 29, 1980

MEMORANDUM

TO : MR. BILL EDGAR, Assistant City Manager

FROM : WILLIAM R. POWELL, Chief

SUBJECT: DISCONTINUANCE OF FIRE ALARM BOXES

During the operations meeting of February 27, I was surprised to hear that consideration was being given to the elimination of our current fire alarm box system.

Although I have not been asked for input at this time, I feel it is important to have the following information available for consideration when discussing the discontinuance of the fire alarm box system:

1. There were 20,420 incidents reported to the Alarm Station during 1979. Of these, 16,845 were received by telephone; 2,731 were received by alarm box; 844 were received by other means.

   We have 553 total fire alarm boxes in Sacramento. Of these, schools are connected to 45; private enterprise (hospitals, etc.) to 20, City property 9, County 2, Federal 3, State 13, for a total of 91 auxiliary boxes.

2. The system, although old, has been evaluated by Insurance Services Office personnel as being in excellent condition due to proper maintenance. One of the reasons that many similar systems have been discontinued throughout the nation was due to poor maintenance; the system became too costly to bring up to standard.

3. The new Electronic Switching Service which is being developed by the telephone company is going to run through a trunk line to Concord from Sacramento (as reported by telephone company personnel). All calls will flow through this trunk. One failure (i.e.: Earthquake ground movement, damage due to construction equipment, sabotage, etc.), will put all of the phones in Sacramento out of service

4. Out fire alarm boxes are placed:

   a. In the older part of Sacramento.

b. In industrial and commercial tracts where phones are not available.

c. Near churches, schools and public buildings.

5. The telephone company is having trouble with vandalism of public telephones and are locating them inside complexes now, rather than outside. This impacts on reporting fires in commercial and industrial areas.

6. If an earthquake or major emergency impacted on this area, our alarm system and radio system would probably be the only method of communication.

7. During the winter of 1979, the south part of town was without phone service for one-half of a day due to a severe storm.

I do not feel that a good argument can be made to do away with the current street box alarm system when considering the above.

WILLIAM R. POWELL
Chief

WRP:nm

Attachment

ATTACHMENT C

CITY OF SACRAMENTO

DEPARTMENT OF FIRE
915 "I" STREET SACRAMENTO, CALIF. 95814
CITY HALL - ROOM 3 TEL. (916) 449-5207

WILLIAM R. POWELL
FIRE CHIEF

June 26, 1980

Memorandum

To: Bill Edgar, Assistant City Manager
Communications Task Force Members

From: Bill Powell Harry Powell Joe Yee

Subject: REASONS WHY EXISTING FIRE ALARM SYSTEM SHOULD NOT BE REMOVED

On June 11, 1980 we submitted to the Communications Task Force reasons why the existing fire alarm system should not be removed. We would like to further elaborate and expand on these reasons. Submitted herewith are our findings:

1. The present fire alarm system is in good operating condition. It has not caused excessive false alarms. It represents millions of dollars of City investments which should not be wasted or abandoned.

   The false alarms that are received are not caused by the system itself. The false alarm is an entire separate vandalism problem. Just to stop the false alarms is not a reason to do away with the fire alarm system. This is a police problem. Those responsible should be apprehended.

2. Its removal will decrease the effectiveness of the overall City fire reporting system. The system is far more valuable to the City than just the construction costs. We have the usage of telephone ducts, telephone and SMUD poles free of charge.

3. Its removal would cause the City to rely solely on telephone for fire reporting. This would be like putting all the eggs in one basket. The City would be without a fire reporting system if there was a telephone outage caused by storm, labor problems or other disaster.

   The City's fire alarm system is a 3-Fold system. This system is made up of a loop circuit system whereby if a conductor is broken on either side of the loop, the alarm will still be able to be transmitted to the Central Alarm Station by the other half of the circuit.

   For contrast, when one wire of a two telephone circuit is broken, communication will be lost. Telephone lines are trunk lines. A mishap can knock out a large area of the entire City. In the winter of 1979 the southern part of the City was out for one day due to a storm. Telephone circuits may be "swamped" during an extreme emergency. The only alarm system available then is fire alarm boxes.

City fire alarm circuits are protected by lightning arresters. The power supply is backed up by a battery system and also an auxiliary generator. Manual tests of the power supply for box and dispatch circuits are made under constant electrical supervision to give prompt warning of conditions adversely affecting reliability.

Alarm boxes are designed to transmit satisfactorily their codes even when up to four boxes are pulled at or about the same time. The first box will transmit; the second box pulled will run but will not transmit until the first box is finished, etc.

All the wire sizes are much larger than the telephone system; consequently they are not as susceptible to breakage as telephone lines. To be totally dependent upon the telephone system would not be to the City's advantage.

Most fire alarm boxes are located in commercial, industrial, on major arteries and at all schools which are not normally occupied at night, weekends or holidays. There are no residents in some of these areas to report fires during unoccupied periods. Private fire alarm systems connected to our boxes give us automatic notification of fire.

Removal of the fire alarm system will disconnect the following private fire alarm connects to the Central Fire Alarm Station:

- 45 Schools
- 20 Private Enterprizes, including Downtown Plaza, Tower Apartments, Sacramento Bee, Sacramento Union, 4 Hospitals, Southern Pacific, etc.
- 2 County Buildings
- 3 Federal Buildings
- 13 State Buildings

It would be a considerable expense to modify each connection for transmission of signal by telephone lines. Reoccuring lease line charges are costly.

The fire rating of the City would suffer. Insurance rates are based on fire losses and the fire losses can be reduced if early detection is available. Reduction of fire losses will reduce the insurance premiums which the taxpayer will pay.

The current plan is to place radio boxes in the outlying areas. To provide equal service throughout the City, the removed street boxes would be replaced with radio boxes. Latest cost estimate for a radio box is approximately $2,000 each. To replace 550 street boxes would cost approximately $1,100,000.

It will cost approximately $800,000 to $1,000,000 to remove the existing fire alarm system.

June 26, 1980
Bill Edgar

With all the statements in favor or retaining the existing fire alarm system none is more important than the reliability of this system verses the telephone system. This system will operate when all other systems are inoperable.

There is no other system available at this time that is more reliable than the existing fire alarm system in operation in the City today. Any type of box that is accessible to the public is equally susceptible to false alarms.

WILLIAM R. POWELL
Fire Chief

HARRY W. POWELL
Deputy Fire Chief

J. F. YEE
Chief Electrical Engineer

WRP:jp

ATTACHMENT D

COPY

FIELER & ASSOCIATES
COMMUNICATIONS CONSULTANTS

6903 Reseda Boulevard / Reseda, California 91335 / 213-343-2202

July 8, 1980

Mr. William Edgar
Assistant City Manager
City of Sacramento
City Hall
Sacramento, Ca. 95814

Dear Mr. Edgar:

This morning we communicated with Mssrs. Redmond, Yee and Powell relative to the existing Gamewell public fire alarm system. We were asked for guidance concerning possible abandonment or replacement of the system. This letter, therefore, will summarize our discussion and set forth our opinion on the matter:

1. The present Gamewell alarm system represents a major financial investment on the part of the City. The system performs extremely well and maintenance costs are minimal.

2. Although the majority of fire alarms are received via telephone, the telephone system has certain limitations which make it very desirable to have a secondary alarm network, such as the Gamewell system, to help fill gaps in the public telephone system. Some of the potential telephone system problems as we see them are:

   A. Citizens report that they frequently receive a busy signal before dialing all seven digits to report a fire. This indicates that switching equipment at the telephone exchange is overloaded. Under these circumstances, the municipal alarm system serves as a back-up system in the event the public cannot reach the fire alarm center due to telephone system overload.

   B. Because of vandalism, we understand that the telephone company has removed pay telephones from some areas of the city. Typically, these areas represent a high life loss potential in the event of fire. The municipal alarm system would permit reporting of fires in the absence of accessible telephones.

- continued -

C. Labor problems concerning telephone company personnel have, in some cities, resulted in interruption of telephone service. Under these circumstances, the municipal alarm system would continue to function because the wiring is independent from telephone company circuits.

D. Terrorist activities are on the rise throughout this country. Disruption of communications facilities could be a major goal of these elements. Inasmuch as city fire alarm circuits are independent from telephone circuits, damage to phone cables would not affect the municipal fire alarm system.

E. The city has experienced problems in the past when the public telephone system was disrupted by floods, earthquakes, high winds, etc. There have been no reported failures of the municipal fire alarm system under these circumstances to our knowledge.

3. Total replacement of a serviceable fire alarm system with radio type fire alarm boxes would represent a major cost to the city for new equipment, plus the cost of spare replacement parts and specialized test equipment.

4. Failure to have a municipal fire alarm system would result in demerits when the city is inspected by the Insurance Service Office. This could result in higher insurance costs if increased fire losses result from failure of the public's ability to report fires.

In summary, it is our opinion that the existing Gamewell alarm system can render many more years of reliable, economical service and should therefore not be considered as a candidate for replacement or abandonment. It can continue to provide very valuable back-up to the public telephone system and revert to a primary alarm medium in the event of telephone system failure.

If we can assist the City further in reaching a decision regarding the municipal alarm system, please feel free to call on us.

Very truly yours,
FIELER & ASSOCIATES

Kenneth E. Fieler

KEF/wlf
cc: Mr. Redmond
Mr. Yee
Mr. Powell
Mr. Varner

ATTACHMENT E

PROSPECTIVE SITES FOR COMMUNICATION CENTER