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NORTHEAST QUADRANT SPECIFIC PLAN

**ENVIRONMENTAL IMPACT REPORT
TECHNICAL APPENDICES**

SEPTEMBER 1994

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ENVIRONMENTAL SITE ASSESSMENT

PREPARED BY
ANDERSON CONSULTING GROUP

PRELIMINARY SITE ASSESSMENT

VAUGHN ROAD PSA
Dixon, Solano County, California

FILE NO. 3195-44



**ANDERSON
CONSULTING
GROUP**

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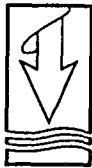
Prepared for:

**Wade Associates
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12 July 1993



**ANDERSON
CONSULTING
GROUP**

*Geotechnical and
Environmental
Engineering
Solid Waste
Management
Waste Reduction
and Recycling*

File No. 3195-44
12 July 1993

Wade Associates
2150 A Douglas Boulevard
Suite 220
Roseville, CA 95661

Attention: Brian Collett

Subject: Vaughn Road Property
Dixon, Solano County, California
PRELIMINARY SITE ASSESSMENT

Dear Mr. Collett:

The report of our preliminary site assessment (PSA) of the Vaughn Road Property in Dixon is attached. We completed this investigation under the terms of the contract of 18 May 1993 entered into by Anderson Consulting Group and Wade Associates.

Please call if you have any questions about the report, or if we can be of additional assistance.

Very truly yours,

ANDERSON CONSULTING GROUP

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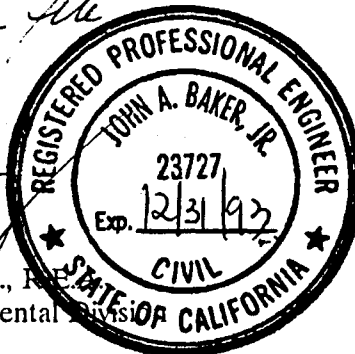


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1.0 SUMMARY

The property was located northeast of Vaughn Road and Highway 113 (N. First Street) in Dixon, Solano County, California. The site consisted of approximately 541 acres, and has a variety of land uses. These include businesses, residences, and fields.

There were five businesses on the property. They are: 1) the Dixon Livestock Auction Yard, 2) the Mistler Trucking Facility, 3) Bartholomew Enterprises, 4) the plumbing business, and 5) the former Budget Inn Property. With the exception of the fifth business, which has closed, all of these facilities handle hazardous materials. The following concerns were noted at these sites:

- There were two underground fuel storage tanks at the Dixon Livestock Auction Yard, which may be 40 years old, or older. We were told that the tanks were not used and are scheduled for removal in 45 days.
- We noted areas of soil staining from petroleum spillage in both the livestock yard, and the Mistler Trucking / Mistler Farms property .
- A trench containing garbage was noted on the Mistler Trucking/ Mistler Farms site. If hazardous materials (such as pesticide containers, or containers of used motor oil) were disposed of in this trench, soil and groundwater contamination may have resulted.
- Equipment for steam cleaning was noted on the Mistler Trucking / Mistler Farms Property, and at the Bartholomew Enterprises property. If steam cleaning has been done, automotive fluids from the vehicles could have infiltrated the soil in this area, resulting in soil, and possibly groundwater, contamination.
- A gas well was noted east of the Mistler yard area. If the well's use is to be discontinued in the future, it is important that the well be properly abandoned. Otherwise, petroleum products from the well may contaminate the shallow groundwater aquifers.
- Three underground fuel-storage tanks were removed from the Bartholomew Enterprises site in 1985: one 550 gallon tank with unleaded gasoline, one 550 gallon tank with leaded gasoline, and one 1,000 gallon tank with diesel fuel. This work was done before new regulations went into effect, so no regulatory official was onhand to witness the tank removals.

There were a total of eleven single-family residences on the property. The residences were equipped with garages, barns, and various outbuildings. It should be assumed that each of these properties may have at one time had underground tanks to store heating fuel and possibly vehicle fuels. Given the agricultural setting, it is also likely that these properties have been used to store and mix pesticides.

The fields on the site were being used to grow tomatoes, walnuts, almonds, hay, alfalfa, dry grains, and other miscellaneous row crops, as well as to graze sheep. A large number of pesticides may have been applied to these crops over the years.

The property was surrounded with commercial, industrial, agricultural, and residential development, including;

- a CalTrans maintenance yard;
- at least five closed service stations;
- a warehouse for Kragen Auto Parts;
- a closed cashew treating facility which had stored large quantities of anhydrous ammonia;
- the Dixon Canning Company; and
- Smith's Auto Repair.

Environmental investigations were underway at four of the five former service stations, and the CalTrans Yard. The extent of contamination at these sites has not been completely defined, but the information which is currently available does not indicate that the subject site has been adversely affected. The remaining businesses all handle hazardous materials, as would many of the large farms also located near the site.

One half mile north of the site was the Dixon Y Machine site. The State of California Department of Toxic Substances Control (DTSC) has investigated the burying of 55 and 5 gallon pesticide containers on this site. Sample analyses failed to consistently detect pesticide residuals in area groundwater.

2.0 ANALYSIS

There is the potential for contamination to exist on the following areas of the site:

- the underground fuel-storage tanks at the Dixon Livestock Auction Yard;
- the areas of soil staining;
- the trench containing garbage;
- the steam cleaning areas;
- the former underground fuel-storage tanks area at Bartholomew Enterprises;
- possible heating fuel and vehicle fuels tank sites at the residences;
- areas in which pesticides were mixed and stored; and
- areas with heavy pesticide application.

Contamination has been found at several surrounding properties and may be present at other properties. The government records we have reviewed do not prove that the subject site has been adversely affected by any of these sites.

Plans to develop a property for residential, hospital, school or other similar purposes may require a review by the State of California Environmental Protection Agency, if the site in question is located within 2,000 feet of a state or federally listed Superfund site ("Border Zone Property Law:" State of California Health and Safety Code Article 11 Sections 25220-25241). These regulations do not usually apply to proposed commercial, industrial and agricultural developments. However, based on our investigation, the subject property does not appear to exist within 2,000 feet of a Superfund site, and therefore should not qualify as a border zone property as defined by this statute.

3.0 INTRODUCTION

3.1 Site Description

This report summarizes the results of our Preliminary Site Assessment of the Vaughn Road Property. The property was located northeast of Vaughn Road and Highway 113 (N. First Street) in Dixon, Solano County, California. Figure 1 shows the location of the site. The site consists of approximately 541 acres.

The subject property was located in the portions of Sections 1, 6, and 12 of Township 7 North, Range 2 East, Mount Diablo Baseline and Meridian.

3.2 Scope of Investigation

To conduct this investigation, we examined:

- the site for visual signs of contamination;
- publicly accessible portions of the surrounding properties for evidence of contamination;
- aerial photographs of the region for historical evidence of contamination; and
- federal, state, and local hazardous material records for listings of the site or nearby properties.

We also:

- interviewed reachable property owners for insight into land use at and near the site; and
- consulted technical literature as needed.

Appendix A identifies and briefly explains the sources we have used to complete the investigation.

4.0 PREVIOUS WORK AT THE SITE

To the best of our knowledge, this site assessment is the first environmental investigation which has been done of the property.

5.0 RESULTS OF ACG INVESTIGATION

5.1 Physical Setting

Identifying the geologic and hydrologic (groundwater) conditions of an area were an important part of a preliminary site assessment. With this information, it is possible to get an idea where and how contaminants on a site might move. If contamination is found on the subject site, this information can help to design a more cost-effective sampling plan. If, on the other hand, contamination is found on a neighboring site, we can use this information to conclude whether the contaminants were likely

to move towards the subject site, and thus, be of concern.

The site is in the Central Valley, which is shaped like a long, linear, westwardly-tilting trough. The base of the trough is composed of granitic rocks. Over that is almost 3000 feet of marine sedimentary rocks, deposited when the valley was a portion of the Pacific Ocean floor. On top of the marine rocks lie thick deposits of alluvium (clay, silt, sand and gravel), eroded from the bordering mountain ranges. The alluvium covers the valley, giving it its unusually flat appearance. Flanking the Central Valley on the east and west are mountain ranges; to the west is the Sierra Nevada, and to the east are the Coast Ranges.

In the course of this investigation, we reviewed a number of reports summarizing leaking tank investigations in the area. According to these reports, the soil in the vicinity of the subject site consists of interbedded silty clay and silty sand. The depth to groundwater was measured to be between 20 to 35 feet. The groundwater flow was determined to be to the southeast. The nearest surface water is the intermittent Dudley creek, located about one mile south of the site.

5.2 Subject Property.

The walkover for this property was conducted on 22 June 1993.

The site was large and has a variety of land uses. For the purposes of this investigation, we have arranged our discussion of site conditions into three categories: 1) businesses; 2) single family residences; and 3) fields. Photographs of the site are included as Appendix D of this report.

BUSINESSES ON THE PROPERTY

There were five businesses on the property. They were: 1) the Dixon Livestock Auction Yard, 2) the Mistler Trucking Facility, 3) Bartholomew Enterprises, 4) the plumbing business, and 5) the former Budget Inn Property. The site conditions of each are summarized below. When available, we have also included summaries of Solano County Environmental Health Department information concerning each of the businesses.

1) Dixon Livestock Auction Yard

Site conditions. The auction yard was located east of Highway 113, and north of the Interstate 80 off-ramp at 8338 Auction Lane.

The auction yard consisted of a sheet metal structure with a concrete floor (part of which has been destroyed by fire), a number of covered and uncovered corals, a barn, a scale house, and a trailer serving as an office. The property surrounding the structures consisted of dirt roadways and gravel-paved parking areas.

Approximately half of the main building was destroyed by a fire. The existing half of the building contained a restaurant, its kitchen, and an arena. An outbuilding containing restrooms was located north of the main building.

Near the barn, located on the north side of the yard, were two fuel dispensers, and two tank fill pipes. The dispensers and fill pipes appeared to be 30 to 40 years old, or older. Also near the tanks were a number of 55 gallon drums, some of which contained what appeared to be used motor oil. We also observed a five gallon plastic bucket containing used motor oil and water, which had overflowed and stained the concrete pavement below. Near the dispensers was a vehicle lift rack, operated by an air compressor. The barn itself contained:

- various paint containers (none larger than 5 gallons);
- empty 55 gallon drums;
- five lead acid batteries on a wooden pallet;
- two gallon containers of Ace Hardware Brand Household Insect Control;
- five gallon buckets which were partially full of used motor oil;
- hand tools and hardware;
- various cardboard boxes;
- household appliances;
- air compressor.

Our office spoke with Mr. Nick Cammarota, owner of 138 acres of property, including the auction yard. Mr. Cammarota said that he purchased the property in 1988, and that he was not familiar with land usage before that time. He stated that the agricultural fields were leased and used to grow row crops, annuals, and biannuals such as sugar beets and tomatoes. He indicated that he had received bids to remove the two underground fuel tanks at the site, and that the work should be done within 45 days. He was not familiar with other practices at the livestock yard. Mr. Cammarota stated that, until early this year, a Christmas tree farm occupied a property south of the auction yard.

Aerial photographs of the auction yard and its surrounding property show the site had not changed significantly over the years.

County records. The site was equipped with two 550 gallon tanks, which were reportedly not used. The tanks were used to store unleaded and regular gasoline. Permit fees for the tanks have not been paid since 1987. There was no record of tank integrity (leak) testing. The District Attorney has been asked to follow up the unpaid fees. State law requires that a tank which has not been used for over one year be removed.

2) Mistler Trucking / Mistler Farms

The Mistler family operated a trucking business and a farm. A combination trucking facility and farmyard was located in the west-central portion of the property.

The property consisted of two partially enclosed barn structures, a house on stilts, an enclosed barn, a residence, and two mobile homes. At the time of the walkover, the barn was locked; no one was present on the property to gain access. Surrounding these structures were farm machinery, old inoperative trucks, and large stacks of hay.

In the yard were two pesticide trailers bearing the hazardous material identification number

"1993," which indicates they were used to store and apply herbicides. A small shed near the southern border of the property contained 1 and 5 gallon containers of: Malathion, herbicide activator, Hydrotex, Oil Surfactant Adjuvant, Antifreeze, boxes of MCPA, and Herbimax.

We noted three main areas of concern on this portion of the site. They were:

- **Tank area.** Along the southern border of the yard was an 8-10,000 gallon above-ground fuel storage tank. The tank's exterior was stained near its base, and smelled of diesel fuel. The tank was connected to two dispenser lines. A portion of one of these lines was buried beneath a dirt roadway. There was stained soil around and near the dispensers.

Nine 55 gallon drums, most of which were unlabeled, were grouped near the above-ground tank. All appeared to be empty. Some were stained with motor oil, and the soil beneath the drums was stained. One of the drums was labeled, "Ramos Oil Company Solvent UN 1255, 371-2570." The rest of the drums were unlabeled.

Three additional above-ground tanks were located on stands east of the large diesel tank. They were labeled: motor oil, tractor hydraulic fluid, and regular.

- **Trench containing garbage.** On the western edge of the yard was a large trench which appeared to have been used as a repository for garbage for a long time. The trench contained bags of garbage, various household materials, chairs, lumber, large amounts of brush, paint containers, rusted metal containers, unlabeled 5 gallon containers, large metal objects, kitchen appliances. If hazardous materials (such as pesticide containers, or containers of used motor oil) were disposed of in this trench, soil and groundwater contamination may have resulted.

- **Steam cleaning area.** Near the barn, we observed an area with motor-oil stained soil. Nearby were water hoses, and an air compressor. This would suggest the area may have been used to steam clean, or at least pressure wash, engines. There was no water collection system in this area. If steam cleaning had been done, automotive fluids from the vehicles could have infiltrated the soil in this area, resulting in soil, and possibly groundwater, contamination.

A gas well was noted east of the Mistler yard area. No other gas wells were noted on the site during the site visit. Signs indicate a product from the well flowed through an underground pipeline located on the northern side of the dirt road which connected the well with Pedrick Road.

We were unable to speak with Mr. Bob Mistler, owner of the subject site, as he did not return our calls.

Aerial photographs of the Mistler property show that the yard area has grown significantly since 1973. In the photographs from 1973 and earlier, the yard consisted of a barn, a residence and a few outbuildings. The trench containing garbage was not visible, nor was the gas well present.

County records. County lists indicate there is no file for this site.

3) Bartholomew Enterprises

Bartholomew Enterprises was a highway construction business. The business was located near the southeast corner of the property at 6831 Vaughn Road. The property consisted of a large sheet metal building, a masonry block building, and a residence.

The sheet metal building was locked at the time of the walkover, and no staff member was available to grant us access. However, from the building's exterior, we could observe the building contained vehicles, a 55 gallon drum of what appeared to be motor oil on a stand, and miscellaneous maintenance materials.

The masonry block building contained a portable steam cleaner. As noted in the preceding section, steam cleaning can be of concern since it discharges automotive fluids to the ground or to a collection system, and can cause soil and possibly groundwater contamination. Also present were a number of unlabeled five gallon containers.

The area surrounding the building contained:

- heavy machinery;
- an empty five gallon container of sodium hydroxide,
- several empty, unlabeled 55 gallon drums;
- a truck-mounted container bearing the hazardous material identification number "1203," which was identified as petrol.
- a five gallon container of Thompson's Water Seal;
- two five-gallon containers of Shell HD Clear Oil
- a five gallon container of kerosene.

We noted no fuel storage area, or vent lines from an underground fuel tank.

A worker from the neighboring business (discussed below) indicated that the small residence was occupied periodically by employees of Bartholomew Enterprises. Near the residence, we noted a large pile of firewood, some wooden pallets, miscellaneous household items, vehicle parts, a vehicle and a camper.

Our office spoke with Mr. Tom Atkinson of Bartholomew Enterprises about the site. Mr. Atkinson stated that Batholomew Enterprises bought the facility in 1985. At that time, it was also a roadway constuction business. He stated that the tanks which were removed were located near the masonry block building. The tanks were removed because they were in an awkward position, and were difficult to drive heavy machinery around. Mr. Atkinson said they had not farmed their portion of the property. An orchard used to exist south of the building, along Vaughn Road. Because Bartholomew Enterprises was not farming the property, the trees began to die from lack of water, and they were removed.

The building housing Bartholomew Enterprises was not visible in aerial photographs taken in or before 1973. A concrete pad was visible near the location in which the underground

tanks were reportedly located. This pad was visible in 1970 photographs also. Photographs of the area taken in 1966 and 1962 show the area to be a field.

County records. According to county files, the following underground fuel-storage tanks were removed from the site in 1985: one 550 gallon tank with unleaded gasoline, one 550 gallon tank with leaded gasoline, and one 1,000 gallon tank with diesel fuel. This work was done before new regulations went into effect, so no regulatory official was onhand to witness the tank removal, and inspect the excavation for evidence of soil or groundwater contamination which may have resulted from a tank leak.

The following information was provided about hazardous materials storage at the business:

- 25 gallons of sludges, 40 gallons of waste oil, and 2 gallons of battery acid were generated annually; these were stored onsite for up to two years.
- Solvents and spent oils recycled by a business referred to as "Clever."
- Usually stored on site: 550 gallons gasoline, 1000 gallons gasoline or diesel fuel, 1100 cubic feet of compressed oxygen and acetylene, 25 gallons paint, 110 gallons motor oil, 30 gallons gear oil, and 30 gallons grease.
- In June, 1992, Mr. Ken Williams of the Solano County Health Department conducted an inspection of the site. He instructed business owners to remove unlabeled drums and containers, clean and organize shops, and consolidate chemical areas. His notes from a follow-up inspection state this was done satisfactorily.

4) Plumbing business

This business was located directly north of Bartholomew Enterprises. The site contained a sheet metal building with concrete pads, and also an office trailer. Additional concrete pads were noted along the building's perimeter. An employee told ACG that the building was formerly occupied by two businesses: a tire business on the north end, and a paint business on the south.

The building was neat and well maintained. It consisted of several rooms flanked by wooden shelves, containing boxes of sorted and labeled plumbing parts. The floor of the building was in good repair, and had no drains. We saw no evidence of a former painting business, including any painting sheds or areas of staining.

Stored outside were porcelain bathtubs and fiberglass shower stalls. Also noted were: a 55 gallon drum of Ramos' Rotella T Oil; a 55 gallon drum of Arco Autokut Oil #250; a portable propane tank; and a pesticide trailer bearing the hazardous materials identification number "1993," for herbicides.

According to the employee noted above, the business has experienced some problems with its septic system. We noted a depression in the area where he indicated the septic tank was. We also noted some repair work was underway on sprinkler lines.

The plumbing business was located on property bought by Bartholomew Enterprises in 1985.

Our office spoke with Mr. Tom Atkinson of Bartholomew Enterprises about the site. He stated that the site was occupied for two years by a tire service and an auto repair facility. He stated that no paint business leased the site.

Aerial photographs of this portion of the site show that the buildings on the property were constructed after 1973. In 1973 photographs, four structures were located on the site, none of which correspond to the currently existing structures. The structures were larger, indicating that they were probably warehouses, barns, or similar structures. In photographs of the site taken in 1970, the area appears to have been recently developed. Photographs of the area taken in 1966 and 1962 show the area to be a field.

County records. County lists indicate there is no file for this site.

5) Former Budget Inn

This business has been demolished. The property it occupied was located north of the Dixon Livestock Auction Yard, southeast of the Highway 113 / Interstate 80 interchange.

At the time of the walkover, the former hotel property was fenced and locked. A sign and some asphalt pavement were noted through the fence. The site was covered with a thick growth of weeds. We noted a water well and a large water tank east of the fence, which may have serviced the inn when it was operational. The well's pump was electrical.

Aerial photographs of the inn taken in 1991 shown that it consisted of five structures. The inn appears unchanged in photographs taken in 1973, 1970, 1966, and 1962.

According to Mr. Nick Cammarota, owner of the neighboring property, the Budget Inn was financially unsuccessful and was therefore recently closed and demolished. We do not have a name or phone number for the property owner, and were therefore unable to discuss the property history with the owner.

County records. County lists indicate there is no file for this site.

RESIDENCES ON THE PROPERTY

There were a total of eleven single-family residences on the property. The residences were equipped with garages, barns, and various outbuildings. Given the size of the property, and the time required to evaluate the potential concerns at the businesses on the site, it was not possible to provide a detailed inventory of each of the residential properties. However, it should be assumed that each of these properties may have at one time had underground tanks to store heating fuel and possibly vehicle fuels. Given the agricultural setting, it is also likely that these properties have been used to store and mix pesticides.

The table below summarizes the residential properties:

| LOCATION | STRUCTURES NOTED | ITEMS OF NOTE (IF ANY) |
|--------------------------|---|---|
| North of auction yard | Double-wide mobile home | |
| North of auction yard | Small wooden house | |
| North of auction yard | Large wooden house and a sheet metal garage/ barn | |
| North of auction yard | Small wooden house and garage | Household debris dumped in roadway in front of house, including concrete mix, some tools, lumber, and an empty container of motor oil |
| South of auction yard | Small wooden house, garage/barn, large barn, and small barn | Above-ground fuel storage |
| South of auction yard | Wood house, stable being used for storage | Propane tank, unlabeled 55 gallon drum |
| East of Mistler Trucking | Single-wide mobile home, and old wooden barn | Propane tank |
| Vaughn Road | House, mobile home, garage | Propane tank |
| Vaughn Road | Small wooden house, with a single car garage | |
| Vaughn Road | House, trailer, barn, and sheet metal outbuilding | |
| Pedrick Road | House and barn | |

We attempted to contact each of the owners of the residential properties by telephone; however, we were able to reach only two. We spoke with Mr. William Elam, owner of the property at 6805 Vaughn Road, about land usage at his site. He stated that he had owned the property for approximately eight years. Mr. Elam stated that, to the best of his knowledge, the site had never been equipped with an underground fuel tank for heating fuel or vehicle fuel. Mr. Elam stated that he did not think the houses in the area were heated with heating fuel, but rather, by propane or electricity. We also spoke to Mr. John Vaughn, who owns two of the residences located south of the Dixon Livestock Auction Yard. Mr. Vaughn stated that the land use at his property has not changed significantly over the past 27 years. To the best of his knowledge, no underground fuel tanks had been located on the site.

FIELDS

The fields on the site were being used for a variety of purposes, including:

- tomato cultivation (northeastern portion of site);
- sheep grazing (southwest corner);
- walnut and almond orchards (southeast corner);
- hay, alfalfa, and dry grains (western-central portions of the site); and
- miscellaneous row crops (northern portion of the site).

Workers from the University of California Davis Cooperative Extension program were observed working in the fields.

An orchard surrounded the residential property owned by Mr. William Elam and located at 6805 Vaughn Road. Mr. Elam stated that he converted the former pear orchard into an almond orchard after he purchased the site. He also stated that he had applied no herbicides to the orchard over the past year. To the best of his recollection, only the fungicide Lorsban had been applied to the orchard in the past year.

5.3 Surrounding Property

The property was surrounded with commercial, industrial, agricultural, and residential development.

North of the site was a CalTrans maintenance yard, which was equipped with new above-ground storage tanks, and what appeared to be a small asphalt mixing facility. East of the CalTrans yard were Valley Farms Transport, and Pioneer Roofing, which were trucking and roofing supply businesses. North of the site, and across Interstate 80 was a series of vacant structures, which were once part of the Milk Farm, a roadside tourist attraction which has since closed down. The Milk Farm included a restaurant, at least four service stations, a petting zoo, a fruit stand, and other amenities. A large dairy farm was located northwest of the Milk Farm.

South of the site, and across Vaughn Road, was a large warehouse for Kragen Auto Parts. Also south of the site, was a large propane tank, and a pump station for the fire department.

Directly east of the site, near the intersection of Pedrick and Vaughn Roads, was an unoccupied facility with six large above-ground tanks. There were also two sheet metal buildings, which appeared to be unoccupied. According to Mr. Ken Williams of the Solano County Environmental Health Department, this property was part of a cashew processing plant, and the tanks held anhydrous ammonia. The facility has been vacant for over a year. The cashew farm also occupied property east of Pedrick Road. Further east of the site, and across Pedrick Road was the Dixon Canning Company and Smith's Auto Repair.

West of the site, and across Highway 113, were agricultural fields, and a restaurant. Aerial photographs indicate another service station was located in this area as well.

5.4 Federal, State and Local Records

Various government agencies compile lists of sites which they believe may be contaminated with hazardous materials. These agencies also create inventories of facilities that handle or create hazardous waste, but may not be contaminated.

It is important to be cautious when making conclusions about these government lists. Most importantly, you should realize that these records identify sites with *known* problems, or sites which are *known* to handle hazardous materials. They are not comprehensive lists of all sites with contamination. Also, government lists often contain wrong or incomplete information, which can lead

to erroneous conclusions on the part of an assessor.

We examined each of the lists described below to determine whether the site, or any neighboring sites, are included.

1. The Solano County Environmental Health Department does not maintain a list of hazardous material spills and dumpings under Proposition 65. Therefore, we were unable to examine this list for information concerning hazardous materials spills and dumpings which may have occurred within the targeted radius.

2. The Solano County Environmental Health Department compiles a list of sites with known leaking underground storage tanks within the county. The list contains the following sites located less than one half mile from the site:

- Former Exxon, 6618 Milk Farm Road;
- Ike's Landscaping, 6646 Milk Farm Road;
- Former Texaco, 6615 Milk Farm Road;
- Morgan's Fruit Stand, 6717 Milk Farm Road;
- CalTrans Yard, 8638 Sparling Lane; and
- John Taylor Fertilizers, 1850 North First Street.

These sites are discussed in Item 6 below.

3. ACG reviewed microfilmed Sandborn Fire Insurance Maps of the Dixon area. These detailed maps of urban areas, which identify items such as buildings, wells, water mains, and storage tanks, were utilized by insurance underwriters to determine the amount of fire hazard associated with a property. The maps reviewed were dated 1884, 1888, 1891, 1900, 1907, and 1921. The subject site is not covered by these maps.

Each of the records below were examined by NATEC Environmental Reporting Services of Garden Grove, California, a commercial record-checking service. NATEC identified listings within one-half mile of the site ¹, and listings which may be within the radius, but whose exact locations were unclear. ACG then evaluated listings identified by NATEC, reviewing files when appropriate, and locating mislocated sites when possible. Appendix C is a copy of the record checking service report.

4. The United States Environmental Protection Agency (EPA) maintains the Resource Conservation and Recovery Act Notification System (RCRA List), which identifies businesses which generate, store, or manufacture regulated quantities of hazardous materials. Inclusion of a facility on this list does not necessarily indicate that an environmental problem has been identified.

¹ NATEC's computerized record search identifies listed sites within a specified distance of the center of a property. Normally, a one-half mile radius is used. In the case of the subject site, which is quite large, a one-half mile radius drawn from the center of the property encompasses little more than the site itself. In order to identify sites located within one-half mile of the property boundaries, a larger search radius was used. In this case, the radius was enlarged to 1.5 miles.

The resulting computer report (Appendix C) identifies the sites within 1.5 miles of the center of the subject property. Using more traditional notations, our report identifies the distances to each listed site from the nearest property border. Thus, the distances to listed sites in the text of this report and in Appendix C will not be the same.

According to this list, six such facilities are located within one-half mile of the site. They are:

Distance: 0.25 miles southwest
Facility Name: **TAYLOR JOHN-Dixon**
Address: 1850 N. First Street
Reason listed: Facility is a Large Quantity Generator; it generates more than 1000 kilograms of hazardous materials per month.

Distance: 0.50 miles southwest
Facility Name: **MEM MASONRY**
Address: 395 Industrial Way
Reason listed: Facility is a Limited Quantity Generator; it generates less than 100 kilograms of hazardous materials per month.

Distance: 0.50 miles southwest
Facility Name: **TIPTON J WOODWORK INC**
Address: Industrial Way
Reason listed: Facility is a Large Quantity Generator; it generates more than 1000 kilograms of hazardous materials per month.

Distance: 0.50 miles southwest
Facility Name: **BASALITE**
Address: 605 Industrial Way
Reason listed: Facility is a Small Quantity Generator; it generates between 100 and 1000 kilograms of hazardous materials per month.

Distance: 0.50 miles southwest
Facility Name: **TEMPERED GLASS PRODUCTS INC**
Address: 1320 Industrial Place
Reason listed: Facility is a Small Quantity Generator; it generates between 100 and 1000 kilograms of hazardous materials per month.

Distance: 0.25 miles northeast
Facility Name: **CAL TRANS**
Address: 8638 Sparling Road
Reason listed: Facility is a Small Quantity Generator; it generates between 100 and 1000 kilograms of hazardous materials per month.

5. To find contaminated sites which have not been noted by other government agencies, the State of California Department of Toxic Substances Control operates the CALSITES program. DTSC identifies businesses which may handle hazardous materials, and then investigates them using questionnaires, phone interviews and site visits. Any site which has been investigated in this manner by DTSC, including those at which no problems were found, are added to the CALSITES list. Before the formation of the State of California Environmental Protection Agency, of which DTSC is a department, this program was administered by the Department of Health Services and was known as the Abandoned Site Program Information System (ASPIS).

CALSITES includes one site located within one-half mile of the property. This is:

Facility Name: **DIXON Y MACHINE INC.**
 Address: **I-80 AND PEDRICK ROAD**
 Status: **PEA Required, Low Priority**
 Status Date: **07/01/87**
 Summary:

The Dixon Y Machine site is located one-half mile north of the site, southwest of the intersection of Pedrick and Tremont Roads. According to the file, some time before 1969, there was a fertilizer dealership on the property. This dealership was owned by American Fertilizer. In 1968 or 1969, American Fertilizer moved to a new location, nearer I-80. Before leaving the property, American Fertilizer backfilled a ditch, which contained 55 and five gallon containers, with soil and broken concrete. The site was then purchased by Mr. Jerald Taylor and his wife (whose name is not given). The Taylors have operated Dixon Y Machine, a machine shop, on the property.

A domestic well on the property, located 120 feet from the former ditch, supplies water for the residents and workers on the site. Concerned that potential pesticide residuals from the buried drums may have affected the water supply, DTSC and the State of California Regional Water Quality Control Board (RWQCB) collected and analyzed several water samples. The sample analyses failed to consistently detect pesticide residuals in the water. The regulatory agencies concluded that no groundwater contamination was present. To identify potential soil contamination from the buried drums, DTSC instructed the property owners to conduct an investigation of the ditch. However, the property owners have resisted, stating that they do not wish to fund the investigation.

6. The State of California Regional Water Quality Control Board, Central Valley Region (RWQCB) publishes a list of all known leaking underground fuel tanks in the Central Valley area. The table below summarizes the sites located less than one-half mile from the site.

| FACILITY AND ADDRESS | DISTANCE FROM SUBJECT SITE (to nearest quarter mile) | SUMMARY |
|---|--|--|
| Former Exxon 6618 Milk Farm Road | Borders to North | Fifteen tanks have been removed from these four sites. Each of the four sites was found to have contaminated soil and groundwater. Most of the contaminated soil has been excavated from these sites. The extent of groundwater contamination has not been identified. Additional work is planned. |
| Ike's Landscaping 6646 Milk Farm Road | Borders to North | |
| Former Texaco 6615 Milk Farm Road | Borders to North | |
| Morgan's Fruit Stand 6717 Milk Farm Road | Borders to North | |
| CalTrans Yard 8638 Sparling Lane | Borders to Northeast | Soil contamination was identified during a tank removal. Groundwater was not affected. |

| | | |
|--|----------------------|--|
| John Taylor Fertilizers 1850 North First Street | 0.25 miles southwest | Leak suspected at site but has not been confirmed. |
|--|----------------------|--|

7. The State of California Regional Water Quality Control Board (RWQCB) and the United States Environmental Protection Agency (EPA) issue permits to facilities that discharge hazardous materials to public waterways. No facilities located within one half mile of the site held such permits.

Additional government agencies can provide information about the historical and present-day land uses. We checked the following sources:

A. According to Solano County Planning Department records, the subject property is zoned for agricultural and manufacturing/warehouse purposes.

B. Mr. Mack Cody of the Solano County Agricultural Commissioner's Office stated that the following pesticides may have been used on the site, past or present:

| CROP | PESTICIDES | PORTION OF SITE ON WHICH CROP WAS GROWN |
|----------------------|--|---|
| Dry grains and wheat | 2, 4-D MCPA Banville Disyston | Central Western |
| Tomatoes | Sevin Diazinon Lannate Disyston Parathion Methyl Parathion Other General Organophosphates Other General Carbamates | Northeastern |
| Sugar Beets | Disyston Lannate Monitor Phosdrin Parathion Methyl Parathion Sevin Metasystox Other General Organophosphates Other General Carbamates | Central |
| Alfalfa | Furadan 2,4-D Gromoxyn Paraquat | Central Western |
| Corn | Lasso 2,4-D Banville Parathion Methyl Parathion | Northern |

| | PESTICIDES | PORTION OF SITE ON WHICH CROP WAS GROWN |
|--------------------------------|--|---|
| Almonds | Benolate Copper Captan Diazinon Parathion 2,4-D Princep Karmax | Southeastern |
| Walnuts | Benolate Copper Captan Diazinon Parathion 2,4-D Princep Karmax Lorsban | Southeastern |
| Insect control at auction yard | Malathion Coopertex | Auction Yard |

We also checked these records during our investigation:

- the State of California Integrated Waste Management Board (CIWMB); and
- the State of California Water Resources Control Board.

No additional information was found in any of these records suggesting the misuse of hazardous materials on or near the subject property. See Appendix A for an explanation of each source.

6.0 LIMITATIONS

This presents the facts about the site as they have been presented to us. It is not intended to be comprehensive, to identify all potential concerns, or to remove the risk involved in property acquisition. Also, the conclusions in this report are based on judgement and experience, and are not scientific certainties.

Determining the presence of radon, lead paint, or asbestos was beyond the scope of this study. In addition, identifying endangered species, geologic hazards, archeological sites, or ecologically sensitive areas (such as vernal pools and wetlands) is outside of the scope of services agreed upon by the client and ACG.

This report includes the findings of investigations conducted by other environmental consulting firms. While we have no reason to question the findings of these reports, we cannot take responsibility for their accuracy and completeness.

We do not recommend that you use this report as a guideline or decision-making tool after 90 days of the date issued. The information drawn from the public record for this investigation is updated

on a continual basis, and conditions at a site can change over time. Should there be such a lapse of time, we urge you to have this report updated to reflect any new information which may exist.

This report has been prepared for the exclusive use of our client and is applicable only for the subject property. We are not responsible for the interpretations of the data in this report made by others. This report does not represent a legal opinion. No warranty is expressed or implied.

This work was performed in accordance with the generally accepted standards of care existing in Northern California at the time of the study.

**APPENDIX A:
SOURCES OF INFORMATION**

SOURCES OF INFORMATION

We examined information from the following sources for listings within a one-half mile radius of the subject property:

Solano County Department of Environmental Health.

This agency maintains three countywide lists of import to site investigations: 1) a list of leaking underground storage tanks; 2) a list of all permitted underground storage tanks; and 3) a list of hazardous material spills and dumpings in accordance with Proposition 65.

State of California Department of Toxic Substances Control.

This division, a branch of the California Environmental Protection Agency, publishes the CALSITES List which describes sites which may have been contaminated with hazardous materials. (This list was formerly known as the Abandoned Site Program Information System List, or ASPIS.)

State of California Regional Water Quality Control Board, Central Valley Region (RWQCB).

RWQCB publishes a list of all known leaking underground fuel tanks (known as the LUFT list) in the Central Valley area.

State of California Water Resources Control Board (SWRCB).

The SWRCB publishes the Solid Waste Assessment Test Program Report (known as the SWAT List), which includes Rank 1-3 landfills in the state which are known to be leaking hazardous wastes.

The AB 1803 Follow-Up Program Annual Report, December 1988.

The SWRCB and the RWQCB publish this list of all known polluted public water wells as well as those wells suspected of being polluted.

We examined information from the following source for listings within a one mile radius of the subject property:

United States Environmental Protection Agency (EPA).

The EPA maintains a list of contaminated sites which have been referred to the EPA for further investigation under the 1984 Comprehensive Environmental Response, Compensation, and Recovery Act (CERCLA) and under the 1986 Superfund Amendments and Reauthorization Act (SARA). The list is known as CERCLIS. Those sights which have qualified for funding under the Bond Expenditure Plan (BEP), known as National Priority List (NPL) sites, are included in CERCLIS.

We examined information from the following sources for details about the site and/or the immediately surrounding property:

Geonex (of Sacramento).

We examined stereo aerial of the site and vicinity obtained from this source. These photographs were dated 4/27/91, 7/12/73, 3/21/70, 9/12/66, and 7/18/62.

State of California Library.

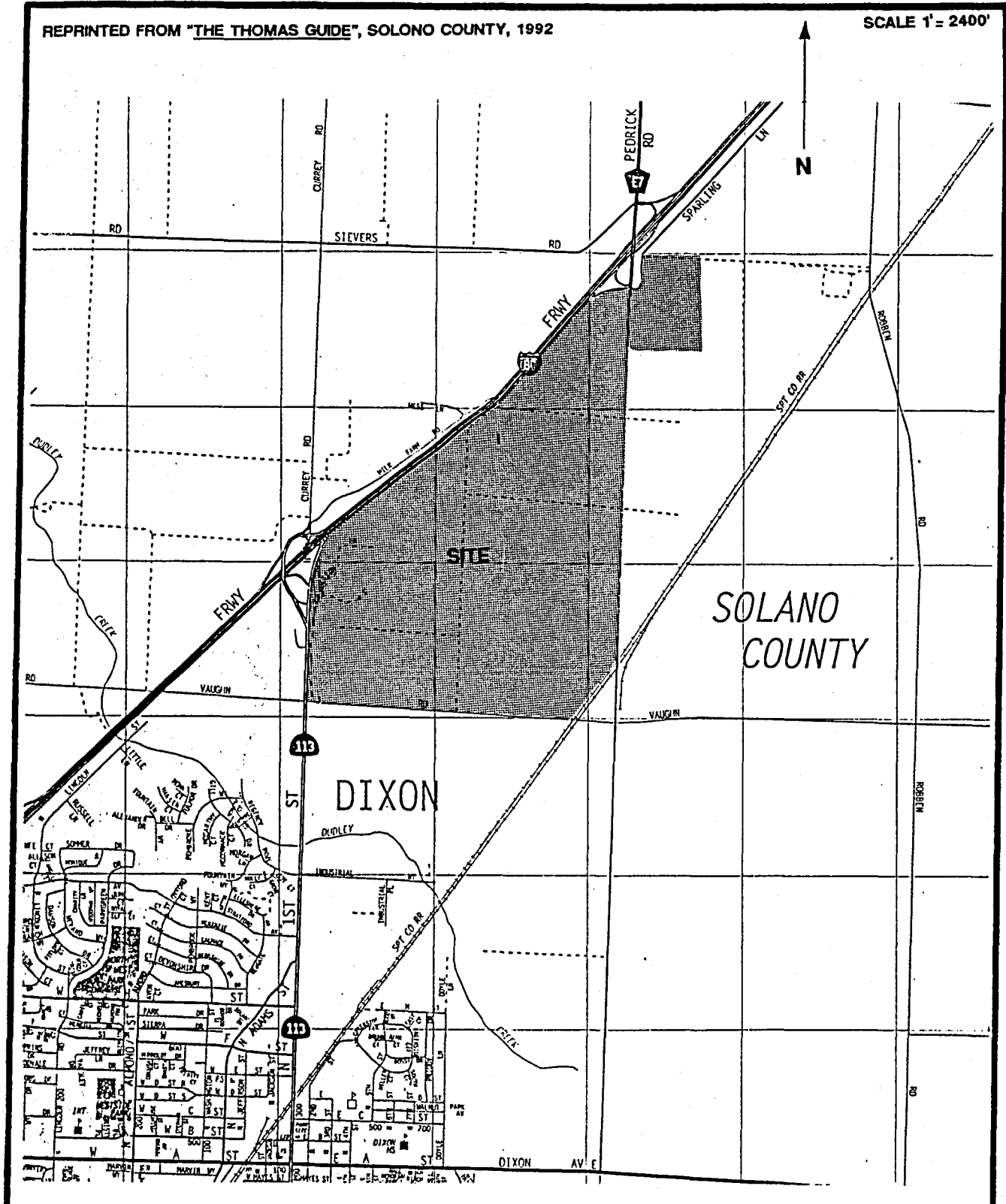
We reviewed microfilmed copies of Sandborn Fire Insurance Maps of the site at the State Library.

Solano County Planning Department.

We identified the property zoning at this location.

Solano County Agricultural Commissioner's Office.

We asked this office to provide information as to what, if any, agricultural practices have occurred on or near the site, as well as any restricted use pesticide permits which are on file for the subject property.



VAUGHN ROAD PSA

AREA MAP


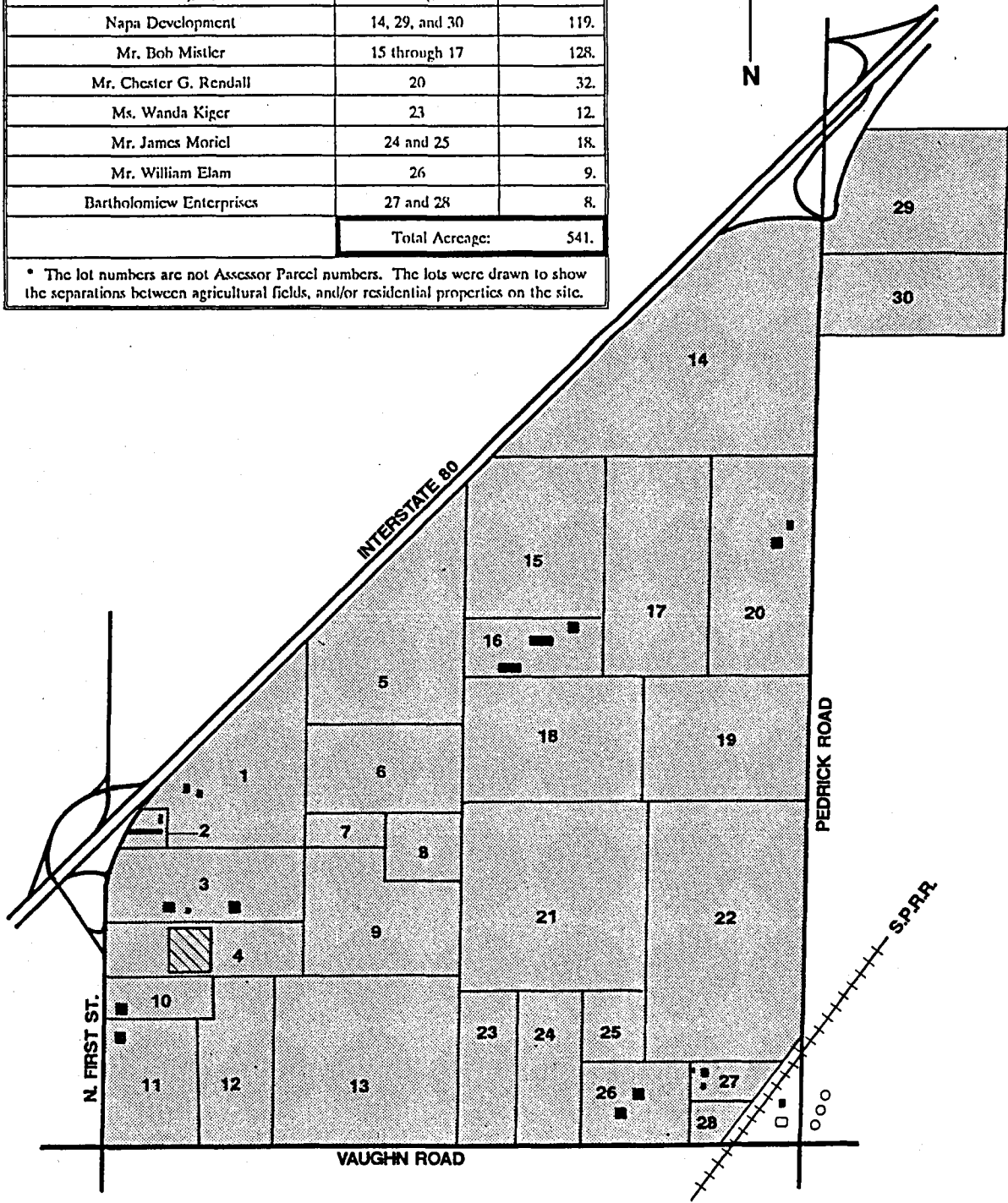
 **ANDERSON CONSULTING GROUP**
Roseville (916) 786-8883
Grass Valley (916) 273-SOIL

FIGURE 1

| | LOT NUMBERS* | ACREAGE (Approximate) |
|-------------------------------|-----------------------|--------------------------|
| Mr. Nick Cammarota | 1 through 9 | 138. |
| Mr. John Vaughn, <i>et al</i> | 10 through 13 | 77. |
| Napa Development | 14, 29, and 30 | 119. |
| Mr. Bob Mistler | 15 through 17 | 128. |
| Mr. Chester G. Rendall | 20 | 32. |
| Ms. Wanda Kiger | 23 | 12. |
| Mr. James Moriel | 24 and 25 | 18. |
| Mr. William Elam | 26 | 9. |
| Bartholomiew Enterprises | 27 and 28 | 8. |
| | Total Acreage: | 541. |

* The lot numbers are not Assessor Parcel numbers. The lots were drawn to show the separations between agricultural fields, and/or residential properties on the site.



VAUGHN ROAD PSA

AREA MAP



**ANDERSON
 CONSULTING GROUP**

Roseville (916) 786-8883
 Grass Valley (916) 273-SOIL

FIGURE 2

**APPENDIX B:
PROPOSAL AND CONTRACT**

**PLEASE RETURN TO ACG
AGREEMENT FOR PROFESSIONAL
ENVIRONMENTAL ENGINEERING SERVICES**



631 Commerce Drive • Roseville, CA 95678 • (916) 786-8883
350 Crown Point Circle, Suite 250 • Grass Valley, CA 95945 • (916) 273-SOIL

THE AGREEMENT

This AGREEMENT is made by and between ANDERSON CONSULTING GROUP, hereinafter referred to as ACG, and Wade Associates, hereinafter referred to as CLIENT.

The AGREEMENT between the parties consists of these TERMS, the attached PROPOSAL letter by ACG, dated 11 March 1991, and any exhibits or attachments noted in the PROPOSAL. Together, these elements will constitute the entire AGREEMENT superseding any and all prior negotiations, correspondence, or agreements either written or oral. Any changes to this AGREEMENT must be mutually agreed to in writing. This agreement was developed to be fair and reasonable to both parties. The CLIENT should understand when signing that modern construction creates risks which are not entirely eliminated through the services of ACG. Therefore, in signing this agreement the CLIENT understands that ACG is not providing a warranty or assurance as to the performance of the project.

SCOPE OF BASIC SERVICES

The Scope of ACG's basic services shall consist of those tasks enumerated in the attached PROPOSAL.

The scope of work outlined in the PROPOSAL represents a minimum program at this time. As the results of a records search, or site walkover or sampling/testing become known, other tests and/or sampling may be recommended to the CLIENT for written approval as Additional Services. In general, an increased frequency of sampling and testing will improve the opinion reached in ACG's report.

Because geologic and soil formations are inherently random, variable, and indeterminate in nature, the professional services rendered by ACG, and opinions provided with respect to such services under this AGREEMENT (including opinions regarding potential cleanup costs), are not guaranteed to be a representation of actual site conditions, or contamination, or costs, which are also subject to change with time as a result of natural or man-made processes.

STANDARD OF CARE

The CLIENT recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by ACG will be based solely on information available to ACG. ACG is responsible for the data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.

Services performed by ACG under this AGREEMENT are expected by the CLIENT to be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the geotechnical/environmental engineering profession practicing contemporaneously under similar conditions in the locality of the project. Under no circumstance is any warranty, expressed or implied, made in connection with providing geotechnical/environmental engineering services.

RESPONSIBILITIES OF THE CLIENT

The CLIENT shall provide all information in its possession, custody, or control which relates to the site, its present and prior uses, or to activities at the site which may bear upon the services of ACG under this AGREEMENT, including, but not limited to, the following:

- (i) a legal description of the site, including boundary lines and a site plan;
- (ii) historical information as to the prior owners of the site;
- (iii) identification of the location of utilities, underground tanks, and other structures and the routing thereof at the site, including available plans of the site;
- (iv) a description of activities which were conducted at the site at any time by the CLIENT or by any person or entity which would relate to the services provided by ACG; and
- (v) identification, by name, quantity, location, and date, of any releases or handling of hazardous substances.

CLIENT will grant or obtain free access to the site for all equipment and personnel necessary for ACG to perform the work set forth in the AGREEMENT. The CLIENT will notify any and all possessors of the project site that CLIENT has granted ACG free access to the site. ACG will take reasonable precautions to minimize damage to the site, but it is understood by CLIENT that, in the normal course of work, some damage may occur and the correction of such damage is not part of this AGREEMENT unless so specified in the PROPOSAL.

The CLIENT is responsible for accurately delineating the locations of all subterranean structures and utilities. ACG will take reasonable precautions to avoid known subterranean structures, and the CLIENT waives any claim against ACG, and agrees to defend, indemnify, and hold ACG harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located.

SAMPLE DISPOSAL

ACG will dispose of all remaining soil and rock samples in its possession 60 days after submission of report covering those samples. Further storage or transfer of samples can be made at CLIENT's expense upon CLIENT's prior written request.

At any time ACG may request in writing that CLIENT remove contaminated samples, cuttings, and other hazardous substances that may be generated by the project from the project site. CLIENT shall promptly comply with such requests, and pay for the removal and lawful disposal of such samples, cuttings, or other hazardous substances.

REMEDIAL ACTION/MONITORING

The CLIENT understands that an environmental assessment report presents preliminary recommendations for remedial action based on assumptions made about the subsurface conditions. In order for ACG to validate its assumptions, ACG needs to be present during remedial action.

Therefore, this AGREEMENT is to include pre-remedial action plan review and remedial action monitoring services by ACG, if remedial action will be part of the project. If for some reason ACG is not allowed to provide pre-remedial action plan review and remedial action monitoring services, ACG will assume no liability for the accuracy of its preliminary assumptions. For remedial action monitoring services that may be outlined in a subsequent proposal from ACG, ACG will report observations and professional opinions to the CLIENT. No action of ACG or ACG's representative can be construed as altering any AGREEMENT between the CLIENT and others. ACG will report any observed environmentally related work to the CLIENT which, in ACG's professional opinion, does not conform with plans and specifications. ACG has no right to reject or stop work of any agent of the CLIENT. Such rights are reserved solely for the CLIENT. Furthermore, ACG's presence on site does not in any way guarantee the completion or quality and performance of the work of any party retained by the CLIENT to provide field or remedial action related services.

ACG will not be responsible for and will not have control or charge of specific means, methods, techniques, sequences or procedures of remedial action selected by any agent or agreement of the CLIENT, or safety precautions and programs incident thereto.

BILLING AND PAYMENT

CLIENT will pay ACG the lump sum amount indicated in the PROPOSAL or, if no lump sum amount is indicated, in accordance with ACG's Fee Schedule rates as included in the PROPOSAL and its attachments. Invoices will be submitted to CLIENT by ACG, and will be due and payable upon presentation. If CLIENT objects to all or any portion of any invoice, CLIENT will so notify ACG in writing within fourteen (14) calendar days of the invoice date, identify the cause of disagreement, and pay when due that portion of the invoice not in dispute. The parties will immediately make every effort to settle the disputed portion of the invoice. In the absence of written notification described above, the balance as stated on the invoice will be paid.

Invoices are delinquent if payment has not been received within thirty (30) days from date of invoice. An administrative fee of 1.5% per month will be included for invoices over 30 days, excepting any portion of the invoiced amount in dispute and resolved in favor of CLIENT. All time spent and expenses incurred (including any attorney's fees) in connection with collection of any delinquent amount will be paid by the CLIENT to ACG per ACG's current fee schedule. In the event CLIENT fails to pay ACG within sixty (60) days after invoices are rendered, CLIENT agrees that ACG will have the right to consider the failure to pay ACG's invoice as a breach of this AGREEMENT and ACG will have the right to stop all current work and withhold letters, reports or any verbal consultation until the invoice is paid in full. All invoices will be formatted as shown on the attached example provided on EXHIBIT 1. If the CLIENT requests back-up data or changes to the format of the standard invoice, an administrative fee of \$100 per invoice may be charged plus \$1 per copy of back-up data.

TERMINATION

This AGREEMENT may be terminated by either party seven (7) days after written notice in the event of any breach of any provision of this AGREEMENT or in the event of substantial failure of performance by the other party, or if the CLIENT suspends the work for more than three (3)

months. In the event of termination, ACG will be paid for services performed prior to the date of termination plus reasonable termination expenses, including the cost of completing analyses, records and reports necessary to document job status at the time of termination.

RISK ALLOCATION

The CLIENT recognizes that the fees charged by ACG and other design professionals include an allowance for risks they assume as a consequence of their agreeing to provide services on their client's behalf. One of these risks stems from ACG's potential for human error, and, in order to reduce the amount allowed for purposes of funding that risk on this project, the CLIENT agrees to limit ACG's liability to the CLIENT and to all contractors, consultants, and subcontractors, including Remedial Action Contractors, arising from ACG's professional facts, errors, or omissions, such that the total aggregate liability of ACG to all those named including, but not limited to, any attorneys fees and costs spent to enforce this provision, shall not exceed \$50,000 or ACG's total fee for services rendered on this project, whichever is greater.

Notwithstanding any other provision of this AGREEMENT, CLIENT waives any claim against ACG, and to the maximum extent permitted by law, agrees to defend, indemnify, and save ACG harmless from any claim (including without limitation, any third party claims), liability, and/or defense costs or expenses, and/or judgements for injury or loss arising from or related to, in any manner whatsoever, this Agreement or the work performed by ACG hereunder.

The CLIENT agrees to indemnify, defend, and hold ACG harmless for all liabilities, claims and/or expenses in excess of the monetary limits set forth in the first paragraph of this RISK ALLOCATION section.

Limitations on liability and indemnities in this AGREEMENT are business understandings between parties and shall apply to all different theories of recovery, including breach of contract or warranty, tort (including negligence), strict or statutory liability, or any other cause of action, except for willful misconduct or gross negligence. Parties means CLIENT and ACG and their officers, employees, agents, affiliates, and subcontractors. The parties also agree that the CLIENT will not seek damages in excess of the limitations indirectly through suits with other parties who may join ACG as a third-party defendant.

Both CLIENT and ACG agree that they will not be liable to each other under any circumstances, for special, consequential, or punitive damages arising out of or related to this AGREEMENT.

UNANTICIPATED HAZARDOUS MATERIALS

CLIENT warrants that a reasonable effort to inform ACG of known or suspected hazardous materials on or near the project site has been made.

Hazardous materials may exist at a site where there is no reason to believe they could or should be present. ACG and CLIENT agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work or termination of services. ACG and CLIENT also agree that the discovery of unanticipated hazardous materials may make it necessary for ACG to take immediate measures to protect health and safety. CLIENT agrees to compensate ACG for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous waste.

ACG agrees to notify CLIENT when unanticipated hazardous materials or suspected hazardous materials are encountered. CLIENT agrees to make any disclosures required by law to the appropriate governing agencies. CLIENT also agrees to hold ACG harmless for any and all consequences of disclosures made by ACG which are required by governing law. In the event the project site is not owned by CLIENT, CLIENT recognizes that it is the CLIENT's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.

Notwithstanding any other provision of the AGREEMENT, CLIENT waives any claim against ACG, and to the maximum extent permitted by law, agrees to defend, indemnify, and save ACG harmless from any claim, liability, and/or defense costs for injury or loss arising from ACG's discovery of unanticipated or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value.

HAZARDOUS MATERIALS R IS.

CLIENT recognizes that, while necessary for remedial investigations, commonly used exploration methods, such as drilling borings or excavating trenches, involve an inherent risk. These exploration methods may penetrate through an aquifer of contaminated fluid and serve as a connecting passageway between the contaminated aquifer and an uncontaminated aquifer or groundwater, inducing cross-contamination. While backfilling with grout or by other means, according to a state of practice design, is intended to provide a seal against such passageway, it is recognized that such a seal may be imperfect and that there is an inherent risk in drilling borings, excavating trenches or implementing other methods of exploration in connection with a contaminated site.

CLIENT recognizes that the state of practice, particularly with respect to contaminated site and waste conditions, is changing and evolving. For example, the long-term effect of chemicals on soil or manufactured or constructed liner systems is not well-established or known at this time. While ACG is required to perform in reasonable accordance with the standards in effect at the time the services are performed, it is recognized that those standards may subsequently change because of improvements in the state of practice.

CLIENT recognizes that projects, such as contaminated waste sites and sanitary landfill sites, may not perform as anticipated by CLIENT, even if the services are performed in accordance with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. It is also recognized that a satisfactorily designed, constructed and maintained monitoring system may assist in the early detection of environmental changes. Unless it is specially included in the services, ACG shall not perform such monitoring.

It is recognized that certain of the governmental regulations relating to hazardous waste sites purport to require achievement of results which cannot be accomplished in an absolute sense (e.g., the construction of entirely impermeable liners). ACG shall be obligated to use due professional care to comply with the regulations but does not guarantee results.

On projects relating to efforts to ascertain the presence or absence of hazardous substances or underground tanks, the level of effort may range from very limited observation and inquiry to extensive investigation and testing. The level of uncertainty with respect to opinions reached on such projects will vary, depending on the extent of the investigation, but some level of uncertainty will exist in every project.

CLIENT recognizes that ACG's failure to detect the presence of hazardous materials at a site, even though hazardous materials may be assumed or expected to exist through the use of appropriate and mutually agreed upon sampling techniques, does not guarantee that hazardous materials do not exist at the site. Similarly, CLIENT recognizes that ACG's subsurface explorations may not encounter hazardous materials at a site, which may later be effected by hazardous materials due to natural phenomena or human intervention. CLIENT agrees to waive any claim against ACG and agrees to defend, indemnify, and save ACG harmless from claims or liability for injury or loss arising from ACG's failure to detect the presence of hazardous materials through techniques commonly employe for the purpose.

All laboratory and field equipment contaminated in performing ACG's services will be cleaned at CLIENT's expense. Contaminated consumables will be disposed of and replaced at CLIENT'S expense. Equipment (including tools) which cannot be reasonably decontaminated shall become the property and responsibility of CLIENT. All such equipment shall be delivered to CLIENT or disposed of in a manner similar to that indicated for hazardous samples. CLIENT agrees to pay the fair market value of any such equipment which cannot reasonably be decontaminated.

DISPUTE RESOLUTION

All claims, disputes, and other matters in controversy between ACG and CLIENT arising out of or in any way related to this AGREEMENT will be submitted to "alternative dispute resolution" (ADR) such as mediation, before and as a condition precedent to other remedies provided by law.

If a dispute of law arises related to the services provided under this AGREEMENT and that dispute requires litigation instead of ADR as provided above, then:

- (1) the claim will be brought and tried in judicial jurisdiction of the court of the county where ACG's principal place of business is located and CLIENT waives the right to remove the action to any other county or judicial jurisdiction, and
- (2) the prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorney's fees, and other claim related expenses.

GOVERNING LAW AND SURVIVAL

The law of the State of California will govern the validity of these TERMS, their interpretation and performance.

If any of the provisions contained in this AGREEMENT are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Limitations of liability and indemnities will survive termination of this AGREEMENT for any cause.

The Parties have read the foregoing, understand completely the terms and willingly enter into this AGREEMENT which will become effective on the date signed by the CLIENT below.

WADE ASSOCIATES
CLIENT
David Wade
By
Principal
Title
18 May 1993
Date

ANDERSON CONSULTING GROUP
John A. Baker
By
Director, Environmental Division
Title
12 May 1993
Date

**APPENDIX C:
NATEC REPORT**



Environmental Disclosure Report

a product of NATEC Environmental Reporting Services, Ltd.

11552 Knott Street, Suite 8 ♦ Garden Grove, CA 92641 ♦ 800/969-3228 ♦ 714/894-7577 ♦ 714/373-1768 (FAX)

SUBSCRIBER INFORMATION

Contact Person: ANITA FITE
Name: ANDERSON CONSULTING GROUP
Address: 631 COMMERCE DRIVE
ROSEVILLE, CA 95678

Phone: 916-969-8883
Project: VAUGHN ROAD PSA

SUBJECT PROPERTY

Legal Description: 395, DF2
Address: HWY 113 & VAUGHN ROAD
DIXON, CA 95620

Order No.: MY93045

REQUESTED INFORMATION

Enviro Scan
1.5 Mile Site Map

Government Records Report

This report is limited in scope and accuracy to the available government records searched as listed in the table of contents. This report represents only a search of those records as of the date specified herein. The specific government records searched do not include all sites of environmental contamination or risk. The subscriber acknowledges that NATEC assumes no responsibility for the completeness and accuracy of the recorded lists as compiled by the various governmental agencies. The purpose of this report is for a records search and is not a substitute for a Phase I Environmental Audit.

Site Map

NATEC Site Maps are based on both U.S. Geological Survey elevation data and U.S. Government Tiger files. The subscriber acknowledges that NATEC assumes no responsibility for the completeness or accuracy of such maps or coordinates derived there from.

Title Custody Report

The Title Custody Report represents a search of the recorded chain of title documents regarding a specific real property. The title reports will show a summary of those deeds, easements, right of ways, and ground leases of record as compiled by the respective County Recorder's Office.

The subscriber acknowledges that other documents that may record pertinent information to the subject property will not be provided in the title report. All services performed shall include only the subject property and shall not include any easements, reversion or other interests in abutting properties. This report is for information only and shall not be deemed to constitute title insurance and will not determine status of ownership or liens on the subject property.

Historical Profile

The Historical Profile report will include a government records search and a written review of pertinent historical aerial photographs of the site on each available decade, including one aerial photograph.

NATEC services does not include an evaluation of the information contained in the recorded documents. The subscriber acknowledges that government records and title records may not include certain information and accepts the limitations of the service provided herein.

ENVIRO-SCAN

TABLE OF CONTENTS

| <u>GOVERNMENT RECORDS SEARCHED</u> | <u>AGENCIES AND SOURCE LISTS</u> | <u>PAGE</u> |
|--|--|-------------|
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| NPL: | <u>E.P.A. National Priority Lists</u> | <u>2</u> |
| LIENS: | <u>E.P.A. Federal Superfund Liens</u> | <u>3</u> |
| SWIS: | <u>C.W.M. Solid Waste Information System List</u> | <u>4</u> |
| RCRA: | <u>E.P.A. Hazardous Waste Generators</u> | <u>5</u> |
| LUST: | <u>W.R.C.B. Underground Leaking Tanks</u> | <u>7</u> |
| CORTESE: | <u>C.W.M.B. Hazardous Waste Substance Sites</u> | <u>10</u> |
| BEP: | <u>C.D.H.S. Bond Expenditure Plan</u> | <u>12</u> |
| CAL-SITES: | <u>E.P.A. CAL - Sites</u> | <u>13</u> |
| WDS: | <u>H.M.D.M. Waste Discharge System (NPDES Permits)</u> | <u>14</u> |
| SARA: | <u>E.P.A. Superfund Amendments and Reauthorization Act</u> | <u>22</u> |
| WMUDS: | <u>W.R.C.B. Waste Management Unit Discharge Systems</u> | <u>24</u> |

SUBJECT PROPERTY

STATISTICAL REVIEW

This review is provided as a convenience only. The intent of this review is to flag immediate problems. It is not meant as a substitute for a Government Records Report.

| <u>List Name</u> | <u>Date</u> | <u>0.5 Mile</u> | <u>1 Mile</u> | <u>Over 1 Mile</u> | <u>Unknown</u> | <u>Total</u> |
|------------------|-------------|-----------------|---------------|--------------------|----------------|--------------|
| CERCLIS | 3 /93 | 0 | 0 | 0 | 0 | 0 |
| NPL | 3 /93 | 0 | 0 | 0 | 0 | 0 |
| LIENS | 11/92 | 0 | 0 | 0 | 0 | 0 |
| SWIS | 5 /92 | 0 | 0 | 0 | 0 | 0 |
| RCRA | 8 /92 | 0 | 1 | 4 | 1 | 6 |
| LUST | 5 /92 | 0 | 4 | 1 | 1 | 6 |
| CORTESE | 11/90 | 0 | 5 | 1 | 2 | 8 |
| BEP | 1 /90 | 0 | 0 | 0 | 0 | 0 |
| CAL-SITES | 2 /93 | 0 | 1 | 0 | 1 | 2 |
| WDS | 3 /93 | 0 | 0 | 0 | 7 | 7 |
| SARA | 12/91 | 0 | 0 | 0 | 1 | 1 |
| WMUDS | 12/92 | 0 | 0 | 0 | 5 | 5 |
| Total | | 0 | 11 | 0 | 18 | 35 |

Number of CAL-SITES:

Other then NFA: 0
Superfund: 0

Number of sites in immediate vicinity (<.1 miles): 0

Lists of immediate concern;
None.

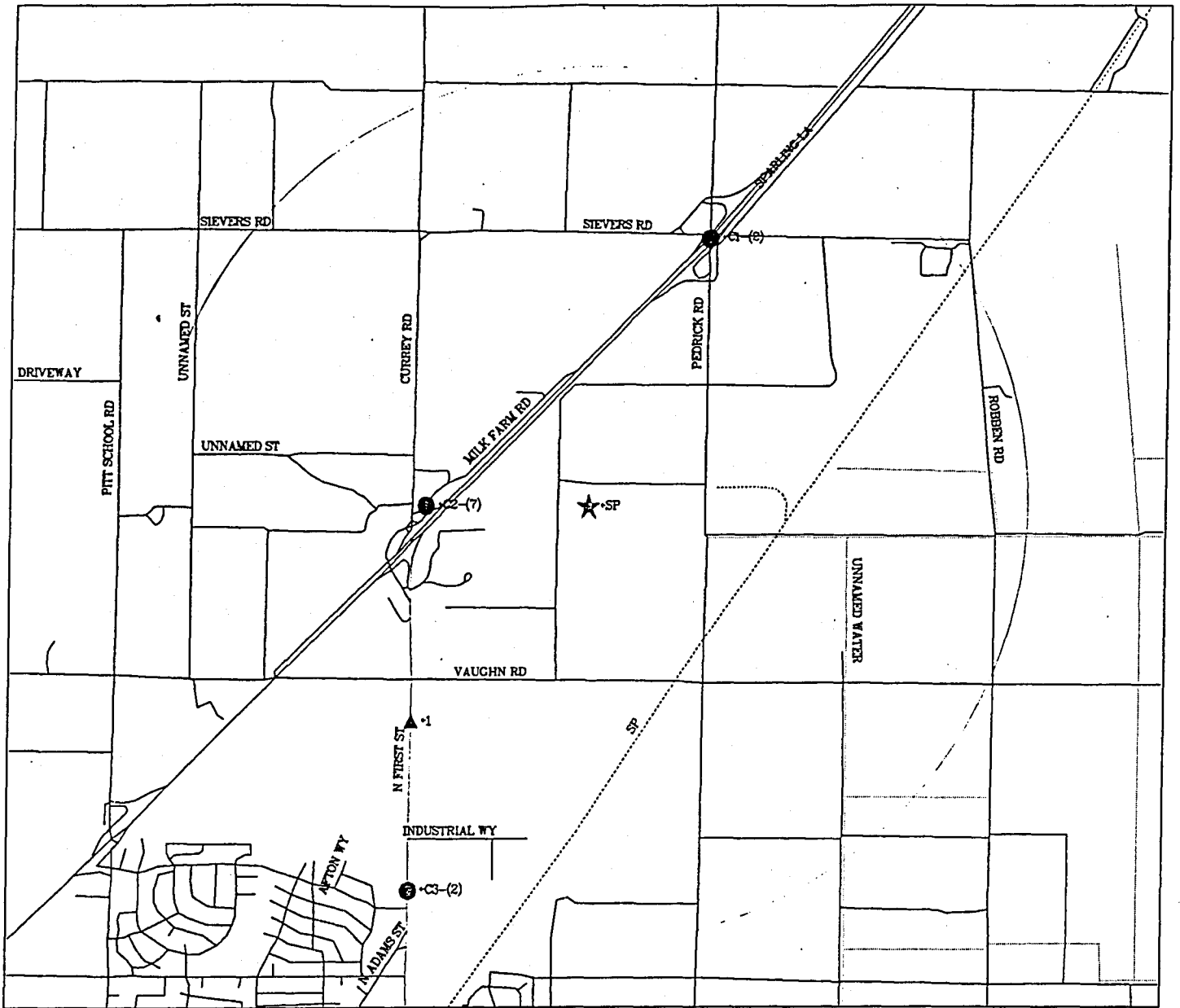
Chemicals reported in the area of this report include:

7782-50-5 - CHLORINE

WASTE OIL

GASOLINE

DIESEL



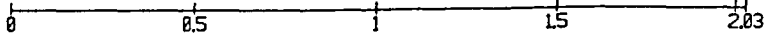
Subject Property

Site: VAUGHN ROAD PSA
 Address: HWY 113 & VAUGHN ROAD
 City: DIXON
 State: CA
 Zip: 95620
 Order: MY93045

Legend

- | | | | |
|---------|---|-----------|---|
| SITE | ☆ | CORTESE | ▲ |
| CERCLIS | + | BEP | ◆ |
| NPL | ■ | CAL-SITES | □ |
| LIENS | ▼ | WDS | ■ |
| SWIS | ▼ | SARA | ■ |
| LUST | ▲ | WMUDS | ☆ |
| | | CLUSTER | |

miles



(C) 1993 NATEC Environmental Reporting Services, Ltd.
 * Map coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street map guides.

MAP KEY

The preceding map represents specific properties found in this report by a corresponding icon and reference number. If more than one site is in a small vicinity (.03 miles) a cluster is assigned to the center of the given group. An example of cluster numbering is as follows:

C1 - (3)

Where C1 indicates CLUSTER #1 and the (3) indicates a total of 3 sites in this cluster.

* Mapping information is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Sites that are not provided on the map are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

| <u>Agency</u> | <u>Ref. #</u> | <u>Site Name</u> | <u>Site Address</u> | <u>Bearing</u> |
|---------------|---------------|-------------------------|-----------------------|----------------|
| LUST | | | | |
| | 1 | JOHN TAYLOR FERTILIZERS | 1850 1ST ST N | 1.0 SW |
| | C2 | FORMER EXXON | 6618 MILK FARM RD | 0.6 NW |
| | C2 | IKE'S LANDSCAPING | 6646 MILK FARM RD | 0.6 NW |
| | C2 | FORMER TEXACO | 6615 MILK FARM RD | 0.6 NW |
| | C3 | RON DUPRATT FORD | 1320 1ST ST N | 1.5 SW |
| CORTESE | | | | |
| | C1 | DIXON Y MACHINE INC. | I-80 AND PEDRICK RD | 1.0 NE |
| | C2 | FORMER EXXON STATION | 6618 MILK FARM RD | 0.6 NW |
| | C2 | FORMER TEXACO STATION | 6615 MILK FARM RD | 0.6 NW |
| | C2 | IKE'S LANDSCAPING | 6647 MILK FARM RD | 0.6 NW |
| | C2 | MORGAN'S FRUIT STAND | 6646 MILK FARM RD | 0.6 NW |
| | C3 | RON DUPRATT FORD | 1320 NORTH FIRST ST | 1.5 SW |
| CAL-SITES | | | | |
| | C1 | DIXON Y MACHINE INC. | I-80 AND PEDRICK ROAD | 1.0 NE |

QUICK REFERENCE LIST

This report provides a brief list of site information in a sorted by address format for quick and convenient reference when performing on site inspections.

| <u>Site</u> | <u>Address Number</u> | <u>Street Name</u> | <u>Page.</u> | <u>Bearing</u> | <u>Agency</u> | <u>Map Ref.</u> |
|---------------------------|---------------------------|------------------------|--------------|----------------|---------------|-----------------|
| | | HWY 113 & VAUGHN RD | | | SUBJECT | SP |
| WASTEWATER TREATMENT PLAN | | | 15 | | WDS | N/A |
| MEAT PACKING FACILITY | | | 16 | | WDS | N/A |
| B & J DROP BOX DISP SITE | | | 17 | | WDS | N/A |
| TOMATO PROCESSING | | | 18 | | WDS | N/A |
| WASTE DISPOSAL FACILITY | | | 19 | | WDS | N/A |
| MONTEZUMA HILLS FACILITY | | | 20 | | WDS | N/A |
| WASTE DISP. FACILITY | | | 21 | | WDS | N/A |
| B & J DROP BOX DISP SITE | | | 25 | | WMUDS | N/A |
| MONTEZUMA HILLS FACILITY | | | 28 | | WMUDS | N/A |
| SERV-U-GARBAGE | | | 32 | | WMUDS | N/A |
| VALLEJO | | | 34 | | WMUDS | N/A |
| RON DUPRATT FORD | 1320 | N 1ST ST | 8 | 1.5 SW | LUST | C3 |
| JOHN TAYLOR FERTILIZERS | 1850 | N 1ST ST | 8 | 1.0 SW | LUST | 1 |
| RON DUPRATT FORD | 1320 | N FIRST ST | 11 | 1.5 SW | CORTESE | C3 |
| TAYLOR JOHN-DIXON | 1850 | N FIRST ST | 5 | 1.0 SW | RCRA | N/A |
| TIPTON J WOODWORK INC | | INDUSTRIAL WAY | 5 | 1.1 SW | RCRA | N/A |
| MEM MASONRY | 395 | INDUSTRIAL WAY | 5 | 1.1 SW | RCRA | N/A |
| BASALITE | 605 | INDUSTRIAL WAY | 6 | 1.1 SW | RCRA | N/A |
| TEMPERED GLASS PRODUCTS I | 1320 | INDUSTRIAL PL | 6 | 1.2 SW | RCRA | N/A |
| FORMER TEXACO | 6615 | MILK FARM RD | 8 | 0.6 NW | LUST | C2 |
| FORMER TEXACO STATION | 6615 | MILK FARM RD | 11 | 0.6 NW | CORTESE | C2 |
| FORMER EXXON | 6618 | MILK FARM RD | 7 | 0.6 NW | LUST | C2 |
| FORMER EXXON STATION | 6618 | MILK FARM RD | 10 | 0.6 NW | CORTESE | C2 |
| IKE'S LANDSCAPING | 6646 | MILK FARM RD | 7 | 0.6 NW | LUST | C2 |
| MORGAN'S FRUIT STAND | 6646 | MILK FARM RD | 11 | 0.6 NW | CORTESE | C2 |
| IKE'S LANDSCAPING | 6647 | MILK FARM RD | 11 | 0.6 NW | CORTESE | C2 |
| DIXON Y MACHINE INC. | | I-80 AND PEDRICK RD | 11 | 1.0 NE | CORTESE | C1 |
| DIXON Y MACHINE INC. | | I-80 AND PEDRICK RD | 13 | 1.0 NE | CAL-SIT | C1 |
| DIXON CANNING CORP. | 8380 | PEDRICK RD | 23 | | SARA | N/A |
| BP STN #11245/MOBIL STN#1 | 8665 | PEDRICK RD | 11 | | CORTESE | N/A |
| A G FERTILIZER COMPANY | | ROUTE 2 BOX 773 | 13 | | CAL-SIT | N/A |
| CA DEPT OF TRANSPORTATION | 8638 | SPARLING LN | 8 | | LUST | N/A |
| DIXON MAINT STN (CALTRANS | 8638 | SPARLING LN | 11 | | CORTESE | N/A |
| CAL TRANS | 8638 | STARLING RD | 6 | | RCRA | N/A |
| DIXON CITY | | NW OF TOWN | 30 | | WMUDS | N/A |

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

CERCLIS

The information contained in this report is the current database provided by the E.P.A. list as of March, 1993.

The U.S. Environmental Protection Agency (E.P.A.) has compiled this list of contaminated properties for designation under the Federal Superfund Program pursuant to the *Comprehensive Environmental Response Compensation and Liability Act (CERCLA)*. These sites represent environmental concern for the discharge of hazardous materials by hazardous waste generators, treatment and storage facilities, and hazardous waste disposal sites.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

The NATEC database listing as of this date indicates no locations within a one and a half mile radius of the subject property.

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

NPL

NATIONAL PRIORITY LIST

The information contained in this report is the current database provided by the E.P.A. list as of March, 1993.

The Environmental Protection Agency has compiled this list from the designated CERCLIS list. The NPL sites are prioritized to their significant risk to human health and the environment. The list targets those sites to receive remedial funding under the *Comprehensive Environmental Response Conservation and Liability Act (CERCLA)*. The NPL lists the nation's highest priority sites for remedial action. Only NPL sites can receive CERCLA funding.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

The NATEC database listing as of this date indicates no locations within a one and a half mile radius of the subject property.

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

SUPERFUND (LIENS)

FEDERAL SUPERFUND LIENS

The information contained in this report is the current database provided by the E.P.A. list as of November, 1992.

Under the authority granted the E.P.A. by the *Comprehensive Environmental Response Conservation and Liability Act (CERCLA)*, E.P.A. is authorized to place a Superfund Lien on property that the agency has spent money on for remedial action or notified the owner of the potential of liability for remedial action.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

The NATEC database listing as of this date indicates no locations within a one and a half mile radius of the subject property.

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

SWIS

SOLID WASTE INFORMATION SYSTEMS

The information in this report is the current list prepared by the California Waste Management Board as of May, 1992.

The California Waste Management Board maintains this list pursuant to the Solid Waste Management and Resource Recovery Act of 1972. The list contains an inventory of active, inactive, and closed solid waste disposal and transfer facilities.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

The NATEC database listing as of this date indicates no locations within a one and a half mile radius of the subject property.

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

RCRA

RESOURCE CONSERVATION AND RECOVERY ACT

The information in this report is the current database provided by the E.P.A. as of August, 1992.

Under the Resource Conservation and Recovery Act, the Environmental Protection Agency compiles this list classification of generators of hazardous waste materials. Generators in this classification are required to have U.S. E.P.A. I.D. numbers on all waste manifest disposal records.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

FACILITY DATA

Distance: 1.0 mile Southwest
Map Ref.#: Not mapped.
Facility ID: CAD05877756
Facility Name: TAYLOR JOHN-DIXON
Facility Phone: (916) 991-4451
Address: 1850 N FIRST ST
City and zip: DIXON 95620
Large Quantity Generator (more than 1000 kg/month)

Distance: 1.1 mile Southwest
Map Ref.#: Not mapped.
Facility ID: CAD982342271
Facility Name: MEM MASONRY
Facility Phone: (916) 678-3071
Address: 395 INDUSTRIAL WAY
City and zip: DIXON 95620
Limited Quantity Generator (less than 100 kg/month)

Distance: 1.1 mile Southwest
Map Ref.#: Not mapped.
Facility ID: CAD041840042
Facility Name: TIPTON J WOODWORK INC
Facility Phone: (916) 678-3322
Address: INDUSTRIAL WAY
City and zip: DIXON 95620
Large Quantity Generator (more than 1000 kg/month)

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

RCRA FACILITY DATA CONTINUED

Distance: 1.1 mile Southwest
Map Ref.#: Not mapped.
Facility ID: CAD983606609
Facility Name: BASALITE
Facility Phone: (916) 678-1901
Address: 605 INDUSTRIAL WY
City and zip: DIXON 95620
Small Quantity Generator (100-1000 kg/month)

Distance: 1.2 mile Southwest
Map Ref.#: Not mapped.
Facility ID: CAD983617218
Facility Name: TEMPERED GLASS PRODUCTS INC
Facility Phone: (916) 568-2300
Address: 1320 INDUSTRIAL PL
City and zip: DIXON 95620
Small Quantity Generator (100-1000 kg/month)

Facility ID: CAD982485302
Facility Name: CAL TRANS
Facility Phone: (209) 948-7427
Address: 8638 STARLING RD
City and zip: DIXON 95620
Small Quantity Generator (100-1000 kg/month)

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

LUST

LEAKING UNDERGROUND STORAGE TANKS

The information in this report is the current list prepared by the California Water Resources Control Board as of May, 1992.

The State of California Water Resources Control Board (WRCB) in Sacramento provides a list of all leaks of hazardous substances from underground tanks. This database provides information on contamination case types. Additional sources of information are provided by the nine local offices of the WRCB in California.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

FACILITY DATA

Distance: 0.6 mile Northwest
Map Ref.#: C2
Site: FORMER EXXON
Address: 6618 MILK FARM RD
City,State,Zip: DIXON CA 95620
Substance: GASOLINE
Lead Agency: Regional
Report Date: 08/10/89
Revision Date: 08/10/89
Regional Date: 04/22/93
Case Type: Ground water has been affected.
Status: Preliminary site assessment workplan submitted.
Remedial Action:
Excavate and Treat -- remove contaminated soil and treat (including spreading or land farming).
Enhance Biodegradation -- use of any available technology to promote bacterial decomposition of contaminants.

Distance: 0.6 mile Northwest
Map Ref.#: C2
Site: IKE'S LANDSCAPING
Address: 6646 MILK FARM RD
City,State,Zip: DIXON CA 95620
Substance: GASOLINE
Lead Agency: Regional
Report Date: 08/10/89
Revision Date: 08/10/89
Regional Date: 04/22/93
Case Type: Ground water has been affected.
Status: Preliminary site assessment workplan submitted.
Remedial Action:
Excavate and Treat -- remove contaminated soil and treat (including spreading or land farming).

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

LUST FACILITY DATA CONTINUED

Enhance Biodegradation -- use of any available technology to promote bacterial decomposition of contaminants.

Distance: 0.6 mile Northwest
Map Ref.#: C2
Site: FORMER TEXACO
Address: 6615 MILK FARM RD
City,State,Zip: DIXON CA 95620
Substance: DIESEL
Lead Agency: Regional
Report Date: 08/10/89
Revision Date: 08/10/89
Regional Date: 04/22/93
Case Type: Ground water has been affected.
Status: Preliminary site assessment workplan submitted.

Remedial Action:
Excavate and Treat -- remove contaminated soil and treat (including spreading or land farming).
Enhance Biodegradation -- use of any available technology to promote bacterial decomposition of contaminants.

Distance: 1.0 mile Southwest
Map Ref.#: I
Site: JOHN TAYLOR FERTILIZERS
Address: 1850 1ST ST N
City,State,Zip: DIXON CA 95620
Substance: GASOLINE
Report Date: 01/04/91
Revision Date: 01/04/91
Regional Date: 04/22/93
Case Type: Only Soil has been affected
Status: Leak suspected at site but has not been confirmed.

Distance: 1.5 mile Southwest
Map Ref.#: C3
Site: RON DUPRATT FORD
Address: 1320 1ST ST N
City,State,Zip: DIXON CA 95620
Substance: WASTE OIL
Lead Agency: Regional
Report Date: 02/17/88
Revision Date: 11/09/88
Regional Date: 04/22/93
Case Type: Only Soil has been affected
Status: Preliminary site assessment underway.

Site: CA DEPT OF TRANSPORTATION
Address: 8638 SPARLING LN
City,State,Zip: DIXON CA 95620
Substance: GASOLINE
Lead Agency: Regional
Report Date: 11/10/86
Revision Date: 11/10/86

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

LUST FACILITY DATA CONTINUED

Regional Date: 04/22/93
Case Type: Only Soil has been affected
Status: Preliminary site assessment workplan submitted.

CORTESE**STATE OF CALIFORNIA OFFICE OF PLANNING AND RESEARCH**

The information contained in this report is compiled by the State of California's Governors Office and is current as of November, 1990.

This is a listing of potential and confirmed hazardous waste and substance sites throughout California. The information in this list was consolidated within the State Office of Planning and Research. The data for the list was received from the State Water Resources Control Board (WRCB), The California Waste Management Board (CWMB), and the Department of Health Services (DHS).

This database is no longer in production and is provided as a convenience only.

DHS: Records that have been compiled by the Toxic Substances Control Division of the Department of Health Services. This code indicates an abandoned hazardous waste site.

DHS5: Sites pursuant to Section 25356 of the Health and Safety Codes (sites included under the Hazardous Substance Cleanup Bond Act).

DHS2: Records that have been compiled by the Environmental Health Division of the Department of Health Services. This code indicates public water drinking wells that serve less than 200 connections ("small wells").

WRCB: Records compiled by the Water Resources Control Board. These are sites of reported leaks that have been investigated by the WRCB. Leak sites do not necessarily lie within incorporated boundaries of listed cities.

DHS3: Records that have been compiled by the Environmental Health Division of the Department of Health Services and consist of public water drinking wells that serve more than 200 connections ("large wells").

CWMB: Records compiled by the California Waste Management Board. These are solid waste disposal facilities from which there is a known migration of hazardous waste.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

FACILITY DATA

Distance: 0.6 mile Northwest
Map Ref.#: C2
Source: WRCB
Site Name: FORMER EXXON STATION
Location: 6618 MILK FARM RD
City and zip: DIXON 95620

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

CORTESE FACILITY DATA CONTINUED

Distance: 0.6 mile Northwest
Map Ref.#: C2
Source: WRCB
Site Name: FORMER TEXACO STATION
Location: 6615 MILK FARM RD
City and zip: DIXON 95620

Distance: 0.6 mile Northwest
Map Ref.#: C2
Source: WRCB
Site Name: IKE'S LANDSCAPING
Location: 6647 MILK FARM RD
City and zip: DIXON 95620

Distance: 0.6 mile Northwest
Map Ref.#: C2
Source: WRCB
Site Name: MORGAN'S FRUIT STAND
Location: 6646 MILK FARM RD
City and zip: DIXON 95620

Distance: 1.0 mile Northeast
Map Ref.#: C1
Source: DHS1
Site Name: DIXON Y MACHINE INC.
Location: I-80 AND PEDRICK RD
City and zip: DIXON 95620

Distance: 1.5 mile Southwest
Map Ref.#: C3
Source: WRCB
Site Name: RON DUPRATT FORD
Location: 1320 NORTH FIRST ST
City and zip: DIXON 95620

Source: WRCB
Site Name: DIXON MAINT STN (CALTRANS)
Location: 8638 SPARLING LN
City and zip: DIXON 95620

Source: WRCB
Site Name: BP STN #11245/MOBIL STN#10-FDF
Location: 8665 PEDRICK RD
City and zip: DIXON 95620

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

BEP

BOND EXPENDITURE PLAN

The information in this report is the current list prepared by the California Department of Health Services as of January, 1990.

Under the California Hazardous Substance Bond Act of 1984, the California Department of Health Services has developed a listing of those hazardous waste sites subject to develop a site specific expenditure plan for an appropriation of funds for cleanup under the Bond Expenditure Plan.

This database was incorporated into the CAL-SITES database. It is no longer in production and is provided as a convenience only.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

The NATEC database listing as of this date indicates no locations within a one and a half mile radius of the subject property.

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

CAL-SITES

The information contained in this report is the current database provided by the E.P.A. as of February, 1993.

The CDHS compiled this database pursuant to Section 253596 of the California Health and Safety Code. The list contains information on potential hazardous waste sites that have been identified by the Historical Abandoned Site Survey Program. The CDHS researched a major portion of the various state environmental agencies that could possibly help identify potential hazardous waste sites. Once sites are confirmed as hazardous sites they may be merged into the database of the Cortese List and/or the Bond Expenditure Program (BEP) List. Names may remain on this list even though a determination has been made that no leak had occurred and the DHS is requiring no further action to protect the environment or public health.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

FACILITY DATA

Distance: 1.0 mile Northeast
Map Ref.#: C1
Facility No.: 48-35-0001
Facility Name: DIXON Y MACHINE INC.
Address: I-80 AND PEDRICK ROAD
City and zip: DIXON 95620
Status: PEA Required, Low Priority
Status Date: 07/01/87

Facility No.: 48-28-0002
Facility Name: A G FERTILIZER COMPANY
Address: ROUTE 2, BOX 773
City and zip: DIXON 95620
Status: No Further Action for DTSC
Status Date: 04/26/82

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WDS

WASTE DISCHARGE SYSTEMS

The information in this report is produced by the state of California Environmental Affairs Agency Office of Hazardous Material Data Management.

This data base contains information on sites which have been issued waste discharge requirements. Under State and Federal regulations, generators are allowed to discharge to publicly owned treatment works (POTW's) specified levels of waste water toxins. (Some of these industries have categorical pretreatment standards for their discharges; other companies may fall under locally developed limits.) The current information was compiled from the agency published list as of March, 1993.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

FACILITY DATA

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WDS FACILITY DATA CONTINUED

Site Information

ID: 5A482010001
Site: WASTEWATER TREATMENT PLANT
Address:
City and Zip:
Phone: None
Contact:

Operator Data

Operator: AMERICAN HOME FOODS, INC.
Address: VACA VALLEY
City and Zip: VACAVILLE 95688
Phone: None
Contact: WILLIAM BARRETT

Facility Characteristics

Status: Active
NPDES No.:
Operator type: Private
Facility type: Industrial
Standard Industrial Classification Codes
Primary: 2033
Secondary:
Waste types:
Designated Process Waste (Ind./Mfg.)
Process Waste (Ind./Mfg.)
Design Flow: 0.0000 Million Gallons per Day
Baseline Flow: 0.0000 Million Gallons per Day
Self Monitoring
Report Frequency: Quarterly
Threat: Minor
Reclamation
Requirements: Unknown
Pretreatment: POTW does not have an approved pretreatment program
Complexity:
Facility having physical, chemical or biological waste treatment system, class II or III disposal sites or facilities without treatment system that are complex

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WDS FACILITY DATA CONTINUED

Site Information

ID: 5A482004001
Site: MEAT PACKING FACILITY
Address:
City and Zip: DIXON
Phone: None
Contact: GARY SCHRECONGOST

Operator Data

Operator: ARMOUR FOOD COMPANY, DIXON
Address: P.O. BOX G
City and Zip: GREELEY 80632
Phone: None
Contact: MYRA MONFORT

Facility Characteristics

Status: Active
NPDES No.:
Operator type: Private
Facility type: Industrial
Standard Industrial Classification Codes
Primary: 2011
Secondary:
Waste types:
Designated Domestic Sewage
Domestic Sewage
Design Flow: 0.0000 Million Gallons per Day
Baseline Flow: 0.0000 Million Gallons per Day
Self Monitoring
Report Frequency: No reporting requirements
Threat: Moderate
Reclamation
Requirements: Unknown
Pretreatment: POTW does not have an approved pretreatment program
Complexity:
Facility having physical, chemical or biological waste treatment system, class II or III disposal sites or facilities without treatment system that are complex

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WDS FACILITY DATA CONTINUED

Site Information

ID: 5A480300001
Site: B & J DROP BOX DISP SITE
Address:
City and Zip:
Phone: None
Contact: GLEN HOLDNER, ELMER KITCHEN

Operator Data

Operator: B & J DROP BOX *
Address: 831 DAVIS ST.
City and Zip: VACAVILLE 95688
Phone: None
Contact: ARCHIE HUMPHREY

Facility Characteristics

Status: Active
NPDES No.:
Operator type: Private
Facility type: Solid Waste Site - Class III
Standard Industrial Classification Codes
Primary: 4953
Secondary:
Waste types:
Nonhazardous Solid Waste Solid Wastes
Solid Wastes
Design Flow: 0.0000 Million Gallons per Day
Baseline Flow: 0.0000 Million Gallons per Day
Self Monitoring
Report Frequency: Quarterly
Threat: Major
Reclamation
Requirements: Unknown
Pretreatment: POTW does not have an approved pretreatment program
Complexity:
Major NPDES facility, non-NPDES facility that would be
major is discharge was made to surface or ground waters
or Class I disposal site

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WDS FACILITY DATA CONTINUED

Site Information

ID: 5A482012001
Site: TOMATO PROCESSING
Address:
City and Zip: DIXON
Phone: 916-662-7676
Contact: HANK STONE

Operator Data

Operator: DIXON CANNING CO.
Address: POST OFFICE BOX 340
City and Zip: DIXON 95620
Phone: 916-662-7676
Contact: FRED TYLER

Facility Characteristics

Status: Active
NPDES No.:
Operator type: Private
Facility type: Industrial
Standard Industrial Classification Codes
Primary: 2033
Secondary:
Waste types:
Designated Domestic Sewage with Ind. Waste
Domestic Sewage with Ind. Waste
Design Flow: 7.6000 Million Gallons per Day
Baseline Flow: 0.0000 Million Gallons per Day
Self Monitoring
Report Frequency: Monthly
Threat: Minor
Reclamation
Requirements: Producer-User
Pretreatment: POTW does not have an approved pretreatment program
Complexity:
Facility having physical, chemical or biological waste
treatment system, class II or III disposal sites or
facilities without treatment system that are complex

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WDS FACILITY DATA CONTINUED

Site Information

ID: 5A480107001
Site: WASTE DISPOSAL FACILITY
Address:
City and Zip:
Phone: None
Contact:

Operator Data

Operator: DIXON CITY HOUSING AUTHORITY
Address: P.O. BOX 610
City and Zip: DIXON 95620
Phone: None
Contact: MARGARITE KITTYLE

Facility Characteristics

Status: Active
NPDES No.:
Operator type: Special District
Facility type: Municipal
Standard Industrial Classification Codes
Primary: 6514
Secondary:
Waste types:
Designated Domestic Sewage
Domestic Sewage
Design Flow: 0.0000 Million Gallons per Day
Baseline Flow: 0.0000 Million Gallons per Day
Self Monitoring
Report Frequency: No reporting requirements
Threat: Minor
Reclamation
Requirements: Unknown
Pretreatment: POTW does not have an approved pretreatment program
Complexity: Other

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WDS FACILITY DATA CONTINUED

Site Information

ID: 5A480307001
Site: MONTEZUMA HILLS FACILITY
Address:
City and Zip:
Phone: 415-372-9100
Contact: SALLY SCHOEMANN

Operator Data

Operator: IT CORP CLASS III/ DISP SITE
Address: 4575 PACHECO BLVD
City and Zip: MARTINEZ 94553
Phone: 415-372-9100
Contact: DOUG WALTERMIRE

Facility Characteristics

Status: Active
NPDES No.:
Operator type: Private
Facility type: Solid Waste Site - Class II
Standard Industrial Classification Codes
Primary: 4953
Secondary:
Waste types:
Designated Solid Wastes
Solid Wastes
Design Flow: 0.0000 Million Gallons per Day
Baseline Flow: 0.0000 Million Gallons per Day
Self Monitoring
Report Frequency: Quarterly
Threat: Moderate
Reclamation
Requirements: Unknown
Pretreatment: POTW does not have an approved pretreatment program
Complexity:
Major NPDES facility, non-NPDES facility that would be
major is discharge was made to surface or ground waters
or Class I disposal site

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WDS FACILITY DATA CONTINUED

Site Information

ID: 5A481002001
Site: WASTE DISP. FACILITY
Address:
City and Zip:
Phone: None
Contact:

Operator Data

Operator: THE MILK FARM
Address: 6615 MILK FARM ROAD
City and Zip: DIXON 95620
Phone: None
Contact: RAZI SHAH MANAGER

Facility Characteristics

Status: Active
NPDES No.:
Operator type: Private
Facility type: Municipal
Standard Industrial Classification Codes
Primary: 5812
Secondary:

Waste types:

Designated Domestic Sewage
Domestic Sewage

Design Flow: 0.0000 Million Gallons per Day
Baseline Flow: 0.0000 Million Gallons per Day

Self Monitoring

Report Frequency: No reporting requirements

Threat: Minor

Reclamation

Requirements: Unknown

Pretreatment: POTW does not have an approved pretreatment program

Complexity: Other

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

SARA TITLE III

TOXIC CHEMICAL RELEASE INVENTORY

Section 313 of the Emergency Planning and Community Right to Know Act (Title III of the Superfund Amendments and Re-authorization Act of 1986) requires certain facilities to file an annual toxic chemical release inventory form with the United States Environmental Protection Agency and the California Environmental Affairs Agency. Facilities are required to report releases to air, water and land. The current information was compiled from the agency published list as of December, 1991.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

FACILITY DATA

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

SARA FACILITY DATA CONTINUED

Facility ID: 480817
Facility Name: DIXON CANNING CORP.
Address: 8380 PEDRICK RD.
City and zip: DIXON 95620
SIC code: 2099
CAS code: 7782-50-5 - CHLORINE
Inventory Code (Pounds by Range) 1,000 - 9,999
Air Total: 0
Water Total: 0
Underground: 0
Land Total: 0
POTW Total: 0
Off Site Total: 0

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS

WASTE MANAGEMENT UNIT DATABASE SYSTEM

This report lists sites tracked by the State of California Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units.

WMUDS is intended as an enhancement to WDS (Waste Discharger System); it does not duplicate any information in WDS. In addition, WMUDS contains information regarding SWAT and TPCA programs. The current information was compiled from the agency published list as of December, 1992.

* Distance coordinates are provided as a convenience only. Estimated distance is based on the mapping information provided by the U.S. Government Tiger files and may vary from local street guide maps. Elevation data is based on U.S. Geological Survey data and is limited in scope and accuracy to this source. Sites that are not provided with coordinates are generally the result of inaccurate or incomplete information provided by Federal and State government record lists.

FACILITY DATA

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Site Information

WDS ID: 5A480300001
NPDES #:
Name: B & J DROP BOX DISP SITE
Contact: GLEN HOLDNER, ELMER KITCHEN Department:
Phone:
Address:
City, State, Zip: ,CA

Landowner Data

Name: GOLDEN GATE DISPOSAL CO.
Contact: Department:
Phone: 4156264000
Address: 900 7TH STREET
City, State, Zip: SAN FRANCISCO, CA 94107

Agency Data

Name: B & J DROP BOX *
Contact: ARCHIE HUMPHREY Department:
Phone: 7074482945
Address: 831 DAVIS ST.
City, State, Zip: VACAVILLE ,CA95688
Comments:

Additional Information

This facility is CLOSED to the public.
SIC code 1: 4953 - unknown
Waste Type 1: NSLDWST
Facility Complexity: A
Facility Status: A
Threat to Water Quality: 1
This facility is classified: SWAT WDS .
WMU ID: 5A480300001-01
WMU type: LANDFILL
Liner Comments:
Monitoring: Surface Water Ground Water
Township: 5N,1E,2
WMU Name: B & J DROP BOX DISPOSAL SITE-VACAVILLE
Type of WMU operation: TRENCH
WMU classification (post 1984):III
WMU classification (pre 1984):
WMU status: UNDETERMINED
Type of waste (post 1984):NON-HAZARD
Type of waste (pre 1984):
Year WMU will reach capacity:
Nearest fault name: HAYWARD
Distance to nearest fault (Feet): 185000
WMU Size in (Acres) :161

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Average annual precipitation (Inches): 18

Ground water depth (Feet): 5

General comments:

WMU#1 CONSISTS OF 3 MODULES. MODULE 1 IS TO CEASE ACCEPTING WASTES
BY 9/30/91 AND PLANNING CONSTRUCTION OF MODULES 1 & 2.

Formation name: U

type: OTHER

permeability: UNKNOWN

comments:

FORMATION CONSISTS OF STIFF TO VERY STIFF SILTY TO SANDY SILTY CLAY.

Statistics used to analyze water quality:U

WMU Monitoring status:DETECTION

LCRS are not present.

Will withstand maximum probable/credible earthquake.

Regional Board doesn't consider Vadose monitoring feasible.

Water quality protection standard isn't set to background.

Water quality protection standards haven't been exceeded.

This facility accepts Asbestos.

SWIS ID: 48-AA-0002

SWAT rank: 2

SWAT status: REPORT APPROVED

SWAT report review percent complete:

SWAT listing was last edited on 07/07/91

SWAT workplan status: WORKPLAN APPROVED

Non-Hazardous waste isn't above active level outside WMU in ground water.

Non-Hazardous waste isn't above active level outside WMU in vadose zone.

Non-Hazardous waste isn't below active level outside WMU in surface water.

Non-Hazardous waste is below active level outside WMU in ground water.

Non-Hazardous waste isn't below active level outside WMU in vadose zone.

Ground water monitoring is adequate.

Hazardous waste isn't outside WMU in ground water.

Non-Hazardous waste isn't above active level outside WMU in surface water.

Surface water monitoring network is adequate.

Hazardous waste isn't outside WMU in vadose zone.

Four quarters of monitoring data isn't submitted.

Vadose zone monitoring network is adequate.

Hazardous waste isn't outside WMU in surface water.

WMU ID: 5A480300001-02

WMU type: SURF. IMP.

Liner type 1: NATURAL GEOLOGIC MATERIAL

Liner type 2: 24" CLAY

Liner Comments:

Monitoring: Surface Water Ground Water

Township: 5N,1E,2

WMU Name: B&J DROP BOX CLASS II SI

Type of WMU operation:

WMU classification (post 1984):II

WMU classification (pre 1984):

WMU status: UNDETERMINED

Type of waste (post 1984):DESIGNATED

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Type of waste (pre 1984):

Year WMU will reach capacity:

Nearest fault name: HAYWARD

Distance to nearest fault (Feet): 200000

WMU Size in (Acres) :161

Average annual precipitation (Inches): 18

Ground water depth (Feet): 5

General comments:

WMU #2(SI-1) IS A CLASS II SI FOR LEACHATE EVAPORATION. NOT IN CON-
FORMANCE WITH CH 15 REQUIREMENTS AND MUST BE RETROFITTED OR CLOSED.

Formation name:

type: OTHER

permiability:

comments:

FORMATION CONSISTS OF STIFF TO VERY STIFF SILTY TO SANDY SILTY CLAY.

Statistics used to analyze water quality:

WMU Monitoring status:DETECTION

LCRS are present.

Will not withstand maximum probable/credible earthquake.

Regional Board doesn't consider Vadose monitoring feasible.

Water quality protection standard is set to background.

Water quality protection standards haven't been exceeded.

This facility accepts designated liquids.

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Site Information

WDS ID: 5A480307001
NPDES #:
Name: MONTEZUMA HILLS FACILITY
Contact: SALLY SCHOEMANN Department:
Phone: 4153729100
Address:
City, State, Zip: ,CA

Landowner Data

Name: IT CORPORTATION
Contact: Department:
Phone: 4152288400
Address: 4575 PACHECO BOULEVARD
City, State, Zip: MARTINEZ, CA 94553

Agency Data

Name: IT CORP CLASS III/ DISP SITE
Contact: DOUG WALTERMIRE Department:
Phone: 4153725276
Address: 4575 PACHECO BLVD
City, State, Zip: MARTINEZ ,CA94553
Comments:

Additional Information

This facility is CLOSED to the public.
SIC code 1: 4953 - unknown
Waste Type 1: DSLDWST
Facility Complexity: A
Facility Status: A
Threat to Water Quality : 2
This facility is classified: TPCA SWAT WDS .
WMU ID: 5A480307001-01
WMU type: SURF. IMP.
Liner Comments:
Township:
WMU Name: MONTEZUMA HILLS FACILITY
Type of WMU operation:
WMU classification (post 1984):
WMU classification (pre 1984): II-1
WMU status: CEASE DISCHARGE
Type of waste (post 1984):
Type of waste (pre 1984):
Year WMU will reach capacity:
Nearest fault name: UNKNOWN
Distance to nearest fault (Feet):
WMU Size in (Acres) :<100
Average anual percipitation (Inches): 0

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Ground water depth (Feet): 0

Formation name: UNKNOWN

type: UNKNOWN

permiability: UNKNOWN

Statistics used to analyze water quality:U

WMU Monitoring status:

LCRS are not present.

Will not withstand maximum probable/credible earthquake.

Regional Board doesn't considers Vadose monitoring feasible.

Water quality protection standard isn't set to background.

Water quality protection standards haven't been exceeded.

SWIS ID:

SWAT rank: 1

SWAT status: REPORT APPROVED

SWAT report review percent complete:

SWAT listing was last edited on 07/07/91

SWAT workplan status: WORKPLAN APPROVED

Non-Hazardous waste is above active level outside WMU in ground water.

Non-Hazardous waste is above active level outside WMU in vadose zone.

Non-Hazardous waste isn't below active level outside WMU in surface water.

Non-Hazardous waste is below active level outside WMU in ground water.

Non-Hazardous waste is below active level outside WMU in vadose zone.

Ground water monitoring is adequate.

Hazardous waste isn't outside WMU in ground water.

Non-Hazardous waste isn't above active level outside WMU in surface water.

Surface water monitoring network is adequate.

Hazardous waste isn't outside WMU in vadose zone.

Four quarters of monitoring data isn't submitted.

Vadose zone monitoring network is adequate.

Hazardous waste isn't outside WMU in surface water.

TPCA Task #: 05048

TPCA Status: G

HAR Status: 6

HAR Due Date: / /

HAR approval date: / /

TPCA requirements notification date: 10/28/85

Surface impoundment isn't being retrofitted.

Surface impoundment leak is present.

Surface impoundment is within half mile of potential drinking water.

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Site Information

WDS ID: 5 480001NUR
NPDES #:
Name: DIXON CITY
Contact: Department:
Phone:
Address: NW OF TOWN
City, State, Zip:

Landowner Data

Name:
Contact: Department:
Phone:
Address:
City, State, Zip: , CA

Agency Data

Name: CITY OF DIXON
Contact: Department:
Phone:
Address:
City, State, Zip:
Comments:

Additional Information

This facility is CLOSED to the public.
SIC code 1: - unknown
Waste Type 1:
Facility Complexity:
Facility Status:
Threat to Water Quality :
This facility is classified: SWAT .
WMU ID: 5 480001NUR-01
WMU type: LANDFILL
Liner Comments:
Township:
WMU Name: DIXON CITY
Type of WMU operation:
WMU classification (post 1984): UNK
WMU classification (pre 1984): UNKN
WMU status: CEASE DISCHARGE
Type of waste (post 1984):
Type of waste (pre 1984):
Year WMU will reach capacity:
Nearest fault name: UNKNOWN
Distance to nearest fault (Feet):
WMU Size in (Acres) : <100
Average annual precipitation (Inches): 0

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Ground water depth (Feet): 0
Formation name: UNKNOWN
type: UNKNOWN
permiability: UNKNOWN
Statistics used to analyze water quality:U
WMU Monitoring status:DETECTION
LCRS are not present.
Will not withstand maximum probable/credible earthquake.
SWIS ID:
SWAT rank: 5
SWAT status: NOT DUE YET
SWAT report review percent complete:
SWAT listing was last edited on 07/07/91
SWAT workplan status: WORKPLAN APPROVED

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Site Information

WDS ID: 2 480005NUR
NPDES #:
Name: SERV-U-GARBAGE
Contact: Department:
Phone:
Address:
City, State, Zip:

Landowner Data

Name:
Contact: Department:
Phone:
Address:
City, State, Zip: , CA

Agency Data

Name:
Contact: Department:
Phone:
Address:
City, State, Zip:
Comments:

Additional Information

This facility is CLOSED to the public.
SIC code 1: - unknown
Waste Type 1:
Facility Complexity:
Facility Status:
Threat to Water Quality :
This facility is classified: SWAT .
WMU ID: 2 480005NUR-01
WMU type: LANDFILL
Liner Comments:
Township:
WMU Name: SERV-U-GARBAGE
Type of WMU operation:
WMU classification (post 1984): UNK
WMU classification (pre 1984): UNKN
WMU status: UNKNOWN
Type of waste (post 1984):
Type of waste (pre 1984):
Year WMU will reach capacity:
Nearest fault name: UNKNOWN
Distance to nearest fault (Feet):
WMU Size in (Acres) :
Average annual precipitation (Inches): 0

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Ground water depth (Feet): 0
Formation name: UNKNOWN
type: UNKNOWN
permiability: UNKNOWN
Statistics used to analyze water quality:
WMU Monitoring status:
LCRS are not present.
Will not withstand maximum probable/credible earthquake.
SWIS ID:
SWAT rank: 13
SWAT status: NOT DUE YET
SWAT report review percent complete:
SWAT listing was last edited on 07/07/91
SWAT workplan status: NOT DUE YET

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Site Information

WDS ID: 2 480006NUR
NPDES #:
Name: VALLEJO
Contact: Department:
Phone:
Address:
City, State, Zip:

Landowner Data

Name:
Contact: Department:
Phone:
Address:
City, State, Zip: , CA

Agency Data

Name:
Contact: Department:
Phone:
Address:
City, State, Zip:
Comments:

Additional Information

This facility is CLOSED to the public.
SIC code 1: - unknown
Waste Type 1:
Facility Complexity:
Facility Status:
Threat to Water Quality :
This facility is classified: SWAT .
WMU ID: 2 480006NUR-01
WMU type: LANDFILL
Liner Comments:
Township:
WMU Name: VALLEJO
Type of WMU operation:
WMU classification (post 1984):UNK
WMU classification (pre 1984): UNKN
WMU status: UNKNOWN
Type of waste (post 1984):
Type of waste (pre 1984):
Year WMU will reach capacity:
Nearest fault name: UNKNOWN
Distance to nearest fault (Feet):
WMU Size in (Acres) :
Average annual precipitation (Inches): 0

SUBJECT PROPERTY:

HWY 113 & VAUGHN ROAD
DIXON
05/20/93 MY93045

WMUDS FACILITY DATA CONTINUED

Ground water depth (Feet): 0
Formation name: UNKNOWN
type: UNKNOWN
permiability: UNKNOWN
Statistics used to analyze water quality:
WMU Monitoring status:
LCRS are not present.
Will not withstand maximum probable/credible earthquake.
SWIS ID:
SWAT rank: 13
SWAT status: NOT DUE YET
SWAT report review percent complete:
SWAT listing was last edited on 07/07/91
SWAT workplan status: NOT DUE YET

**APPENDIX D:
SITE PHOTOGRAPHS**



(Above) Generalized view of agricultural fields on property.

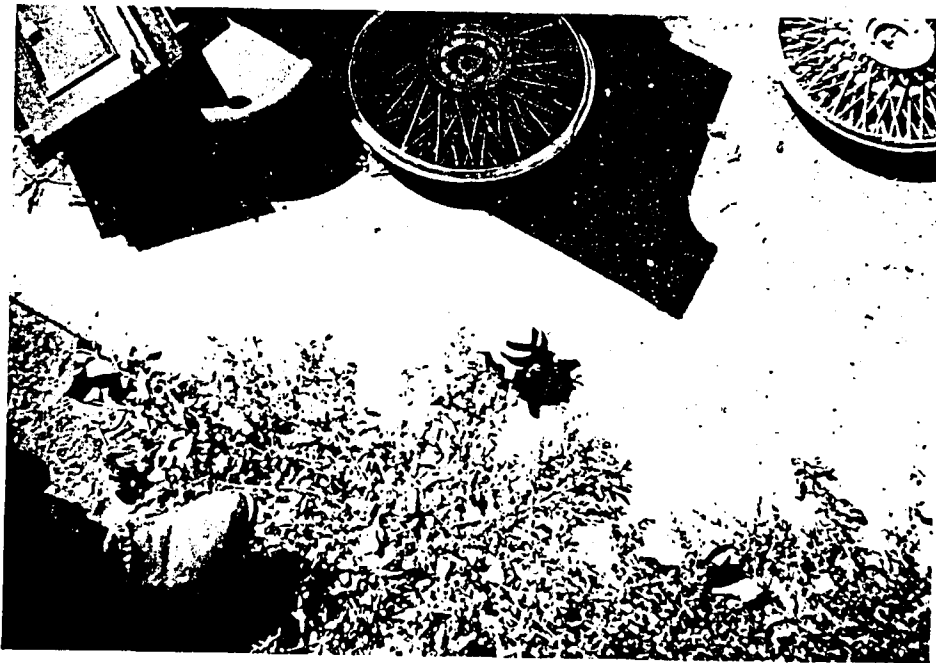
(Below) Left-building housing plumbing business
Right-building housing Bartholomew-Enterprises
Construction business.





(Above) Fuel dispensers, Dixon Livestock Auction Yard.

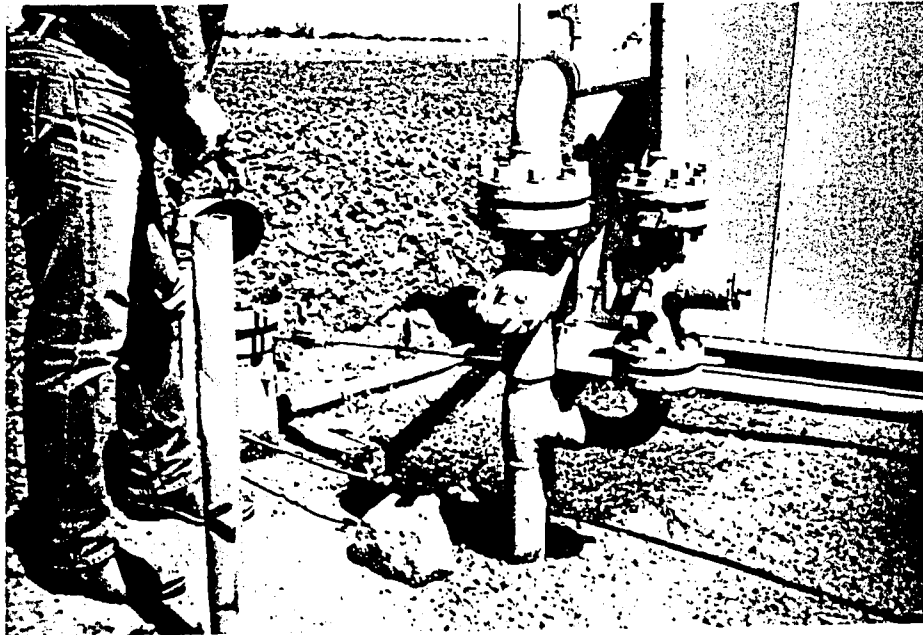
(Below) Fuel tank fill pipe, Dixon Livestock Auction Yard.

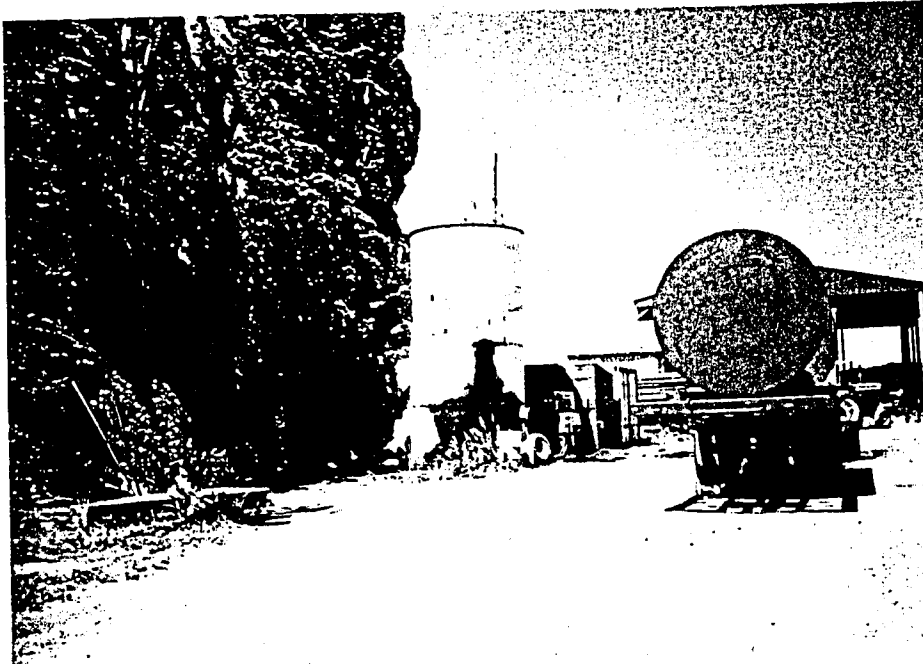




(Above) Trench containing garbage,
Mistler Trucking/Mistler Farms.

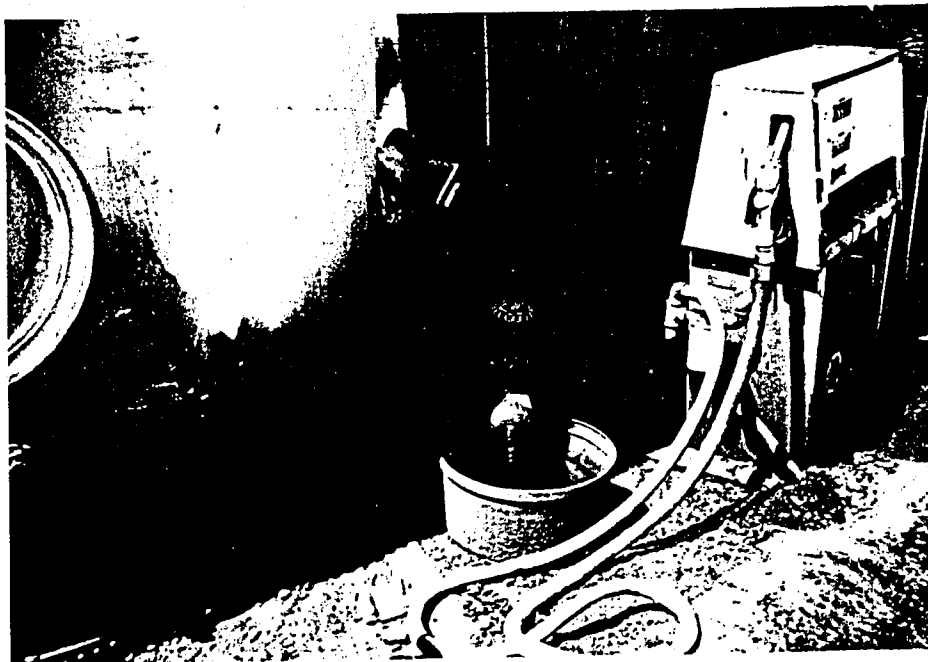
(Below) Gas well, Mistler Property.





(Above) Large above-ground tank at Mistler Trucking/
Mistler Farms.

(Below) Close-up view of dispenser and tank
Mistler Trucking/Mistler Farms.



**ANDERSON
CONSULTING
GROUP**

RECEIVED AUG 13 1993

*Geotechnical and
Environmental
Engineering
Solid Waste
Management
Waste Reduction
and Recycling*

File No. 3195-44
12 August 1993

Wade Associates
2150 A Douglas Boulevard
Suite 220
Roseville, CA 95661

Attention: **Brian Collett**

Subject: Vaughn Road Property
Dixon, Solano County, California
FOLLOW-UP TO PRELIMINARY SITE ASSESSMENT

Dear Mr. Collett:

In our telephone conversation of 29 July 1993, you requested that we prepare a letter to follow-up our preliminary site assessment of the Vaughn Road Property. Enclosed is the information you requested.

As we discussed, our 12 July 1993 report identified a number of conditions on the site and the surrounding property which could be indicative of the presence of contamination. You requested more information about each condition, including its relative seriousness, and the ways in which it could be investigated further.

What follows is: 1) a discussion of each of the conditions; 2) the potential problems associated with the condition; and 3) ways in which the condition could be investigated. The items are arranged in order of importance; that is, those conditions which we believe are most likely to cause contamination are listed first.

1) Noted Condition: There were two underground fuel storage tanks at the Dixon Livestock Auction Yard. The tanks may be 40 years old, or older. We were told that the tanks were not used and are scheduled for removal.

631 Commerce Drive
Roseville, CA 95678-6431

916.969.8883

916.786.8883

Fax 916.786.7891

350 Crown Point Circle
Suite 250, Grass Valley, CA
95945-7801
916.273.7645
Fax 916.273.9159

Potential Problem: Underground fuel storage tanks can leak, contaminating the surrounding soil, and, at times, the groundwater. It has been estimated that 25 per cent of the underground fuel storage tanks in the United States are leaking. Older tanks, such as the ones at the Livestock Auction Yard, are more likely to have leaked than newer tanks for two reasons: 1) they have had more time to corrode and 2) older tanks lack the leak-deterring features of newer tanks.

How This Could Be Investigated: State regulations specify the procedure to be used when investigating a tank excavation for leaks. First, the excavated tank is inspected for holes, and soil samples taken from the base of the excavation are analyzed for contaminants. If contamination is found,

additional sampling is required to determine the extent of the contamination. The contaminated soil is then remediated, usually by excavation and removal, or by soil venting. If groundwater were found in the base of the excavation or in boreholes advanced during subsequent studies, the regulatory agency will usually require the installation and sampling of one or more monitoring wells. If groundwater contamination is identified, and the levels of contaminants do not appear to decrease over time, remediation of the groundwater will be required.

2) Noted condition: Three underground fuel-storage tanks were removed from the Bartholomew Enterprises site in 1985. This work was done before tank removal regulations went into effect, so no regulatory official was onhand to witness the tank closure.

Potential Problem: Because the tanks were removed before regulations controlling tank removals went into effect, there was no analyses of soil samples from the base of the excavation. As a result, there is no data to support or refute a potential leak.

How This Could Be Investigated: Soil borings could be advanced in the former location of each tank. Soil samples could be collected and analyzed for petroleum contaminants. In addition, the presence (or absence) of groundwater in the boreholes could be noted, indicating the likelihood of groundwater contamination and the need for groundwater sampling.

3) Noted Condition: A trench containing garbage was noted on the Mistler Trucking/ Mistler Farms site.

Potential Problem: If hazardous materials (such as pesticide containers, or containers of used motor oil) were disposed of in this trench, soil and groundwater contamination may have resulted.

How This Could Be Investigated: The debris could be removed, and potentially hazardous items in the debris could be identified. Then, soil samples could be collected from the base of the trench and analyzed for various contaminants. Water samples could be collected using a hydroponch or other sampling technique and analyzed for contaminants as well.

4) Noted condition: There were a total of eleven single-family residences on the property. The residences were equipped with garages, barns, and various outbuildings. It should be assumed that each of these properties may have at one time had underground tanks to store heating fuel and possibly vehicle fuels. Given the agricultural setting, it is also likely that these properties have been used to store and mix pesticides.

Potential Problem: The soil and possibly the groundwater in these locations may be contaminated with petroleum contaminants and pesticide residuals.

How This Could Be Investigated: Soil and water samples could be collected from the former

tank locations. Soil and water samples could also be collected and analyzed in areas in which pesticides were mixed and stored.

5) Noted Condition: We noted areas of soil staining from petroleum spillage in both the Livestock Auction Yard and the Mistler Trucking / Mistler Farms property .

Potential Problem: The soil may be contaminated with petroleum products, as well as other contaminants often found in waste oil, such as heavy metals, PCBs, and PAHs.

How This Could Be Investigated: The areas of staining could be excavated, and one or more soil samples from the excavated material could be analyzed for contaminants. The remedial method which would be used to treat or dispose of the soil would be selected based on the levels of contamination identified.

6) Noted Condition: Equipment for steam cleaning was noted on the Mistler Trucking / Mistler Farms Property, and at the Bartholomew Enterprises property.

Potential Problem: If steam cleaning has been done, automotive fluids from the vehicles could have infiltrated the soil in this area, resulting in soil, and possibly groundwater, contamination.

How This Could Be Investigated: Soil and groundwater samples from the steam cleaning area could be collected and analyzed for contaminants.

7) Noted Condition: The fields on the site were being used to grow tomatoes, walnuts, almonds, hay, alfalfa, dry grains, and other miscellaneous row crops, as well as to graze sheep. A large number of pesticides may have been applied to these crops over the years.

Potential Problem: The soil and possibly the groundwater in these locations may be contaminated with pesticide residuals.

How This Could Be Investigated: Soil and water samples could be collected from these fields and analyzed for pesticide residuals.

8) Noted Condition: A gas well was noted east of the Mistler yard area.

Potential Problem: If the well's use is to be discontinued in the future, it is important that the well be properly abandoned. Otherwise, petroleum products from the well may contaminate the shallow groundwater aquifers.

How This Could Be Investigated: At the time of well abandonment, interested persons could contact the State of California Division of Oil and Gas to verify that the well was abandoned in accordance with state regulations.

9) **Noted Condition:** The property was surrounded with commercial, industrial, agricultural, and residential development, including a CalTrans maintenance yard, at least five closed service stations, a warehouse for Kragen Auto Parts, a closed cashew treating facility which had stored large quantities of anhydrous ammonia, the Dixon Canning Company, and Smith's Auto Repair.

Potential Problem: Environmental investigations were underway at four of the five former service stations, and the CalTrans Yard. The extent of contamination at these sites has not been completely defined, but the information which is currently available does not indicate that the subject site has been adversely affected. The remaining businesses all handle (or handled) hazardous materials, as would many of the large farms also located near the site. They may therefore have soil or water contamination.

How This Could Be Investigated: According to a management memo issued by the State of California Department of Toxic Substances Control, it is the State's policy not to hold the owners of properties contaminated by off-site sources liable for cleanup costs. Thus, investigation of off-site sources is not recommended.

10) **Noted Condition:** One half mile north of the site was the Dixon Y Machine site. The State of California Department of Toxic Substances Control (DTSC) has investigated the burying of 55 and 5 gallon pesticide containers on this site. Sample analyses failed to consistently detect pesticide residuals in area groundwater.

Potential Problem: It would not appear likely that contaminants from this site, if present, could adversely impact the subject site, given the distance involved.

How This Could Be Investigated: We do not recommend additional investigation of this matter.

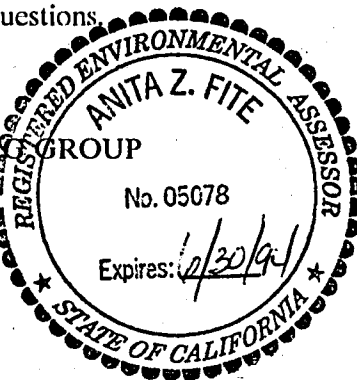
Please call if you have any questions.

Very truly yours,

ANDERSON CONSULTING GROUP



Anita Fite, R.E.A.
Staff Geologist



PRELIMINARY INVESTIGATIONS OF STORM DRAINAGE,
WASTEWATER, WATER, AND STREET SYSTEMS

PREPARED BY
MORTON & PITALO, INC.

DRAFT

PRELIMINARY INVESTIGATION

OF

STORM DRAINAGE, WASTEWATER, WATER
SYSTEM, AND STREET IMPROVEMENTS

THE NORTHEAST QUADRANT
SPECIFIC PLAN

September 16, 1993

MORTON & PITALO, INC.

1788 Tribute Road, Suite 200,
Sacramento, Ca. 95815
(916) 927-2400

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I. Introduction

This study will provide information, calculations, and preliminary cost estimates for the major infrastructure improvements for the Northeast Quadrant Specific Plan as shown in Figure 1. The major infrastructure improvements include storm drainage, wastewater, water supply, and arterial roadway improvements. The cost information provided will be utilized in the preparation of the City of Dixon General Plan Update Economic Analysis.

The Northeast Quadrant Specific Plan is located in the northeast area of Dixon bounded by Interstate 80 to the north, Pedrick Road to the west, Vaughn Road to the South, and Highway 113 (N. First Street) to the west. The Northeast Quadrant Specific Plan is comprised of nineteen (19) parcels totalling 643 acres. All of the parcels included in this study are within the boundaries of the North First Street Assessment District and are designated to be assessed. Thirteen (13) of the parcels will be assessed for sewer trunk facilities only, another three (3) of the parcels will be assessed for sewer trunk and water supply facilities, and the remaining 3 parcels, adjacent to Highway 113, will be assessed for full improvements.

The storm drain, wastewater, water supply, and street improvements designated in this report are conceptual, and intended to be used as a guide. The exact alignment and depth of underground utilities; location and size of retention/detention basins; pumping plants; and roadway improvements can only be determined during the final design.

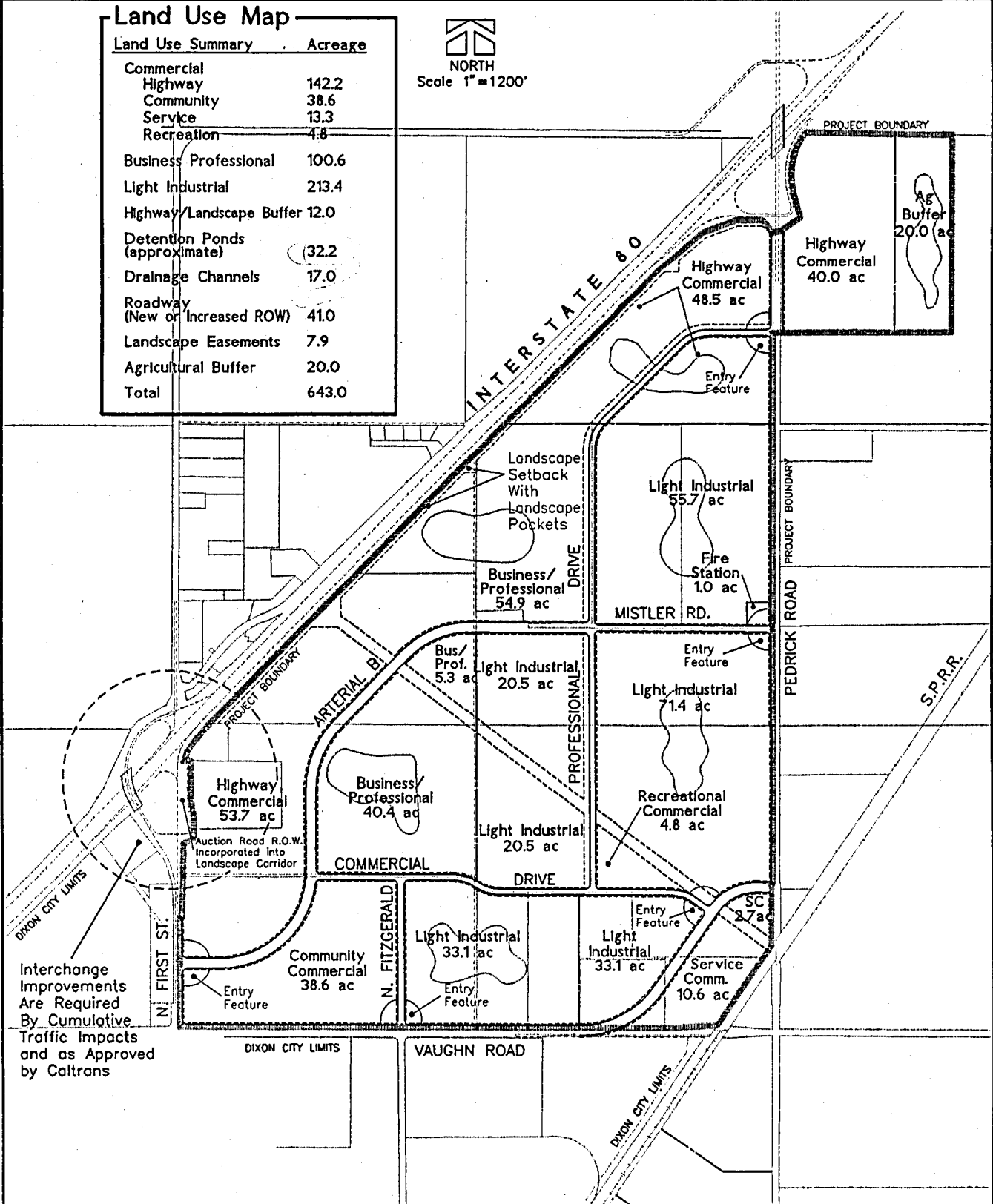
Figure I NORTHEAST QUADRANT SPECIFIC PLAN LAND USE PLAN

City of Dixon

California

Land Use Map

| Land Use Summary | Acreage |
|--------------------------------|--------------|
| Commercial | |
| Highway | 142.2 |
| Community | 38.6 |
| Service | 13.3 |
| Recreation | 4.8 |
| Business Professional | 100.6 |
| Light Industrial | 213.4 |
| Highway/Landscape Buffer | 12.0 |
| Detention Ponds (approximate) | 32.2 |
| Drainage Channels | 17.0 |
| Roadway (New or Increased ROW) | 41.0 |
| Landscape Easements | 7.9 |
| Agricultural Buffer | 20.0 |
| Total | 643.0 |



Interchange Improvements Are Required By Cumulative Traffic Impacts and as Approved by Caltrans

II. STORM DRAINAGE

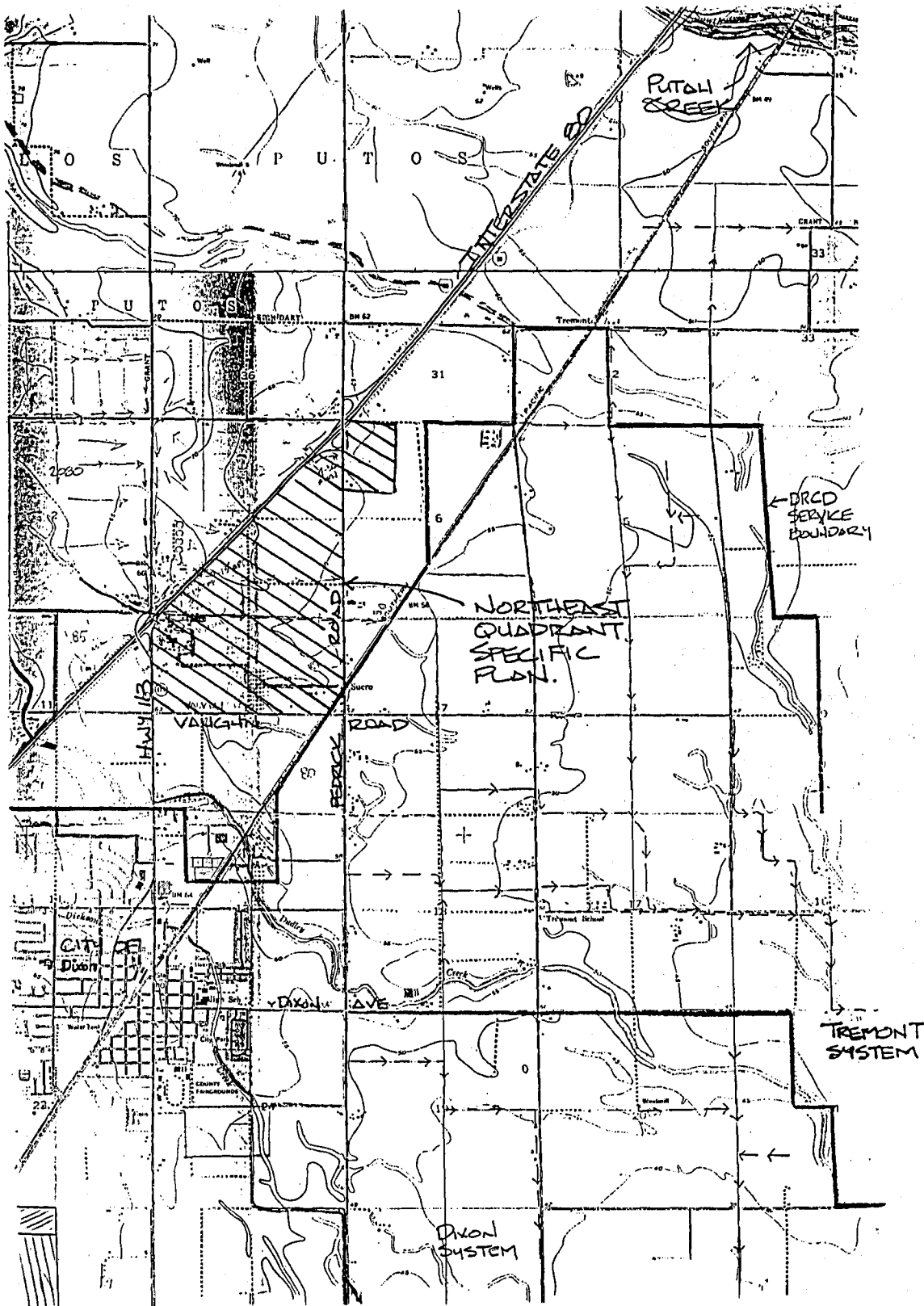
A. EXISTING DRAINAGE:

The lands within the proposed Northeast Quadrant Specific Plan (NEQSP) area contain soils of the Yolo-Brentwood association. The area drains predominantly in the east-southeast direction, away from Interstate 80. The majority of the parcels are used for irrigated row crops, and orchards. Runoff is collected in roadside ditches adjacent to Pedrick Road on the east, and Vaughn Road on the South, and conveyed via ditches to a depressed area adjacent to the Southern Pacific Railroad tracks. The lands within the NEQSP have been omitted from the Dixon Resource Conservation District (DRCD) service area, and therefore no outlet channel has been provided. By inspection of the geographical information available (see Figure II) it appears that flows are stored within the depressed area adjacent to the SPRR, and ultimately released into the downstream systems.

Additional flows from the northwest side of Interstate 80 contribute to the NEQSP area. Field inspection of the existing drainage patterns within the area indicate that approximately 1460 acres are tributary to the 8' x 4' RCB culvert crossing of Interstate 80 near the Highway 113 interchange. The flows are conveyed from this point eastward by channel to a depressed area of approximately 4.5 acres. This area remains wet year round due to irrigation runoff. A channel conveys the flows from this point to Pedrick Road.

An additional 360 acres are tributary to the 4 - 36" CMP archpipe culvert crossings of Interstate 80 southwest of the Pedrick Road Interchange. An existing channel bisecting the proposed 60 acre parcel east of Pedrick Road, and carries the flows eastward, away from the project area.

Approximately 40 acres of land within the NEQSP are being provided with drainage capacity and service through the North First Street Assessment District improvements. See Figure III.



NORTH ↑

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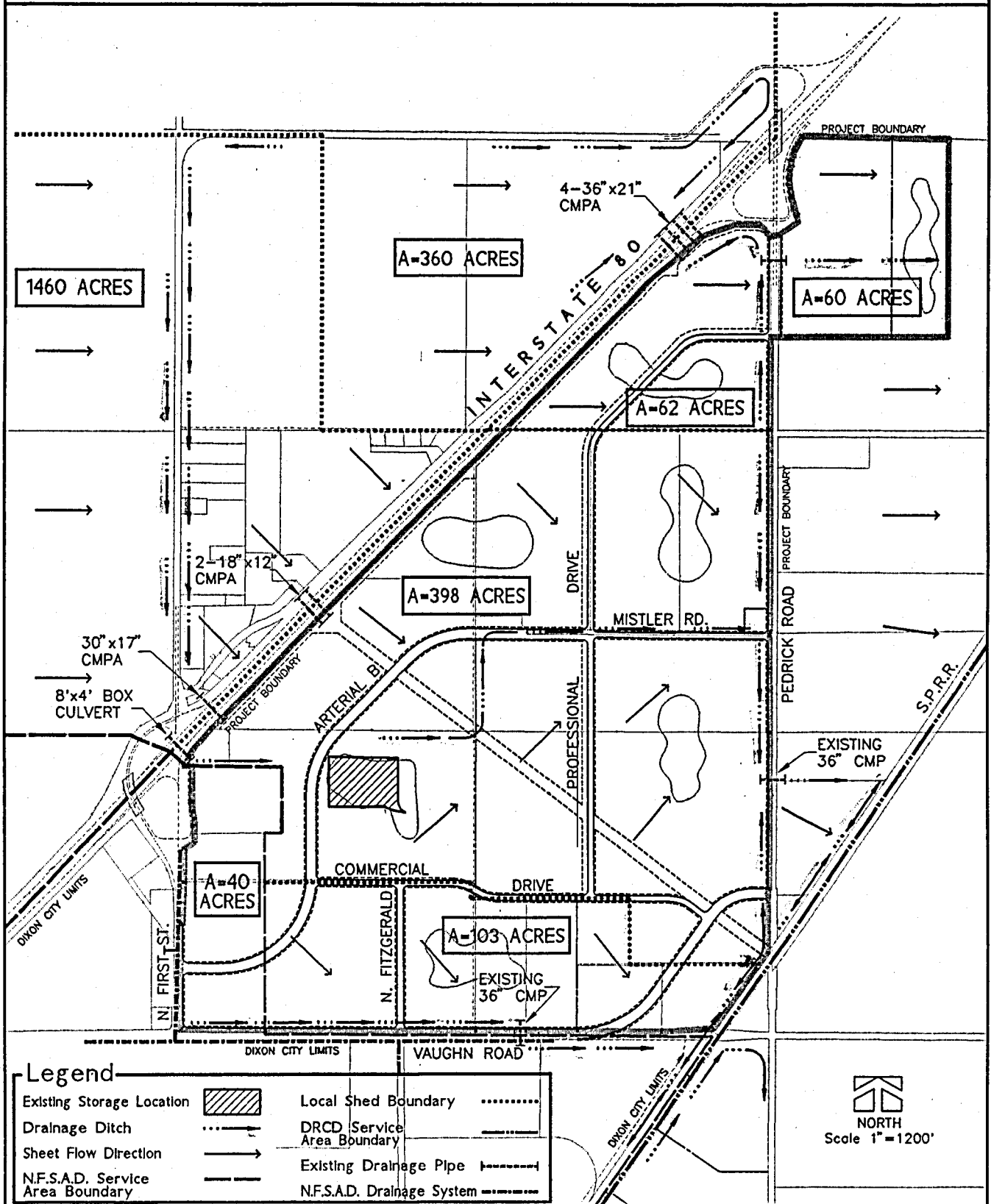
DATE: 9-15-93 JOB NO: 930090
 SCALE: 1" = 4000' DRAWN/ENGR: T.S.P.

SHEET
 OF

FIGURE II
 NORTHEAST QUADRANT SPECIFIC PLAN

SOURCE: USGS QUADRANGLE MAP
 MODIFIED WITH EXISTING FACILITIES

Figure III
NORTHEAST QUADRANT SPECIFIC PLAN
EXISTING DRAINAGE SYSTEM
 City of Dixon California



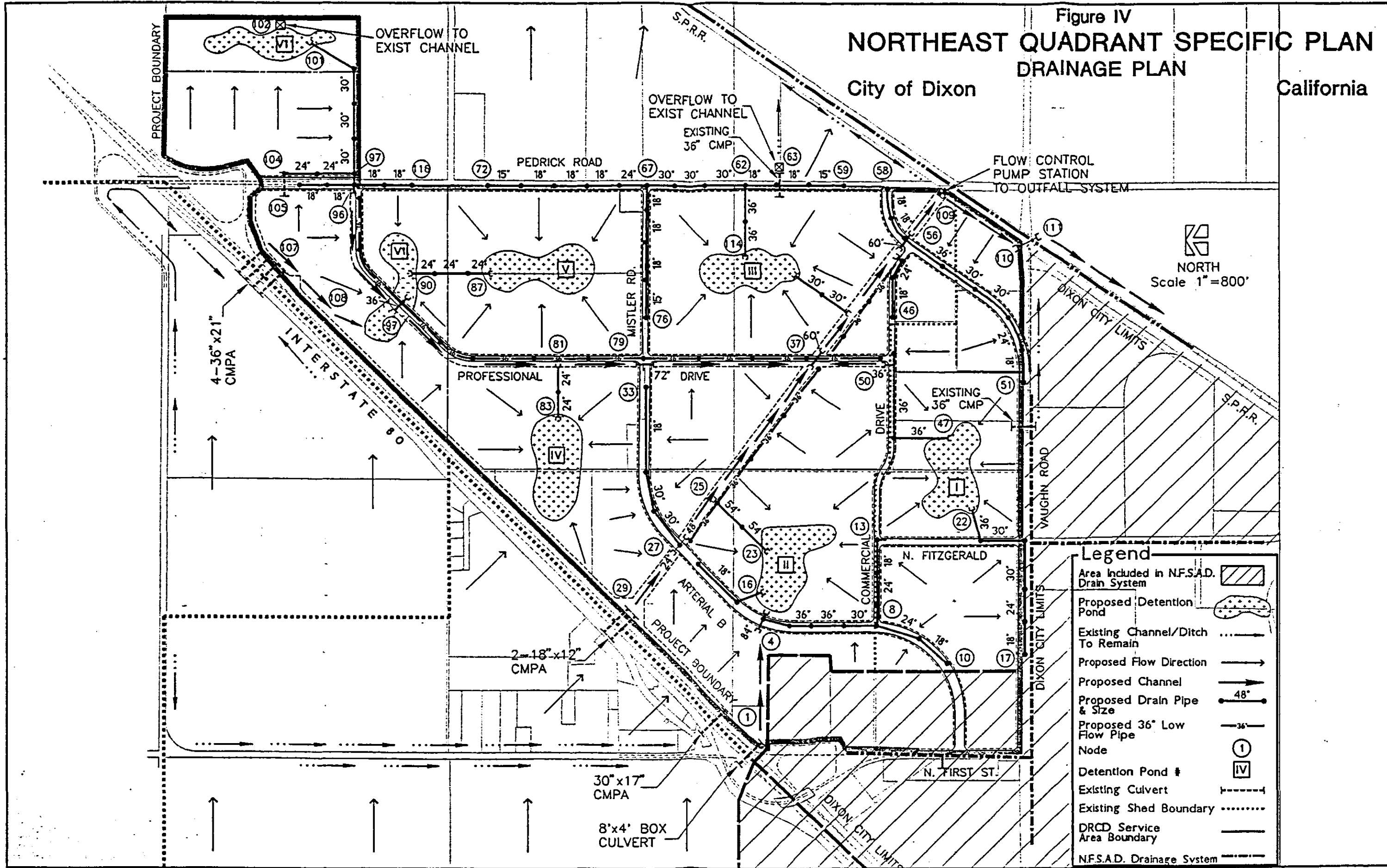
B. PROJECT DRAINAGE:

Site improvements for the proposed development area will collect and convey runoff to localized detention ponds, and channels. The drainage channel located within the 100 foot landscape easement in combination with the roadside drainage channel at Professional Drive, will combine and distribute the flows to the local detention ponds, as well as convey outlet flows to the outfall system, see figure IV.

Two alternative outfall systems are identified in this report. The first, see figure V, involves an expansion to the outfall system to be constructed with the North First Street Assessment District. Outlet flows could be discharged from the NEQSP drainage system by a pump located at the Southeast end of the 100 landscape area. A 36 inch diameter pipe undercrossing of the SPRR tracks could be constructed at Vaughn Road. The flows would be conveyed Southwest along the east side of the SPRR right of way to the Pond 'B' site. The capacity of Pond 'B' would need to be expanded by approximately 200 acre feet to maintain outflows at acceptable levels.

The second alternative outfall system, see figure VI, would be the construction of channel improvements from the development area, northeast to Putah Creek. The flows would be conveyed eastward from Pedrick Road, at the intersection with Professional Drive to the SPRR tracks. From this location the flows could be conveyed along the west side of the SPRR right of way to Putah Creek. At the Putah Creek Levee, a pump station would be constructed to lift the flows into the Creek. This alternative is not be in compliance with the recommendations of the present City of Dixon Master Drainage Plan.

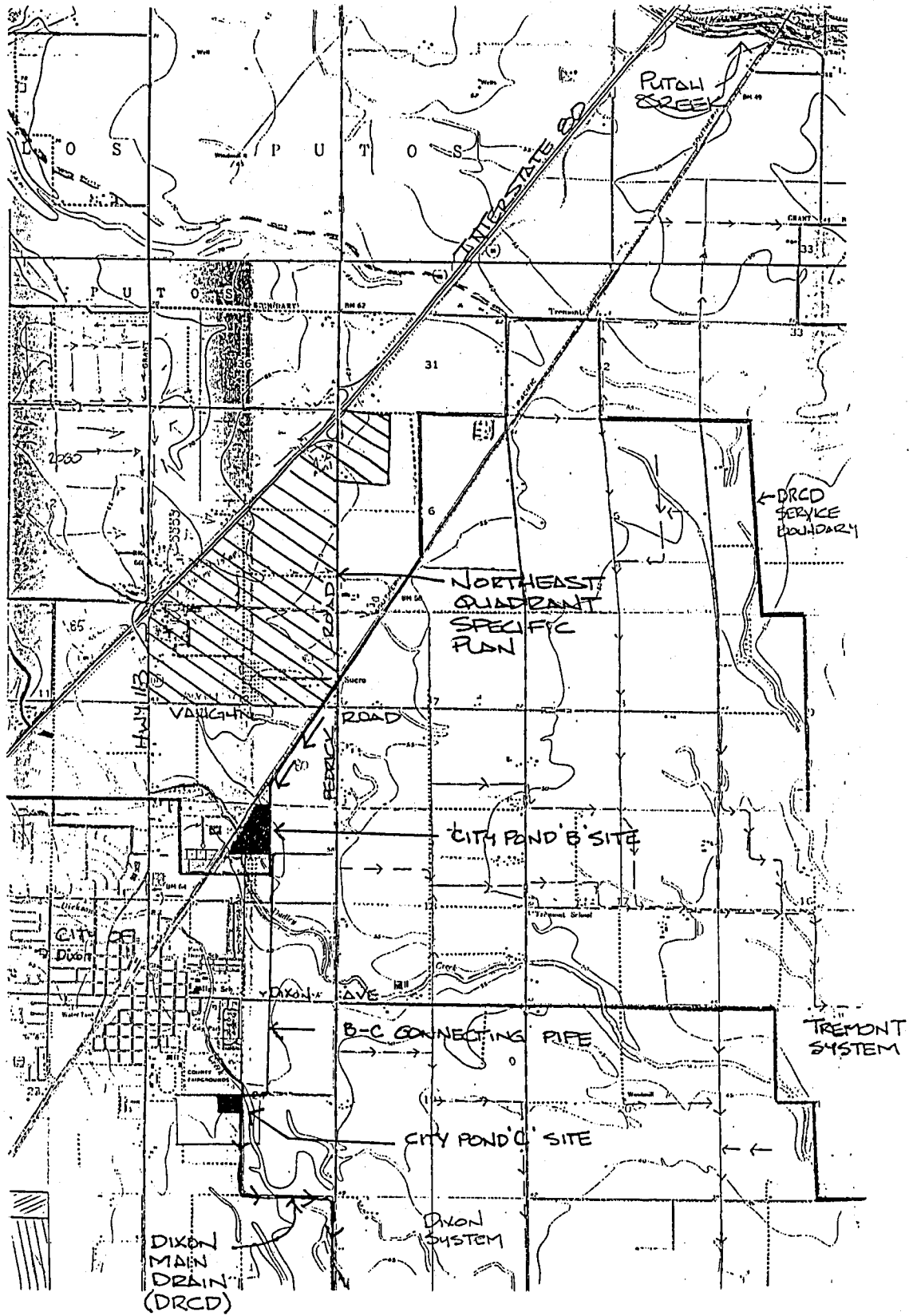
Figure IV
NORTHEAST QUADRANT SPECIFIC PLAN
DRAINAGE PLAN
 City of Dixon
 California



NORTH
 Scale 1"=800'

Legend

| | |
|--|--|
| Area Included in N.F.S.A.D. Drain System | |
| Proposed Detention Pond | |
| Existing Channel/Ditch To Remain | |
| Proposed Flow Direction | |
| Proposed Channel | |
| Proposed Drain Pipe & Size | |
| Proposed 36" Low Flow Pipe | |
| Node | |
| Detention Pond # | |
| Existing Culvert | |
| Existing Shed Boundary | |
| DRCD Service Area Boundary | |
| N.F.S.A.D. Drainage System | |



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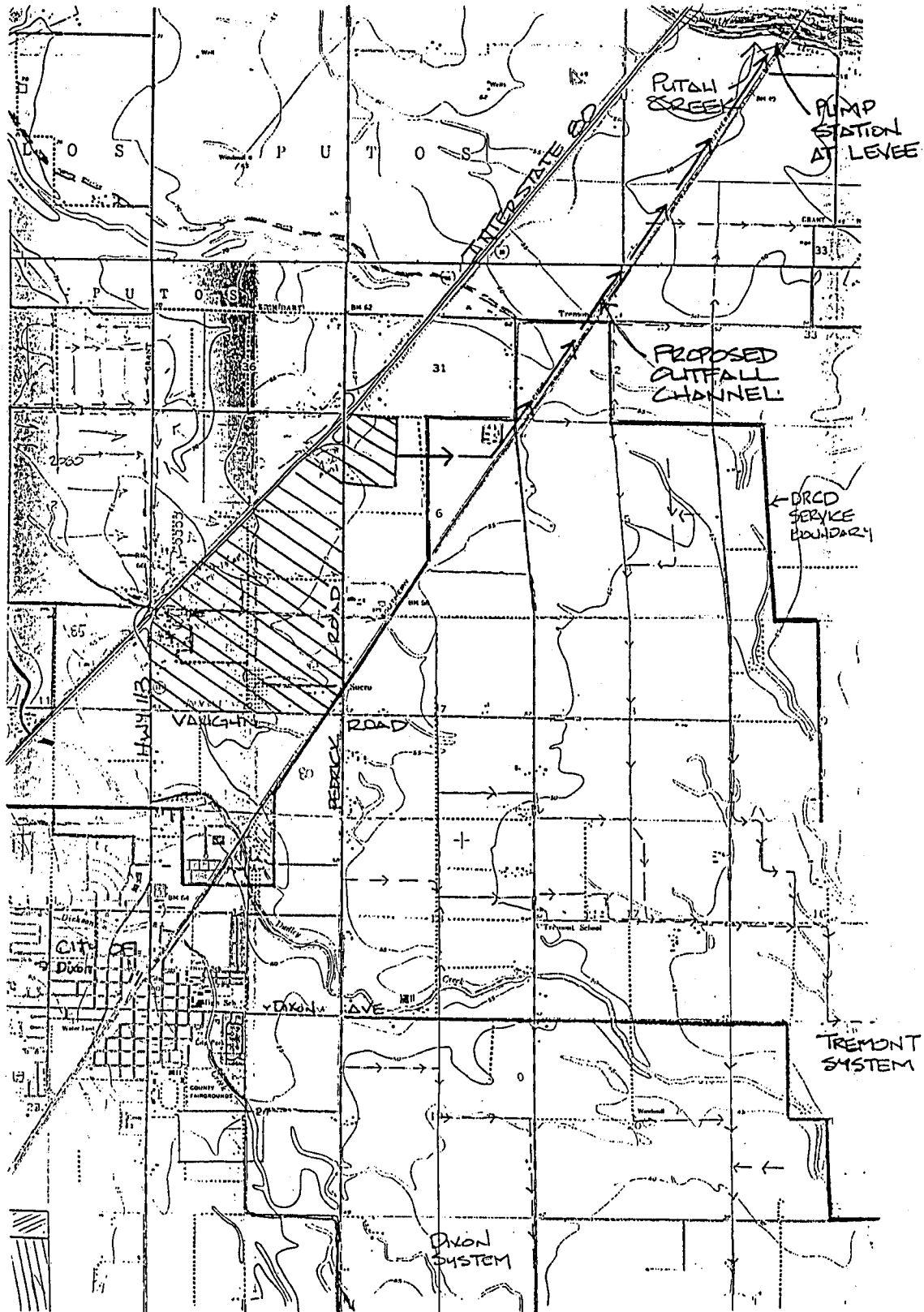
FIGURE V

NORTHEAST QUADRANT SPECIFIC PLAN
 CITY POND 'B' OUTFALL SYSTEM

DATE: 9-15-93 JOB NO: 930090
 SCALE: 1" = 4000' DRAWN/ENGR: T.S.P.

SHEET
 OF

SOURCE: USGS QUADRANGLE MAP
 MODIFIED WITH EXISTING FACILITIES



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FIGURE VI
 NORTHEAST QUADRANT SPECIFIC PLAN
 PUTAH CREEK OUTFALL SYSTEM

DATE: 9-15-93 JOB NO: 930090
 SCALE: 1" = 400' DRAWN/ENGR: T.S.P.

SHEET
 OF

SOURCE: USGS QUADRANGLE MAP
 MODIFIED WITH EXISTING FACILITIES

III. WASTEWATER SYSTEM

A. EXISTING WASTEWATER SYSTEM:

The area within the Northeast Quadrant Specific Plan area is planned to be served by sewer trunk improvements in the North First Street Assessment District. A small portion of the area, adjacent to North First Street is currently served by an existing city sewer trunk. Figure VII shows the service area boundaries for the NEQSP area.

How big?

The wastewater flow from North First Street Assessment District is designed to flow to a temporary lift station located south of Hall Park. At this location, the flow is lifted into a temporary 15 inch diameter diversion pipe which conveys the flows to the existing sewer trunk system located within South First Street, which conveys all of the wastewater from the City to the treatment plant. The temporary diversion has been designed for a capacity of ??? mgd. Ultimately a second 36" sewer trunk system is planned to convey the flow from the temporary pump station to the treatment plant.

B. PROJECT WASTEWATER SYSTEM:

The NFSAD trunk sewer system will be extended from the intersection of Vaughn Road and Fitzgerald Way into the project area. Figure VII shows the service areas for the proposed collection system. The main collection system will be extended eastward along Vaughn Road, and north along Pedrick Road. A ??? mgd lift station will be constructed at the intersection of Mistler Road and Pedrick Road. A second collection system will be extended north, at Fitzgerald Way and west at Commercial Drive, to collect wastewater from the western area of the specific plan area.

A schematic wastewater collection system for the NEQSP is shown in figure VIII. The calculations for this system are based on the updated criteria established for the NFSAD, as indicated in Table III-1.

Figure VII
NORTHEAST QUADRANT SPECIFIC PLAN
WASTEWATER SERVICE AREA MAP
 City of Dixon California

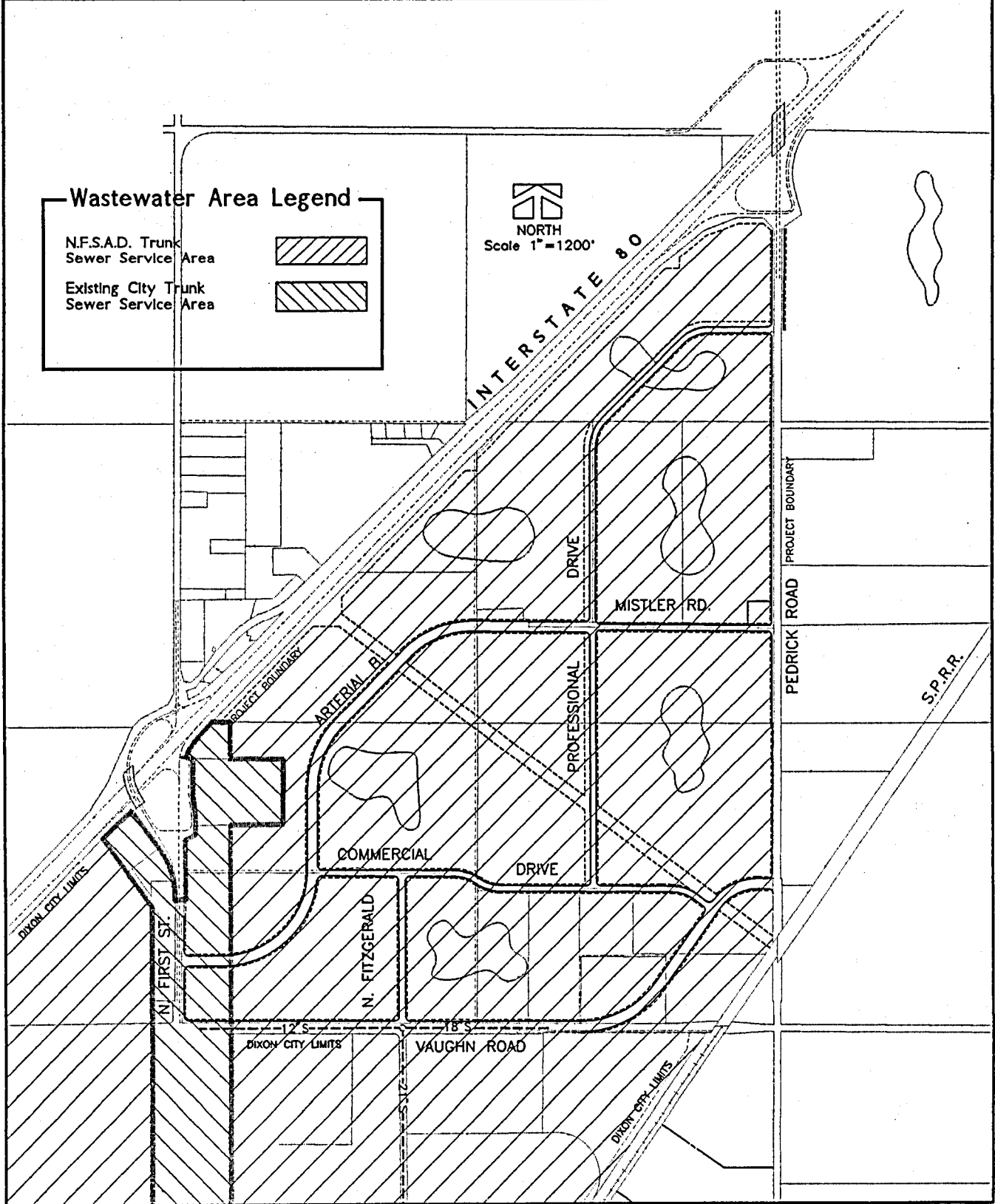
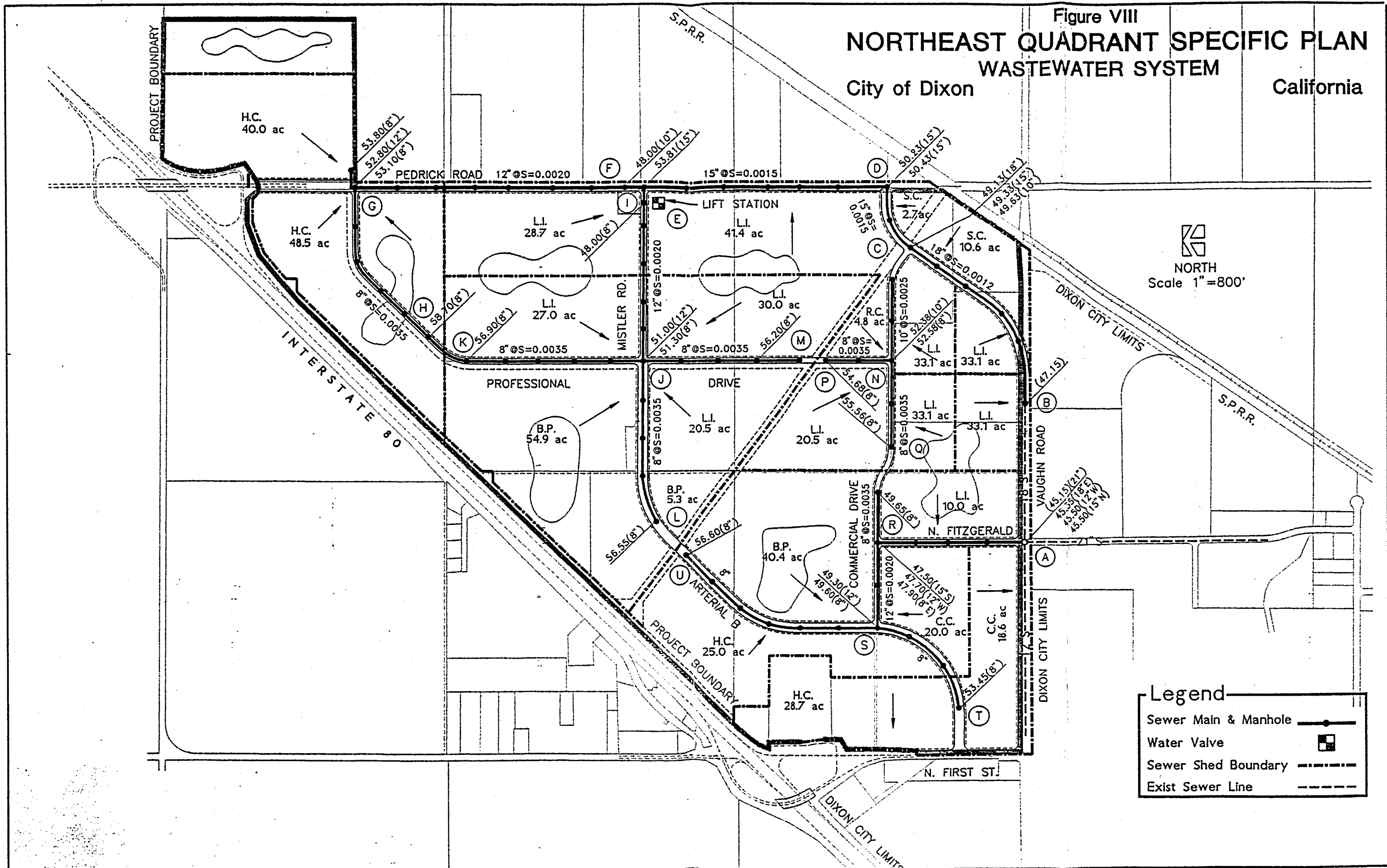


Figure VIII
NORTHEAST QUADRANT SPECIFIC PLAN
WASTEWATER SYSTEM
 City of Dixon
 California



NORTH
 Scale 1" = 800'

Legend

- Sewer Main & Manhole
- Water Valve
- Sewer Shed Boundary
- Exist Sewer Line

TABLE III - 1:

| <u>Description:</u> | <u>Average Flow:</u> | <u>Peak Flow:</u> |
|---------------------|--|-------------------|
| Commercial | 1600 gpd/acre | 4000 gpd/acre |
| Industrial | 1200 gpd/acre | 3000 gpd/acre |
| Residential | 375 gpd/unit (based on average of 4 units/acre) | 940 gpd/unit |

An area wide assessment, including areas beyond the NEQSP boundary, may be required to fund the construction of the planned parallel 36 inch diameter trunk south of Hall Park to the wastewater treatment plant. The Public Works Department has indicated that the existing 27 inch trunk in First Street is nearing capacity, and that the proposed parallel 36 inch trunk will need to be installed to serve future developments within the City of Dixon.

C. WASTEWATER TREATMENT PLANT:

The capacity of the existing City Wastewater Treatment Plant, located approximately 3 miles south of Dixon, has recently been downgraded due to new regulations imposed by the State Regional Water Quality Control Board. Phase I of the Wastewater Treatment Plant Improvements is scheduled for January 1994 and will bring the capacity of the plant up to 1.6 mgd. This is approximately 0.6 mgd above the current daily average flow. This will allow for approximately 400 acres of development before the Phase II improvements are needed. The expansion of the Treatment Plant will be funded through a combination of Federal, State, and Local grants, and including City development fees.

IV. WATER SYSTEM

A. EXISTING WATER SYSTEM:

The lands within the NEQSP are currently within the service area boundary of Solano Irrigation District (S.I.D.) which delivers agricultural irrigation water to the area through a series of underground pipelines.

The Westerly portion of the NEQSP area is presently planned to be provided with water supply with the construction of the NFSAD improvements. The NFSAD improvements will also provide the area with stubs, on N. First Street, and Vaughn Road. The closest water storage facility will be the 600,000 gallon tank located approximately 1600 feet south of Vaughn Road, between N. First Street and Fitzgerald Way. Figure IX shows the existing service area boundaries for the Dixon-Solano Municipal Water District (DSMWS) water supply system.

B. PROJECT WATER SYSTEM:

The NEQSP area can be served by the Dixon Solano Municipal Water Service (DSMWS), with the system proposed in figure X. The system would include the extension of the existing 12 inch mains at Vaughn Road and North First Street, into the Project area at Arterial 'B', Pedrick Road, and Fitzgerald Way. The system would be designed to meet the requirements of DSMWS, with fire hydrants and mains installed to meet current fire prevention standards. The existing wells will be abandoned as infill development occurs within the project. The S.I.D. irrigation pipelines serving areas beyond the NEQSP will be reconstructed as required by S.I.D., and the irrigation pipelines serving the NEQSP area will be abandoned as infill development occurs.

Figure IX
NORTHEAST QUADRANT SPECIFIC PLAN
WATER SERVICE AREA MAP
City of Dixon California

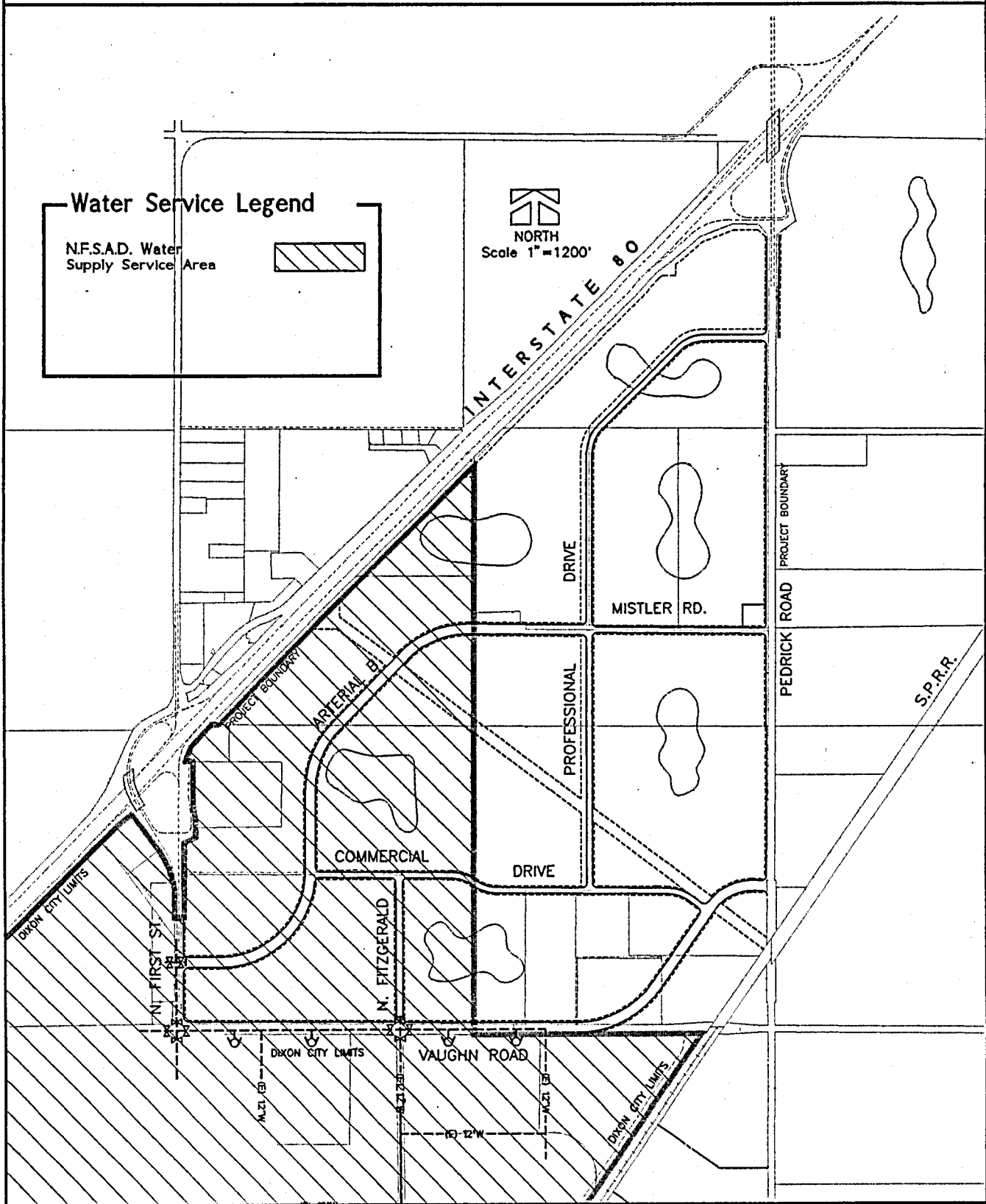

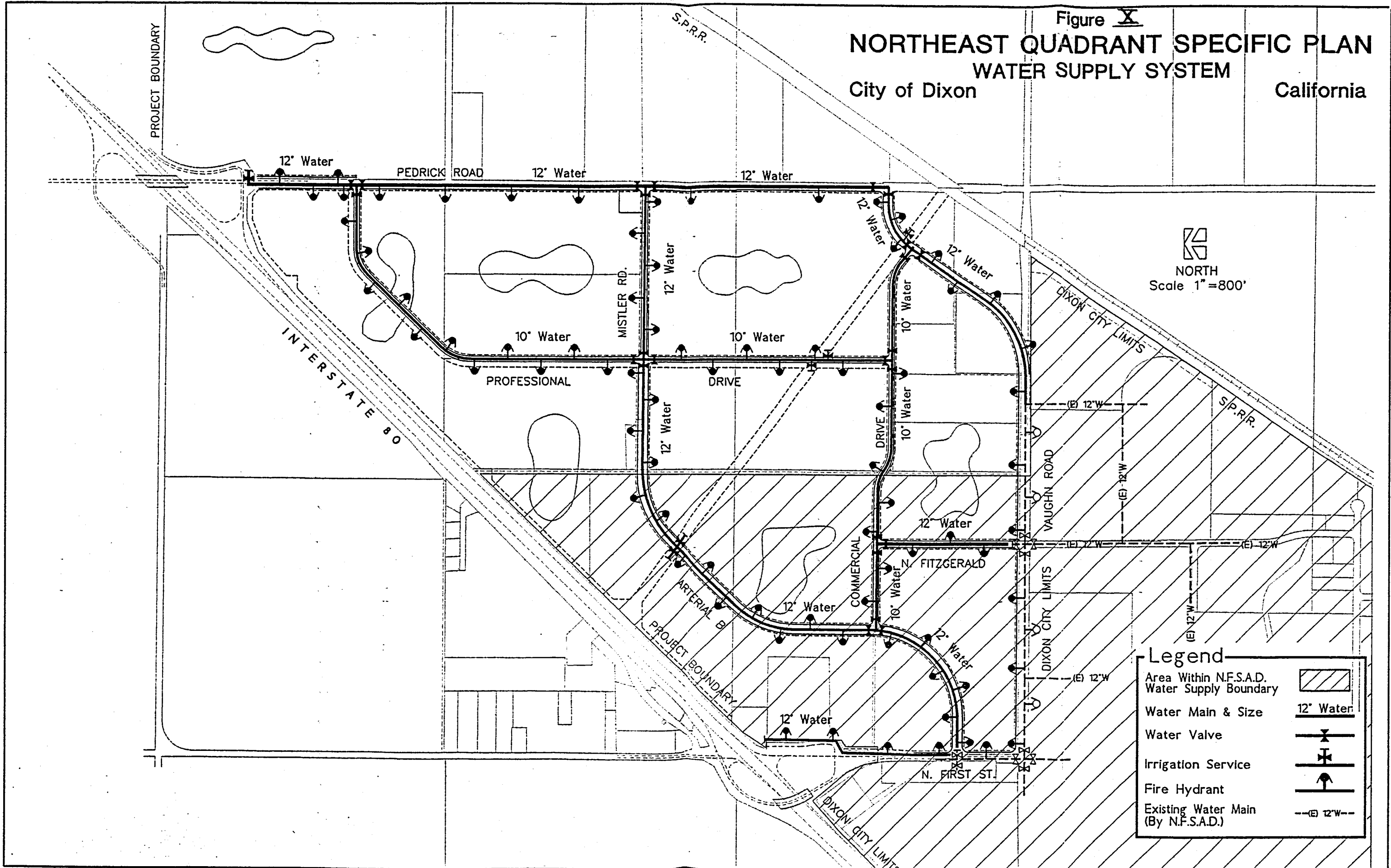
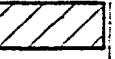







Figure X
NORTHEAST QUADRANT SPECIFIC PLAN
WATER SUPPLY SYSTEM
 City of Dixon California


 NORTH
 Scale 1"=800'



Legend

| | |
|--|---|
| Area Within N.F.S.A.D. Water Supply Boundary |  |
| Water Main & Size |  12" Water |
| Water Valve |  |
| Irrigation Service |  |
| Fire Hydrant |  |
| Existing Water Main (By N.F.S.A.D.) |  (E) 12"W |

C. WATER SUPPLY SYSTEM:

The total service area boundary for the water supply improvements to be constructed with the NFSAD has not been determined. The ability of this system to provide water to the NEQSP will depend significantly on the scope of the infill projects constructed within these areas. It has been estimated that the system will be capable of supplying water to the areas designated in Figure X. It is likely, however, that additional water supply facilities to be located on the east side of the NEQSP project will be required. For this analysis, it has been assumed that a 1500 gpm well, with a 500,000 gallon storage tank and booster pump station (2000 gpm) will be required.

V. STREET IMPROVEMENTS

A. EXISTING STREETS:

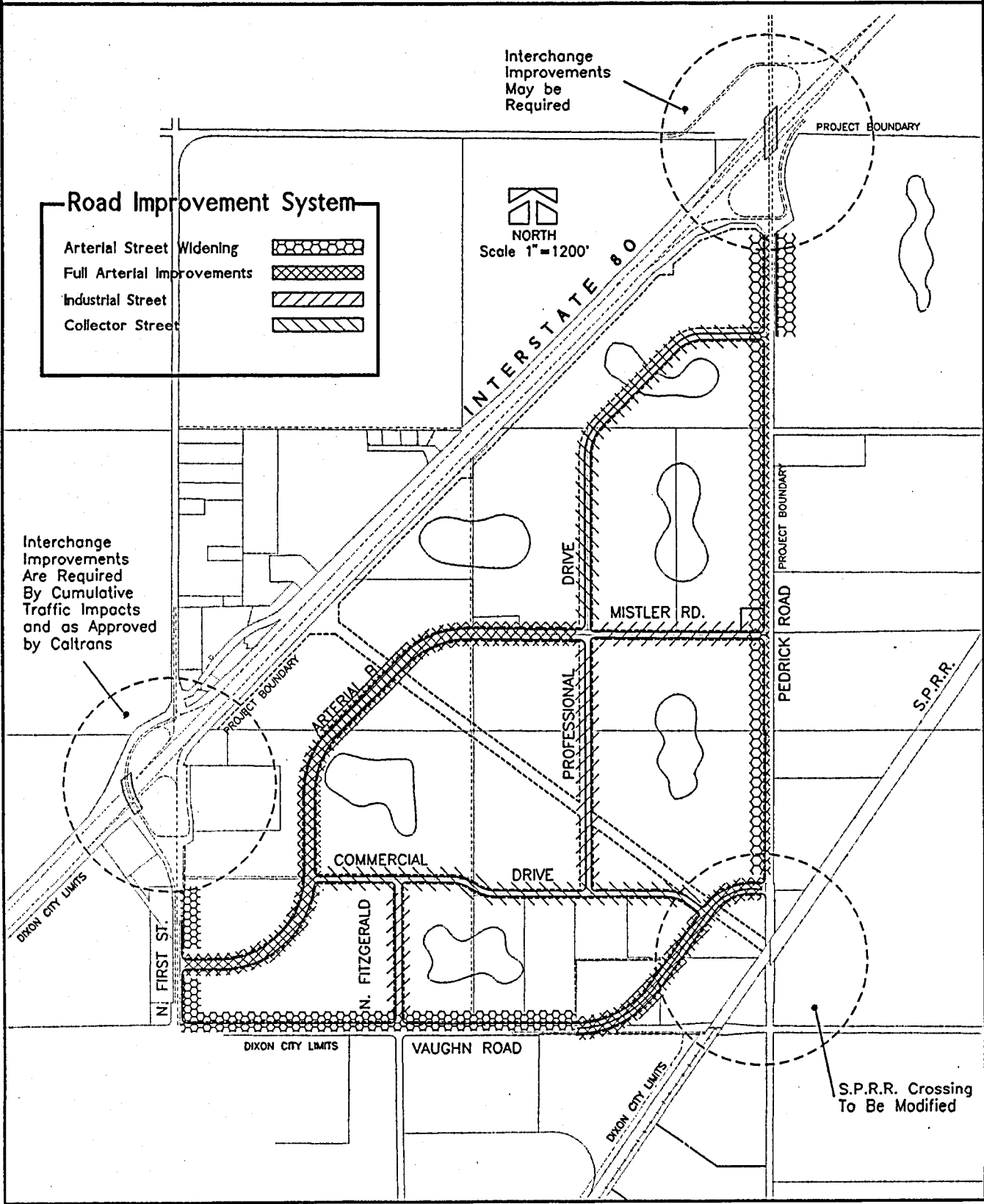
Currently the area is accessed from N. First Street (Highway 113), Vaughn Road, and Pedrick Road. State of California right-of-way includes the Interstate 80 interchanges at N. First Street and Pedrick Road, as well as N. First Street (Highway 113). County right-of-way includes Pedrick Road and Vaughn Road east of the SPRR tracks. City of Dixon right-of-way includes Vaughn Road west of the SPRR tracks. Currently all three roads operate as rural, two lane roads(one lane in each direction).

The NFSAD will be improving the west side of N. First Street to its ultimate width, south of Collector 'B'. Improvements on the east side of N. First Street will be limited to intersection widening at Vaughn Road. The existing Vaughn Road west of Kragen, will be removed (by the NFSAD), and the southerly half of an arterial roadway will be constructed. The scope of work currently proposed to be included within the NFSAD does not include any interchange improvements at the N. First Street - Interstate 80 interchange.

B. PROJECT STREET IMPROVEMENTS:

Table V - 1 indicates the scope of the proposed street improvements to be included in the NEQSP. The east side of N. First Street will be widened to ultimate width. The north half of an arterial roadway will be constructed on Vaughn Road, as well as the full width re-alignment of Vaughn Road at the Pedrick Road intersection shown in Figure XI. Full arterial improvements will be constructed on Pedrick Road, between Professional Drive and the I-80 interchange. The west half of ultimate arterial improvements on Pedrick Road will be constructed south of Professional Drive to the SPRR tracks. Full minor arterial improvements will be constructed on Arterial 'B'. N. Fitzgerald Way, Mistler Road, and the southerly section of Professional Drive between Arterial 'B' and Commercial Drive, will be constructed to industrial standards. Commercial Drive and the northerly section of Professional Drive will be constructed to collector standards.

Figure XI
NORTHEAST QUADRANT SPECIFIC PLAN
ROADWAY IMPROVEMENT SYSTEM
 City of Dixon California



C. INTERSTATE 80 INTERCHANGES:

Caltrans previously indicated extensive interchange improvements would be required at the N. First Street interchange with the development of this area. Caltrans prepared a conceptual plan for the ultimate improvements, as requested in December 1991, and submitted the plan to the City of Dixon for review. The ultimate plan involves the relocation of the overpass and extensive improvements for the north side of Interstate 80 which this project will have limited impact. The costs included in Table VI - 5 are for a phased construction of their plan in which the NEQSP constructs reduced improvements. Three alternative designs have also been developed which provide varied levels of improvements. The alternative designs provide the improvements to be aligned such that the impacts to adjacent properties will be minimized, and the existing overpass could be expanded rather than relocated.

Caltrans has also indicated that minor interchange improvements will be required at Pedrick Road. The most significant of these improvements is the removal of the 4-way stop at the south side of the interchange, and the construction of a new northbound to eastbound onramp. They will also require the relocation of a section of the existing frontage road.

D. SOUTHERN PACIFIC RAILROAD CROSSING:

A re-alignment of Vaughn Road will remove an at-grade railroad crossing by re-directing traffic to Pedrick Road. It has been indicated by the City Public Works Department that extensive modifications to the Pedrick Road crossing will be required with this project. Alternatives for an at-grade crossing, and 2 alternative overpass crossings are considered in this report. Figures XII to XIV identify these alternatives.

VI. PROJECT COSTS:

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 1
City of Dixon, California

JOB NO: 930090
DATE: 9/9/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM | DESCRIPTION | EST QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|---------------------------------|------------------------|--------------|------|-------------|---------------------|
| I. STORM DRAINAGE SYSTEM | | | | | |
| A. VAUGHN ROAD | | | | | |
| 1 | Storm Drainage Manhole | 2 | EA | \$1,300.00 | \$2,600.00 |
| 2 | Junction Structure | 1 | EA | \$10,000.00 | \$10,000.00 |
| 3 | Drainage Inlet | 16 | EA | \$1,200.00 | \$19,200.00 |
| 4 | 15" Storm Drain Pipe | 420 | LF | \$24.00 | \$10,080.00 |
| 5 | 18" Storm Drain Pipe | 1100 | LF | \$25.00 | \$27,500.00 |
| 6 | 24" Storm Drain Pipe | 600 | LF | \$31.00 | \$18,600.00 |
| 7 | 30" Storm Drain Pipe | 1200 | LF | \$37.00 | \$44,400.00 |
| 8 | 36" Storm Drain Pipe | 400 | LF | \$42.00 | \$16,800.00 |
| 9 | 60" Storm Drain Pipe | 200 | LF | \$90.00 | \$18,000.00 |
| SUBTOTAL | | | | | \$167,160.00 |
| B. N. FITZGERALD WAY | | | | | |
| 1 | Storm Drainage Manhole | 2 | EA | \$1,300.00 | \$2,600.00 |
| 2 | Drainage Inlet | 6 | EA | \$1,200.00 | \$7,200.00 |
| 3 | 15" Storm Drain Pipe | 150 | LF | \$24.00 | \$3,600.00 |
| 4 | 30" Storm Drain Pipe | 400 | LF | \$37.00 | \$14,800.00 |
| SUBTOTAL | | | | | \$28,200.00 |
| C. COMMERCIAL DRIVE | | | | | |
| 1 | Drainage Inlet | 15 | EA | \$1,200.00 | \$18,000.00 |
| 2 | 15" Storm Drain Pipe | 350 | LF | \$24.00 | \$8,400.00 |
| 3 | 18" Storm Drain Pipe | 600 | LF | \$25.00 | \$15,000.00 |
| 4 | 24" Storm Drain Pipe | 750 | LF | \$31.00 | \$23,250.00 |
| 5 | 36" Storm Drain Pipe | 600 | LF | \$42.00 | \$25,200.00 |
| SUBTOTAL | | | | | \$89,850.00 |
| D. ARTERIAL 'B' | | | | | |
| 1 | Storm Drainage Manhole | 1 | EA | \$1,300.00 | \$1,300.00 |
| 2 | Junction Structure | 2 | EA | \$10,000.00 | \$20,000.00 |
| 3 | Drainage Inlet | 24 | EA | \$1,200.00 | \$28,800.00 |
| 4 | 15" Storm Drain Pipe | 1200 | LF | \$24.00 | \$28,800.00 |
| 5 | 18" Storm Drain Pipe | 1150 | LF | \$25.00 | \$28,750.00 |
| 6 | 24" Storm Drain Pipe | 850 | LF | \$31.00 | \$26,350.00 |
| 7 | 30" Storm Drain Pipe | 1100 | LF | \$37.00 | \$40,700.00 |
| 8 | 36" Storm Drain Pipe | 800 | LF | \$42.00 | \$33,600.00 |
| 9 | 48" Storm Drain Pipe | 100 | LF | \$60.00 | \$6,000.00 |
| 10 | 72" Storm Drain Pipe | 200 | LF | \$102.00 | \$20,400.00 |
| 11 | 84" Storm Drain Pipe | 300 | LF | \$120.00 | \$36,000.00 |
| SUBTOTAL | | | | | \$270,700.00 |

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 1
City of Dixon, California

JOB NO: 930090

DATE: 9/9/93

For Preliminary Fiscal Analysis

BY: T.S.P.

| ITEM | DESCRIPTION | EST QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|--|---------------------------|--------------|------|--------------|---------------------|
| E. MISTLER ROAD | | | | | |
| 1 | Storm Drainage Manhole | 1 | EA | \$1,300.00 | \$1,300.00 |
| 2 | Drainage Inlet | 10 | EA | \$1,200.00 | \$12,000.00 |
| 3 | 15" Storm Drain Pipe | 350 | LF | \$24.00 | \$8,400.00 |
| 4 | 18" Storm Drain Pipe | 850 | LF | \$25.00 | \$21,250.00 |
| SUBTOTAL | | | | | \$42,950.00 |
| F. PROFESSIONAL DRIVE | | | | | |
| 1 | Storm Drainage Manhole | 2 | EA | \$1,300.00 | \$2,600.00 |
| 2 | Junction Structure | 2 | EA | \$10,000.00 | \$20,000.00 |
| 3 | Drainage Inlet | 22 | EA | \$1,200.00 | \$26,400.00 |
| 4 | Roadside Drainage Channel | 6000 | LF | \$65.00 | \$390,000.00 |
| 5 | 15" Storm Drain Pipe | 1100 | LF | \$24.00 | \$26,400.00 |
| 6 | 36" Storm Drain Pipe | 6200 | LF | \$42.00 | \$260,400.00 |
| 7 | 60" Storm Drain Pipe | 200 | LF | \$90.00 | \$18,000.00 |
| SUBTOTAL | | | | | \$743,800.00 |
| G. PEDRICK ROAD | | | | | |
| 1 | Storm Drainage Manhole | 4 | EA | \$1,300.00 | \$5,200.00 |
| 2 | Junction Structure | 1 | EA | \$10,000.00 | \$10,000.00 |
| 3 | Drainage Inlet | 30 | EA | \$1,200.00 | \$36,000.00 |
| 4 | 15" Storm Drain Pipe | 1500 | LF | \$24.00 | \$36,000.00 |
| 5 | 18" Storm Drain Pipe | 3100 | LF | \$25.00 | \$77,500.00 |
| 6 | 24" Storm Drain Pipe | 300 | LF | \$31.00 | \$9,300.00 |
| 7 | 30" Storm Drain Pipe | 800 | LF | \$37.00 | \$29,600.00 |
| 8 | 36" Storm Drain Pipe | 300 | LF | \$42.00 | \$12,600.00 |
| SUBTOTAL | | | | | \$216,200.00 |
| H. POND INTERCONNECTIONS | | | | | |
| 1 | Storm Drainage Manhole | 9 | EA | \$1,300.00 | \$11,700.00 |
| 2 | Junction Structure | 1 | EA | \$10,000.00 | \$10,000.00 |
| 3 | 24" Storm Drain Pipe | 1200 | LF | \$31.00 | \$37,200.00 |
| 4 | 30" Storm Drain Pipe | 1900 | LF | \$37.00 | \$70,300.00 |
| 5 | 36" Storm Drain Pipe | 1300 | LF | \$42.00 | \$54,600.00 |
| 6 | 54" Storm Drain Pipe | 500 | LF | \$72.00 | \$36,000.00 |
| SUBTOTAL | | | | | \$219,800.00 |
| I. 100' LANDSCAPE/DRAINAGE AREA | | | | | |
| 1 | Storm Drainage Manhole | 6 | EA | \$1,300.00 | \$7,800.00 |
| 2 | Pump Station (20 cfs) | 1 | EA | \$200,000.00 | \$200,000.00 |
| 3 | Drainage Channel | 4800 | LF | \$65.00 | \$312,000.00 |
| 4 | 36" Storm Drain Pipe | 4800 | LF | \$42.00 | \$201,600.00 |

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 1
City of Dixon, California

JOB NO: 930090
DATE: 9/9/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM | DESCRIPTION | EST QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|-----------------------|--|--------------|------|--------------|---|
| SUBTOTAL | | | | | \$721,400.00 |
| J. | ONSITE DETENTION PONDS | | | | |
| 1 | Site Clearing | 1 | LS | \$50,000.00 | \$50,000.00 |
| 2 | Excavation | 300000 | CY | \$2.00 | \$600,000.00 |
| 3 | Gravel Access Road | 75000 | SF | \$2.00 | \$150,000.00 |
| 4 | Landscaped Slope Protection | 450000 | SF | \$0.60 | \$270,000.00 |
| 5 | Landscaping & Trees | 1 | LS | \$45,000.00 | \$45,000.00 |
| 6 | Overflow Weir | 7 | EA | \$10,000.00 | \$70,000.00 |
| 7 | Percolation Trenching | 4000 | LF | \$35.00 | \$140,000.00 |
| 8 | Site Fencing | 5400 | LF | \$12.50 | \$67,500.00 |
| SUBTOTAL | | | | | \$1,392,500.00 |
| K. | OUTFALL SYSTEM & POND 'B' EXPANSION | | | | |
| 1 | Site Clearing | 1 | LS | \$50,000.00 | \$50,000.00 |
| 2 | Excavation | 500000 | CY | \$2.00 | \$1,000,000.00 |
| 3 | Gravel Access Road | 45000 | SF | \$2.00 | \$90,000.00 |
| 4 | Landscaped Slope Protection | 250000 | SF | \$0.60 | \$150,000.00 |
| 5 | Landscaping & Trees | 1 | LS | \$35,000.00 | \$35,000.00 |
| 6 | Percolation Trenching | 2000 | LF | \$35.00 | \$70,000.00 |
| 7 | Site Fencing | 3500 | LF | \$12.50 | \$43,750.00 |
| 8 | Drainage Channel/Pipe | 4500 | LF | \$65.00 | \$292,500.00 |
| 9 | SPRR - Jack & Bore Undercrossing | 150 | LF | \$360.00 | \$54,000.00 |
| 10 | Land Acquisition Cost | 25 | AC | \$15,000.00 | \$375,000.00 |
| SUBTOTAL | | | | | \$2,160,250.00 |
| L. | Alternate Outfall to Putah Creek | | | | |
| | | | | | (not included in cost estimate totals) |
| 1 | Site Clearing | 1 | LS | \$30,000.00 | \$30,000.00 |
| 2 | Gravel Access Road | 212400 | SF | \$2.00 | \$424,800.00 |
| 3 | Site Fencing | 36000 | LF | \$12.50 | \$450,000.00 |
| 4 | Drainage Channel | 17700 | LF | \$125.00 | \$2,212,500.00 |
| 5 | 60" Drainage Pipe Roadway Crossing | 600 | LF | \$115.00 | \$69,000.00 |
| 6 | Pump Station (75 cfs) | 1 | LS | \$600,000.00 | \$600,000.00 |
| 7 | Land Acquisition Cost | 32 | AC | \$15,000.00 | \$480,000.00 |
| SUBTOTAL | | | | | \$4,266,300.00 |
| DRAINAGE TOTAL | | | | | \$6,052,830.00 |

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 2
City of Dixon, California

JOB NO: 930090
DATE: 9/10/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM | DESCRIPTION | EST QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|---|----------------------|--------------|------|--------------|---------------------|
| II. WASTEWATER SYSTEM: | | | | | |
| A. VAUGHN ROAD | | | | | |
| 1 | Sewer Manhole | 8 | EA | \$1,500.00 | \$12,000.00 |
| 2 | 15" Sewer Main | 500 | LF | \$45.00 | \$22,500.00 |
| 3 | 18" Sewer Main | 1350 | LF | \$70.00 | \$94,500.00 |
| SUBTOTAL | | | | | \$129,000.00 |
| B. N. FITZGERALD WAY | | | | | |
| 1 | Sewer Manhole | 5 | EA | \$1,500.00 | \$7,500.00 |
| 2 | 15" Sewer Main | 1100 | LF | \$45.00 | \$49,500.00 |
| SUBTOTAL | | | | | \$57,000.00 |
| C. COMMERCIAL DRIVE | | | | | |
| 1 | Sewer Manhole | 8 | EA | \$1,500.00 | \$12,000.00 |
| 2 | 8" Sewer Main | 1050 | EA | \$20.00 | \$21,000.00 |
| 3 | 10" Sewer Main | 900 | EA | \$30.00 | \$27,000.00 |
| 4 | 12" Sewer Main | 650 | LF | \$38.00 | \$24,700.00 |
| SUBTOTAL | | | | | \$84,700.00 |
| D. ARTERIAL 'B' & MISTLER ROAD | | | | | |
| 1 | Sewer Manhole | 19 | EA | \$1,500.00 | \$28,500.00 |
| 2 | 8" Sewer Main | 3750 | EA | \$20.00 | \$75,000.00 |
| 3 | 12" Sewer Main | 1250 | LF | \$38.00 | \$47,500.00 |
| SUBTOTAL | | | | | \$151,000.00 |
| F. PROFESSIONAL DRIVE | | | | | |
| 1 | Sewer Manhole | 20 | EA | \$1,500.00 | \$30,000.00 |
| 2 | 8" Sewer Main | 5800 | EA | \$20.00 | \$116,000.00 |
| SUBTOTAL | | | | | \$146,000.00 |
| G. PEDRICK ROAD | | | | | |
| 1 | Sewer Manhole | 12 | EA | \$1,500.00 | \$18,000.00 |
| 2 | 12" Sewer Main | 2650 | LF | \$38.00 | \$100,700.00 |
| 3 | 15" Sewer Main | 2200 | LF | \$45.00 | \$99,000.00 |
| SUBTOTAL | | | | | \$217,700.00 |
| H. LIFT STATION | | | | | |
| 1 | Lift Station & Pumps | 1 | LS | \$150,000.00 | \$150,000.00 |

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 2
City of Dixon, California

JOB NO: 930090
DATE: 9/10/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM DESCRIPTION | EST QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|------------------|--------------|------|------------------|--------------|
| | | | SUBTOTAL | \$150,000.00 |
| | | | WASTEWATER TOTAL | \$939,400.00 |

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 3
City of Dixon, California

JOB NO: 930090
DATE: 9/10/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM | DESCRIPTION | EST. QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|---|-------------------------|---------------|------|------------|---------------------|
| III. WATER SUPPLY SYSTEM: | | | | | |
| A. VAUGHN ROAD | | | | | |
| 1 | 12" Water Main | 2500 | LF | \$25.00 | \$62,500.00 |
| 2 | 12" Water Valve | 4 | EA | \$1,000.00 | \$4,000.00 |
| 3 | Irrigation Service | 1 | EA | \$900.00 | \$900.00 |
| 4 | Fire Hydrant & Assembly | 14 | EA | \$2,500.00 | \$35,000.00 |
| 5 | Connect to Existing | 1 | EA | \$500.00 | \$500.00 |
| SUBTOTAL: | | | | | \$102,900.00 |
| B. N. FITZGERALD WAY | | | | | |
| 1 | 12" Water Main | 1250 | LF | \$25.00 | \$31,250.00 |
| 2 | 12" Water Valve | 1 | EA | \$1,000.00 | \$1,000.00 |
| 3 | Fire Hydrant & Assembly | 3 | EA | \$2,500.00 | \$7,500.00 |
| 4 | Connect to Existing | 1 | EA | \$500.00 | \$500.00 |
| SUBTOTAL: | | | | | \$40,250.00 |
| C. COMMERCIAL DRIVE | | | | | |
| 1 | 10" Water Main | 3600 | LF | \$22.00 | \$79,200.00 |
| 2 | 10" Water Valve | 6 | EA | \$850.00 | \$5,100.00 |
| 3 | Fire Hydrant & Assembly | 11 | EA | \$2,500.00 | \$27,500.00 |
| SUBTOTAL: | | | | | \$111,800.00 |
| D. ARTERIAL 'B' & MISTLER ROAD | | | | | |
| 1 | 12" Water Main | 6000 | LF | \$25.00 | \$150,000.00 |
| 2 | 12" Water Valve | 5 | EA | \$1,000.00 | \$5,000.00 |
| 3 | Irrigation Service | 2 | EA | \$900.00 | \$1,800.00 |
| 4 | Fire Hydrant & Assembly | 24 | EA | \$2,500.00 | \$60,000.00 |
| 5 | Connect to Existing | 1 | EA | \$500.00 | \$500.00 |
| SUBTOTAL: | | | | | \$217,300.00 |
| F. PROFESSIONAL DRIVE | | | | | |
| 1 | 10" Water Main | 5400 | LF | \$22.00 | \$118,800.00 |
| 2 | 10" Water Valve | 4 | EA | \$850.00 | \$3,400.00 |
| 3 | Irrigation Service | 2 | EA | \$900.00 | \$1,800.00 |
| 4 | Fire Hydrant & Assembly | 17 | EA | \$2,500.00 | \$42,500.00 |
| SUBTOTAL: | | | | | \$166,500.00 |
| G. PEDRICK ROAD | | | | | |
| 1 | 12" Water Main | 5800 | LF | \$25.00 | \$145,000.00 |
| 2 | 12" Water Valve | 5 | EA | \$1,000.00 | \$5,000.00 |

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 3

City of Dixon, California

For Preliminary Fiscal Analysis

JOB NO: 930090

DATE: 9/10/93

BY: T.S.P.

| ITEM | DESCRIPTION | EST. QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|---------------------------|---------------------------|---------------|------|------------|---------------------|
| | 3 Fire Hydrant & Assembly | 10 | EA | \$2,500.00 | \$25,000.00 |
| SUBTOTAL: | | | | | \$175,000.00 |
| H. N. FIRST STREET | | | | | |
| | 1 12" Water Main | 1450 | LF | \$25.00 | \$36,250.00 |
| | 2 12" Water Valve | 1 | EA | \$1,000.00 | \$1,000.00 |
| | 3 Fire Hydrant & Assembly | 5 | EA | \$2,500.00 | \$12,500.00 |
| | 4 Connect to Existing | 1 | EA | \$500.00 | \$500.00 |
| SUBTOTAL: | | | | | \$50,250.00 |
| WATER TOTAL: | | | | | \$864,000.00 |

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 4
City of Dixon, California

JOB NO: 930090
DATE: 9/10/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM | DESCRIPTION | EST QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|---|---------------------------------------|--------------|------|--------------|-----------------------|
| IV. ROADWAY IMPROVEMENTS: | | | | | |
| A. VAUGHN ROAD | | | | | |
| 1 | Clear & Grub | 1 | LS | \$10,000.00 | \$10,000.00 |
| 2 | Excavation | 27000 | CY | \$3.00 | \$81,000.00 |
| 3 | Pavement Placement (T.I. = 9) | 288000 | SF | \$2.30 | \$662,400.00 |
| 4 | Curb & Gutter | 8000 | LF | \$10.00 | \$80,000.00 |
| 5 | Median Curb | 11000 | LF | \$8.00 | \$88,000.00 |
| 6 | Sidewalk | 11400 | SF | \$2.00 | \$22,800.00 |
| 7 | Signing & Striping | 1 | LS | \$10,000.00 | \$10,000.00 |
| 8 | Intersection Signalization | 1 | EA | \$200,000.00 | \$200,000.00 |
| 9 | 200 W. Street Light, Conduit & Wiring | 40 | EA | \$2,500.00 | \$100,000.00 |
| 10 | Median Landscaping | 66000 | SF | \$2.00 | \$132,000.00 |
| SUBTOTAL | | | | | \$1,386,200.00 |
| B. N. FITZGERALD WAY | | | | | |
| 1 | Clear & Grub | 1 | LS | \$3,000.00 | \$3,000.00 |
| 2 | Excavation | 8700 | EA | \$3.00 | \$26,100.00 |
| 3 | Pavement Placement (T.I. = 9) | 57200 | SF | \$2.30 | \$131,560.00 |
| 4 | Curb & Gutter | 2600 | LF | \$10.00 | \$26,000.00 |
| 5 | Signing & Striping | 1 | LS | \$3,000.00 | \$3,000.00 |
| 6 | 100 W. Street Light, Conduit & Wiring | 5 | EA | \$2,200.00 | \$11,000.00 |
| SUBTOTAL | | | | | \$200,660.00 |
| C. COMMERCIAL DRIVE | | | | | |
| 1 | Clear & Grub | 1 | LS | \$5,000.00 | \$5,000.00 |
| 2 | Excavation | 16600 | EA | \$3.00 | \$49,800.00 |
| 3 | Pavement Placement (T.I. = 8) | 161000 | SF | \$2.05 | \$330,050.00 |
| 4 | Curb & Gutter | 7000 | LF | \$10.00 | \$70,000.00 |
| 5 | Sidewalk | 30000 | SF | \$2.00 | \$60,000.00 |
| 6 | Signing & Striping | 1 | LS | \$5,000.00 | \$5,000.00 |
| 7 | 100 W. Street Light, Conduit & Wiring | 18 | EA | \$2,200.00 | \$39,600.00 |
| SUBTOTAL | | | | | \$559,450.00 |
| D. ARTERIAL 'B' & MISTLER ROAD | | | | | |
| 1 | Clear & Grub | 1 | LS | \$10,000.00 | \$10,000.00 |
| 2 | Excavation | 46700 | EA | \$3.00 | \$140,100.00 |
| 3 | Pavement Placement (T.I. = 9) | 459200 | SF | \$2.30 | \$1,056,160.00 |
| 4 | Curb & Gutter | 14000 | LF | \$10.00 | \$140,000.00 |
| 5 | Median Curb | 10800 | LF | \$8.00 | \$86,400.00 |
| 6 | Sidewalk | 64800 | SF | \$2.00 | \$129,600.00 |
| 7 | Signing & Striping | 1 | LS | \$10,000.00 | \$10,000.00 |
| 8 | Intersection Signalization | 1 | EA | \$200,000.00 | \$200,000.00 |

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 4
City of Dixon, California

JOB NO: 930090
DATE: 9/10/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM | DESCRIPTION | EST QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|------------------------------|---------------------------------------|--------------|------|--------------|-----------------------|
| 9 | 100 W. Street Light, Conduit & Wiring | 35 | EA | \$2,200.00 | \$77,000.00 |
| 10 | Median Landscaping | 64800 | SF | \$2.00 | \$129,600.00 |
| SUBTOTAL | | | | | \$1,978,850.00 |
| F. PROFESSIONAL DRIVE | | | | | |
| 1 | Clear & Grub | 1 | LS | \$10,000.00 | \$10,000.00 |
| 2 | Excavation | 40000 | EA | \$3.00 | \$120,000.00 |
| 3 | Pavement Placement (T.I. = 9) | 105600 | SF | \$2.30 | \$242,880.00 |
| 4 | Pavement Placement (T.I. = 8) | 165600 | SF | \$2.00 | \$331,200.00 |
| 5 | Curb & Gutter | 12000 | LF | \$10.00 | \$120,000.00 |
| 6 | Sidewalk | 21600 | SF | \$2.00 | \$43,200.00 |
| 7 | Signing & Striping | 1 | LS | \$10,000.00 | \$10,000.00 |
| 8 | Intersection Signalization | 1 | EA | \$200,000.00 | \$200,000.00 |
| 9 | 100 W. Street Light, Conduit & Wiring | 30 | EA | \$2,200.00 | \$66,000.00 |
| 10 | Landscaping | 150000 | SF | \$2.00 | \$300,000.00 |
| SUBTOTAL | | | | | \$1,449,280.00 |
| G. PEDRICK ROAD | | | | | |
| 1 | Clear & Grub | 1 | LS | \$10,000.00 | \$10,000.00 |
| 2 | Excavation | 23300 | EA | \$3.00 | \$69,900.00 |
| 3 | Pavement Placement (T.I. = 9) | 252000 | SF | \$2.30 | \$579,600.00 |
| 4 | Curb & Gutter | 7000 | LF | \$10.00 | \$70,000.00 |
| 5 | Median Curb | 900 | LF | \$8.00 | \$7,200.00 |
| 6 | Sidewalk | 10800 | SF | \$2.00 | \$21,600.00 |
| 7 | Signing & Striping | 1 | LS | \$10,000.00 | \$10,000.00 |
| 8 | 200 W. Street Light, Conduit & Wiring | 35 | EA | \$2,500.00 | \$87,500.00 |
| 9 | Median Landscaping | 5400 | SF | \$2.00 | \$10,800.00 |
| SUBTOTAL | | | | | \$868,600.00 |
| H. N. FIRST STREET | | | | | |
| 1 | Clear & Grub | 1 | LS | \$5,000.00 | \$5,000.00 |
| 2 | Excavation | 3300 | EA | \$3.00 | \$9,900.00 |
| 3 | Pavement Placement (T.I. = 10) | 36000 | SF | \$3.00 | \$108,000.00 |
| 4 | Curb & Gutter | 1000 | LF | \$10.00 | \$10,000.00 |
| 5 | Median Curb | 500 | LF | \$8.00 | \$4,000.00 |
| 6 | Sidewalk | 6000 | SF | \$2.00 | \$12,000.00 |
| 7 | Signing & Striping | 1 | LS | \$5,000.00 | \$5,000.00 |
| 8 | 200 W. Street Light, Conduit & Wiring | 5 | EA | \$2,500.00 | \$12,500.00 |
| 9 | Median Landscaping | 3000 | SF | \$2.00 | \$6,000.00 |
| SUBTOTAL | | | | | \$172,400.00 |
| ROADWAYS TOTAL | | | | | \$8,807,450.00 |

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 4
City of Dixon, California

JOB NO: 930090
DATE: 9/10/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM | DESCRIPTION | EST. QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|------|-------------|------------------|------|---------------|---------------|
|------|-------------|------------------|------|---------------|---------------|

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 5
City of Dixon, California

JOB NO: 930090
DATE: 9/10/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM | DESCRIPTION | EST QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|------|-------------|--------------|------|------------|------------|
|------|-------------|--------------|------|------------|------------|

TOTAL IMPROVEMENTS COST: \$13,524,280.00

IV. CONTINGENCY ITEMS:

A. N. First Street Interchange Alternatives

| | | | | | |
|---|---|---|----|-----------------|-----------------|
| 1 | Alternative 1 - Caltrans | 1 | LS | \$12,031,560.00 | \$12,031,560.00 |
| 2 | Alternative 2 - Caltrans South Side Onl | 1 | LS | \$8,021,441.05 | \$8,021,441.05 |
| 3 | Alternative 3 - Reduced Alternative(*) | 1 | LS | \$5,979,082.50 | \$5,979,082.50 |
| 4 | Alternative 4 - Minimum Alternative | 1 | LS | \$3,840,240.00 | \$3,840,240.00 |

SUBTOTAL \$5,979,082.50

B. Pedrick Road Interchange

| | | | | | |
|----|-----------------------------|-------|----|--------------|--------------|
| 1 | Mobilization | 1 | LS | \$50,000.00 | \$50,000.00 |
| 2 | Clear & Grub | 1 | LS | \$100,000.00 | \$100,000.00 |
| 3 | Excavation | 5000 | CY | \$3.00 | \$15,000.00 |
| 4 | Fill Placement & Compaction | 5000 | CY | \$6.00 | \$30,000.00 |
| 5 | AC Paving - T.I. = 10 | 28800 | SF | \$4.50 | \$129,600.00 |
| 6 | Curb & Gutter | 1800 | LF | \$10.00 | \$18,000.00 |
| 7 | AC Curb | 1500 | LF | \$4.00 | \$6,000.00 |
| 8 | Striping | 1 | LS | \$20,000.00 | \$20,000.00 |
| 9 | D.I. | 4 | EA | \$1,200.00 | \$4,800.00 |
| 10 | CMP Drainage Pipe | 200 | LF | \$37.00 | \$7,400.00 |
| 11 | Roadside Ditch Construction | 1000 | LF | \$25.00 | \$25,000.00 |
| 12 | Fence Construction | 1000 | LF | \$12.00 | \$12,000.00 |
| 13 | Right of Way | 60000 | SF | \$1.00 | \$60,000.00 |

SUBTOTAL \$477,600.00

C. Pedrick Road S.P.R.R. Crossing Alternatives

| | | | | | |
|---|-----------------------------------|---|----|----------------|----------------|
| 1 | Alt. 1 - Expand Existing Crossing | 1 | LS | \$456,120.00 | \$456,120.00 |
| 2 | Alternative 2 | 1 | LS | \$2,149,640.00 | \$2,149,640.00 |
| 3 | Alternative 3 | 1 | LS | \$2,924,540.00 | \$2,924,540.00 |

SUBTOTAL \$2,149,640.00

D. Landscaping Improvements

| | | | | | |
|---|-------------------------|--------|----|--------|--------------|
| 1 | Landcaping & Irrigation | 400000 | SF | \$2.00 | \$800,000.00 |
|---|-------------------------|--------|----|--------|--------------|

SUBTOTAL \$800,000.00

E. Water Tank Improvements

| | | | | | |
|---|-----------------------|---|----|--------------|--------------|
| 1 | Well, Tank, and Pumps | 1 | LS | \$300,000.00 | \$300,000.00 |
|---|-----------------------|---|----|--------------|--------------|

SUBTOTAL \$300,000.00

COMPLETE INFRASTRUCTURE COST ESTIMATE

NORTHEAST QUADRANT SPECIFIC PLAN: TABLE VI - 5
City of Dixon, California

JOB NO: 930090
DATE: 9/10/93
BY: T.S.P.

For Preliminary Fiscal Analysis

| ITEM DESCRIPTION | EST QUANTITY | UNIT | UNIT PRICE | UNIT TOTAL |
|---|--------------|------|------------|------------------------|
| F. 15% Contingency | | | | \$3,484,620.38 |
| TOTAL ESTIMATED CONSTRUCTION COST: | | | | \$26,715,422.88 |
| 30% ADMINISTRATION, ENGINEERING, LEGAL, AND BONDING: | | | | \$8,014,626.86 |
| TOTAL PROJECT COST: | | | | \$34,730,049.74 |

(*) Alternative included in cost estimates.

Appendix A - Contingency Items

TABLE A1-1

| North First Street Overcrossing at I-80: Alternative 1 - Using and expanding the existing crossing improvements. | | | | |
|---|----------|------|--------------------------------------|-----------------------|
| Description | Quantity | Unit | Unit Price (\$) | Total Price (\$) |
| Mobilization | 1 | LS | \$240,000.00 | \$240,000.00 |
| Clear & Grub | 1 | LS | \$100,000.00 | \$100,000.00 |
| Excavation | 25000 | CY | \$3.00 | \$75,000.00 |
| Fill Placement & Compaction | 55000 | CY | \$6.00 | \$330,000.00 |
| AC Paving - T.I. = 10 | 282800 | SF | \$4.50 | \$1,272,600.00 |
| Curb & Gutter | 11200 | LF | \$10.00 | \$112,000.00 |
| Sidewalk | 25200 | SF | \$2.90 | \$73,080.00 |
| Guard Rail | 1200 | LF | \$100.00 | \$120,000.00 |
| Bridge Deck Expansion | 26900 | SF | \$50.00 | \$1,345,000.00 |
| Exist. Bridge Deck Modification | 17500 | SF | \$25.00 | \$437,500.00 |
| Median Curb | 4800 | LF | \$8.00 | \$38,400.00 |
| Median Paving/Landscape | 28800 | SF | \$2.00 | \$57,600.00 |
| Striping | 1 | LS | \$50,000.00 | \$50,000.00 |
| D.I. | 16 | EA | \$1,200.00 | \$19,200.00 |
| D.M.H. | 4 | EA | \$1,500.00 | \$6,000.00 |
| CMP Drainage Pipe | 1600 | LF | \$37.00 | \$59,200.00 |
| Roadside Ditch Construction | 5000 | LF | \$25.00 | \$125,000.00 |
| Fence Construction | 4000 | LF | \$12.00 | \$48,000.00 |
| Right of Way | 97240 | SF | \$3.00 | \$291,720.00 |
| | | | TOTAL = | \$4,800,300.00 |
| | | | NEOSP Improvements at South = | \$3,840,240.00 |
| (First Phase of Interchange Re-construction) | | | | |

| North First Street Overcrossing at I-80 & Highway 113. | | | | 930090 |
|--|----------|------|-----------------|------------------|
| CALTRANS RECOMMENDED ALTERNATIVE | | | | July 29, 1993 |
| Description | Quantity | Unit | Unit Price (\$) | Total Price (\$) |
| Mobilization | 1 | LS | \$240,000.00 | \$240,000.00 |
| Clear & Grub | 1 | LS | \$100,000.00 | \$100,000.00 |
| Remove Exist. Roadway Imps. | 1 | LS | \$500,000.00 | \$500,000.00 |
| Excavation | 50000 | CY | \$3.00 | \$150,000.00 |
| Fill Placement & Compaction | 250000 | CY | \$6.00 | \$1,500,000.00 |
| AC Paving - T.I. = 10 | 600000 | SF | \$4.50 | \$2,700,000.00 |
| Curb & Gutter | 21000 | LF | \$10.00 | \$210,000.00 |

| | | | | |
|---------------------------------|--------|----|--------------|----------------|
| AC Curb | 21000 | LF | \$4.00 | \$84,000.00 |
| Sidewalk | 26400 | SF | \$2.90 | \$76,560.00 |
| Guard Rail | 2000 | LF | \$100.00 | \$200,000.00 |
| Bridge Deck | 42900 | SF | \$50.00 | \$2,145,000.00 |
| Median Curb | 4400 | LF | \$8.00 | \$35,200.00 |
| Median Paving/Landscape | 70400 | SF | \$2.00 | \$140,800.00 |
| Striping | 1 | LS | \$100,000.00 | \$100,000.00 |
| D.I. | 20 | EA | \$1,200.00 | \$24,000.00 |
| D.M.H. | 6 | EA | \$1,500.00 | \$9,000.00 |
| CMP Drainage Pipe | 2200 | LF | \$37.00 | \$81,400.00 |
| Extend Box Culvert | 400 | LF | \$100.00 | \$40,000.00 |
| Roadside Ditch Construction | 10000 | LF | \$25.00 | \$250,000.00 |
| Infiltration Basin Construction | 380000 | SF | \$2.00 | \$760,000.00 |
| Fence Construction | 6000 | LF | \$12.00 | \$72,000.00 |
| Right of Way | 871200 | SF | \$3.00 | \$2,613,600.00 |

TOTAL = \$12,031,560.00

NEQSP Improvements at South = \$8,021,441.05
(First Phase of Interchange Re-construction)

| North First Street Overcrossing at I-80 | | | | |
|--|-----------------|-------------|------------------------|-------------------------|
| Alternative 2 - Removing the existing crossing and constructing a new crossing. | | | | |
| Description | Quantity | Unit | Unit Price (\$) | Total Price (\$) |
| Mobilization | 1 | LS | \$240,000.00 | \$240,000.00 |
| Clear & Grub | 1 | LS | \$100,000.00 | \$100,000.00 |
| Remove Existing Roadway Im | 1 | LS | \$500,000.00 | \$500,000.00 |
| Excavation | 50000 | CY | \$3.00 | \$150,000.00 |
| Fill Placement & Compaction | 100000 | CY | \$6.00 | \$600,000.00 |
| AC Paving - T.I. = 10 | 411300 | SF | \$4.50 | \$1,850,850.00 |
| Curb & Gutter | 15000 | LF | \$10.00 | \$150,000.00 |
| Sidewalk | 26400 | SF | \$2.90 | \$76,560.00 |
| Guard Rail | 1600 | LF | \$100.00 | \$160,000.00 |
| Bridge Deck | 46000 | SF | \$50.00 | \$2,300,000.00 |
| Median Curb | 4400 | LF | \$8.00 | \$35,200.00 |
| Median Paving/Landscape | 28800 | SF | \$2.00 | \$57,600.00 |
| Striping | 1 | LS | \$50,000.00 | \$50,000.00 |
| D.I. | 16 | EA | \$1,200.00 | \$19,200.00 |
| D.M.H. | 4 | EA | \$1,500.00 | \$6,000.00 |
| CMP Drainage Pipe | 1600 | LF | \$37.00 | \$59,200.00 |
| Roadside Ditch Construction | 7500 | LF | \$25.00 | \$187,500.00 |
| Fence Construction | 7500 | LF | \$12.00 | \$90,000.00 |
| Right of Way | 670000 | SF | \$2.00 | \$1,340,000.00 |

TOTAL = \$7,972,110.00

NEQSF Improvements at South = \$5,979,042.50
 (First Phase of Interchange Re-construction)

| Pedrick Road Interchange Modifications requested by Caltrans 930090 | | | | |
|---|----------|------|-----------------|------------------|
| July 29, 1993 | | | | |
| Description | Quantity | Unit | Unit Price (\$) | Total Price (\$) |
| Mobilization | 1 | LS | \$50,000.00 | \$50,000.00 |
| Clear & Grub | 1 | LS | \$100,000.00 | \$100,000.00 |
| Excavation | 5000 | CY | \$3.00 | \$15,000.00 |
| Fill Placement & Compaction | 5000 | CY | \$6.00 | \$30,000.00 |
| AC Paving - T.I. = 10 | 28800 | SF | \$4.50 | \$129,600.00 |
| Curb & Gutter | 1800 | LF | \$10.00 | \$18,000.00 |
| AC Curb | 1500 | LF | \$4.00 | \$6,000.00 |
| Striping | 1 | LS | \$20,000.00 | \$20,000.00 |
| D.I. | 4 | EA | \$1,200.00 | \$4,800.00 |
| CMP Drainage Pipe | 200 | LF | \$37.00 | \$7,400.00 |
| Roadside Ditch Construction | 1000 | LF | \$25.00 | \$25,000.00 |
| Fence Construction | 1000 | LF | \$12.00 | \$12,000.00 |
| Right of Way | 60000 | SF | \$1.00 | \$60,000.00 |
| | | | TOTAL = | \$477,800.00 |

TABLE A1-2

| Pedrick Road Overpass at SPRR: Alternative 1 - Using and expanding the existing crossing improvements. | | | | |
|---|----------|------|-----------------|---------------------|
| Description | Quantity | Unit | Unit Price (\$) | Total Price (\$) |
| Mobilization | 1 | LS | \$10,000.00 | \$10,000.00 |
| Excavation | 4000 | CY | \$3.00 | \$12,000.00 |
| Fill Placement & Compaction | 1000 | CY | \$6.00 | \$6,000.00 |
| AC Paving - T.I. = 9 | 21600 | SF | \$2.30 | \$49,680.00 |
| Curb & Gutter | 600 | LF | \$10.00 | \$6,000.00 |
| Sidewalk | 3600 | SF | \$2.90 | \$10,440.00 |
| Expand Exist. Crossing Deck | 1 | LS | \$200,000.00 | \$200,000.00 |
| Replace Exist. Crossing Deck | 1 | LS | \$50,000.00 | \$50,000.00 |
| Median Curb | 600 | LF | \$8.00 | \$4,800.00 |
| Median Paving/Landscape | 3600 | SF | \$2.00 | \$7,200.00 |
| Striping | 1 | LS | \$5,000.00 | \$5,000.00 |
| Crossing Guard and Lights | 1 | LS | \$50,000.00 | \$50,000.00 |
| Right of Way | 15000 | SF | \$3.00 | \$45,000.00 |
| TOTAL CONSTRUCTION COST | | | | \$456,120.00 |

| Pedrick Road Overpass at SPRR: | | | | 930090 |
|--|----------|------|-----------------|-----------------------|
| Alternative 2 - Overpass Alternative with Vaughn Intersection. | | | | July 29, 1993 |
| Description | Quantity | Unit | Unit Price (\$) | Total Price (\$) |
| Mobilization | 1 | LS | \$10,000.00 | \$10,000.00 |
| Clear & Grub | 1 | LS | \$10,000.00 | \$10,000.00 |
| Remove Exist. Roadway Imps. | 1 | LS | \$10,000.00 | \$10,000.00 |
| Excavation | 16000 | CY | \$3.00 | \$48,000.00 |
| Fill Placement & Compaction | 60000 | CY | \$6.00 | \$360,000.00 |
| AC Paving - T.I. = 9 | 172800 | SF | \$2.30 | \$397,440.00 |
| Curb & Gutter | 4800 | LF | \$10.00 | \$48,000.00 |
| Sidewalk | 12000 | SF | \$2.90 | \$34,800.00 |
| Guard Rail | 600 | LF | \$100.00 | \$60,000.00 |
| Bridge Deck | 20000 | SF | \$50.00 | \$1,000,000.00 |
| Median Curb | 2000 | LF | \$8.00 | \$16,000.00 |
| Median Paving/Landscape | 12000 | SF | \$2.00 | \$24,000.00 |
| Striping | 1 | LS | \$15,000.00 | \$15,000.00 |
| Fence Construction | 2000 | LF | \$12.00 | \$24,000.00 |
| Right of Way | 264000 | SF | \$0.35 | \$92,400.00 |
| TOTAL CONSTRUCTION COST | | | | \$2,149,640.00 |

Pedrick Road Overpass at SPRR:

930090

Alternative 3 - Smooth turning movements alternative

July 29, 1993

| Description | Quantity | Unit | Unit Price (\$) | Total Price (\$) |
|--------------------------------|----------|------|-----------------|-----------------------|
| Mobilization | 1 | LS | \$10,000.00 | \$10,000.00 |
| Clear & Grub | 1 | LS | \$10,000.00 | \$10,000.00 |
| Remove Exist. Roadway Imps. | 1 | LS | \$10,000.00 | \$10,000.00 |
| Excavation | 20000 | CY | \$3.00 | \$60,000.00 |
| Fill Placement & Compaction | 60000 | CY | \$6.00 | \$360,000.00 |
| AC Paving - T.I. = 9 | 244800 | SF | \$2.30 | \$563,040.00 |
| Curb & Gutter | 6800 | LF | \$10.00 | \$68,000.00 |
| Sidewalk | 24000 | SF | \$2.90 | \$69,600.00 |
| Guard Rail | 600 | LF | \$100.00 | \$60,000.00 |
| Bridge Deck | 30000 | SF | \$50.00 | \$1,500,000.00 |
| Median Curb | 3000 | LF | \$8.00 | \$24,000.00 |
| Median Paving/Landscape | 18000 | SF | \$2.00 | \$36,000.00 |
| Striping | 1 | LS | \$20,000.00 | \$20,000.00 |
| Fence Construction | 2000 | LF | \$12.00 | \$24,000.00 |
| Right of Way | 314000 | SF | \$0.35 | \$109,900.00 |
| TOTAL CONSTRUCTION COST | | | | \$2,924,540.00 |

Appendix B - Drainage Calculations

Filename: Neqspot
 Description: Total Ponds 32.2 Acres
 20 cfs outlet pump station to pond 'B'
 2.18165972 0.41666667 0.00076923 20

Creek Percolation Rate: 0.25 ft./day Area @ Creek: 3.22
 Other Percolation Rate: 0.25 ft./day Area @ Other: 16.10
 Creek Trench Rate: 37.50 cu. ft./ft./day Length @ Creek: 708.40
 Other Trench Rate: 37.50 cu. ft./ft./day Length @ Other: 2833.60

Sediment Pond Information:

Main Pond Information:

TOTAL STORAGE

| STAGE | AREA | VOLUME | STAGE | AREA | VOLUME | VOLUME |
|-------|------|--------|-------|-------|--------|--------|
| 43.99 | 0.00 | 0.00 | 43.99 | 0.00 | 0.00 | 0.00 |
| 44 | 0.00 | 0.00 | 44 | 1.00 | 0.09 | 0.00 |
| 45 | 0.00 | 0.00 | 45 | 2.00 | 1.59 | 0.00 |
| 46 | 0.00 | 0.00 | 46 | 11.00 | 8.09 | 0.00 |
| 47 | 0.00 | 0.00 | 47 | 12.00 | 19.59 | 19.59 |
| 48 | 0.00 | 0.00 | 48 | 13.00 | 32.09 | 32.09 |
| 49 | 0.00 | 0.00 | 49 | 14.00 | 45.59 | 45.59 |
| 50 | 0.00 | 0.00 | 50 | 15.00 | 60.09 | 60.09 |
| 51 | 0.00 | 0.00 | 51 | 16.10 | 75.64 | 75.64 |
| 52 | 0.00 | 0.00 | 52 | 17.10 | 92.24 | 92.24 |
| 53 | 0.00 | 0.00 | 53 | 18.10 | 109.84 | 109.84 |
| 53.5 | 0.00 | 0.00 | 53.5 | 19.00 | 119.12 | 119.12 |
| 54 | 0.00 | 0.00 | 54 | 19.80 | 128.82 | 128.82 |
| 55 | 0.00 | 0.00 | 55 | 21.70 | 149.57 | 149.57 |
| 56 | 0.00 | 0.00 | 56 | 23.20 | 172.02 | 172.02 |
| 57 | 0.00 | 0.00 | 57 | 25.00 | 196.12 | 196.12 |
| 58 | 0.00 | 0.00 | 58 | 27.00 | 222.12 | 222.12 |
| 59 | 0.00 | 0.00 | 59 | 28.50 | 249.87 | 249.87 |
| 60 | 0.00 | 0.00 | 60 | 30.00 | 279.12 | 279.12 |

OUTFLOW INFORMATION:

PERCOLATION VALUES:

OTHER OUTFLOW:

TOTAL OUTFLOW (cfs) TOTAL OUTFLOW (acre ft.)

| STAGE | @ Creek | @ Creek Trench | @ Other | @ Other Trench | Pump | @ Overflow Channels | TOTAL OUTFLOW (cfs) | TOTAL OUTFLOW (acre ft.) |
|-------|---------|----------------|---------|----------------|-------|---------------------|---------------------|--------------------------|
| 43.99 | | | | | | | 0.00 | 0 |
| 44 | | | | | | | 0.00 | 0 |
| 45 | 0.41 | | 2.03 | | | | 2.44 | 4.83 |
| 46 | 0.41 | | 2.03 | | 20.00 | 10.00 | 32.44 | 64.3341322 |
| 47 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 10.00 | 33.97 | 67.3833747 |
| 48 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 10.00 | 33.97 | 67.3833747 |
| 49 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 10.00 | 33.97 | 67.3833747 |
| 50 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 10.00 | 33.97 | 67.3833747 |
| 51 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 10.00 | 33.97 | 67.3833747 |
| 52 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 10.00 | 33.97 | 67.3833747 |
| 53 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 10.00 | 33.97 | 67.3833747 |
| 53.5 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 10.00 | 33.97 | 67.3833747 |
| 54 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 10.00 | 33.97 | 67.3833747 |
| 55 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 20.00 | 43.97 | 87.2180854 |
| 56 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 30.00 | 53.97 | 107.052796 |
| 57 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 60.00 | 83.97 | 166.556928 |
| 58 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 100.00 | 123.97 | 245.895771 |
| 59 | 0.41 | 0.31 | 2.03 | 1.22986111 | 20.00 | 100.00 | 123.97 | 245.895771 |

60 0.41 0.31 2.03 1.22986111 20.00 100.00 123.97 245.895771

Other Pond Information

TOTAL POND BEHAVIOR INFORMATION:

| Stage | Storage | Percolation Outflow | STORAGE | PERC. | PUMP | TOTAL Q (cfs) | STAGE |
|-------|---------|------------------------|---------|------------|-------|------------------|-------|
| 43.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 43.99 |
| 44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 44 |
| 45 | 0.00 | 0.00 | 0.00 | 2.44 | 0.00 | 2.44 | 45 |
| 46 | 0.00 | 0.00 | 0.00 | 12.44 | 20.00 | 32.44 | 46 |
| 47 | 0.00 | 0.00 | 19.59 | 13.97 | 20.00 | 33.97 | 47 |
| 48 | 0.00 | 0.00 | 32.09 | 13.97 | 20.00 | 33.97 | 48 |
| 49 | 0.00 | 0.00 | 45.59 | 13.97 | 20.00 | 33.97 | 49 |
| 50 | 0.00 | 0.00 | 60.09 | 13.97 | 20.00 | 33.97 | 50 |
| 51 | 0.00 | 0.00 | 75.64 | 13.97 | 20.00 | 33.97 | 51 |
| 52 | 0.00 | 0.00 | 92.24 | 13.97 | 20.00 | 33.97 | 52 |
| 53 | 0.00 | 0.00 | 109.84 | 13.97 | 20.00 | 33.97 | 53 |
| 53.5 | 0.00 | 0.00 | 119.12 | 13.97 | 20.00 | 33.97 | 53.5 |
| 54 | 0.00 | 0.00 | 128.82 | 13.97 | 20.00 | 33.97 | 54 |
| 55 | 0.00 | 0.00 | 149.57 | 23.97 | 20.00 | 43.97 | 55 |
| 56 | 0.00 | 0.00 | 172.02 | 33.97 | 20.00 | 53.97 | 56 |
| 57 | 0.00 | 0.00 | 196.12 | 63.97 | 20.00 | 83.97 | 57 |
| 57.5 | 0.00 | 0.00 | 209.115 | 83.9724514 | 20 | 103.972451 | 57.5 |
| 58 | 0.00 | 0.00 | 222.12 | 103.97 | 20.00 | 123.97 | 58 |
| 58.5 | 0.00 | 0.00 | 235.99 | 103.972451 | 20 | 123.972451 | 58.5 |
| 59 | 0.00 | 0.00 | 249.87 | 103.97 | 20.00 | 123.97 | 59 |
| 60 | 0.00 | 0.00 | 279.12 | 103.97 | 20.00 | 123.97 | 60 |

1840.00

TOTAL RUNOFF INFORMATION:

(Per Table 2-2a, SCS TR-55 manual. No AMC adjustment used. Soil Group 'D')

| AREA TYPE: | CN | AREA | AREA*CN | Shed 'A' | Shed B&C |
|------------------|--------|---------|---------|-------------|---------------|
| Agricultural | 65.00 | 1840.00 | 119600 | | 562.9 |
| Landscape Areas | 65.00 | 36.90 | 2398.5 | | 5.5 |
| Commercial Areas | 90.00 | 299.50 | 26955 | 17 | 369.3 |
| Park Areas | 65.00 | | 0 | | 7.7 |
| Industrial Areas | 90.00 | 254.40 | 22896 | 66.9 | 114.3 |
| Pond Area | 100.00 | 32.20 | 3220 | | 0 |
| School Areas | 70.00 | | 0 | | 11.3 |
| Low Density Res. | 72.00 | | 0 | | 99.7 |
| Mid Density Res. | 78.00 | | 0 | | 28.6 |
| TOTAL = | | | | 83.9 | 1199.3 |

Summations: 2463.00 175069.5
 Average CN = 71.08
 S = 4.07
 Ia = 0.81

STORM RUNOFF INFORMATION:

| Storm Duration | Precip. | Runoff | Total Runoff | Runoff Per | Day Runoff | Average Flow |
|-------------------|---------|--------|-----------------|---------------|---------------|-----------------|
|-------------------|---------|--------|-----------------|---------------|---------------|-----------------|

| (Days) | (Inches) | (Inches) | (Acre*Ft.) | Day | (Acre Ft.) | (CFS) |
|--------|----------|----------|------------|------|------------|--------|
| 1 | 4.64 | 1.85 | 380.61 | 1.85 | 380.61 | 191.89 |
| 2 | 6.26 | 3.12 | 639.84 | 1.56 | 319.92 | 80.65 |
| 3 | 7.00 | 3.73 | 765.96 | 1.24 | 255.32 | 42.91 |
| 4 | 7.42 | 4.09 | 839.13 | 1.02 | 209.78 | 26.44 |
| 5 | 7.92 | 4.52 | 927.51 | 0.90 | 185.50 | 18.70 |
| 6 | 8.28 | 4.83 | 991.91 | 0.81 | 165.32 | 13.89 |
| 8 | 9.15 | 5.60 | 1149.82 | 0.70 | 143.73 | 9.06 |
| 10 | 9.69 | 6.09 | 1249.23 | 0.61 | 124.92 | 6.30 |
| 15 | 10.79 | 7.09 | 1454.45 | 0.47 | 96.96 | 3.26 |
| 20 | 12.33 | 8.51 | 1746.63 | 0.43 | 87.33 | 2.20 |
| 30 | 14.48 | 10.53 | 2161.49 | 0.35 | 72.05 | 1.21 |
| 45 | 17.89 | 13.79 | 2830.49 | 0.31 | 62.90 | 0.70 |
| 60 | 20.87 | 16.67 | 3422.29 | 0.28 | 57.04 | 0.48 |
| 75 | 23.43 | 19.17 | 3934.22 | 0.26 | 52.46 | 0.35 |
| 90 | 25.56 | 21.25 | 4361.99 | 0.24 | 48.47 | 0.27 |
| 120 | 27.69 | 23.34 | 4791.05 | 0.19 | 39.93 | 0.17 |

STORM/POND CALCULATIONS:

1 Day Storm: 1
 Time Increment = 0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 1.2 | 19.03 | 19.03 | 1.23 | 1.98 | 3.22 | 15.81 | 46.00 |
| 2.4 | 19.03 | 34.84 | 1.39 | 1.98 | 3.37 | 31.48 | 47.00 |
| 3.6 | 19.03 | 50.51 | 1.39 | 1.98 | 3.37 | 47.14 | 49.00 |
| 4.8 | 19.03 | 66.17 | 1.39 | 1.98 | 3.37 | 62.80 | 50.00 |
| 6 | 19.03 | 81.83 | 1.39 | 1.98 | 3.37 | 78.46 | 51.00 |
| 7.2 | 19.03 | 97.49 | 1.39 | 1.98 | 3.37 | 94.12 | 52.00 |
| 8.4 | 19.03 | 113.15 | 1.39 | 1.98 | 3.37 | 109.78 | 52.00 |
| 9.6 | 19.03 | 128.81 | 1.39 | 1.98 | 3.37 | 125.44 | 53.50 |
| 10.8 | 19.03 | 144.47 | 1.39 | 1.98 | 3.37 | 141.11 | 54.00 |
| 12 | 19.03 | 160.14 | 2.38 | 1.98 | 4.36 | 155.77 | 55.00 |
| 13.2 | 19.03 | 174.81 | 3.37 | 1.98 | 5.35 | 169.45 | 55.00 |
| 14.4 | 19.03 | 188.48 | 3.37 | 1.98 | 5.35 | 183.13 | 56.00 |
| 15.6 | 19.03 | 202.16 | 6.34 | 1.98 | 8.33 | 193.83 | 56.00 |
| 16.8 | 19.03 | 212.86 | 8.33 | 1.98 | 10.31 | 202.55 | 57.00 |
| 18 | 19.03 | 221.58 | 8.33 | 1.98 | 10.31 | 211.27 | 57.50 |
| 19.2 | 19.03 | 230.30 | 10.31 | 1.98 | 12.29 | 218.01 | 57.50 |
| 20.4 | 19.03 | 237.04 | 10.31 | 1.98 | 12.29 | 224.74 | 58.00 |
| 21.6 | 19.03 | 243.77 | 10.31 | 1.98 | 12.29 | 231.48 | 58.00 |
| 22.8 | 19.03 | 250.51 | 10.31 | 1.98 | 12.29 | 238.22 | 58.50 |
| 24 | 19.03 | 257.25 | 10.31 | 1.98 | 12.29 | 244.95 | 58.50 |
| 25.2 | 0.00 | 244.95 | 10.31 | 1.98 | 12.29 | 232.66 | 58.00 |

2 Day Storm: 2.00
 Time Increment = 0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|

| | | | | | | | |
|------|-------|--------|-------|------|-------|--------|-------|
| 2.4 | 31.99 | 31.99 | 2.77 | 3.97 | 6.74 | 25.25 | 47.00 |
| 4.8 | 31.99 | 57.25 | 2.77 | 3.97 | 6.74 | 50.51 | 49.00 |
| 7.2 | 31.99 | 82.50 | 2.77 | 3.97 | 6.74 | 75.76 | 51.00 |
| 9.6 | 31.99 | 107.75 | 2.77 | 3.97 | 6.74 | 101.02 | 52.00 |
| 12 | 31.99 | 133.01 | 2.77 | 3.97 | 6.74 | 126.27 | 53.50 |
| 14.4 | 31.99 | 158.26 | 4.75 | 3.97 | 8.72 | 149.54 | 54.00 |
| 16.8 | 31.99 | 181.53 | 6.74 | 3.97 | 10.71 | 170.83 | 55.00 |
| 19.2 | 31.99 | 202.82 | 12.69 | 3.97 | 16.66 | 186.16 | 56.00 |
| 21.6 | 31.99 | 218.15 | 16.66 | 3.97 | 20.62 | 197.53 | 57.00 |
| 24 | 31.99 | 229.52 | 20.62 | 3.97 | 24.59 | 204.93 | 57.00 |
| 26.4 | 31.99 | 236.93 | 20.62 | 3.97 | 24.59 | 212.34 | 57.50 |
| 28.8 | 31.99 | 244.33 | 20.62 | 3.97 | 24.59 | 219.74 | 57.50 |
| 31.2 | 31.99 | 251.73 | 20.62 | 3.97 | 24.59 | 227.14 | 58.00 |
| 33.6 | 31.99 | 259.13 | 20.62 | 3.97 | 24.59 | 234.54 | 58.00 |
| 36 | 31.99 | 266.54 | 20.62 | 3.97 | 24.59 | 241.95 | 58.50 |
| 38.4 | 31.99 | 273.94 | 20.62 | 3.97 | 24.59 | 249.35 | 58.50 |
| 40.8 | 31.99 | 281.34 | 20.62 | 3.97 | 24.59 | 256.75 | 59.00 |
| 43.2 | 31.99 | 288.74 | 20.62 | 3.97 | 24.59 | 264.15 | 59.00 |
| 45.6 | 31.99 | 296.15 | 20.62 | 3.97 | 24.59 | 271.56 | 59.00 |
| 48 | 31.99 | 303.55 | 20.62 | 3.97 | 24.59 | 278.96 | 59.00 |
| 50.4 | 0.00 | 278.96 | 20.62 | 3.97 | 24.59 | 254.37 | 59.00 |

3 Day Storm: 3.00
Time Increment = 0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 3.6 | 38.30 | 38.30 | 4.16 | 5.95 | 10.11 | 28.19 | 47.00 |
| 7.2 | 38.30 | 66.49 | 4.16 | 5.95 | 10.11 | 56.38 | 49.00 |
| 10.8 | 38.30 | 94.68 | 4.16 | 5.95 | 10.11 | 84.57 | 51.00 |
| 14.4 | 38.30 | 122.87 | 4.16 | 5.95 | 10.11 | 112.76 | 53.00 |
| 18 | 38.30 | 151.06 | 7.13 | 5.95 | 13.08 | 137.98 | 54.00 |
| 21.6 | 38.30 | 176.28 | 10.11 | 5.95 | 16.06 | 160.22 | 55.00 |
| 25.2 | 38.30 | 198.52 | 19.03 | 5.95 | 24.98 | 173.53 | 56.00 |
| 28.8 | 38.30 | 211.83 | 24.98 | 5.95 | 30.93 | 180.90 | 56.00 |
| 32.4 | 38.30 | 219.19 | 24.98 | 5.95 | 30.93 | 188.26 | 56.00 |
| 36 | 38.30 | 226.56 | 30.93 | 5.95 | 36.88 | 189.67 | 56.00 |
| 39.6 | 38.30 | 227.97 | 30.93 | 5.95 | 36.88 | 191.09 | 56.00 |
| 43.2 | 38.30 | 229.38 | 30.93 | 5.95 | 36.88 | 192.50 | 56.00 |
| 46.8 | 38.30 | 230.80 | 30.93 | 5.95 | 36.88 | 193.91 | 56.00 |
| 50.4 | 38.30 | 232.21 | 30.93 | 5.95 | 36.88 | 195.33 | 56.00 |
| 54 | 38.30 | 233.63 | 30.93 | 5.95 | 36.88 | 196.74 | 57.00 |
| 57.6 | 38.30 | 235.04 | 30.93 | 5.95 | 36.88 | 198.15 | 57.00 |
| 61.2 | 38.30 | 236.45 | 30.93 | 5.95 | 36.88 | 199.57 | 57.00 |
| 64.8 | 38.30 | 237.87 | 30.93 | 5.95 | 36.88 | 200.98 | 57.00 |
| 68.4 | 38.30 | 239.28 | 30.93 | 5.95 | 36.88 | 202.40 | 57.00 |
| 72 | 38.30 | 240.69 | 30.93 | 5.95 | 36.88 | 203.81 | 57.00 |
| 75.6 | 0.00 | 203.81 | 19.03 | 5.95 | 24.98 | 178.83 | 56.00 |

4 Day Storm: 4.00
Time Increment = 0.05

Time Total Storage

| Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Outflow Losses | At End Incr. (Acre Ft.) | Stage |
|----------------------|--------|-------------------|-----------------------|-------------------|-------------------|----------------------------|-------|
| 4.8 | 41.96 | 41.96 | 5.54 | 7.93 | 13.48 | 28.48 | 47.00 |
| 9.6 | 41.96 | 70.44 | 5.54 | 7.93 | 13.48 | 56.96 | 49.00 |
| 14.4 | 41.96 | 98.92 | 5.54 | 7.93 | 13.48 | 85.44 | 51.00 |
| 19.2 | 41.96 | 127.40 | 5.54 | 7.93 | 13.48 | 113.92 | 53.00 |
| 24 | 41.96 | 155.88 | 9.51 | 7.93 | 17.44 | 138.43 | 54.00 |
| 28.8 | 41.96 | 180.39 | 13.48 | 7.93 | 21.41 | 158.98 | 55.00 |
| 33.6 | 41.96 | 200.93 | 25.38 | 7.93 | 33.31 | 167.62 | 55.00 |
| 38.4 | 41.96 | 209.58 | 33.31 | 7.93 | 41.25 | 168.33 | 55.00 |
| 43.2 | 41.96 | 210.29 | 33.31 | 7.93 | 41.25 | 169.04 | 55.00 |
| 48 | 41.96 | 211.00 | 33.31 | 7.93 | 41.25 | 169.76 | 55.00 |
| 52.8 | 41.96 | 211.71 | 33.31 | 7.93 | 41.25 | 170.47 | 55.00 |
| 57.6 | 41.96 | 212.42 | 33.31 | 7.93 | 41.25 | 171.18 | 55.00 |
| 62.4 | 41.96 | 213.13 | 33.31 | 7.93 | 41.25 | 171.89 | 55.00 |
| 67.2 | 41.96 | 213.85 | 33.31 | 7.93 | 41.25 | 172.60 | 56.00 |
| 72 | 41.96 | 214.56 | 33.31 | 7.93 | 41.25 | 173.31 | 56.00 |
| 76.8 | 41.96 | 215.27 | 33.31 | 7.93 | 41.25 | 174.02 | 56.00 |
| 81.6 | 41.96 | 215.98 | 33.31 | 7.93 | 41.25 | 174.73 | 56.00 |
| 86.4 | 41.96 | 216.69 | 33.31 | 7.93 | 41.25 | 175.45 | 56.00 |
| 91.2 | 41.96 | 217.40 | 33.31 | 7.93 | 41.25 | 176.16 | 56.00 |
| 96 | 41.96 | 218.11 | 33.31 | 7.93 | 41.25 | 176.87 | 56.00 |
| 100.8 | 0.00 | 176.87 | 13.48 | 7.93 | 21.41 | 155.46 | 55.00 |

5 Day Storm: 5.00
Time Increment = 0.05

| Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|----------------------|--------|-------------------|-----------------------|-------------------|----------------------------|---------------------------------------|-------|
| 6 | 46.38 | 46.38 | 6.93 | 9.92 | 16.85 | 29.53 | 47.00 |
| 12 | 46.38 | 75.91 | 6.93 | 9.92 | 16.85 | 59.06 | 49.00 |
| 18 | 46.38 | 105.44 | 6.93 | 9.92 | 16.85 | 88.59 | 51.00 |
| 24 | 46.38 | 134.96 | 6.93 | 9.92 | 16.85 | 118.12 | 53.00 |
| 30 | 46.38 | 164.49 | 11.89 | 9.92 | 21.80 | 142.69 | 54.00 |
| 36 | 46.38 | 189.07 | 16.85 | 9.92 | 26.76 | 162.30 | 55.00 |
| 42 | 46.38 | 208.68 | 31.72 | 9.92 | 41.64 | 167.04 | 55.00 |
| 48 | 46.38 | 213.41 | 41.64 | 9.92 | 51.56 | 161.86 | 55.00 |
| 54 | 46.38 | 208.23 | 31.72 | 9.92 | 41.64 | 166.59 | 55.00 |
| 60 | 46.38 | 212.97 | 41.64 | 9.92 | 51.56 | 161.41 | 55.00 |
| 66 | 46.38 | 207.79 | 31.72 | 9.92 | 41.64 | 166.15 | 55.00 |
| 72 | 46.38 | 212.53 | 41.64 | 9.92 | 51.56 | 160.97 | 55.00 |
| 78 | 46.38 | 207.34 | 31.72 | 9.92 | 41.64 | 165.70 | 55.00 |
| 84 | 46.38 | 212.08 | 41.64 | 9.92 | 51.56 | 160.52 | 55.00 |
| 90 | 46.38 | 206.90 | 31.72 | 9.92 | 41.64 | 165.26 | 55.00 |
| 96 | 46.38 | 211.64 | 41.64 | 9.92 | 51.56 | 160.08 | 55.00 |
| 102 | 46.38 | 206.45 | 31.72 | 9.92 | 41.64 | 164.82 | 55.00 |
| 108 | 46.38 | 211.19 | 41.64 | 9.92 | 51.56 | 159.63 | 55.00 |
| 114 | 46.38 | 206.01 | 31.72 | 9.92 | 41.64 | 164.37 | 55.00 |
| 120 | 46.38 | 210.75 | 41.64 | 9.92 | 51.56 | 159.19 | 55.00 |
| 126 | 0.00 | 159.19 | 11.89 | 9.92 | 21.80 | 137.39 | 54.00 |

6 Day Storm: 6.00

Time Increment = 0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 7.2 | 49.60 | 49.60 | 8.31 | 11.90 | 20.22 | 29.38 | 47.00 |
| 14.4 | 49.60 | 78.98 | 8.31 | 11.90 | 20.22 | 58.76 | 49.00 |
| 21.6 | 49.60 | 108.36 | 8.31 | 11.90 | 20.22 | 88.14 | 51.00 |
| 28.8 | 49.60 | 137.74 | 8.31 | 11.90 | 20.22 | 117.52 | 53.00 |
| 36 | 49.60 | 167.12 | 14.26 | 11.90 | 26.17 | 140.95 | 54.00 |
| 43.2 | 49.60 | 190.55 | 20.22 | 11.90 | 32.12 | 158.43 | 55.00 |
| 50.4 | 49.60 | 208.03 | 38.07 | 11.90 | 49.97 | 158.06 | 55.00 |
| 57.6 | 49.60 | 207.66 | 38.07 | 11.90 | 49.97 | 157.69 | 55.00 |
| 64.8 | 49.60 | 207.29 | 38.07 | 11.90 | 49.97 | 157.32 | 55.00 |
| 72 | 49.60 | 206.91 | 38.07 | 11.90 | 49.97 | 156.95 | 55.00 |
| 79.2 | 49.60 | 206.54 | 38.07 | 11.90 | 49.97 | 156.58 | 55.00 |
| 86.4 | 49.60 | 206.17 | 38.07 | 11.90 | 49.97 | 156.20 | 55.00 |
| 93.6 | 49.60 | 205.80 | 38.07 | 11.90 | 49.97 | 155.83 | 55.00 |
| 100.8 | 49.60 | 205.43 | 38.07 | 11.90 | 49.97 | 155.46 | 55.00 |
| 108 | 49.60 | 205.06 | 38.07 | 11.90 | 49.97 | 155.09 | 55.00 |
| 115.2 | 49.60 | 204.69 | 38.07 | 11.90 | 49.97 | 154.72 | 55.00 |
| 122.4 | 49.60 | 204.31 | 38.07 | 11.90 | 49.97 | 154.35 | 55.00 |
| 129.6 | 49.60 | 203.94 | 38.07 | 11.90 | 49.97 | 153.98 | 55.00 |
| 136.8 | 49.60 | 203.57 | 38.07 | 11.90 | 49.97 | 153.60 | 55.00 |
| 144 | 49.60 | 203.20 | 38.07 | 11.90 | 49.97 | 153.23 | 55.00 |
| 151.2 | 0.00 | 153.23 | 14.26 | 11.90 | 26.17 | 127.07 | 53.50 |

8 Day Storm: 8.00

Time Increment = 0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 9.6 | 57.49 | 57.49 | 11.09 | 15.87 | 26.95 | 30.54 | 47.00 |
| 19.2 | 57.49 | 88.03 | 11.09 | 15.87 | 26.95 | 61.08 | 50.00 |
| 28.8 | 57.49 | 118.57 | 11.09 | 15.87 | 26.95 | 91.61 | 51.00 |
| 38.4 | 57.49 | 149.10 | 11.09 | 15.87 | 26.95 | 122.15 | 53.50 |
| 48 | 57.49 | 179.64 | 26.95 | 15.87 | 42.82 | 136.82 | 54.00 |
| 57.6 | 57.49 | 194.31 | 26.95 | 15.87 | 42.82 | 151.49 | 55.00 |
| 67.2 | 57.49 | 208.98 | 50.76 | 15.87 | 66.62 | 142.36 | 54.00 |
| 76.8 | 57.49 | 199.85 | 50.76 | 15.87 | 66.62 | 133.23 | 54.00 |
| 86.4 | 57.49 | 190.72 | 26.95 | 15.87 | 42.82 | 147.90 | 54.00 |
| 96 | 57.49 | 205.39 | 50.76 | 15.87 | 66.62 | 138.77 | 54.00 |
| 105.6 | 57.49 | 196.26 | 50.76 | 15.87 | 66.62 | 129.63 | 54.00 |
| 115.2 | 57.49 | 187.12 | 26.95 | 15.87 | 42.82 | 144.30 | 54.00 |
| 124.8 | 57.49 | 201.79 | 50.76 | 15.87 | 66.62 | 135.17 | 54.00 |
| 134.4 | 57.49 | 192.66 | 26.95 | 15.87 | 42.82 | 149.84 | 55.00 |
| 144 | 57.49 | 207.33 | 50.76 | 15.87 | 66.62 | 140.71 | 54.00 |
| 153.6 | 57.49 | 198.20 | 50.76 | 15.87 | 66.62 | 131.58 | 54.00 |
| 163.2 | 57.49 | 189.07 | 26.95 | 15.87 | 42.82 | 146.25 | 54.00 |
| 172.8 | 57.49 | 203.74 | 50.76 | 15.87 | 66.62 | 137.12 | 54.00 |
| 182.4 | 57.49 | 194.61 | 26.95 | 15.87 | 42.82 | 151.79 | 55.00 |
| 192 | 57.49 | 209.28 | 66.62 | 15.87 | 82.49 | 126.79 | 53.50 |
| 201.6 | 0.00 | 126.79 | 11.09 | 15.87 | 26.95 | 99.83 | 52.00 |

10 Day Storm: 10.00
 Time Increment = 0.05

| Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|----------------------|--------|-------------------|-----------------------|-------------------|----------------------------|---------------------------------------|-------|
| 12 | 62.46 | 62.46 | 13.86 | 19.83 | 33.69 | 28.77 | 47.00 |
| 24 | 62.46 | 91.23 | 13.86 | 19.83 | 33.69 | 57.54 | 49.00 |
| 36 | 62.46 | 120.00 | 13.86 | 19.83 | 33.69 | 86.31 | 51.00 |
| 48 | 62.46 | 148.77 | 13.86 | 19.83 | 33.69 | 115.08 | 53.00 |
| 60 | 62.46 | 177.54 | 33.69 | 19.83 | 53.53 | 124.01 | 53.50 |
| 72 | 62.46 | 186.48 | 33.69 | 19.83 | 53.53 | 132.95 | 54.00 |
| 84 | 62.46 | 195.41 | 33.69 | 19.83 | 53.53 | 141.88 | 54.00 |
| 96 | 62.46 | 204.35 | 63.44 | 19.83 | 83.28 | 121.07 | 53.50 |
| 108 | 62.46 | 183.53 | 33.69 | 19.83 | 53.53 | 130.00 | 54.00 |
| 120 | 62.46 | 192.46 | 33.69 | 19.83 | 53.53 | 138.94 | 54.00 |
| 132 | 62.46 | 201.40 | 63.44 | 19.83 | 83.28 | 118.12 | 53.00 |
| 144 | 62.46 | 180.58 | 33.69 | 19.83 | 53.53 | 127.06 | 53.50 |
| 156 | 62.46 | 189.52 | 33.69 | 19.83 | 53.53 | 135.99 | 54.00 |
| 168 | 62.46 | 198.45 | 63.44 | 19.83 | 83.28 | 115.17 | 53.00 |
| 180 | 62.46 | 177.64 | 33.69 | 19.83 | 53.53 | 124.11 | 53.50 |
| 192 | 62.46 | 186.57 | 33.69 | 19.83 | 53.53 | 133.04 | 54.00 |
| 204 | 62.46 | 195.51 | 33.69 | 19.83 | 53.53 | 141.98 | 54.00 |
| 216 | 62.46 | 204.44 | 63.44 | 19.83 | 83.28 | 121.16 | 53.50 |
| 228 | 62.46 | 183.62 | 33.69 | 19.83 | 53.53 | 130.10 | 54.00 |
| 240 | 62.46 | 192.56 | 33.69 | 19.83 | 53.53 | 139.03 | 54.00 |
| 252 | 0.00 | 139.03 | 13.86 | 19.83 | 33.69 | 105.34 | 52.00 |

15 Day Storm: 15.00
 Time Increment = 0.05

| Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|----------------------|--------|-------------------|-----------------------|-------------------|----------------------------|---------------------------------------|-------|
| 87.266889 | 72.72 | 72.72 | 20.79 | 29.75 | 50.54 | 22.18 | 47.00 |
| 174.533778 | 72.72 | 94.91 | 20.79 | 29.75 | 50.54 | 44.37 | 48.00 |
| 261.800667 | 72.72 | 117.09 | 20.79 | 29.75 | 50.54 | 66.55 | 50.00 |
| 349.067556 | 72.72 | 139.28 | 20.79 | 29.75 | 50.54 | 88.74 | 51.00 |
| 436.334445 | 72.72 | 161.46 | 35.66 | 29.75 | 65.41 | 96.05 | 52.00 |
| 523.601334 | 72.72 | 168.77 | 35.66 | 29.75 | 65.41 | 103.36 | 52.00 |
| 610.868223 | 72.72 | 176.08 | 50.54 | 29.75 | 80.29 | 95.79 | 52.00 |
| 698.135112 | 72.72 | 168.51 | 35.66 | 29.75 | 65.41 | 103.10 | 52.00 |
| 785.402001 | 72.72 | 175.82 | 50.54 | 29.75 | 80.29 | 95.53 | 52.00 |
| 872.66889 | 72.72 | 168.25 | 35.66 | 29.75 | 65.41 | 102.84 | 52.00 |
| 959.935779 | 72.72 | 175.56 | 50.54 | 29.75 | 80.29 | 95.27 | 52.00 |
| 1047.20267 | 72.72 | 168.00 | 35.66 | 29.75 | 65.41 | 102.58 | 52.00 |
| 1134.46956 | 72.72 | 175.30 | 50.54 | 29.75 | 80.29 | 95.01 | 52.00 |
| 1221.73645 | 72.72 | 167.74 | 35.66 | 29.75 | 65.41 | 102.32 | 52.00 |
| 1309.00333 | 72.72 | 175.05 | 50.54 | 29.75 | 80.29 | 94.76 | 52.00 |
| 1396.27022 | 72.72 | 167.48 | 35.66 | 29.75 | 65.41 | 102.07 | 52.00 |
| 1483.53711 | 72.72 | 174.79 | 50.54 | 29.75 | 80.29 | 94.50 | 52.00 |
| 1570.804 | 72.72 | 167.22 | 35.66 | 29.75 | 65.41 | 101.81 | 52.00 |
| 1658.07089 | 72.72 | 174.53 | 50.54 | 29.75 | 80.29 | 94.24 | 52.00 |
| 1745.33778 | 72.72 | 166.96 | 35.66 | 29.75 | 65.41 | 101.55 | 52.00 |
| 1832.60467 | 72.72 | 174.27 | 50.54 | 29.75 | 80.29 | 93.98 | 52.00 |

Filename: ALTCN

Description: Pond B = 55 Acres (31 by NFSAD)
 36 inch diameter outflow to Pond 'C'
 7.0685775 0.75 0.001066667 21.76270571

Creek Percolation Rate: 0.50 ft./day Area @ Creek: 5.50
 Other Percolation Rate: 0.25 ft./day Area @ Other: 27.50
 Creek Trench Rate: 75.00 cu. ft./ft./day Length @ Creek: 1210.00
 Other Trench Rate: 37.50 cu. ft./ft./day Length @ Other: 4840.00

Sediment Pond Information:

Main Pond Information:

TOTAL STORAGE VOLUME

| STAGE | AREA | VOLUME | STAGE | AREA | VOLUME | TOTAL STORAGE VOLUME |
|-------|------|--------|-------|-------|--------|----------------------|
| 43.99 | 0.00 | 0.00 | 43.99 | 0.00 | 0.00 | 0.00 |
| 44 | 2.87 | 0.01 | 44 | 30.00 | 0.09 | 0.01 |
| 45 | 3.15 | 3.02 | 45 | 30.66 | 30.42 | 3.02 |
| 46 | 3.44 | 6.32 | 46 | 31.33 | 61.42 | 6.32 |
| 47 | 3.73 | 9.91 | 47 | 31.99 | 93.07 | 102.98 |
| 48 | 4.01 | 13.78 | 48 | 32.65 | 125.39 | 139.17 |
| 49 | 4.30 | 17.94 | 49 | 33.31 | 158.38 | 176.31 |
| 50 | 4.59 | 22.38 | 50 | 33.98 | 192.02 | 214.40 |
| 51 | 4.88 | 27.11 | 51 | 34.64 | 226.33 | 253.45 |
| 52 | 5.16 | 32.13 | 52 | 35.30 | 261.30 | 293.44 |
| 53 | 5.45 | 37.44 | 53 | 35.97 | 296.94 | 334.38 |
| 53.5 | 6.77 | 40.49 | 53.5 | 38.33 | 315.51 | 356.01 |
| 54 | 6.90 | 43.91 | 54 | 38.67 | 334.77 | 378.68 |
| 55 | 7.16 | 50.93 | 55 | 39.35 | 373.78 | 424.71 |
| 56 | 7.41 | 58.22 | 56 | 40.03 | 413.46 | 471.68 |
| 57 | 7.67 | 65.76 | 57 | 40.70 | 453.83 | 519.59 |
| 58 | 7.93 | 73.57 | 58 | 41.38 | 494.87 | 568.43 |
| 59 | 8.19 | 81.63 | 59 | 42.06 | 536.59 | 618.21 |
| 60 | 8.45 | 89.95 | 60 | 42.73 | 578.98 | 668.93 |

OUTFLOW INFORMATION:

PERCOLATION VALUES:

OTHER OUTFLOW:

TOTAL OUTFLOW (cfs)

TOTAL OUTFLOW (acre ft.)

| STAGE | @ Creek | @ Creek Trench | @ Other | @ Other Trench | Pump | TOTAL OUTFLOW (cfs) | TOTAL OUTFLOW (acre ft.) |
|-------|---------|----------------|---------|----------------|-------|---------------------|--------------------------|
| 43.99 | | | | | | 0.00 | 0 |
| 44 | | | | | | 0.00 | 0 |
| 45 | 1.39 | | 3.47 | | | 4.85 | 9.625 |
| 46 | 1.39 | | 3.47 | | 21.76 | 26.62 | 52.79069728 |
| 47 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 48 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 49 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 50 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 51 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 52 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 53 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 53.5 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 54 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 55 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 56 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 57 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 58 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 59 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |
| 60 | 1.39 | 1.05 | 3.47 | 2.100694444 | 21.76 | 29.77 | 59.04069728 |

Other Pond Information

TOTAL POND BEHAVIOR INFORMATION:

| Stage | Storage | Percolation Outflow | STORAGE | PERC. | PUMP | TOTAL Q (cfs) | STAGE |
|-------|---------|---------------------|---------|-------|-------|---------------|-------|
| 43.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 43.99 |
| 44 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 44 |
| 45 | 0.00 | 0.00 | 3.02 | 4.85 | 0.00 | 4.85 | 45 |
| 46 | 0.00 | 0.00 | 6.32 | 4.85 | 21.76 | 26.62 | 46 |
| 47 | 0.00 | 0.00 | 102.98 | 8.00 | 21.76 | 29.77 | 47 |
| 48 | 0.00 | 0.00 | 139.17 | 8.00 | 21.76 | 29.77 | 48 |
| 49 | 0.00 | 0.00 | 176.31 | 8.00 | 21.76 | 29.77 | 49 |
| 50 | 0.00 | 0.00 | 214.40 | 8.00 | 21.76 | 29.77 | 50 |
| 51 | 0.00 | 0.00 | 253.45 | 8.00 | 21.76 | 29.77 | 51 |
| 52 | 0.00 | 0.00 | 293.44 | 8.00 | 21.76 | 29.77 | 52 |
| 53 | 0.00 | 0.00 | 334.38 | 8.00 | 21.76 | 29.77 | 53 |

| | | | | | | | |
|------|------|------|-------------|-------------|-------------|-------------|------|
| 53.5 | 0.00 | 0.00 | 356.01 | 8.00 | 21.76 | 29.77 | 53.5 |
| 54 | 0.00 | 0.00 | 378.68 | 8.00 | 21.76 | 29.77 | 54 |
| 55 | 0.00 | 0.00 | 424.71 | 8.00 | 21.76 | 29.77 | 55 |
| 56 | 0.00 | 0.00 | 471.68 | 8.00 | 21.76 | 29.77 | 56 |
| 57 | 0.00 | 0.00 | 519.59 | 8.00 | 21.76 | 29.77 | 57 |
| 57.5 | 0.00 | 0.00 | 544.012667 | 8.003645833 | 21.76270571 | 29.76635155 | 57.5 |
| 58 | 0.00 | 0.00 | 568.43 | 8.00 | 21.76 | 29.77 | 58 |
| 58.5 | 0.00 | 0.00 | 593.3242051 | 8.003645833 | 21.76270571 | 29.76635155 | 58.5 |
| 59 | 0.00 | 0.00 | 618.21 | 8.00 | 21.76 | 29.77 | 59 |
| 60 | 0.00 | 0.00 | 668.93 | 8.00 | 21.76 | 29.77 | 60 |

TOTAL RUNOFF INFORMATION:

(Per Table 2-2a, SCS TR-55 manual. No AMC adjustment used. Soil Group 'D')

| AREA TYPE: | CN | AREA | AREA*CN | Shed 'A' | Shed B&C |
|--------------------|--------------|----------------|-----------------|-------------|---------------|
| Agricultural | 65.00 | 562.90 | 36588.5 | | 562.9 |
| Landscape Areas | 65.00 | 5.50 | 357.5 | | 5.5 |
| Commercial Areas | 90.00 | 386.30 | 34767 | 17 | 369.3 |
| Park Areas | 65.00 | 7.70 | 500.5 | | 7.7 |
| Industrial Areas | 90.00 | 181.20 | 16308 | 66.9 | 114.3 |
| Pond Area | 100.00 | 55.00 | 5500 | | 0 |
| School Areas | 70.00 | 11.30 | 791 | | 11.3 |
| Low Density Res. | 72.00 | 99.70 | 7178.4 | | 99.7 |
| Mid Density Res. | 78.00 | 28.60 | 2230.8 | | 28.6 |
| TOTAL = | | | | 83.9 | 1199.3 |
| Summations: | | 1338.20 | 104221.7 | | |
| Average CN = | 77.88 | | | | |
| S = | 2.84 | | | | |
| Ia = | 0.57 | | | | |

STORM RUNOFF INFORMATION:

| Storm Duration (Days) | Precip. (Inches) | Runoff (Inches) | Total Runoff (Acre*Ft.) | Runoff Per Day | Day Runoff (Acre Ft.) | Average Flow (CFS) |
|-----------------------|------------------|-----------------|-------------------------|----------------|-----------------------|--------------------|
| 1 | 4.64 | 2.40 | 267.52 | 2.40 | 267.52 | 134.88 |
| 2 | 6.26 | 3.80 | 423.47 | 1.90 | 211.74 | 53.37 |
| 3 | 7.00 | 4.46 | 497.58 | 1.49 | 165.86 | 27.87 |
| 4 | 7.42 | 4.84 | 540.21 | 1.21 | 135.05 | 17.02 |
| 5 | 7.92 | 5.30 | 591.42 | 1.06 | 118.28 | 11.93 |
| 6 | 8.28 | 5.64 | 628.55 | 0.94 | 104.76 | 8.80 |
| 8 | 9.15 | 6.45 | 719.08 | 0.81 | 89.89 | 5.66 |
| 10 | 9.69 | 6.96 | 775.75 | 0.70 | 77.57 | 3.91 |
| 15 | 10.79 | 8.00 | 892.08 | 0.53 | 59.47 | 2.00 |
| 20 | 12.33 | 9.47 | 1056.56 | 0.47 | 52.83 | 1.33 |
| 30 | 14.48 | 11.55 | 1288.41 | 0.39 | 42.95 | 0.72 |
| 45 | 17.89 | 14.88 | 1659.60 | 0.33 | 36.88 | 0.41 |
| 60 | 20.87 | 17.81 | 1986.18 | 0.30 | 33.10 | 0.28 |
| 75 | 23.43 | 20.34 | 2267.79 | 0.27 | 30.24 | 0.20 |
| 90 | 25.56 | 22.44 | 2502.64 | 0.25 | 27.81 | 0.16 |
| 120 | 27.69 | 24.55 | 2737.87 | 0.20 | 22.82 | 0.10 |

STORM/POND CALCULATIONS:

| 1Day Storm: Time Increment = | 1 0.05 | | | | | | |
|---------------------------------|-----------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
| 1.2 | 15.36 | 15.36 | 0.48 | 2.16 | 2.64 | 12.72 | 46.00 |
| 2.4 | 15.36 | 28.08 | 0.48 | 2.16 | 2.64 | 25.44 | 46.00 |
| 3.6 | 15.36 | 40.80 | 0.48 | 2.16 | 2.64 | 38.16 | 46.00 |
| 4.8 | 15.36 | 53.52 | 0.48 | 2.16 | 2.64 | 50.88 | 46.00 |
| 6 | 15.36 | 66.24 | 0.48 | 2.16 | 2.64 | 63.60 | 46.00 |
| 7.2 | 15.36 | 78.96 | 0.48 | 2.16 | 2.64 | 76.32 | 46.00 |
| 8.4 | 15.36 | 91.68 | 0.48 | 2.16 | 2.64 | 89.04 | 46.00 |
| 9.6 | 15.36 | 104.40 | 0.79 | 2.16 | 2.95 | 101.45 | 46.00 |
| 10.8 | 15.36 | 116.81 | 0.79 | 2.16 | 2.95 | 113.85 | 47.00 |
| 12 | 15.36 | 129.21 | 0.79 | 2.16 | 2.95 | 126.26 | 47.00 |

| | | | | | | | |
|------|-------|--------|------|------|------|--------|-------|
| 13.2 | 15.36 | 141.62 | 0.79 | 2.16 | 2.95 | 138.67 | 47.00 |
| 14.4 | 15.36 | 154.03 | 0.79 | 2.16 | 2.95 | 151.08 | 48.00 |
| 15.6 | 15.36 | 166.44 | 0.79 | 2.16 | 2.95 | 163.48 | 48.00 |
| 16.8 | 15.36 | 178.84 | 0.79 | 2.16 | 2.95 | 175.89 | 48.00 |
| 18 | 15.36 | 191.25 | 0.79 | 2.16 | 2.95 | 188.30 | 49.00 |
| 19.2 | 15.36 | 203.66 | 0.79 | 2.16 | 2.95 | 200.71 | 49.00 |
| 20.4 | 15.36 | 216.07 | 0.79 | 2.16 | 2.95 | 213.11 | 49.00 |
| 21.6 | 15.36 | 228.47 | 0.79 | 2.16 | 2.95 | 225.52 | 50.00 |
| 22.8 | 15.36 | 240.88 | 0.79 | 2.16 | 2.95 | 237.93 | 50.00 |
| 24 | 15.36 | 253.29 | 0.79 | 2.16 | 2.95 | 250.34 | 50.00 |
| 25.2 | 0.00 | 250.34 | 0.79 | 2.16 | 2.95 | 247.38 | 50.00 |

2 Day Storm:
Time Increment = 2.00
Time 0.05

| Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|-------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 2.4 | 25.14 | 25.14 | 0.96 | 4.32 | 5.28 | 19.86 | 46.00 |
| 4.8 | 25.14 | 45.00 | 0.96 | 4.32 | 5.28 | 39.72 | 46.00 |
| 7.2 | 25.14 | 64.86 | 0.96 | 4.32 | 5.28 | 59.58 | 46.00 |
| 9.6 | 25.14 | 84.72 | 0.96 | 4.32 | 5.28 | 79.45 | 46.00 |
| 12 | 25.14 | 104.59 | 1.59 | 4.32 | 5.90 | 98.68 | 46.00 |
| 14.4 | 25.14 | 123.82 | 1.59 | 4.32 | 5.90 | 117.92 | 47.00 |
| 16.8 | 25.14 | 143.06 | 1.59 | 4.32 | 5.90 | 137.15 | 47.00 |
| 19.2 | 25.14 | 162.30 | 1.59 | 4.32 | 5.90 | 156.39 | 48.00 |
| 21.6 | 25.14 | 181.53 | 1.59 | 4.32 | 5.90 | 175.63 | 48.00 |
| 24 | 25.14 | 200.77 | 1.59 | 4.32 | 5.90 | 194.86 | 49.00 |
| 26.4 | 25.14 | 220.00 | 1.59 | 4.32 | 5.90 | 214.10 | 49.00 |
| 28.8 | 25.14 | 239.24 | 1.59 | 4.32 | 5.90 | 233.34 | 50.00 |
| 31.2 | 25.14 | 258.48 | 1.59 | 4.32 | 5.90 | 252.57 | 50.00 |
| 33.6 | 25.14 | 277.71 | 1.59 | 4.32 | 5.90 | 271.81 | 51.00 |
| 36 | 25.14 | 296.95 | 1.59 | 4.32 | 5.90 | 291.05 | 51.00 |
| 38.4 | 25.14 | 316.19 | 1.59 | 4.32 | 5.90 | 310.28 | 52.00 |
| 40.8 | 25.14 | 335.42 | 1.59 | 4.32 | 5.90 | 329.52 | 52.00 |
| 43.2 | 25.14 | 354.66 | 1.59 | 4.32 | 5.90 | 348.76 | 53.00 |
| 45.6 | 25.14 | 373.90 | 1.59 | 4.32 | 5.90 | 367.99 | 53.50 |
| 48 | 25.14 | 393.13 | 1.59 | 4.32 | 5.90 | 387.23 | 54.00 |
| 50.4 | 0.00 | 387.23 | 1.59 | 4.32 | 5.90 | 381.32 | 54.00 |

3 Day Storm:
Time Increment = 3.00
Time 0.05

| Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|-------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 3.6 | 30.83 | 30.83 | 1.44 | 6.47 | 7.92 | 22.91 | 46.00 |
| 7.2 | 30.83 | 53.74 | 1.44 | 6.47 | 7.92 | 45.82 | 46.00 |
| 10.8 | 30.83 | 76.65 | 1.44 | 6.47 | 7.92 | 68.73 | 46.00 |
| 14.4 | 30.83 | 99.56 | 1.44 | 6.47 | 7.92 | 91.64 | 46.00 |
| 18 | 30.83 | 122.47 | 2.38 | 6.47 | 8.86 | 113.62 | 47.00 |
| 21.6 | 30.83 | 144.45 | 2.38 | 6.47 | 8.86 | 135.59 | 47.00 |
| 25.2 | 30.83 | 166.42 | 2.38 | 6.47 | 8.86 | 157.56 | 48.00 |
| 28.8 | 30.83 | 188.39 | 2.38 | 6.47 | 8.86 | 179.54 | 49.00 |
| 32.4 | 30.83 | 210.37 | 2.38 | 6.47 | 8.86 | 201.51 | 49.00 |
| 36 | 30.83 | 232.34 | 2.38 | 6.47 | 8.86 | 223.48 | 50.00 |
| 39.6 | 30.83 | 254.31 | 2.38 | 6.47 | 8.86 | 245.46 | 50.00 |
| 43.2 | 30.83 | 276.29 | 2.38 | 6.47 | 8.86 | 267.43 | 51.00 |
| 46.8 | 30.83 | 298.26 | 2.38 | 6.47 | 8.86 | 289.40 | 51.00 |
| 50.4 | 30.83 | 320.23 | 2.38 | 6.47 | 8.86 | 311.38 | 52.00 |
| 54 | 30.83 | 342.21 | 2.38 | 6.47 | 8.86 | 333.35 | 52.00 |
| 57.6 | 30.83 | 364.18 | 2.38 | 6.47 | 8.86 | 355.32 | 53.00 |
| 61.2 | 30.83 | 386.15 | 2.38 | 6.47 | 8.86 | 377.30 | 53.50 |
| 64.8 | 30.83 | 408.13 | 2.38 | 6.47 | 8.86 | 399.27 | 54.00 |
| 68.4 | 30.83 | 430.10 | 2.38 | 6.47 | 8.86 | 421.24 | 54.00 |
| 72 | 30.83 | 452.07 | 2.38 | 6.47 | 8.86 | 443.22 | 55.00 |
| 75.6 | 0.00 | 443.22 | 2.38 | 6.47 | 8.86 | 434.36 | 55.00 |

4 Day Storm:
Time Increment = 4.00
Time 0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 4.8 | 34.94 | 34.94 | 1.93 | 8.63 | 10.56 | 24.39 | 46.00 |
| 9.6 | 34.94 | 59.33 | 1.93 | 8.63 | 10.56 | 48.77 | 46.00 |
| 14.4 | 34.94 | 83.72 | 1.93 | 8.63 | 10.56 | 73.16 | 46.00 |
| 19.2 | 34.94 | 108.10 | 3.18 | 8.63 | 11.81 | 96.30 | 46.00 |
| 24 | 34.94 | 131.24 | 3.18 | 8.63 | 11.81 | 119.43 | 47.00 |
| 28.8 | 34.94 | 154.38 | 3.18 | 8.63 | 11.81 | 142.57 | 48.00 |
| 33.6 | 34.94 | 177.51 | 3.18 | 8.63 | 11.81 | 165.70 | 48.00 |
| 38.4 | 34.94 | 200.65 | 3.18 | 8.63 | 11.81 | 188.84 | 49.00 |
| 43.2 | 34.94 | 223.79 | 3.18 | 8.63 | 11.81 | 211.98 | 49.00 |
| 48 | 34.94 | 246.92 | 3.18 | 8.63 | 11.81 | 235.11 | 50.00 |
| 52.8 | 34.94 | 270.06 | 3.18 | 8.63 | 11.81 | 258.25 | 51.00 |
| 57.6 | 34.94 | 293.19 | 3.18 | 8.63 | 11.81 | 281.39 | 51.00 |
| 62.4 | 34.94 | 316.33 | 3.18 | 8.63 | 11.81 | 304.52 | 52.00 |
| 67.2 | 34.94 | 339.47 | 3.18 | 8.63 | 11.81 | 327.66 | 52.00 |
| 72 | 34.94 | 362.60 | 3.18 | 8.63 | 11.81 | 350.80 | 53.00 |
| 76.8 | 34.94 | 385.74 | 3.18 | 8.63 | 11.81 | 373.93 | 53.50 |
| 81.6 | 34.94 | 408.88 | 3.18 | 8.63 | 11.81 | 397.07 | 54.00 |
| 86.4 | 34.94 | 432.01 | 3.18 | 8.63 | 11.81 | 420.21 | 54.00 |
| 91.2 | 34.94 | 455.15 | 3.18 | 8.63 | 11.81 | 443.34 | 55.00 |
| 96 | 34.94 | 478.29 | 3.18 | 8.63 | 11.81 | 466.48 | 55.00 |
| 100.8 | 0.00 | 466.48 | 3.18 | 8.63 | 11.81 | 454.67 | 55.00 |

5 Day Storm:
Time Increment =

5.00
0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 6 | 39.49 | 39.49 | 2.41 | 10.79 | 13.20 | 26.29 | 46.00 |
| 12 | 39.49 | 65.78 | 2.41 | 10.79 | 13.20 | 52.58 | 46.00 |
| 18 | 39.49 | 92.07 | 2.41 | 10.79 | 13.20 | 78.87 | 46.00 |
| 24 | 39.49 | 118.36 | 3.97 | 10.79 | 14.76 | 103.60 | 47.00 |
| 30 | 39.49 | 143.09 | 3.97 | 10.79 | 14.76 | 128.33 | 47.00 |
| 36 | 39.49 | 167.82 | 3.97 | 10.79 | 14.76 | 153.06 | 48.00 |
| 42 | 39.49 | 192.54 | 3.97 | 10.79 | 14.76 | 177.78 | 49.00 |
| 48 | 39.49 | 217.27 | 3.97 | 10.79 | 14.76 | 202.51 | 49.00 |
| 54 | 39.49 | 242.00 | 3.97 | 10.79 | 14.76 | 227.24 | 50.00 |
| 60 | 39.49 | 266.73 | 3.97 | 10.79 | 14.76 | 251.97 | 50.00 |
| 66 | 39.49 | 291.46 | 3.97 | 10.79 | 14.76 | 276.70 | 51.00 |
| 72 | 39.49 | 316.19 | 3.97 | 10.79 | 14.76 | 301.42 | 52.00 |
| 78 | 39.49 | 340.91 | 3.97 | 10.79 | 14.76 | 326.15 | 52.00 |
| 84 | 39.49 | 365.64 | 3.97 | 10.79 | 14.76 | 350.88 | 53.00 |
| 90 | 39.49 | 390.37 | 3.97 | 10.79 | 14.76 | 375.61 | 53.50 |
| 96 | 39.49 | 415.10 | 3.97 | 10.79 | 14.76 | 400.34 | 54.00 |
| 102 | 39.49 | 439.83 | 3.97 | 10.79 | 14.76 | 425.07 | 55.00 |
| 108 | 39.49 | 464.55 | 3.97 | 10.79 | 14.76 | 449.79 | 55.00 |
| 114 | 39.49 | 489.28 | 3.97 | 10.79 | 14.76 | 474.52 | 56.00 |
| 120 | 39.49 | 514.01 | 3.97 | 10.79 | 14.76 | 499.25 | 56.00 |
| 126 | 0.00 | 499.25 | 3.97 | 10.79 | 14.76 | 484.49 | 56.00 |

6 Day Storm:
Time Increment =

6.00
0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 7.2 | 43.33 | 43.33 | 2.89 | 12.95 | 15.84 | 27.49 | 46.00 |
| 14.4 | 43.33 | 70.82 | 2.89 | 12.95 | 15.84 | 54.98 | 46.00 |
| 21.6 | 43.33 | 98.31 | 2.89 | 12.95 | 15.84 | 82.47 | 46.00 |
| 28.8 | 43.33 | 125.80 | 4.76 | 12.95 | 17.71 | 108.09 | 47.00 |
| 36 | 43.33 | 151.42 | 4.76 | 12.95 | 17.71 | 133.71 | 47.00 |
| 43.2 | 43.33 | 177.04 | 4.76 | 12.95 | 17.71 | 159.32 | 48.00 |
| 50.4 | 43.33 | 202.65 | 4.76 | 12.95 | 17.71 | 184.94 | 49.00 |
| 57.6 | 43.33 | 228.27 | 4.76 | 12.95 | 17.71 | 210.56 | 49.00 |
| 64.8 | 43.33 | 253.88 | 4.76 | 12.95 | 17.71 | 236.17 | 50.00 |
| 72 | 43.33 | 279.50 | 4.76 | 12.95 | 17.71 | 261.79 | 51.00 |
| 79.2 | 43.33 | 305.12 | 4.76 | 12.95 | 17.71 | 287.40 | 51.00 |
| 86.4 | 43.33 | 330.73 | 4.76 | 12.95 | 17.71 | 313.02 | 52.00 |

| | | | | | | | |
|-------|-------|--------|------|-------|-------|--------|-------|
| 93.6 | 43.33 | 356.35 | 4.76 | 12.95 | 17.71 | 338.64 | 53.00 |
| 100.8 | 43.33 | 381.97 | 4.76 | 12.95 | 17.71 | 364.25 | 53.50 |
| 108 | 43.33 | 407.58 | 4.76 | 12.95 | 17.71 | 389.87 | 54.00 |
| 115.2 | 43.33 | 433.20 | 4.76 | 12.95 | 17.71 | 415.49 | 54.00 |
| 122.4 | 43.33 | 458.81 | 4.76 | 12.95 | 17.71 | 441.10 | 55.00 |
| 129.6 | 43.33 | 484.43 | 4.76 | 12.95 | 17.71 | 466.72 | 55.00 |
| 136.8 | 43.33 | 510.05 | 4.76 | 12.95 | 17.71 | 492.33 | 56.00 |
| 144 | 43.33 | 535.66 | 4.76 | 12.95 | 17.71 | 517.95 | 56.00 |
| 151.2 | 0.00 | 517.95 | 4.76 | 12.95 | 17.71 | 500.24 | 56.00 |

8 Day Storm: 8.00
Time Increment = 0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 9.6 | 51.82 | 51.82 | 3.85 | 17.27 | 21.12 | 30.71 | 46.00 |
| 19.2 | 51.82 | 82.53 | 3.85 | 17.27 | 21.12 | 61.41 | 46.00 |
| 28.8 | 51.82 | 113.23 | 6.35 | 17.27 | 23.62 | 89.62 | 46.00 |
| 38.4 | 51.82 | 141.44 | 6.35 | 17.27 | 23.62 | 117.82 | 47.00 |
| 48 | 51.82 | 169.64 | 6.35 | 17.27 | 23.62 | 146.03 | 48.00 |
| 57.6 | 51.82 | 197.85 | 6.35 | 17.27 | 23.62 | 174.23 | 48.00 |
| 67.2 | 51.82 | 226.06 | 6.35 | 17.27 | 23.62 | 202.44 | 49.00 |
| 76.8 | 51.82 | 254.26 | 6.35 | 17.27 | 23.62 | 230.64 | 50.00 |
| 86.4 | 51.82 | 282.47 | 6.35 | 17.27 | 23.62 | 258.85 | 51.00 |
| 96 | 51.82 | 310.67 | 6.35 | 17.27 | 23.62 | 287.06 | 51.00 |
| 105.6 | 51.82 | 338.88 | 6.35 | 17.27 | 23.62 | 315.26 | 52.00 |
| 115.2 | 51.82 | 367.08 | 6.35 | 17.27 | 23.62 | 343.47 | 53.00 |
| 124.8 | 51.82 | 395.29 | 6.35 | 17.27 | 23.62 | 371.67 | 53.50 |
| 134.4 | 51.82 | 423.49 | 6.35 | 17.27 | 23.62 | 399.88 | 54.00 |
| 144 | 51.82 | 451.70 | 6.35 | 17.27 | 23.62 | 428.08 | 55.00 |
| 153.6 | 51.82 | 479.90 | 6.35 | 17.27 | 23.62 | 456.29 | 55.00 |
| 163.2 | 51.82 | 508.11 | 6.35 | 17.27 | 23.62 | 484.49 | 56.00 |
| 172.8 | 51.82 | 536.32 | 6.35 | 17.27 | 23.62 | 512.70 | 56.00 |
| 182.4 | 51.82 | 564.52 | 6.35 | 17.27 | 23.62 | 540.91 | 57.00 |
| 192 | 51.82 | 592.73 | 6.35 | 17.27 | 23.62 | 569.11 | 58.00 |
| 201.6 | 0.00 | 569.11 | 6.35 | 17.27 | 23.62 | 545.49 | 57.50 |

10 Day Storm: 10.00
Time Increment = 0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 12 | 58.62 | 58.62 | 4.81 | 21.58 | 26.40 | 32.23 | 46.00 |
| 24 | 58.62 | 90.85 | 4.81 | 21.58 | 26.40 | 64.45 | 46.00 |
| 36 | 58.62 | 123.08 | 7.94 | 21.58 | 29.52 | 93.55 | 46.00 |
| 48 | 58.62 | 152.18 | 7.94 | 21.58 | 29.52 | 122.66 | 47.00 |
| 60 | 58.62 | 181.28 | 7.94 | 21.58 | 29.52 | 151.76 | 48.00 |
| 72 | 58.62 | 210.38 | 7.94 | 21.58 | 29.52 | 180.86 | 49.00 |
| 84 | 58.62 | 239.48 | 7.94 | 21.58 | 29.52 | 209.96 | 49.00 |
| 96 | 58.62 | 268.58 | 7.94 | 21.58 | 29.52 | 239.06 | 50.00 |
| 108 | 58.62 | 297.69 | 7.94 | 21.58 | 29.52 | 268.16 | 51.00 |
| 120 | 58.62 | 326.79 | 7.94 | 21.58 | 29.52 | 297.27 | 52.00 |
| 132 | 58.62 | 355.89 | 7.94 | 21.58 | 29.52 | 326.37 | 52.00 |
| 144 | 58.62 | 384.99 | 7.94 | 21.58 | 29.52 | 355.47 | 53.00 |
| 156 | 58.62 | 414.09 | 7.94 | 21.58 | 29.52 | 384.57 | 54.00 |
| 168 | 58.62 | 443.19 | 7.94 | 21.58 | 29.52 | 413.67 | 54.00 |
| 180 | 58.62 | 472.29 | 7.94 | 21.58 | 29.52 | 442.77 | 55.00 |
| 192 | 58.62 | 501.40 | 7.94 | 21.58 | 29.52 | 471.88 | 56.00 |
| 204 | 58.62 | 530.50 | 7.94 | 21.58 | 29.52 | 500.98 | 56.00 |
| 216 | 58.62 | 559.60 | 7.94 | 21.58 | 29.52 | 530.08 | 57.00 |
| 228 | 58.62 | 588.70 | 7.94 | 21.58 | 29.52 | 559.18 | 57.50 |
| 240 | 58.62 | 617.80 | 7.94 | 21.58 | 29.52 | 588.28 | 58.00 |
| 252 | 0.00 | 588.28 | 7.94 | 21.58 | 29.52 | 558.76 | 57.50 |

15 Day Storm: 15.00
Time Increment = 0.05

| Time Increment (Hours) | Runoff | System Storage | Percolation Losses | Outflow Losses | Total Outflow Losses | Storage At End Incr. (Acre Ft.) | Stage |
|------------------------|--------|----------------|--------------------|----------------|----------------------|---------------------------------|-------|
| 89.22738075 | 74.36 | 74.36 | 7.22 | 32.37 | 39.59 | 34.76 | 46.00 |

| | | | | | | | |
|--------------|-------|--------|-------|-------|-------|--------|-------|
| 178.4547615 | 74.36 | 109.12 | 11.91 | 32.37 | 44.28 | 64.84 | 46.00 |
| 267.68214225 | 74.36 | 139.19 | 11.91 | 32.37 | 44.28 | 94.91 | 46.00 |
| 356.909523 | 74.36 | 169.27 | 11.91 | 32.37 | 44.28 | 124.99 | 47.00 |
| 446.13690375 | 74.36 | 199.35 | 11.91 | 32.37 | 44.28 | 155.07 | 48.00 |
| 535.3642845 | 74.36 | 229.42 | 11.91 | 32.37 | 44.28 | 185.14 | 49.00 |
| 624.59166525 | 74.36 | 259.50 | 11.91 | 32.37 | 44.28 | 215.22 | 50.00 |
| 713.819046 | 74.36 | 289.57 | 11.91 | 32.37 | 44.28 | 245.29 | 50.00 |
| 803.04642675 | 74.36 | 319.65 | 11.91 | 32.37 | 44.28 | 275.37 | 51.00 |
| 892.2738075 | 74.36 | 349.72 | 11.91 | 32.37 | 44.28 | 305.44 | 52.00 |
| 981.50118825 | 74.36 | 379.80 | 11.91 | 32.37 | 44.28 | 335.52 | 53.00 |
| 1070.728569 | 74.36 | 409.88 | 11.91 | 32.37 | 44.28 | 365.60 | 53.50 |
| 1159.9559498 | 74.36 | 439.95 | 11.91 | 32.37 | 44.28 | 395.67 | 54.00 |
| 1249.1833305 | 74.36 | 470.03 | 11.91 | 32.37 | 44.28 | 425.75 | 55.00 |
| 1338.4107113 | 74.36 | 500.10 | 11.91 | 32.37 | 44.28 | 455.82 | 55.00 |
| 1427.638092 | 74.36 | 530.18 | 11.91 | 32.37 | 44.28 | 485.90 | 56.00 |
| 1516.8654728 | 74.36 | 560.25 | 11.91 | 32.37 | 44.28 | 515.97 | 56.00 |
| 1606.0928535 | 74.36 | 590.33 | 11.91 | 32.37 | 44.28 | 546.05 | 57.50 |
| 1695.3202343 | 74.36 | 620.40 | 11.91 | 32.37 | 44.28 | 576.12 | 58.00 |
| 1784.547615 | 74.36 | 650.48 | 11.91 | 32.37 | 44.28 | 606.20 | 58.50 |
| 1873.7749958 | 74.36 | 680.56 | 11.91 | 32.37 | 44.28 | 636.28 | 59.00 |

Appendix C - Wastewater Calculations

Appendix D - Water Supply Calculations

BIOTIC SURVEY AND WETLANDS ASSESSMENT

PREPARED BY
SUGNET & ASSOCIATES

**PRELIMINARY BIOTIC AND WETLAND
ASSESSMENT**

***DIXON NORTHEAST QUADRANT
ANNEXATION***

SOLANO COUNTY, CALIFORNIA

Prepared for:

Wade Associates

October 24, 1991

**SUGNET & ASSOCIATES
ENVIRONMENTAL CONSULTANTS
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PRELIMINARY BIOTIC AND WETLAND ASSESSMENT

**DIXON NORTHEAST QUADRANT
ANNEXATION**

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APPENDIX A

Plant Species Observed in Each Habitat Type

Row Crops

| | |
|---------------------|----------------------------------|
| Dove weed | <i>Eremocarpus setigerus</i> |
| Field bindweed | <i>Convolvulus arvensis</i> |
| Filaree | <i>Erodium cicutarium</i> |
| Italian rye | <i>Lolium multiflorum</i> |
| Popcorn flower | <i>Plagiobothrys nothofolius</i> |
| Ripgut brome | <i>Bromus diandrus</i> |
| Scarlet pimpernel | <i>Anagallis arvensis</i> |
| Soft chess | <i>Bromus mollis</i> |
| Tarweed | <i>Holocarpha virgata</i> |
| Vinegar weed | <i>Trichostema lanceolatum</i> |
| Wild oat | <i>Avena fatua</i> |
| Yellow mustard | <i>Brassica campestris</i> |
| Yellow star thistle | <i>Centaurea solstitialis</i> |

Irrigated Pasture

| | |
|---------------|---------------------------|
| Bermuda grass | <i>Cynodon dactylon</i> |
| Dallisgrass | <i>Paspalum dilatatum</i> |

Orchard

| | |
|----------------|-----------------------------|
| Bermuda grass | <i>Cynodon dactylon</i> |
| Field bindweed | <i>Convolvulus arvensis</i> |
| Filaree | <i>Erodium cicutarium</i> |
| Ripgut brome | <i>Bromus diandrus</i> |
| Soft chess | <i>Bromus mollis</i> |
| Wild oat | <i>Avena fatua</i> |

Fallow Field

| | |
|-------------------------|----------------------------------|
| California black walnut | <i>Juglans hindsii</i> |
| Dove weed | <i>Eremocarpus setigerus</i> |
| Field bindweed | <i>Convolvulus arvensis</i> |
| Filaree | <i>Erodium cicutarium</i> |
| Italian rye | <i>Lolium multiflorum</i> |
| Johnson grass | <i>Sorghum halepense</i> |
| Perennial peppergrass | <i>Lepidium latifolium</i> |
| Popcorn flower | <i>Plagiobothrys nothofolius</i> |
| Ripgut brome | <i>Bromus diandrus</i> |
| Scarlet pimpernel | <i>Anagallis arvensis</i> |

Soft chess
Soft chess
Tarweed
Vinegar weed
Wild oat
Wild radish
Yellow star thistle
Yellow mustard

Bromus mollis
Bromus mollis
Holocarpha virgata
Trichostema lanceolatum
Avena fatua
Raphanus sativus
Centaurea solstitialis
Brassica campestris

Wetlands

Barley
Barnyard grass
Bindweed
Broad-leaf cattail
Cady's thumb
Common knotweed
Curley dock
Dallisgrass
Johnson grass
Prickly lettuce
Rough cockle-bur
Ryegrass
Smartweed
Southern cattail
Spikerush
Tall flatsedge
Tule
Willow-herb

Hordeum geniculatum
Echinochloa crusgalli
Convolvulus arvensis
Typha latifolia
Polygonum persicaria
Polygonum aviculare
Rumex crispus
Paspalum dilatatum
Sorghum halepense
Lactuca serriola
Xanthium strumarium
Lolium multiflorum
Polygonum species
Typha domingensis
Eleocharismacrostachya
Cyperus eragrostis
Scirpus species
Epilobium species

APPENDIX B

Potential and Observed Wildlife Species in the
Dixon Vicinity

Potential and Observed Wildlife Species in the Dixon Vicinity

Reptiles and Amphibians

California Tiger Salamander CSC
California Slender Salamander
Arboreal Salamander
Western Toad
Pacific Treefrog
Bullfrog
Western Pond Turtle
Gilbert's Skink
Western Skink
Western Fence Lizard
Southern Alligator Lizard
Western Terrestrial Garter Snake
Giant Garter Snake
Ringneck Snake
Sharp-tailed Snake
Racer
Gopher Snake
Common Kingsnake
Night Snake
Common Garter Snake
Western Rattlesnake

Ambystoma tigrinum californiense
Batrachoseps attenuatus
Aneides legubris
Bufo boreas
Hyla regilla
Rana catesbeiana
Chemmys marmorata
Eumeces gilberti
Eumeces skiltonianus
Sceloporus occidentalis
Gerrhonotus multicarinatus
Thamnophis elegans
Thamnophis gigas
Diadophis punctatus
Contia tenuis
Coluber constrictor
Pituophis melanoleucus
Lampropeltis getulus
Hypsiglena torquata
Thamnophis sirtalis
Crotalus viridis

Birds

Great Blue Heron *
•Turkey Vulture
Black-shouldered Kite *
Northern Harrier CSC
Sharp-shinned Hawk CSC
Cooper's Hawk CSC
•Red-tailed Hawk
Red-shouldered Hawk
Swainson's Hawk ST
•American Kestrel
•Ring-necked Pheasant
California Quail
Killdeer
•Mourning Dove
•Rock Dove
Barn Owl
Screech Owl
Great Horned Owl
Burrowing Owl CSC
White-throated Swift
Anna's Hummingbird
Black-chinned Hummingbird

Ardea herodias
Cathartes aura
Elanus caeruleus
Circus cyaneus
Accipiter striatus
Accipiter cooperii
Buteo jamaicensis
Buteo lineatus
Buteo swainsoni
Falco sparverius
Phasianus colchicus
Callipepla californica
Charadrius vociferus
Zenaidura macroura
Columba livia
Tyto alba
Otus kennicottii
Bubo virginianus
Athene cunicularia
Aeronautes saxatalis
Calypte anna
Archilochos alexandri

Acorn Woodpecker
 Common Flicker
 Red-breasted Sapsucker
 Downy Woodpecker
 Nuttall's Woodpecker
 Western Kingbird
 Ash-throated Flycatcher
 Black Phoebe
 Say's Phoebe
 Horned Lark
 Violet Green Swallow
 Tree Swallow
 Scrub Jay
 •Yellow-billed Magpie
 •American Crow
 Plain Titmouse
 Bushtit
 White-breasted Nuthatch
 Bewick's Wren
 Mockingbird
 •American Pipit
 American Robin
 Western Bluebird
 Ruby-crowned Kinglet
 Cedar Waxwing
 Loggerhead Shrike
 •Starling
 Hutton's Vireo
 Yellow-rumped Warbler
 Black-throated Gray Warbler
 Black-headed Grosbeak
 •House Sparrow
 •Western Meadowlark
 Red-winged Blackbird
 Northern Oriole
 •Brewer's Blackbird
 Brown-headed Cowbird
 •House Finch
 American Goldfinch
 Lesser Goldfinch
 Rufous-sided Towhee
 California Towhee
 •Savannah Sparrow
 Lark Sparrow
 Dark-eyed Junco
 White-crowned Sparrow
 Golden-crowned Sparrow
 Song Sparrow

Mammals

Virginia Opossum

Melanerpes formicivorus
Colaptes auratus
Sphyrapicus ruber
Picoides pubescens
Picoides nuttallii
Tyrannus verticalis
Myiarchus cinerascens
Sayornis nigricans
Sayornis saya
Eremophila alpestris
Tachycineta thalassina
Tachycineta bicolor
Aphelocoma coerulescens
Pica nuttallii
Corvus brachyrhynchos
Parus inornatus
Psaltriparus minimus
Sitta carolinensis
Thryomanes bewickii
Mimus polyglottos
Anthus spinoletta
Turdus migratorius
Sialia mexicana
Regulus calendula
Bombycilla cedrorum
Lanius ludovicianus
Sturnus vulgaris
Vireo huttoni
Dendroica coronata
Dendroica nigrescens
Pheucticus melanocephalous
Passer domesticus
Sturnella neglecta
Agelaius phoeniceus
Icterus galbula
Euphagus cyanocephalus
Molothrus aster
Carpodacus mexicanus
Carduelis tristis
Carduelis psaltria
Pipilo erythrophthalmus
Pipilo fuscus
Passerculus sandwichensis
Chondestes grammacus
Junco hyemalis
Zonotrichia leucophrys
Zonotrichia atricapilla
Melospiza melodia

Didelphis marsupialis

Broad-footed Mole
Black-tailed Jackrabbit
•California Groundsquirrel
•Botta's Pocket Gopher
Deer Mouse
California Vole
Norway Rat
Black Rat
House Mouse
Coyote
Gray Fox
Raccoon
Striped Skunk

Scapanus latimanus
Lepus californicus
Citellus beecheyi
Thomomys bottae
Peromyscus maniculatus
Microtus californicus
Rattus norvegicus
Rattus rattus
Mus musculus
Canis latrans
Urocyon cinereoargenteus
Procyon lotor
Mephitis mephitis

- observed during census
- falls into one or more of the following categories:
 - Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines.
 - Taxa that are biologically rare, very restricted in distribution, or declining throughout their range.
 - Population(s) in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation within California.
 - Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands).

- ST - Listed as Threatened by the State of California
SCE - California Candidate for listing as Endangered
CSC - California Department of Fish and Game "Species of Special Concern"
2 - Category 2 Candidate for Federal listing (Taxa for which existing information indicates may warrant listing, but for which substantial biological information to support a proposed rule is lacking)
FSS- Federal (BLM and USFS) Sensitive Species
C1- Enough data on file to support federal listing.
C2- Threatened and/or distribution data are insufficient to support federal listing.
C3c- Too widespread and/or not threatened.
CE- State listed, endangered.
CF2- Candidate for federal listing (Taxa which existing information indicates may warrant listing, but for which substantial biological information to support a proposed ruling is lacking).
CR- State listed, rare.
FE- Federally listed, endangered.
FT- Federally listed, threatened.

APPENDIX C

Mitigation Guidelines for Swainson's Hawks in the
Central Valley of California

DEPARTMENT OF FISH AND GAME

REGION 2

1701 NIMBUS ROAD, SUITE A
RANCHO CORDOVA, CALIFORNIA 95670

DRAFT 9/90

Mitigation Guidelines for Swainson's Hawks (*Buteo swainsoni*)
in the Central Valley of California

CURRENT AND RECOMMENDED MANAGEMENT

The Department of Fish and Game has established the mitigation goal of no net loss of Swainson's hawk breeding or foraging habitat, and has developed the following strategies and mitigation criteria to reverse the dramatic population decline of this species in the Central Valley. These criteria provide guidelines for lead agencies and project sponsors to follow in developing adequate mitigation for the loss of Swainson's hawk habitat. Direction for management towards restoration of this species is also included within this document. These guidelines are to be considered interim and will remain in effect until a comprehensive Swainson's Hawk Habitat Conservation Plan (HCP) is completed by the Department. Several HCP's for Swainson's hawk within specific project areas are currently being proposed. These guidelines will be used in conjunction with a Swainson's Hawk Recovery Plan to establish criteria for species recovery through population expansion into former habitat, recruitment of young into the population, and other identified recovery goals. Currently, translocation of active nests will not be considered a viable option to enable development to proceed. Hacking (controlled release) of captive reared young has not been employed to enhance the population at this time.

During project review, the Department will consider whether suitable foraging habitat occurs within a ten (10) mile radius of an active nest and contributes to maintaining that Swainson's hawk breeding territory. This ten-mile radius standard was developed from Department funded telemetry studies. It is considered to be a conservative estimate of the average flight distance from known active nest sites to suitable foraging habitats within the home range of a Swainson's hawk. Therefore, proposed development projects may be required to mitigate impacts at active nest sites and surrounding suitable feeding habitat areas; both of which are essential to the integrity of the breeding territory. In addition, since over 95% of Swainson's hawk nests occur on private land, a program of incentives for the private landowner is needed to ensure that crops which are compatible to the foraging needs of Swainson's hawks are not replaced by incompatible agriculture practices, urbanization, or other land uses.

If you have any questions, please contact Ms. Sherry Teresa, Environmental Services Wildlife Biologist, Region 2, (916) 355-7030.

LEGAL STATUS

The Swainson's hawk is a migratory bird species protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). The Swainson's hawk is designated as a Candidate species for listing by the U.S. Fish and Wildlife Service under the federal Endangered Species Act (ESA; 16 U.S.C. 1513-1543). The State of California listed the Swainson's hawk as a Threatened species, thus providing them protection under the California Endangered Species Act [CESA] (Chapter 1.5 Fish and Game Code). In addition, Sections 3503, 3503.5, 3800 of the Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. The DFG has interpreted the "take" clause in the CESA to include the destruction of either nesting and/or foraging habitat necessary to maintain the reproductive effort. Implementation of the take provisions of the CESA requires that project-related disturbance at active Swainson's hawk territories be reduced or eliminated during critical phases of the nesting cycle (March 1 - August 15 annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) is considered "taking" and is punishable by fines and/or imprisonment. Such taking would also violate federal law protecting migratory birds (e.g., MBTA).

The California Environmental Quality Act (CEQA) requires a mandatory findings of significance if impacts to threatened or endangered species are likely to occur (Sections 21001(c), 21083. Guidelines 15380, 15064, 15065). Avoidance or mitigation must be presented to reduce impact to less than significant levels (See Mitigation Criteria #2.).

NATURAL HISTORY

The Swainson's hawk is a large broadwinged buteo which frequents open country. Approximately the same size as a red-tailed hawk (*Buteo jamaicensis*), but trimmer, Swainson's hawks weigh approximately 800 - 1100 gm. (1 3/4 - 2 lbs) , and have about a 125 cm. (4+') wingspan. The basic body plumage may be highly variable and is characterized by several color phases - light, dark, and rufous. In dark phase birds, the entire body of the bird may be sooty black. Adult birds generally have dark backs. The ventral or underneath sections may be light with a characteristic dark, wide "bib" from the lower throat down to the upper breast. The tail is gray ventrally with a subterminal dusky band, and narrow, less conspicuous barring proximally. The sexes are similar in appearance; females however, are slightly larger than males, as is the case in most sexually dimorphic raptors. There are no recognized subspecies (Palmer 1988).

The Swainson's hawk is a long distance migrator, leaving nesting grounds in northwestern Canada, the western U.S. and Mexico, most populations migrate to wintering grounds in the open pampas areas of South America (Argentina, Uruguay, southern Brazil). This round trip journey may exceed 14,000 miles. The birds will return to the nesting grounds in early March to establish breeding territories.

Swainson's hawks are monogamous and will remain so until the loss of a mate (Palmer 1988). Nest construction and courtship continues through April. The clutch (commonly 3-4 eggs) is laid in early-April to early-May. Incubation lasts 34-35 days, with both parents participating in the brooding of eggs and young. The young leave the nest approximately 42-44 days after hatching (June - July). The young remain with their parents and gain hunting practice until they depart on migration in the fall.

Reproductive Chronology *

| MAR | APR | MAY | JUN | JUL | AUG | SEPT |
|---------|---------|---------|---------|---------|---------|---------|
| X-----X | | | | | | |
| | X-----X | | | | | |
| | | X-----X | | | | |
| | | | X-----X | | | |
| | | | | X-----X | | |
| | | | | | X-----X | |
| | | | | | | X-----X |

ARRIVE FROM WINTERING GROUNDS (3/11 - 4/4)

COURTSHIP AND NEST CONSTRUCTION

EGGS LAID (4/1 - 5/1)

NESTLINGS FIRST APPEAR (mid-May)

NESTLING STAGE
(mid to late May - early July)

FLEDGING (July)

MIGRATION (late Aug. - mid-Sept)

* data from J. Estep 1989.

FORAGING REQUIREMENTS

Swainson's hawk nests in the Central Valley of California are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures. These open fields and pastures are the primary forage areas. Major prey items for Central Valley birds include: California voles (*Microtus californicus*), valley pocket gophers (*Thomomys bottae*), deer mice (*Peromyscus maniculatus*), California ground squirrels (*Spermophilus beecheyi*), mourning doves (*Zenaida macroura*), ring-necked pheasants (*Phasianus colchicus*), meadowlarks (*Sturnella neglecta*), other passerines, grasshoppers (*Conocephalinae*), crickets (*Gryllidae*), and silphadids (Estep 1989). Swainson's hawks generally search for prey by soaring in open country and agricultural fields similar to northern harriers (*Circus cyaneus*) and ferruginous hawks (*Buteo regalis*). Often many hawks may be seen foraging together following tractors or other farm equipment capturing prey escaping from farming operations. During the breeding season, Swainson's hawks eat mainly vertebrates (small rodents and reptiles), whereas during migration vast numbers of insects are consumed (Palmer 1988).

Department of Fish and Game funded research has documented the importance of suitable foraging habitats (e.g., native grasslands, lightly-grazed pastures, alfalfa and other hay crops, and combinations of hay grain and row crops) within an energetically efficient flight distance from active Swainson's hawk nests (Estep pers. comm.). Recent telemetry studies to determine foraging requirements have shown that birds may utilize in excess of 15,000 acres of habitat or range up to 18.0 miles from the nest in search of prey (Estep 1989). The area needed for foraging is determined by crop types, agricultural practices, harvesting regimes, prey abundance and availability. Estep (1989) found that 73.4% of observed prey captures were in fields being harvested, disced, mowed or irrigated. Some of the preferred foraging habitats for Swainson's hawks include: (1) Alfalfa - low prey abundance but steady prey accessibility. (2) Fallow fields - high prey abundance and prey accessibility if not dominated by thistle. (3) Beet and Tomato fields - largest prey populations but dense cover reduces prey accessibility, except during harvesting operations when Swainson's hawks have been observed foraging almost exclusively in these fields from late-July to early-September. (4) Dry-land pasture provided the primary forage area for 1 radioed pair, and appears to be an important foraging area. (5) Irrigated pasture provides some forage habitat, especially during flooding. Unsuitable foraging habitat types include any crop where prey are not available due to the high density of vegetation, or have low abundance of prey such as rice fields, vineyards, orchards, and cotton fields.

NESTING REQUIREMENTS

Swainson's hawks nest throughout most of the floor of the Central Valley, although nesting habitat is fragmented and unevenly distributed. More than 85% of the known nests in the Central Valley are within riparian systems in Sacramento, Yolo, and

San Joaquin Counties. Much of the potential nesting habitat remaining in this area is in riparian forests, lone trees, oak groves, and roadside trees. The riparian areas are generally adjacent to and within easy flying distance to alfalfa or hay fields. Department research has shown that valley oaks (*Quercus lobata*), Fremont's cottonwood (*Populus fremontii*), willows (*Salix spp.*), sycamores (*Platanus spp.*), and walnut (*Juglans spp.*) are the preferred nest trees for Swainson's hawks (Bloom 1980, Estep 1989).

HISTORICAL AND CURRENT POPULATION STATUS

The Swainson's Hawk was historically (ca 1900) regarded as one of the most common and numerous raptor species in the state, so much so that they were often not given special mention in field notes. The breeding population has declined by an estimated 91% in California since the turn of the century (Bloom 1980). The historical Swainson's hawk population estimate, based on current densities and estimates of former available habitat, is 4,284 - 17,136 pairs (Bloom 1980). In 1979, approximately 375 \pm 50 breeding pairs of Swainson's hawks were estimated in California, and 280 (75%) of those pairs were estimated to be in the Central Valley (Bloom 1980). In 1988, 241 active breeding pairs were found in the Central Valley, with an additional 78 active pairs known in northeastern California. The 1989 population estimate was 430 pairs for the Central Valley and 550 pairs statewide. *This difference in population estimates reflect increased survey intensity, not an actual population increase.*

REASONS FOR DECLINE

The dramatic population decline from historic levels has been attributed to loss of native nesting and foraging habitat, and more recently from the conversion of agriculture to urban uses, changes to incompatible crop types and loss of suitable nesting trees. In addition, pesticides, shooting, disturbance at the nest site, and other disturbances on wintering areas may have contributed to their decline. The loss of nesting habitat within riparian areas has been accelerated by flood control practices and bank stabilization programs. Smith (1977) estimated that in 1850 over 770,000 acres of riparian habitat were present in the Sacramento Valley alone. Today less than 12,000 acres of riparian habitat remain. A 98% decrease in riparian vegetation has been documented within the Central Valley (Katibah 1983).

In summary, management needs of the Central Valley population of Swainson's hawks include ensuring the availability of suitable nesting habitat through the 1) preservation and recruitment of suitable nesting trees, 2) protection of existing nesting habitat from destruction or disturbance, 3) maintenance of compatible agricultural practices to preserve forage habitat, and 4) mitigation for loss of breeding and/or foraging habitat. Coordination and cooperation with local agencies must be continued to prevent further habitat destruction from development projects.

MITIGATION CRITERIA

GOAL: NO NET LOSS OF SWAINSON'S HAWKS NESTING OR FORAGING HABITAT

I. Consultation under California Environmental Quality Act (CEQA) and/or California Endangered Species Act (CESA).

1. Project Consultation.

Project proponent should consult with the DFG regarding take of an endangered species or its habitat pursuant to Section 2081 of CESA, and appropriate Fish and Game Code Sections.

A. Pursuant to Article 4 of CESA, State agencies are required to consult with the DFG to ensure that any action authorized, funded or carried out by that state agency will not jeopardize the continued existence of any endangered species.

B. The DFG may authorize take under Sec.2081 where management plans are in place or for development of Habitat Conservation Plans.

2. CEQA and Subdivision Map Act

Project proponents are encouraged to consult the Department's California Natural Diversity Data Base and Nongame Section to receive updated locational information regarding active Swainson's hawk territories. Due to the complexities of individual cases, it is advisable that developers or others planning projects or actions that may impact one or more Swainson's hawk territories initiate communication with the Department as early as possible.

A. CEQA Guidelines Sec. 15065 directs that a mandatory finding of significance is required for projects that have the potential to substantially degrade or reduce the habitat of, or restrict the range of a threatened or endangered species. CEQA requires agencies to implement feasible mitigation measures or feasible alternatives identified in EIR's for projects which will otherwise cause significant adverse impacts (Sections 21002, 21081, 21083; Guidelines, sections 15002, subd. (a)(3), 15021, subd. (a)(2), 15091, subd. (a)).

To be legally adequate, mitigation measures must be capable of "avoiding the impact altogether by not taking a certain action or parts of an action"; "minimizing impacts by limiting the degree or magnitude of the action and its implementation"; "rectifying the impact by repairing, rehabilitating or restoring the impacted environment"; "or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action." (Guidelines, section 15370).

B. Section 66474 (e) of the Subdivision Map Act states "a legislative body of a city or county shall deny approval of a tentative map or parcel map for which a tentative map was not required, if it makes any of the following findings:...(e) that the design of the subdivision or the proposed improvements are likely to cause substantial environmental damage or substantially and avoidably injure fish and wildlife or their habitat". In recent court cases, the court upheld that Section 66474(e) provides for environmental impact review separate from and independent of the requirements of CEQA (Topanga Assn. for a Scenic Community v. County of Los Angeles, 263 Cal. Rptr. 214 (1989).). The finding in Section 66474 is in addition to the requirements for the preparation of an EIR or Negative Declaration.

II. Maintenance of breeding pairs and their habitat.

1. Prevention of disturbance at the nest site.

A. No disturbance should occur within 1/2 mile of an active nest between March 1 - August 15. If the nest tree is to be removed and fledglings are present, the nest tree may not be removed until September 15 or until the DFG has determined that the young have fledged or are no longer dependent on the nest tree. If construction or other project related activities which may cause nest abandonment or forced fledging are proposed within this 1/2 mile buffer zone, intensive monitoring (funded by the project sponsor) by a Department approved raptor biologist will be required. Exact implementation of this measure will be based upon specific information at the project site.

2. Prevention of loss of nest trees.

A. Projects should be designed to avoid direct and indirect impacts to nest trees.

B. Revegetation of historical nesting habitat with suitable native nest trees species (e.g., oaks, cottonwoods, sycamores, etc.) adjacent to adequate forage habitat shall be undertaken.

3. Maintenance of sufficient foraging habitat to support breeding pairs and successful fledging of young.

A. Impact avoidance and project alternatives must be thoroughly analyzed and discussed with DFG representatives prior to adverse modification of foraging habitat as required by CEQA (Section 21002; Guidelines sec.15002, 15021,15126, 21100). This discussion must focus on alternatives capable of either eliminating any significant adverse environmental effect or reducing them to a level less than significant, even if such alternatives would be more costly or to some degree impede the projects objectives.

B. Potential foraging areas are described as identified foraging habitat types located within a 10-mile radius from an active Swainson's nesting territory. Any adverse modification of these foraging areas may require mitigation for loss of foraging habitat. The criteria for assessing this mitigation is as follows:

a. Territory must have been used at least once historically (as determined by DFG Swainson's hawk nesting records).

b. Mitigation will be required for all lands within the defined foraging area (10 miles), excluding the following: Lands which are currently in urban use or lands that have no existing or potential value for foraging Swainson's hawks as determined by site specific surveys by a DFG qualified raptor biologist.

c. Mitigation for foraging areas shall be a minimum 1:1 acre ratio (i.e., 1 acre replacement for each 1 acre loss of habitat). Increased mitigation ratios may be necessary in certain instances in order to maintain adequate foraging habitat to support Swainson's hawk populations or if a project site provides breeding or forage habitat for more than one pair. Habitat conservation plans for several areas are currently being prepared which may identify new information regarding habitat requirements for nesting pairs. Therefore, these criteria are to be considered interim guidelines and mitigation ratios may increase for future projects based on additional information from scientific research on this species.

4. Retention of Habitat

Retain and create sufficient quality habitat to maintain existing population levels and to allow for future population increases to meet recovery goals for the Swainson's hawk (as to be determined by the Swainson's Hawk Recovery Plan).

A. Restoration and enhancement of Swainson's hawk nesting and foraging habitats through the creation and establishment of mitigation banks.

a. Mitigation banks must meet the following minimum criteria:

1. Minimum acreage size of 1,200 contiguous or semi-contiguous acres of undeveloped land. Smaller individual projects may participate in mitigation banks or fee assessment programs to acquire the minimum acreage needed to support a nesting pair.

2. Creation or enhancement of riparian woodlands may be required for some projects. These riparian areas should be not less than 300' wide, with the successful establishment of native riparian species, such as: cottonwoods, oaks, sycamores, and willows. Revegetation

plans submitted by the project sponsor shall include but is not limited to the following:

1. Tree densities
2. Species compositions
3. Amount of cover
4. Compensated revegetation for loss due to fire or pests

3. Agriculture practices shall be incorporated into the bank or mitigation area to produce crop types such as but not limited to: alfalfa, dry pasture or native grasslands with little to no grazing, disced fields with hedge rows left approximately every 100 feet, and tomato/beet/row crop fields, or other crops which are compatible for foraging Swainson's hawks.

4. Fee title to land or permanent conservation easements obtained for the Department of Fish and Game, or its designee.

5. Management and operation plans must be incorporated with the mitigation plan and implemented by the project proponent prior to project construction.

6. Project proponent would be responsible for the successful establishment of Swainson's hawk nesting/foraging areas in perpetuity. Monitoring programs will require an annual written review submitted to the DFG for the first 5 years, and thereafter written reviews will be required every 3-5 years for private mitigation projects.

III. Restoration of Swainson's hawk population.

1. Support and acquire funding to continue research related to breeding success, contaminants, dispersal, movement, mortality, habitat use, and other identified research needs. Responsibility: DFG Nongame Bird and Mammal Section.

2. Development and completion of a Habitat Conservation Plan and

*Mitigation
Bank
Criteria
contd.*

a Recovery Plan. Responsibility: DFG Nongame Bird and Mammal Section.

3. Coordinate with local agencies for long term planning to maintain sufficient quality habitat for Swainson's hawks.

Responsibility: DFG Nongame Bird and Mammal Section and Regional Environmental Services staff.

A. Maintain close coordination with city and county agencies, other state agencies, local agricultural districts, federal agencies, and private conservation organizations to organize a concerted land use plan sensitive to the need of the Swainson's hawk and other listed or sensitive species.

B. Protect and maintain agricultural preserves.

C. Coordinate management planning with responsible agencies.

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9/10/90 update

APPENDIX D

NDDB Printouts for Dixon and Merritt,
California USGS 7.5 Minute Quadrangles

California Department of Fish and Game
Natural Diversity Data Base
-----[*]-----
Species/Community Location Summary Report

MBYSTOMA TIGRINUM CALIFORNIENSE
California Tiger Salamander

ID: AAAAA01147

-----Status-----

NDDB Element Ranks

-----Other Lists-----

Federal: Category 2
State: None

Global: G5T2T3
State: S2S3

CDFG: Special Concern

Audubon:

CNPS List:

CNPS RED Code:

Occurrence Number: 59

Quality: Unknown

Type: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Quad Summary: Dixon

County(ies): Solano

Location: 2.0 MI E OF DIXON.

Lat/Long: 38d 26m 47s / 121d 46m 58s

UTM: Zone-10 N4255839 E606198

Mapping Precision: NON-SPECIFIC (1 Mile)

Symbol Type: POINT

Map Index Numbers - Group: 10665

Detail: 10665

--Dates Last Seen--

Element: 1953/10/10

Site: 1953/10/10

Township: 07N

Range: 02E

Section: 17

Quarter: SW

Meridian: M

Elevation: 50 ft

California Department of Fish and Game
Natural Diversity Data Base
-----[*]-----
Species/Community Location Summary Report

MUTEO SWAINSONI
Swainsons Hawk

ID: ABNKC19070

-----Status----- NDDB Element Ranks -----Other Lists-----
Federal: Category 3C Global: G4 CDFG: Special Concern
State: Threatened State: S3 Audubon:
CNPS List:
CNPS RED Code:

Occurrence Number: 78
Quality: Unknown --Dates Last Seen--
Type: Natural/Native occurrence Element: 1981/07/08
Presence: Presumed Extant Site: 1981/07/08
Trend: Unknown
Quad Summary: Merritt
County(ies): Yolo
Location: INTERSECTION OF COVELL BLVD & RD 95 ON NE SIDE. NEST IN
EUCALYPTUS.
Lat/Long: 38d 33m 44s / 121d 51m 24s Township: 08N
UTM: Zone-10 N4268610 E599590 Range: 01E
Mapping Precision: NON-SPECIFIC (1/5 Mile) Section: 03
Symbol Type: POINT Quarter: SW
Map Index Numbers - Group: 10468 Meridian: M
Detail: 10468 Elevation: 90 ft

Occurrence Number: 90
Quality: Unknown --Dates Last Seen--
Type: Natural/Native occurrence Element: 1983/05/10
Presence: Presumed Extant Site: 1984/05/15
Trend: Unknown
Quad Summary: Merritt
County(ies): Yolo
Location: DRY WILLOW SLOUGH BETWEEN HWYS 99 & 113 AND 27 & 99 ON S
SIDE OF SLOUGH. NEST IN OAK.
Lat/Long: 38d 35m 38s / 121d 47m 07s Township: 09N
UTM: Zone-10 N4272234 E605787 Range: 02E
Mapping Precision: NON-SPECIFIC (1/5 Mile) Section: 30
Symbol Type: POINT Quarter: SE
Map Index Numbers - Group: 10676 Meridian: M
Detail: 10676 Elevation: 60 ft

Dixon and Merritt RareFind Report
Date of Report: 10/22/91

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California Department of Fish and Game
Natural Diversity Data Base
-----[*]-----
Species/Community Location Summary Report

UTEO SWAINSONI

ID: ABNKC19070

wainsons Hawk

Occurrence Number: 91

Quality: Unknown

Type: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Quad Summary: Merritt

County(ies): Yolo

Location: PLAINFIELD STATION, ALONG DRY SLOUGH.

Lat/Long: 38d 35m 31s / 121d 48m 01s

UTM: Zone-10 N4272001 E604484

Mapping Precision: NON-SPECIFIC (1/5 Mile)

Symbol Type: POINT

Map Index Numbers - Group: 10637

Detail: 10637

--Dates Last Seen--

Element: 1984/05/15

Site: 1984/05/15

Township: 09N

Range: 02E

Section: 30

Quarter: SW

Meridian: M

Elevation: 65 ft

Occurrence Number: 106

Quality: Unknown

Type: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Quad Summary: Merritt

County(ies): Solano, Yolo

Location: PUTAH CREEK, APPROX 0.75 MI NW OF JCT HWY 113 AND I-80, BTWN HUTCHISON RD AND PUTAH CREEK. NEST IN OAK.

Lat/Long: 38d 31m 48s / 121d 46m 34s

UTM: Zone-10 N4265155 E606680

Mapping Precision: NON-SPECIFIC (1/5 Mile)

Symbol Type: POINT

Map Index Numbers - Group: 10683

Detail: 10683

--Dates Last Seen--

Element: 1984/05/09

Site: 1984/05/09

Township: 08N

Range: 02E

Section: 20

Quarter: N

Meridian: M

Elevation: 65 ft

Occurrence Number: 108

Quality: Unknown

Type: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Quad Summary: Merritt, Davis

County(ies): Solano, Yolo

Location: DAVIS. ON FIRST ST BEHIND GREYHOUND BUS STATION, AT END OF PUTAH CRK.

Lat/Long: 38d 32m 08s / 121d 45m 03s

UTM: Zone-10 N4265770 E608851

Mapping Precision: NON-SPECIFIC (1 Mile)

Symbol Type: POINT

Map Index Numbers - Group: 10749

Detail: 10749

--Dates Last Seen--

Element: 1981/07/09

Site: 1981/07/09

Township: 08N

Range: 02E

Section: 16

Quarter: SE

Meridian: M

Elevation: 50 ft

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California Department of Fish and Game
Natural Diversity Data Base
-----[*]-----
Species/Community Location Summary Report

BUTEO SWAINSONI
Swainsons Hawk

ID: ABNKC19070

Occurrence Number: 109
Quality: Unknown
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: Winters, Merritt, Madison, Woodland
County(ies): Yolo
Location: INTERSECTION OF RD 95 AND RD 27, IN STRAW FIELD (SW CORNER).
POSSIBLE NEST IN EUCALYPTUS.
Lat/Long: 38d 37m 00s / 121d 51m 39s Township: 09N
UTM: Zone-10 N4274678 E599176 Range: 01E
Mapping Precision: NON-SPECIFIC (1 Mile) Section: 21
Symbol Type: POINT Quarter: NE
Map Index Numbers - Group: 10464 Meridian: M
Detail: 10464 Elevation: 95 ft

--Dates Last Seen--
Element: 1981/07/08
Site: 1981/07/08

Occurrence Number: 207
Quality: Unknown
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: Merritt
County(ies): Yolo
Location: 0.25 MI W OF HWY 113 ALONG SOUTH SIDE OF NORTH FORK OF
WILLOW SLOUGH. NEST POSSIBLE IN ONE OF SEVERAL LARGE OAKS
WHERE SLOUGH BENDS EAST.
Lat/Long: 38d 36m 16s / 121d 46m 19s Township: 09N
UTM: Zone-10 N4273390 E606909 Range: 02E
Mapping Precision: NON-SPECIFIC (1/5 Mile) Section: 29
Symbol Type: POINT Quarter: NE
Map Index Numbers - Group: 10696 Meridian: M
Detail: 10696 Elevation: 55 ft

--Dates Last Seen--
Element: 1984/05/17
Site: 1984/05/17

Occurrence Number: 213
Quality: Unknown
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: Merritt
County(ies): Solano, Yolo
Location: PUTAH CREEK APPROX 0.5 MI SW OF UC DAVIS AIRPORT.
Lat/Long: 38d 31m 42s / 121d 47m 55s Township: 08N
UTM: Zone-10 N4264945 E604721 Range: 02E
Mapping Precision: NON-SPECIFIC (1/5 Mile) Section: 19
Symbol Type: POINT Quarter: NW
Map Index Numbers - Group: 10635 Meridian: M
Detail: 10635 Elevation: 70 ft

--Dates Last Seen--
Element: 1987/06/10
Site: 1987/06/10

California Department of Fish and Game
Natural Diversity Data Base
-----[*]-----
Species/Community Location Summary Report

MUTEO SWAINSONI
Swainsons Hawk

ID: ABNKC19070

Occurrence Number: 216
Quality: Unknown
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: Merritt
County(ies): Yolo
Location: NORTH DAVIS FARMS, JUST E HWY 113 APPROX 0.5 MI N OF COVELL
BLVD. NEST IN WALNUT.

--Dates Last Seen--
Element: 1984/06/04
Site: 1984/06/04

Lat/Long: 38d 34m 08s / 121d 45m 52s
UTM: Zone-10 N4269454 E607639

Township: 08N
Range: 02E
Section: 04
Quarter: SW
Meridian: M
Elevation: 50 ft

Mapping Precision: NON-SPECIFIC (1/5 Mile)
Symbol Type: POINT

Map Index Numbers - Group: 10716
Detail: 10716

Occurrence Number: 217
Quality: Unknown
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: Merritt
County(ies): Yolo
Location: 0.25 MI SW OF JCT OF RDS 30 AND 98.

--Dates Last Seen--
Element: 1984/05/15
Site: 1984/05/15

Lat/Long: 38d 34m 13s / 121d 48m 35s
UTM: Zone-10 N4269586 E603692

Township: 08N
Range: 01E
Section: 01
Quarter: NW
Meridian: M
Elevation: 65 ft

Mapping Precision: NON-SPECIFIC (1/5 Mile)
Symbol Type: POINT

Map Index Numbers - Group: 10603
Detail: 10603

Occurrence Number: 268
Quality: Unknown
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown
Quad Summary: Merritt
County(ies): Yolo
Location: S END FRONTAGE ROAD ALONG HWY 113; WHERE DRY SLOUGH JOINS
WILLOW SLOUGH. NEST IN SOLITARY OAK.

--Dates Last Seen--
Element: 1984/06/04
Site: 1984/06/04

Lat/Long: 38d 36m 16s / 121d 45m 56s
UTM: Zone-10 N4273398 E607489

Township: 09N
Range: 02E
Section: 28
Quarter: NW
Meridian: M
Elevation: 50 ft

Mapping Precision: NON-SPECIFIC (1/5 Mile)
Symbol Type: POINT

Map Index Numbers - Group: 10719
Detail: 10719

California Department of Fish and Game
Natural Diversity Data Base
-----[*]-----
Species/Community Location Summary Report

UTEO SWAINSONI
wainsons Hawk

ID: ABNKC19070

Occurrence Number: 269

Quality: Unknown

Type: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Quad Summary: Merritt

County(ies): Yolo

Location: S SIDE OF NORTH FORK WILLOW SLOUGH; 150 YDS E OF RD 99.

Lat/Long: 38d 36m 18s / 121d 46m 54s Township: 09N

UTM: Zone-10 N4273440 E606061 Range: 02E

Mapping Precision: NON-SPECIFIC (1/5 Mile) Section: 20

Symbol Type: POINT Quarter: SW

Map Index Numbers - Group: 10678

Detail: 10678

Meridian: M

Elevation: 55 ft

Occurrence Number: 286

Quality: Unknown

Type: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Quad Summary: Merritt

County(ies): Solano

Location: ONE MILE SOUTH ON PEDRICK (COUNTY RD 98) FROM JCT WITH PUTAH
CREEK. NEST IN AN ISOLATED WALNUT TREE ON ROADSIDE.

Lat/Long: 38d 30m 44s / 121d 48m 05s Township: 08N

UTM: Zone-10 N4263123 E604478 Range: 02E

Mapping Precision: NON-SPECIFIC (1/5 Mile) Section: --

Symbol Type: POINT Quarter: --

Map Index Numbers - Group: 10626

Detail: 10626

Meridian: M

Elevation: 60 ft

California Department of Fish and Game
 Natural Diversity Data Base
 -----[*]-----
 Species/Community Location Summary Report

THENE CUNICULARIA
 Burrowing Owl

ID: ABNSB10010

| | | |
|------------------|---------------------|-----------------------|
| -----Status----- | NDDDB Element Ranks | -----Other Lists----- |
| Federal: None | Global: G5 | CDFG: Special Concern |
| State: None | State: S2 | Audubon: |
| | | CNPS List: |
| | | CNPS RED Code: |

Occurrence Number: 28
 Quality: Unknown
 Type: Natural/Native occurrence
 Presence: Extirpated
 Trend: Unknown
 Quad Summary: Merritt
 County(ies): Yolo
 Location: 0.7 MI N ON ROAD 95 FROM JCT WITH RD 31, ADJ TO YOLO COUNTY AIRPORT, 6 MI WNW OF DAVIS.
 Lat/Long: 38d 34m 22s / 121d 51m 31s
 UTM: Zone-10 N4269785 E599410
 Mapping Precision: NON-SPECIFIC (1/5 Mile)
 Symbol Type: POINT
 Map Index Numbers - Group: 10463
 Detail: 10463

--Dates Last Seen--
 Element: 1980/XX/XX
 Site: 1987/XX/XX

Township: 08N
 Range: 01E
 Section: 04
 Quarter: NE
 Meridian: M
 Elevation: 100 ft

Occurrence Number: 30
 Quality: Unknown
 Type: Natural/Native occurrence
 Presence: Presumed Extant
 Trend: Decreasing
 Quad Summary: Merritt, Davis
 County(ies): Solano, Yolo
 Location: WEST SIDE OF UNIVERSITY OF CALIFORNIA ON DAVIS CAMPUS.
 Lat/Long: 38d 32m 20s / 121d 45m 43s
 UTM: Zone-10 N4266128 E607902
 Mapping Precision: NON-SPECIFIC (1 Mile)
 Symbol Type: POINT
 Map Index Numbers - Group: 10720
 Detail: 10720

--Dates Last Seen--
 Element: 1988/XX/XX
 Site: 1988/XX/XX

Township: 08N
 Range: 02E
 Section: 16
 Quarter: NW
 Meridian: M
 Elevation: 35 ft

Occurrence Number: 103
 Quality: Fair
 Type: Natural/Native occurrence
 Presence: Possibly Extirpated
 Trend: Unknown
 Quad Summary: Dixon
 County(ies): Solano
 Location: ALONG ROBBERN ROAD, 1.4 MI SOUTH OF MIDWAY ROAD, APPROXIMATELY 3 MI SE OF DIXON. SITE IS A GAS WELL OR GAS STORAGE SITE, LOCATED ON THE WEST SIDE OF THE ROAD, SURROUNDED BY AGRICULTURAL GRAIN CROPS.
 Lat/Long: 38d 23m 46s / 121d 47m 6s
 UTM: Zone-10 N4250267 E606100
 Mapping Precision: NON-SPECIFIC (1/5 Mile)
 Symbol Type: POINT

--Dates Last Seen--
 Element: 1989/07/01
 Site: 1989/07/01

Township: 06N
 Range: 02E
 Section: 06
 Quarter: NE

Dixon and Merritt RareFind Report
 Date of Report: 10/22/91

Government/Conservation Client
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California Department of Fish and Game
Natural Diversity Data Base
-----[*]-----
Species/Community Location Summary Report

THENE CUNICULARIA

ID: ABNSB10010

Hurrowing Owl

Map Index Numbers - Group: 17253
Detail: 17253

Meridian: M
Elevation: 30 ft

Occurrence Number: 104
Quality: Fair
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

--Dates Last Seen--
Element: 1989/07/01
Site: 1989/07/01

Quad Summary: Dixon
County(ies): Solano
Location: 200 YDS NORTH OF MILLER ROAD, ALONG ROBBERN ROAD, APPROXIMATE
LY 2 MI ESE OF DIXON.

Lat/Long: 38d 25m 59s / 121d 47m 7s Township: 07N

UTM: Zone-10 N4254349 E606026 Range: 02E

Mapping Precision: NON-SPECIFIC (1/5 Mile) Section: 19

Symbol Type: POINT Quarter: SE

Map Index Numbers - Group: 17254
Detail: 17254

Meridian: M
Elevation: 40 ft

Occurrence Number: 105
Quality: Fair
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

--Dates Last Seen--
Element: 1989/07/01
Site: 1989/07/01

Quad Summary: Dixon
County(ies): Solano
Location: 0.2 MI NORTH OF MIDWAY ROAD, ALONG ROBBERN ROAD, APPROXIMATE
LY 2 MI SE OF DIXON.

Lat/Long: 38d 25m 10s / 121d 47m 8s Township: 07N

UTM: Zone-10 N4252837 E606022 Range: 02E

Mapping Precision: NON-SPECIFIC (1/5 Mile) Section: 30

Symbol Type: POINT Quarter: SE

Map Index Numbers - Group: 17255
Detail: 17255

Meridian: M
Elevation: 40 ft

Occurrence Number: 106
Quality: Fair
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Unknown

--Dates Last Seen--
Element: 1989/07/01
Site: 1989/07/01

Quad Summary: Dixon
County(ies): Solano
Location: ALONG ROBBERN ROAD, 75 YDS NORTH OF MIDWAY ROAD, APPROXIMATE
LY 2 MI SE OF DIXON. ONE ADULT OBSERVED ON WEST SIDE OF ROAD
ALONG AN IRRIGATION DITCH.

Lat/Long: 38d 25m 0s / 121d 47m 6s Township: 07N

UTM: Zone-10 N4252527 E606062 Range: 02E

Mapping Precision: NON-SPECIFIC (1/5 Mile) Section: 30

Symbol Type: POINT Quarter: SE

Map Index Numbers - Group: 17256
Detail: 17256

Meridian: M
Elevation: 40 ft

Dixon and Merritt RareFind Report
Date of Report: 10/22/91

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California Department of Fish and Game
Natural Diversity Data Base
-----[*]-----
Species/Community Location Summary Report

THENE CUNICULARIA
Burrowing Owl

ID: ABNSB10010

Occurrence Number: 112
Quality: Good
Type: Natural/Native occurrence
Presence: Presumed Extant
Trend: Fluctuating

--Dates Last Seen--
Element: 1990/06/30
Site: 1990/06/30

Quad Summary: Merritt
County(ies): Yolo

Location: ALONG THE NORTH SIDE OF COVELL DRAIN, APPROXIMATELY 0.6 MI W
EST OF COUNTY RD 101A, NORTH SIDE OF THE CITY OF DAVIS. TWO
OWLS OBSERVED AT A BURROW SITE AT THE "S" CURVE OF THE
DRAIN, FACING SOUTH ON A STEEP BANK.

Lat/Long: 38d 34m 15s / 121d 45m 13s

Township: 08N

UTM: Zone-10 N4269684 E608576

Range: 02E

Mapping Precision: NON-SPECIFIC (1/5 Mile)

Section: 04

Symbol Type: POINT

Quarter: NE

Map Index Numbers - Group: 17302

Meridian: M

Detail: 17302

Elevation: 45 ft.

Nixon and Merritt RareFind Report
Date of Report: 10/22/91

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California Department of Fish and Game
Natural Diversity Data Base
-----[*]-----
Species/Community Location Summary Report

PHAMNOPHIS COUCHII GIGAS
Pigmy Garter Snake

ID: ARADB36150

-----Status-----
Federal: Category 2
State: Threatened

NDDDB Element Ranks
Global: G3T2T3
State: S2S3

-----Other Lists-----
CDFG: No
Audubon:
CNPS List:
CNPS RED Code:

Occurrence Number: 20

Quality: Unknown

Type: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Quad Summary: Merritt, Davis

County(ies): Solano, Yolo

Location: S FORK PUTAH CRK AT OLD DAVIS RD, DAVIS.

Lat/Long: 38d 31m 02s / 121d 45m 20s

UTM: Zone-10 N4263731 E608491

Mapping Precision: NON-SPECIFIC (1 Mile)

Symbol Type: POINT

Map Index Numbers - Group: 10733

Detail: 10733

--Dates Last Seen--

Element: 1976/XX/XX

Site: 1976/XX/XX

Township: 08N

Range: 02E

Section: --

Quarter: --

Meridian: M

Elevation: 50 ft

CULTURAL RESOURCES ASSESSMENT

PREPARED BY
PEAK & ASSOCIATES, INC.

100 - 50

**CULTURAL RESOURCES ASSESSMENT OF
THE DIXON NORTHEAST QUADRANT
ANNEXATION, CITY OF DIXON,
SOLANO COUNTY, CALIFORNIA**

PEAK & ASSOCIATES, INC.

CONSULTING ARCHEOLOGY



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THE DIXON NORTHEAST QUADRANT
ANNEXATION, CITY OF DIXON,
SOLANO COUNTY, CALIFORNIA**

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June 10, 1993
(Job #91-48)

INTRODUCTION

The project involves a proposed annexation by the City of Dixon of about 650 acres of land lying south of Interstate 80 between Route 113 (First Street) and Pedrick Road, except for 60 acres east of Pedrick (Map 1). All of the property not occupied by structures is currently in agricultural production and has been for many years. The proposed annexation is preparatory to changing the land use to residential.

The project is in a sensitive and difficult area for evaluation of potential impact on prehistoric-era cultural resources. Due to the extensive agricultural work in the area, old watercourses are often invisible now due to land levelling and surface evidence of archeological sites may have been obscured through land filling, plowing and other recent activities. The old slough system in the Dixon vicinity was an area of Native American occupation, as evidenced by the recent discovery of a major site with minimal to no surface evidence less than two miles west of the current project area.

Because of the potential for buried sites, historic maps were consulted to identify former waterways to assist the field study and guide recommendations for future work. A complete field inspection was performed (ground cover permitting, see below) to identify any surface evidence of cultural resources. With the exception of two historic buildings, no resources were identified on the property. However, the effort to identify and evaluate all cultural resources on the property cannot be considered complete until some subsurface testing is done. Recommendations for this testing are presented below.

CULTURAL HISTORY

Archeological Background

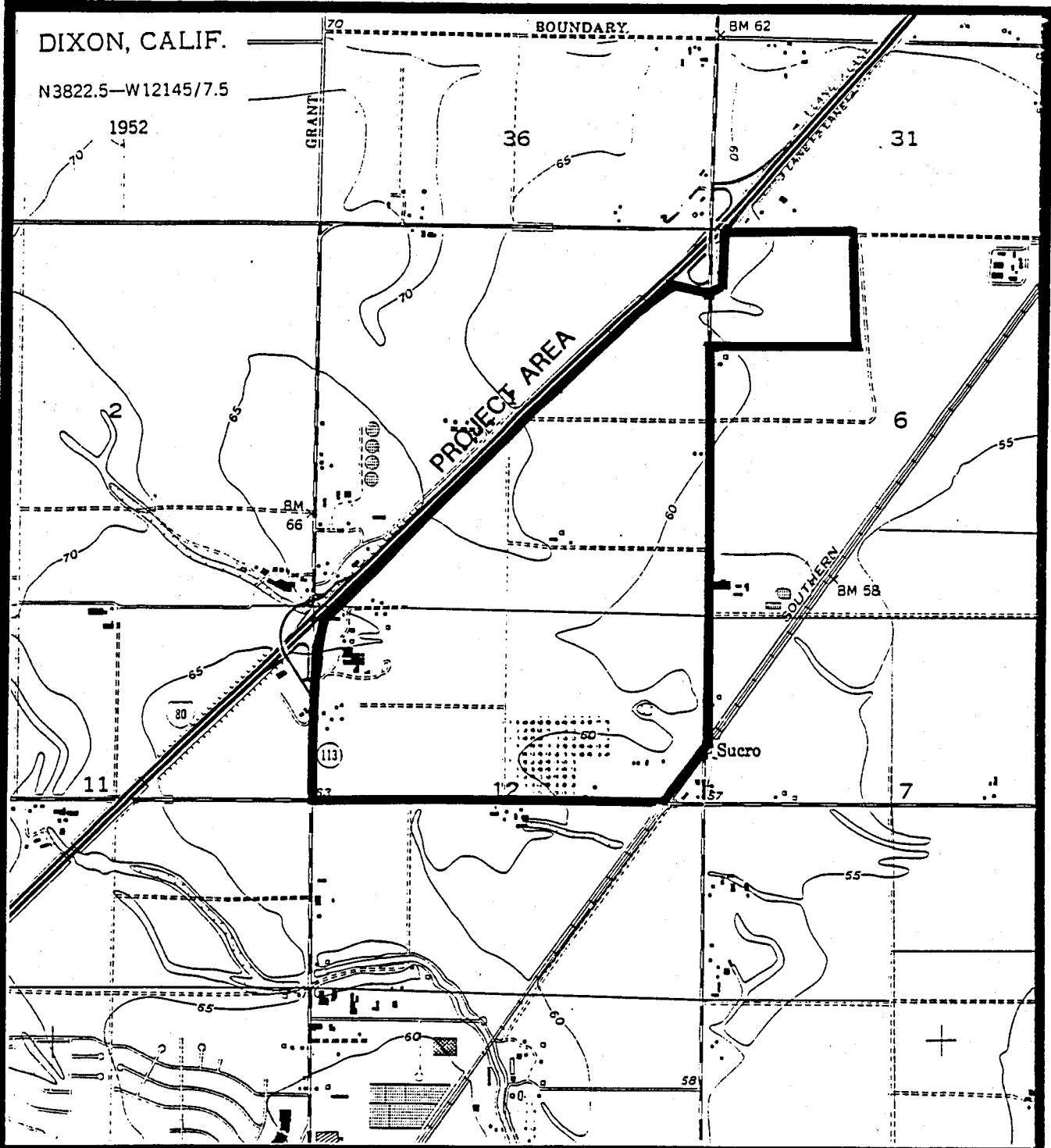
Although the project area is not technically within the Central Valley, the chronological sequence for the region is suitable for the project area.

The Central Valley region was among the first in the state to attract intensive fieldwork and research has continued to the present day. This has resulted in substantial accumulation of data. In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality, where survey and exploration were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, in particular from the stratified Windmill site (CA-Sac-107), suggested two temporally distinct cultural traditions. Later work at other mounds by Sacramento Junior College and the

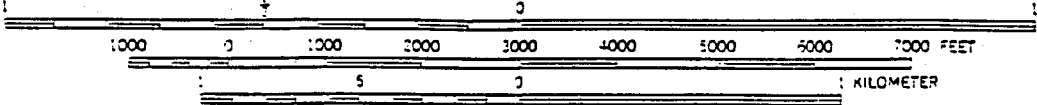
DIXON, CALIF.

N3822.5-W12145/7.5

1952



SCALE 1:24 000

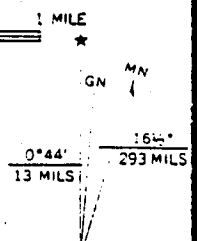


CONTOUR INTERVAL 5 FEET

THE BASE MAP IS MAPPED EDITED AND PUBLISHED BY THE U. S. GEOLOGICAL SURVEY



QUADRANGLE LOCATION



MAP 1

University of California enabled the investigators to identify a third cultural tradition intermediate between the previously postulated early and late horizons. The three-horizon sequence was based on discrete changes in ornamental artifacts and mortuary practices as well as an observed difference in soils within sites (Lillard, Heizer and Fenenga 1939). This sequence was later refined by Beardsley (1954), with an expanded definition of artifacts diagnostic of each time period and was extended to parts of this system within certain limits of time and space to other areas of prehistoric central California.

The Windmill Culture (Early Horizon) is characterized by ventrally-extended burials (some dorsal extensions are known), with westerly orientation of heads, a high percentage of burials with grave goods, frequent presence of red ochre in graves, large projectile points, of which 60 percent are of materials other than obsidian; rectangular *Haliotis* beads; *Olivella* shell beads (types Ala and L); rare use of bone; some use of baked clay objects; and well-fashioned charmstones, usually perforated.

The Cosumnes Culture (Early Horizon) displays considerable changes from the preceding cultural expression. The burial mode is predominately flexed, with variable cardinal orientation and some cremations present. There is a lower percentage of burials with grave goods, and ochre staining is common in graves. *Olivella* beads of type C1, F and G predominate, and there is abundant use of green *Haliotis sp.* rather than red *Haliotis sp.* Other characteristic artifacts include perforated canid teeth, asymmetrical and "fishtail" charmstones, usually perforated; cobble mortars and evidence of wooden mortars; extensive use of bone for tools and ornaments; large projectile points, with considerable use of rock other than obsidian; and use of baked clay.

Hotchkiss Culture (Late Horizon) -- The burial pattern retains the use of the flexed mode, and there is widespread evidence of cremation, lesser use of red ochre, heavy use of baked clay, *Olivella* beads of Types E and M, extensive use of *Haliotis* ornaments of many elaborate shapes and forms, shaped mortars and cylindrical pestles, bird-bone tubes with elaborate geometric designs, clamshell disc beads, small projectile points indicative of the introduction of the bow and arrow, flanged tubular pipes of steatite and schist, and use of magnetite. (The above adapted from Moratto 1984:181-183). The characteristics noted above are not all-inclusive, but cover the more important traits.

Schulz (1981), in an extensive examination of the use of acorns in central California, used the terms Early, Middle and Late complexes, but the defining attributes remain generally the same. While it is not altogether clear, Schulz seemingly substituted the term "Complex" to refer to the particular archeological entities formally called "Horizons."

More recently, Bennyhoff and Hughes (1984) have presented alternative dating schemes for the Central California Archeological Sequence. The primary emphasis is a more elaborate division of the Horizons to reflect what is seen as cultural/temporal changes within the three horizons and compression of the temporal span.

There have been other chronologies proposed for this region. Fredrickson (1973) has correlated his research with Bennyhoff's (1977) work, and has defined, based upon the work of Bennyhoff, patterns, phases and aspects. Fredrickson also proposed periods of time associated heavily with economic modes, which provide a temporal term for comparing contemporary cultural entities.

Period and Dating

Fredrickson

Emergent Period -- A.D. 500 to 1800
Upper Archaic -- 1000 B.C. to A.D. 500
Middle Archaic 3000 to 1000 B.C.
Lower Archaic -- 6000 to 3000 B.C.
Paleo Indian -- 10,000 to 6000 B.C.
Early Lithic 10,000 B.C. to ?

(Fredrickson 1973)

Bennyhoff, Heizer and Schulz

Historic, post-A.D. 1850
Phase 2, Late Horizon -- A.D. 1500 to 1850
Phase 1, Late Horizon -- A.D. 500 to 1500
Middle Horizon -- 1000 B.C.
Early Horizon -- 2500 B.C.

(Bennyhoff and Heizer 1958; Fredrickson 1973; Schulz 1981)

Ethnological Background

The Patwin occupied the southern Sacramento Valley west of the Sacramento river from the town of Princeton, north to Colusa, south to San Pablo and Suisun bays. Patwin territory extended approximately 90 miles north to south and 40 miles east to west. Distinction is made between the River Patwin, who resided in large villages near the Sacramento River, especially between Colusa and Knights Landing, and the Hill Patwin, whose villages were situated in the small valleys along the lower hills of the Vaca Mountains and Coast Range, with concentrations in Long, Indian, Bear, Capay, Cortina and Napa valleys (Johnson 1978:350; Powers 1877:218). The term "Patwin" refers to the people belonging to the many small contiguous independent political entities in this area who shared linguistic and cultural similarities. Hill and River Patwin dialects are grouped into a North Patwin language, separate from South Patwin, spoken by people who live near present-day Knight's Landing and Suisun. Together, these are classified as southern Wintuan and belonging to the Penutian language family as do the languages of the Miwok and Costanoan peoples (Johnson 1978:350-359; Kroeber 1925:351-354).

Politically, the Patwin were organized in small tribes or tribelets, each consisting of a primary village with satellite villages. Tribelets were autonomous and differed from other such units in minor cultural variations. Dialects might encompass several tribelets. Territories were vaguely defined, but included fishing and gathering areas used by the group. In each village, the leader or chief administered subsistence ventures, such as hunting or gathering, and presided over ceremonies. Social and economic activities were divided among families within a village,

with certain families responsible for different specialties such as trapping ducks, collecting salt, making foot drums, or performing particular dances or shamanistic rituals (Johnson 1978:354-355).

Patwin territory includes the riverine environment of tule marshes, vines and brush near the Sacramento River, the flat grasslands dotted with oak groves, and the hills and small valleys of the Coast ranges. The villages situated on low bluffs near the river were often very large; in 1848, General Bidwell estimated at least 1000 residents at *Koru*, near Colusa (Powers 1877:219). In the hills, the Patwin settled in the small valleys, particularly along Cache and Putah creeks, where large populations were reported. The plains were least hospitable; there, villages were sparse because of winter flooding and lack of reliable water sources during the dry months. As Powers described:

In winter there was too much water on them, in summer none at all, and the aborigines had no means of procuring an artificial supply. Besides there was no wood on them, and the overflowed portions in early summer breed millions of accursed gnats, which render human life a burden and a weariness. Hence they were compelled to live beside water-sources, except during certain limited periods in the winter, then they established hunting-camps out on the plains (Powers 1877:219).

Kroeber noted that the Patwin responded to these seasonal changes by shifting their habitation sites:

The valley people evidently had their permanent villages on the river itself -- that is, in the marsh belt -- but appear to have left this during the dry half of the year to live on the adjacent plains, mostly by the side of tributaries. The upland people built their winter homes where the streams issue on these creeks, and in summer moved away from the main water courses into the hills or mountains (Kroeber 1925:354).

Within a village, the Patwin constructed earth-covered semisubterranean structures. The Hill Patwin used a circular floor plan while the River Patwin favored an elliptical shape. Four types of building occurred in a predictable pattern: the ceremonial dance house was placed a short distance to the north or south of the village, the sudatory or sweat house was positioned to the east or west of the dance house, and the menstrual hut was built on the edge of the village, farthest from the dance house. Family dwellings could be erected anywhere within the community. Family lodges were built by one's paternal relatives while the other structures were the product of a communal effort. They used readily available materials, forming a framework of saplings, and covering the walls and roof with mud and brush (Johnson 1978:357-358; Powers 1877:220-221).

Natural resources flourished in Patwin territory. They gathered seeds and plant foods and hunted game animals on the plains, shot or netted ducks and other migratory water fowl in

the thick tule marshes, and netted salmon and other fish in the rivers and streams. Some of these activities were conducted by groups or families assigned to particular resource areas by a village chief. Acorns were a staple in the Patwin diet. Two types of Valley oak and rarely, live oak acorns, were gathered at communally-owned groves (Johnson 1978:355). Common practice was to store abundant quantities of acorns in tall granaries to assure against hunger in years of poor harvest. Kroeber observed a Patwin granary more than eight feet tall and three feet in diameter (Heizer and Elsasser 1980:99). Women prepared the bitter crop by pulverizing the acorns, then leaching out the bitter tannic acid before making bread or acorn soup. At privately-owned gathering tracts on the plains, families gathered seeds, including sunflower, alfilaria, clover, bunchgrass, wild oat and yellow-blossom. The Patwin also collected a variety of bulbs, nuts, roots and berries. These included buckeye, pine nuts, juniper berries, manzanita berries, blackberries, wild grapes, brodiaea bulbs, and tule roots. To obtain salt, the Patwin scraped off rocks that were found near Cortina, burned a grass that grew on the plains, or obtained it in trade from the neighboring Pomo (Johnson 1978:355).

King salmon, silver salmon and steelhead trout that run from the ocean to freshwater rivers and streams were an important diet item. Explorers observed Patwin fishing for salmon with a boom net in 1854 (Heizer and Elsasser 1980: Figure 37). The Patwin also caught smaller fish and collected mussels from the river bottom. They attracted wild ducks by setting out realistic decoys, then drove the fowl into large nets stretched above the marshes. Hunters also netted mud hens, geese and quail. The Suisun tribelet pursued waterfowl in tule rafts (Powers 1877:220). The Patwin hunted large game, such as tule elk, deer, antelope and bear, and took many varieties of small animals, reptiles, insects and birds either to eat or to use for ceremonial and practical materials (Johnson 1978:355).

The ceremonial life of the Patwin was centered on the Kuksu cult system, which features one or more secret societies, each with its own dances and rituals. The Kuksu cult occurs among several north central California tribes, but it was more elaborate among the Patwin who possessed three secret societies: the Kuksu, ghost and Hesi types, each with a slightly different purpose. The ghost society stressed initiation, the Kuksu emphasized curing and shamanistic functions, and the Hesi elaborated on ceremonial dance (Johnson 1978:353). In addition to ritual duties, shamans were called upon to heal the sick by applying native medicines or by sucking out the offending spiritual cause of the illness. The Patwin generally buried their dead, although the tribelets furthest south may have cremated the deceased. The Patwin near Colusa bent the body, wrapped it with strings of shell money, and covered it with an animal skin secured with ropes. they interred the corpse with material goods in a grave situated within a village or within 100 yards of a dwelling or dance house (Kroeber 1925:359-361).

Historical accounts of the Patwin include the early mission registers of baptisms, marriages and deaths of Indians taken to Mission Dolores and Mission San Jose as early as 1800. In 1823, Mission San Francisco Solano was established in nearby Sonoma and it continued the missions' work until about 1832-1836, when all the missions were secularized. During this time, several Mexican land grants were awarded and large ranchos were established on Putah and Cache creeks (Johnson 1978 :351).

Pre-contact population is difficult to estimate, but a survey of various sources seems to indicate that the Patwin may have numbered 4000 before their first encounter with non-Indians. The Patwin suffered from a succession of devastating impacts to their numbers: missionization, punitive military expeditions, and fatal confrontations with ranchers took their toll on the populace. John Work's party of trappers from the Hudsons Bay Company came down the Sacramento River in 1832, returning up the river in 1833. They unintentionally introduced a deadly disease to native California and, in their wake, a malaria epidemic swept through the Sacramento Valley. Just four years later, in 1837, smallpox raged through the villages and, as a result of these diseases, up to 75 percent of the Patwin died (Cook 1955). Those who survived these tragedies eventually settled on small reservations or worked as ranch laborers. Throughout the 1800s and 1900s, the population decreased; in 1972, the Bureau of Indian Affairs counted only 11 Patwin in the entire territory. Three reservations -- Colusa, Cortina and Rumsey -- remain active; they are occupied primarily by descendants of Wintun and other groups (Johnson 1978:352).

Historical Background

The history of the region around the City of Dixon has always been associated with agriculture. The development of the area centered on the development of farms and the transportation facilities necessary to bring the farm produce to market.

An early settler in the vicinity was Elijah Silvey, who settled on property on the old road from Napa to Sacramento in 1852. He built a house and corral (he had established a herd of about 100 milk cows) which became a waystation on the road. Eventually a trade center named Silveyville developed around the spot. This was short-lived as the whole community was moved five miles east to the line of the railroad upon its construction in 1868 (Hoover, Rensch and Rensch 1970:523). The name lives on in the designation of Silvey Township, but the town quickly disappeared after the establishment of Dixon as the main freight depot in the area. The Silveyville post office was discontinued in 1871 (Frickstad 1955:193).

The town of Dixon was originally to have been named Dickson, after Thomas Dickson who donated ten acres for the townsite and freight depot. How the spelling came to be changed is open to debate. Gudde (1969:91) ascribes it to an error by the postal service. Gregory (1912:72) indicates that the first load of freight sent to the new depot was labelled Dixon, and the practice continued. In any event, the correct spelling is retained in the name of the creek that borders the townsite on the north and east. Dixon grew as a shipping and marketing point for the extensive agricultural industry that developed in eastern Solano County.

The project vicinity, being convenient to the new station, went into agricultural production in short order. The county map of 1890 shows all of the land around Dixon in private ownership, mostly in 160 acre parcels. The 1906 USGS map, however, shows very few residences outside the town limits, indicating agriculture and pasturage were the primary land usages. The landowners within the project area in 1890 were J.M. Dudley, J.G. Brinkerhoff,

William Dittmers and H.W. Keisker. By 1909, again referring to the county map, Dudley's widow (and Thomas Dickson's daughter) Eliza owns the Dudley property, G.A. Martin has taken over Brinkerhoff's parcel, Dittmers still owns his parcel and Keisker's widow Meta owns that parcel.

RESEARCH

A records search was conducted through the Northwest Information Center of the California Archeological Sites Inventory at California State University, Sonoma. A copy of the USGS 7.5' topographic quadrangle showing the project area was submitted to the Information Center. The review indicated that no formal cultural resources inventory has been conducted in or in the immediate vicinity of the project area and no prehistoric resources recorded in the project vicinity. However, the Vaughn House is listed on the State Historic Properties Directory (Appendix 1). This listing resulted from a survey of historical and architectural resources conducted by the Vacaville Planning Department (Office of Historic Preservation 1986:9).

The sources consulted by the Information Center are listed in Appendix 1. These include standard historical references and various registers of historic properties, among these, the National Register of Historic Places, California Historical Landmarks and the California Inventory of Historic Resources.

We were informed by Wade and Associates that the Dudley House, an older structure than the Vaughn House, was also located on the subject property. The current condition of the Vaughn House and the Dudley House is described in the Results section below, along with conclusions on the significance of the properties.

FIELD INVESTIGATIONS

The field inspection of the bulk of the property was conducted between April 27 and 29, 1993, by a team of three archeologists headed by Robert Gerry (resumés, Appendix 2). Due to difficulty in contacting a landowner to obtain rights-of-access, a 138-acre parcel was surveyed on May 12.

The survey technique employed was complete coverage. The project area was walked in parallel transects with no more than 20 meters of space between the members of the field team. Although almost all the land is in agricultural use, visibility was generally good because crops had either just been harvested or the fields had just been prepared for planting. Areas that could not be effectively surveyed included an unused field (overgrown with waist-high weeds

and grasses), a field with a mature hay crop and a paved contractor's yard. Areas that have received too much recent impact to merit inspection included two large excavated ponds, the site of a motel razed several years ago and a livestock auction yard with grandstands and other structures, paving and extensive vehicle/animal disturbance. The areas of cursory or no field inspection are depicted on Map 2.

Several currently occupied structures exist on the property, but most are either recent or very plain in architecture. Some are mobile homes. No evidence at all of prehistoric occupation or use of the land was found.

RESULTS

Comparing the current structures observed on the property with those depicted on the 1952 USGS map reveals that only 14 of the 26 structures were built prior to 1952. Comparison with the 1906 USGS shows that none of the buildings were present in that year.

The form recording the Vaughn House as an historic property (prepared by Pamela McGuire) ascribes an estimated date of construction of 1910. Given the results of examining the USGS maps, this appears plausible, but the county maps of 1890 and 1909 show this portion of the project area to be owned by the Dudley family. The 1910 date is probably a bit too old.

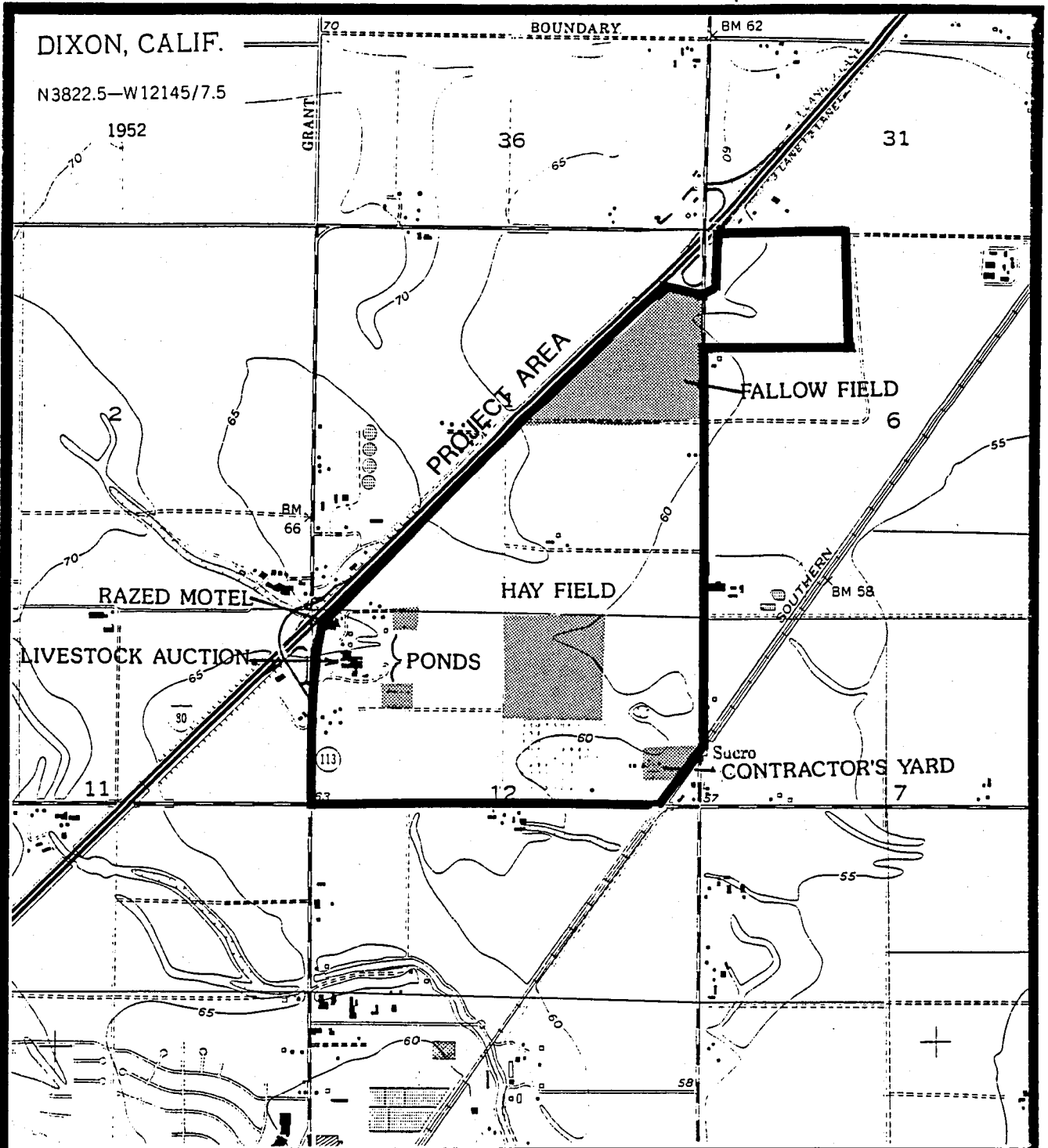
The significance of the structure is described as follows:

[It] is notable as a turn-of-the-century modest Craftsman bungalow located outside Dixon's city limits. It is a representative rural homestead of that era in the California Central Valley. Research is recommended to discover occupants and land use patterns. Howard and Ida Vaughn were the original owners. Vaughn was a sheep rancher who owned acreage in various places surrounding Dixon. Vaughn operated his sheep ranching business from this property.

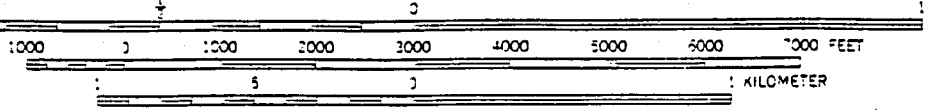
As the house is not architecturally distinctive, its merit lies in being a representative example of rural architecture and life in the early 1900s. This value has been severely compromised by the construction of the livestock auction facilities virtually in the front yard of the house. These modern facilities have reduced the integrity of setting, feeling and association of the house. Nevertheless, since the house is listed on the California Register of Historical Resources, adverse effect to the property may be considered a significant environmental effect under recently enacted legislation (AB 2881).

We conclude that the house may be significant at the local level and a fairly good representative of a Craftsman bungalow, however, it does not appear to possess the qualities of significance that would qualify it for the National Register of Historic Places. However, it is

SURVEY COVERAGE



SCALE 1:24000



CONTOUR INTERVAL 5 FEET

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QUADRANGLE LOCATION

164' 293 MILS
0.44' 13 MILS

an "historical resource" under the recent ammendment to the California Environmaental Quality Act (CEQA) and, therefore, mitigation of adverse effect should be considered.

The Dudley House is, on the surface, more historic in appearance than the Vaughn House and it is, in fact, older. However, it has been moved twice. This precludes eligibility for the National Register, except in cases of extreme significance by other criteria. Some of the history of the house was described in a newspaper article and substantiated by an interview with the current occupants. The Dudley House is not listed on the California Register of Historic Places.

IMPACTS AND RECOMMENDATIONS

The lack of positive results regarding archeological sites during the survey is not surprising given the long history of agriculture in the area. In particular, land levelling and filling of the old sloughs would be very likely to obscure surface evidence. The absence of surface evidence does not necessarily prove that there are no cultural resources on the property. This was certainly the case with CA-SOL-363, located within two miles of the project area. This major site with numerous burials was discovered only after earth-moving for a subdivision had begun. To avoid this possibility, we recommend that subsurface testing be conducted in sensitive areas prior to beginning any ground disturbance associated with a specific development.

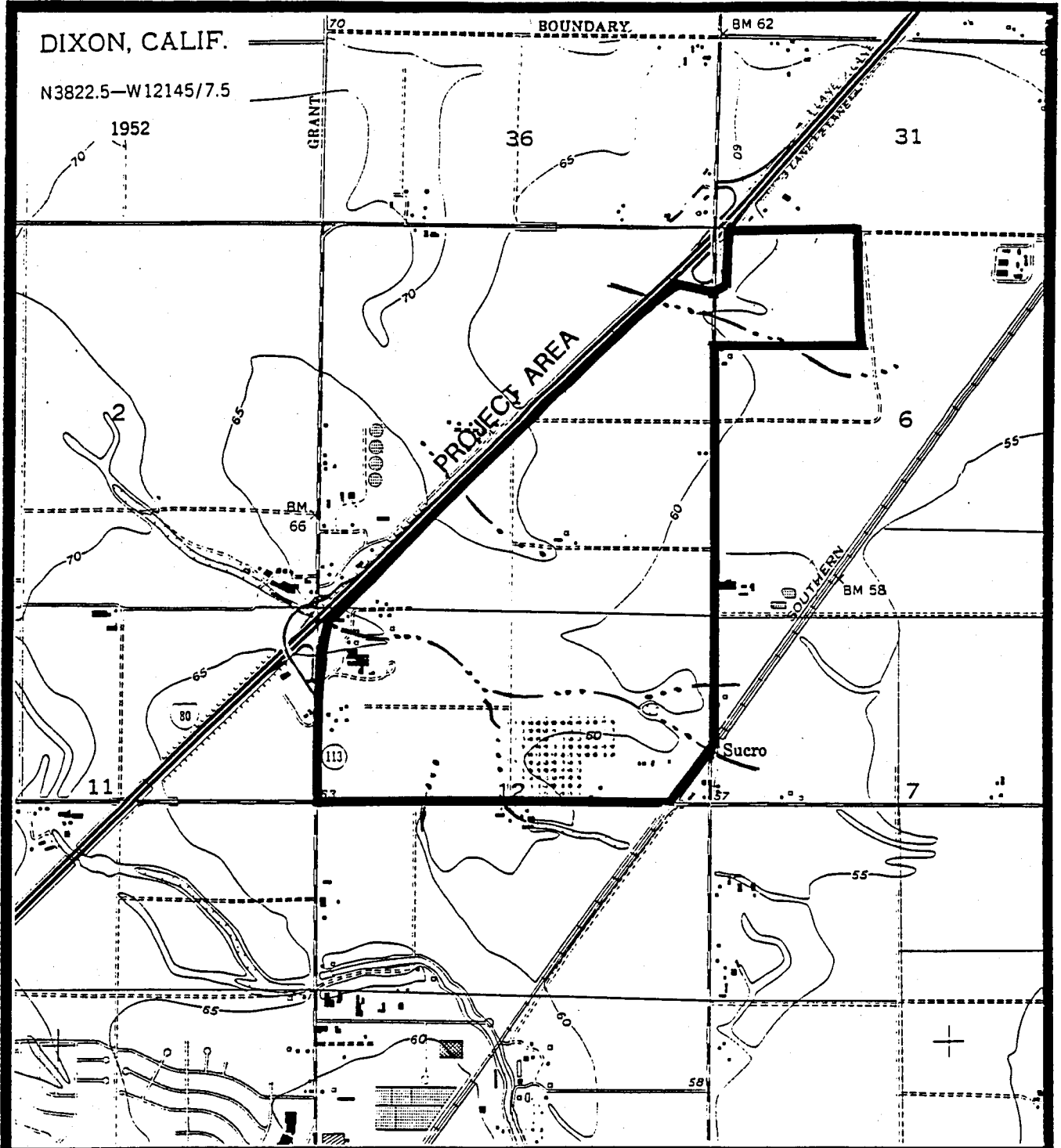
The sensitive areas in this case are the near vicinity of the old slough channels. Map 3 indicates the former routes of drainages in the project area. This was derived from examination of the 1906 USGS map. Although agriculture had been practiced in the area for several years at this time, the land contours had not been extensively modified at that time. In any event, the 1906 map is the earliest to give contours for the property.

We recommend that any development that includes a sensitive area as indicated on Map 3 be preceded by testing along the line of the old slough course. This testing can be done by backhoe trenching at intervals through the sensitive area or by any other means that a qualified archeologist deems adequate, if approved by supervisory agencies.

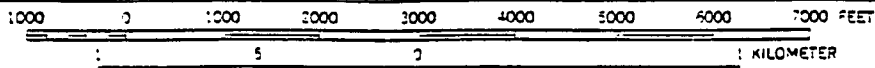
The Vaughn and Dudley Houses are not of sufficient historic importance to require unusual efforts at mitigation. Under CEQA, avoidance of impact is always the best alternative regardless of the importance of the cultural resource. We have been informed that the owners of the Dudley House intend to move it out of the project area. Since it has already been moved twice, this will not constitute adverse effect to the property. If it is feasible to develop the property in such a way as to avoid impact to the Vaughn House, this would be desirable. Moving the structure out of the project area would also avoid major adverse effects.

If neither avoidance nor moving the structure is feasible, for either the Vaughn or Dudley Houses, then the structure should be fully recorded before demolition. This would involve drawing accurate elevations and floor plans and complete photographic documentation with all record submitted to the Office of Historic Preservation.

FOSSIL WATERCOURSES

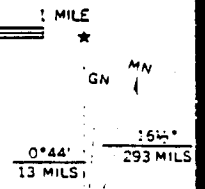


SCALE 1:24 000



CONTOUR INTERVAL 5 FEET

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APPENDIX 1

Information Center Correspondence

California
Archaeological
Inventory



ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE

MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO

SAN MATEO
SANTA CLARA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Department of Anthropology
Sonoma State University
Rohnert Park, California 94928
(707) 664-2484

16 September 1991

File No: 91360

Jodi Schriefer
Wade Associates
2140 Professional Drive, Suite 140
Roseville, California 95661

re: Dixon Specific Plan, Solano County, California.

Ms. Schriefer:

There is a possibility of prehistoric and historic cultural resources and archival and field study is recommended.

Review of records and literature on file at this office indicates that the proposed project area contains no recorded prehistoric or historic archaeological sites listed with the California Archaeological Inventory. The State Office of Historic Preservation lists the **Vaughn House** on the Historic Properties Directory. Other state and federal inventories (see attached) list no historic properties within the project area. This office has no record of an archaeological study of the project area.

The proposed project area is situated on the floor of the Central Valley, north of Dudley Creek. Two prehistoric habitation sites have been identified in the general area in environmental settings similar to that of the project area. There is a moderate possibility of prehistoric cultural resources within the project area.

Historically, settlement in this area began in the mid-1800s. Several structures appear within the project area on the 1952 Dixon USGS topographic quadrangle. The **Vaughn House** on Route 113 at Interstate 80 is listed on the State Historic Properties Directory and may be within the project area. The Office of Historic Preservation has determined that buildings and structures 45 years or older may be of historic value. If the project area contains such properties, they should be evaluated, prior to commencement of project activities. It is anticipated that archaeological deposits and/or structural remains reflecting settlement and early commercial activities exist within the project area.

Review for possible historic structures has included only those sources listed in the attached bibliography and should not be considered comprehensive with respect to architecture.

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300-425
01

If cultural resources are encountered during the project, avoid altering the materials and their context until a cultural resource consultant has evaluated the situation. Project personnel should not collect cultural resources. Prehistoric resources include chert or obsidian flakes, projectile points, mortars, and pestles; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits, often in old wells and privies.

Identified cultural resources should be recorded on forms DPR 422 (archaeological sites) and/or DPR 523 (historic properties) or similar forms.

Thank you for using our services. If you have any questions, please do not hesitate to contact us.

Sincerely,



Vicki R. Beard
Researcher II

LITERATURE REVIEWED

In addition to archaeological maps and site records on file at the Northwest Information Center, California Archaeological Inventory, the following literature was reviewed:

Gudde, Erwin G.

1969 **California Place Names: The Origin and Etymology of Current Geographical Names.** Third Edition. University of California Press, Berkeley and Los Angeles.

Hoover, Mildred Brooke, Hero Eugene Rensch, and Ethel Rensch, revised by William N. Abeloe

1966 **Historic Spots in California.** Third Edition. Stanford University Press, Stanford.

Johnson, Patti J.

1978 Patwin. In **California**, edited by Robert F. Heizer, pp. 350-360. **Handbook of North American Indians**, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Kroeber, A.L.

1925 **Handbook of the Indians of California.** Bureau of American Ethnology, Bulletin 78, Smithsonian Institution, Washington, D.C. (Reprint by Dover Publications, Inc., New York, 1976)

1932 **The Patwin and their Neighbors.** **University of California Publications in American Archaeology and Ethnology** 35(2):15-22. University of California Press, Berkeley. (Reprint by Kraus Reprint Corp., New York, 1965)

National Park Service (compiler)

1990a **National Register of Historic Places Index by Property Location: Listed Properties (Computer Listing for 1966 through 19 July 1990).** National Park Service, United States Department of the Interior, Washington, D.C.

1990b **National Register of Historic Places Index by Property Location: Determined Eligible Properties (Computer Listing for 1966 through 19 July 1990).** National Park Service, United States Department of the Interior, Washington, D.C.

State of California Department of Parks and Recreation

1976 **California Inventory of Historic Resources.** State of California Department of Parks and Recreation, Sacramento.

State of California Office of Historic Preservation

1986a **Point of Historical Interest Log.** State of California Office of Historic Preservation, Sacramento.

1986b **Survey of Surveys: A Summary of California's Historical and Architectural Resource Surveys.** State of California Office of Historic Preservation, Sacramento.

1990a California Historical Landmarks. California Department of Parks and Recreation, Office of Historic Preservation, Sacramento.

1990b Historic Properties Directory. Listing by City (through 27 July 1990). State of California Office of Historic Preservation, Sacramento.

APPENDIX 2

Resumés
Robert A. Gerry
James R. Oglesby
Marvin Marine

RESUMÉ

ROBERT A. GERRY
President

March 1, 1992

PROFESSIONAL EXPERIENCE

Mr. Gerry has twenty years of extensive experience in both the public and private sectors, and he has directed all types of cultural resource-related projects, ranging from field survey, test excavations, data recovery programs, intensive archival research and cultural resource management. He has completed archeological work in most cultural areas of California and the western Great Basin.

EDUCATION

Graduate studies - Anthropology - California State University, Sacramento, 1972-1977
B.A. - Anthropology - University of Illinois, Chicago Circle, 1972

RECENT PROJECTS

Mr. Gerry was field director for a cultural resources survey of about 18,640 acres within the Naval Petroleum Reserve No. 1, Kern County, California. The project employed a stratified random sampling strategy and resulted in the recording of 112 cultural resources, and preparation of a management plan. He also directed a subsequent excavation program for evaluation of significance. Additionally, he served as field director for archeological surveys on the Plumas, Stanislaus, El Dorado and Six Rivers National Forests.

He was field director and primary report writer on several linear surveys of considerable length - including the San Joaquin Valley Pipeline (157 miles) for Shell Oil, the Point Arena-Dunnigan fiber optic cable (137 miles) and the Medford, Oregon, to Redding, California fiber optic cable (151 miles), the Oregon and Idaho portions of the Spokane to Boise fiber optic cable, and the San Bernardino to San Diego fiber optic cable, for American Telephone & Telegraph Company. He also assisted on the 170 mile Pacific Pipeline survey on the southern coast of California.

He produced the computer program that stored, sorted and printed out data abstracts for 1604 sites involved in the Enlarged Shasta Dam and Alternatives Class I Cultural Resources Overview for the Bureau of Reclamation. He directed the transit-and-stadia mapping of a prehistoric/historic site complex covering some 170 acres in El Dorado County and drafted the final map.

Mr. Gerry has developed a speciality in bridge replacement evaluations, completing two such studies in Santa Barbara County.

PEAK & ASSOCIATES, INC.

RESUMÉ

JAMES R. OGLESBY
Staff Archeologist

May 15, 1993

PROFESSIONAL EXPERIENCE

Mr. Oglesby has experience in a many excavations and survey projects throughout California and in the Western Great Basin areas in California, Oregon, and Idaho, and has worked as a monitor in New Mexico. He has conducted and directed laboratory work and field survey, and has written and assisted in producing a number of survey and excavation reports. He is currently a full-time staff member at the office of Peak & Associates, Inc.

EDUCATION

B.A. - Anthropology - University of California at Davis, 1988
Post-Graduate Studies: Archeological Theory, Lithic Technology, Theory of Hunter-Gatherers

RECENT PROJECTS

Most recently, Mr. Oglesby has participated in a 1,400-acre survey of McClellan Air Force Base in Sacramento, and in a survey and test excavation of a prehistoric site in Dixon.

At CA-Pla-329, the Tofanelli Ranch site in Auburn, California, Mr. Oglesby performed laboratory debitage and statistical analysis, authored, and produced an excavation report. He has also written survey reports and assisted in the writing of several excavation and survey reports in Calaveras, Placer, Lake, Plumas, Solano, Yolo, and Ventura counties.

Mr. Oglesby has participated in a 2,500-acre survey in Battle Mountain, Nevada, 9,000-acre survey in the Plumas National Forest, a 4,000-acre survey at Cook Ranch in El Dorado County, a 1,600-acre survey in Stanislaus County, a 3,100-acre survey in Yuba County, and as a surveyor and graphic artist for the 18,640-acre Naval Petroleum Reserve #1 survey in Elk Hills in Kern County. He has also been involved in a large number of other, smaller, surveys in most areas of California.

He served as an archeological technician for several long, linear surveys, including a 170-mile survey of the Pacific Pipeline project in Southern California, a 240-mile survey from Boise, Idaho, through Oregon, to the Washington border for an AT&T fiber optics line, and a number of shorter linear surveys under 100 miles for fiber optic lines, including the AT&T HAW-5 line and San Bernardino to San Diego cable, and pipelines. He has also assisted in the transit and stadia mapping of a historic site complex covering 80 acres in Nevada County and has drafted final maps of prehistoric, historic and dual component sites in California.

Excavation work has been performed by Mr. Oglesby in Calaveras, Contra Costa, El Dorado, Inyo, Kern, Lake, Los Angeles, Nevada, Placer, Plumas, Sacramento, and Ventura counties and in the Basin Ranges in the California White Mountains.

RESUMÉ

MARVIN LEE MARINE

August 1, 1992

PROFESSIONAL EXPERIENCE

Mr. Marine has compiled an excellent record of supervision of excavation and survey projects for both the public and private sectors over the previous twenty-eight years. He worked as both a technician and as a supervisor on projects throughout California, Oregon, Nevada, Washington, Utah, Arizona, and New Mexico.

RECENT EXPERIENCE

Mr. Marine has recently undertaken the laboratory supervision and cataloging of historic artifacts for the Downtown Plaza Expansion Project in Sacramento. Prior to this he served as a technician on the test excavations of prehistoric sites on the Naval Petroleum Reserve No. 1 near Buttonwillow.

Mr. Marine worked as field supervisor during the excavation of a large prehistoric village site and associated burials in excess of 600 in the lower foothills of California. He has additionally served recently as a technician during the excavation of a prehistoric rock art site in the Plumas National Forest.

Mr. Marine, of Maiduan and Ohlone descent, has also been retained by Peak & Associates, Inc. as a Native American observer on several projects.

Survey and excavation experience over the past twenty-eight years includes work in nearly every county in the State of California, and additional excavations in Oregon, Nevada, Washington, Utah, Arizona, and New Mexico.

Mr. Marine has been employed as an archaeologist with the U.S. Forest Service, State Parks and Recreation, and several private consulting firms, including Peak & Associates, Inc.

OTHER

Mr. Marine is a member of the Federated Indians of California, the Inter-Tribal Council of California, the Sacramento Indian Center, California Indian manpower Consortium, Sierra Mono Museum, Fresno American Indian Council, Central Valley Indian Health Project.

Military Status: U.S. Army, served in Republic of Vietnam; awarded Bronze Medal. Honorable discharge, 1969.

TRAFFIC REPORT

**PREPARED BY
FEHR & PEERS ASSOCIATES TRANSPORTATION CONSULTANTS**

Fehr & Peers
3.18.94

I. INTRODUCTION

The Northeast Quadrant Specific Plan encompasses approximately 640 acres in an area bounded by Interstate 80 on the north, Pedrick Road on the east, North First Street on the west and Vaughn Road on the south in Dixon (see Figure 1). The land is currently undeveloped and is used primarily for agricultural purposes. The Specific Plan provides for exclusively non-residential land uses including a mix of highway commercial, community commercial, light industrial and professional office uses.

II. EXISTING CONDITIONS

The area surrounding the proposed specific plan is largely undeveloped. Therefore, the current traffic volumes at the intersections and on the roadways are relatively low and most of the circulation network operates well.

Intersections

Eight study intersections were identified by the City of Dixon for analysis for this project. Fehr & Peers Associates conducted AM and PM peak hour traffic counts at the eight study intersections, all of which are currently unsignalized. Figure 2 shows the location of each study intersection, while Figure 3 displays the existing AM and PM peak hour turning volumes at the study intersections.

Roadways

North First Street begins at I-80 and runs south into the City of Dixon. This road, which serves as SR 113, currently carries approximately 7,500 daily vehicle trips north of Vaughn Road and 8,800 daily trips north of Stratford Avenue¹. Pedrick Road is also a north-south road which provides access to the eastern portion of the City. This street begins as Road 98 north of Woodland and runs south becoming Pedrick Road in the City of Davis. The road then crosses I-80, passing by the specific plan area, and then continues south ending at Main Prairie Road south of Dixon. The traffic on this street ranges from 1,500 to 2,000 daily trips near the project. Vaughn Road is an east-west road which begins at North First Street and ends at Runge Road. It currently carries approximately 650 daily trips.

¹ Daily traffic volumes on the study roadways were estimated by factoring the PM peak hour volumes.

Interchanges

North First Street is a "skewed" interchange with a "fly-over" ramp from westbound I-80 to southbound North First Street. The Pedrick Road interchange is a simple diamond interchange with four-way stop-controlled intersections at the ramp termini. The I-80 interchanges with North First Street and Pedrick Road were not analyzed as part of this specific plan study. However, a substantial amount of project traffic will be using these interchanges to access I-80 and it is likely that both interchanges will require modifications to accommodate the expected volume of traffic.

Level of Service Analysis Methodology

Level of Service (LOS), the measure by which roads and intersections are analyzed, is an alphabetic performance rating of a facility from A (best) to F (worst). Service levels for signalized intersections were determined based on the methodology in the *Transportation Research Circular 212*, Transportation Research Board, 1980. Table 1 summarizes the LOS criteria used for the analysis as established by the City of Dixon.

The service level at a signalized intersection was determined by computing the critical volumes approaching the intersection as a percentage of the total intersection capacity during the peak hour. The LOS for a signalized intersection is a function of the volume-to-capacity ratio computed for each peak hour.

The service level at a two-way stop-controlled unsignalized intersection was based on the reserve capacity method identified in the *Highway Capacity Manual - Special Report 209*, Transportation Research Board, 1985. This methodology computes the reserve capacity of each movement through the intersection; therefore, each turning movement has its own level of service. For an all-way stop controlled intersection, the average stopped delay was computed for the intersection according to the procedure identified in *Transportation Research Circular 373*, Transportation Research Board, 1991.

Standards of Significance

The City of Dixon established level of service (LOS) standards for the various facilities in the study area. Roadway segments and signalized intersections are considered to be impacted if the project causes a change in LOS from acceptable levels (LOS A, B, C, or D) to unacceptable levels (LOS E or F). For unsignalized intersections, the worst turning movement must not exceed LOS E.

Transit impacts are identified as significant if the project is not served by transit services. Bicycle and pedestrian impacts are considered significant if the project would create the potential for new traffic-related conflicts with existing or planned bicycle and pedestrian routes.

use this
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LOS
discussion

Existing Levels of Service

Table 2 summarizes the existing levels of service for each study intersection. As expected in a relatively undeveloped area, the results indicate that each intersection operates within the City's threshold during the AM and PM peak hours. The worst operations include the left turns from the side street at the North First Street intersections with Industrial Way and Stratford Avenue, which operate at LOS D during the PM peak hour. Similar to the intersections, all road segments currently operate acceptably.

III. IMPACTS AND MITIGATION MEASURES

Specific Plan Improvements

Based on the lane assumptions in the *Preliminary Draft Northeast Specific Plan*, Wade Associates, September 29, 1993, Pedrick Road, Vaughn Road and North First Street have been identified as four-lane arterial roadways. Within the site, Arterial B, Mistler Road and the northern section of Professional Drive are also identified as four-lane roads. The other major roads within the site are identified as commercial collectors, with initial provisions for two lanes, but can ultimately accommodate four lanes. These lane configurations were assumed for the EIR analysis.

For intersection operations, assumptions were made regarding the number of turn lanes based on the number of lanes of the cross streets. The following table displays the lane assumptions for intersections.

| ASSUMED LANE GEOMETRY FOR FUTURE INTERSECTIONS | | | | |
|--|-------------------|-----------------------------|---------|-------|
| Facility Type | Intersection Type | Intersection Approach Lanes | | |
| | | Left | Through | Right |
| 4-lane arterial | Full | 1 | 2 | 1 |
| 2-lane arterial | Full | 1 | 1 | 1 |
| 4-lane arterial | T | 2 | 0 | 1 |
| 2-lane arterial | T | 1 | 0 | 1 |

The Solano County Congestion Management Program requires that the Cities in Solano County adopt a Trip Reduction Ordinance (TRO). These ordinances will attempt to effect a 25% reduction in commute trips and requires that all major employers and major projects file a Transportation Management Plan (TMP). The Northeast Quadrant Specific Plan includes the following TMP provisions.

- Distribution of information on alternative modes of travel (busses, bicycles, etc). to employees within the specific plan.
- Carpool and vanpool matching services to assist employees with similar origins, destination, and schedules in finding other employees with whom to share a ride.
- Showers and lockers at employment locations to encourage pedestrian and bicycle commuting.

42,341 50 SHEETS PER CASE 1 SQUARE
 42,342 100 SHEETS PER CASE 2 SQUARE
 42,343 200 SHEETS PER CASE 4 SQUARE
 42,344 400 SHEETS PER CASE 8 SQUARE
 42,345 20 RECYCLED WHITE SQUARE
 MADE IN U.S.A.



NET TRIPS

Trip Generation Table 3

| Land Use | KSF | AM PEAK HOUR | | PM PEAK HOUR | | DAILY |
|------------------------------|--------|--------------|-------|--------------|-------|--------|
| | | IN | OUT | IN | OUT | |
| Highway Commercial | 584.79 | 898 | 898 | 1010 | 1010 | 22,456 |
| | 528.16 | 811 | 811 | 913 | 913 | 20,425 |
| | 435.60 | 669 | 669 | 753 | 753 | 16,727 |
| COMMUNITY/SERVICE Commercial | 420.35 | 297 | 196 | 823 | 824 | 16,478 |
| | 144.84 | 69 | 46 | 145 | 145 | 2,896 |
| OFFICE (PROFESSIONAL/ADMIN) | 527.94 | 419 | 47 | 87 | 347 | 3,338 |
| | 69.26 | 93 | 9 | 18 | 77 | 734 |
| | 717.43 | 533 | 61 | 110 | 441 | 4,244 |
| LIGHT INDUSTRIAL (PI) | 432.55 | 202 | 24 | 49 | 197 | 2,050 |
| | 215.62 | 101 | 11 | 25 | 97 | 1,023 |
| | 223.24 | 105 | 11 | 25 | 102 | 1,058 |
| | 829.81 | 388 | 44 | 94 | 377 | 3,932 |
| | 176.41 | 83 | 9 | 19 | 81 | 837 |
| | 617.46 | 265 | 57 | 70 | 280 | 2,926 |
| TOTAL | | 4,933 | 2,893 | 4,791 | 5,644 | 99,124 |

WITH 60% REDUCTION FOR PAYS BY FOR HIGHWAY COMMERCIAL
 30% REDUCTIONS FOR PAYS BY FOR COMMUNITY COMMERCIAL
 15% REDUCTION FOR GROSS LEASABLE AREA FOR PI & OFFICE USES
 20% REDUCTION FOR INTERNALIZATION OF TRIPS.

- Designation of an on-site TSM coordinator to assist in disseminating information and monitoring the status of any Transportation Management Activities.

Traffic Forecast Methodology

The methodology for the development of traffic forecasts was set by the City of Dixon in order to maintain consistency with the assumptions used for the General Plan analysis. The City's direction for assumptions on traffic forecasts are outlined in a memorandum from J. Daniel Takacs, P.E., Consulting Traffic Engineer, September 30, 1993. This memo include direction on a variety of assumptions including trip generation, distribution, and floor-to-area ratios.

Traffic forecasts were developed for the following scenarios.

- Existing plus Project Conditions - Projected-generated traffic was manually added to the existing traffic volumes based on trip generation and distribution assumptions prescribed by the City of Dixon (see discussion below).
- Cumulative Conditions without the Project - Forecasts were provided by the City of Dixon which included the following assumptions regarding the other proposed developments in the City: 100 percent of the residential units and 80 percent of the non-residential development in the Southpark and the Southwest Plan areas.
- Cumulative Conditions with the Project - Projected-generated traffic was manually added to the traffic projections for Cumulative Conditions without the Project. Site traffic was generated and distributed based on assumptions prescribed by the City of Dixon for cumulative conditions (see discussion below).

Project Trip Generation

Table 3 summarizes the estimated trip generation of the Northeast Quadrant Specific Plan project. The totals are based on trip generation rates identified by the City of Dixon consistent with the General Plan Circulation Element. As shown on Table 3, a buildout of the project is expected to generate approximately 99,124 new average daily trip ends. These totals include certain assumptions for pass-by traffic and internalization of trips within the Northeast Quadrant Specific Plan area (see Table 3).

Trip Distribution

The distribution of project trips was identified by the City of Dixon. Different distribution assumptions were prescribed for the existing and cumulative scenarios. Table 4 summarizes the trip distribution percentages utilized for the assignment of project traffic for both the existing and cumulative scenarios.

Under existing plus project conditions, more than 50 percent of the project traffic is expected to access the site via Interstate 80, with another 31 percent oriented to and from the south via Pedrick Road and North First Street. In the cumulative condition, the estimated proportion of project traffic using Interstate 80 is more than 70 percent, with the majority of the remaining traffic dispersed to the south and north along Pedrick Road and North First Street.

Project Impacts - Existing Conditions

Traffic forecasts were developed for existing plus project conditions by adding the project to the existing counts. Figure 4 displays the peak hour intersection forecasts for each study intersection. Based on these volumes, traffic signals would be warranted at all locations. Therefore, signals have been assumed at these locations in the analysis.

Table 5 summarizes the peak hour intersection operations under existing plus project conditions in comparison to the existing conditions. It should be noted that the existing plus project analysis assumes additional lanes as identified in the Specific Plan. As this shows, the attraction of the commercial land uses along Interstate 80 places a substantial burden on the interchanges with Pedrick Road and North First Street. The intersection of Arterial B with North First Street will require improvements as all project-bound traffic must enter the site via a left turn at the intersection. In addition, the sections of Pedrick Road and North First Street between Interstate 80 and the first major cross street will operate unacceptably as four-lane arterials. A large volume of project traffic will also be added to Interstate 80.

Project Impacts - Cumulative Conditions

Figures 5 and 6 display the peak hour intersection traffic forecasts for the study locations roadways for the Cumulative Condition without and with the project, respectively. Table 5 summarizes the results of the intersection analysis for both cases.

The results of the cumulative conditions analysis are similar to that for the existing plus project analysis in that the interchanges of Pedrick Road and North First Street with Interstate 80 will require significant improvement, along with sections of both North First Street and Pedrick Road. Within the project site, the intersection of Arterial B with Commercial Drive is expected to operate unacceptably during the PM peak hour. Like the interchange impacts, this deficiency is a result of the large volumes of traffic entering the site on Arterial B from Interstate 80 via North First Street.

Required Improvements

Figure 7 displays the configuration of the local roadways and intersections necessary to accommodate project traffic within the City's thresholds. As this shows, the key to adequate operations of the area roads will be the ultimate improvements to the North First Street and Pedrick Road interchanges with Interstate 80. Both facilities are expected to accommodate significant levels of local and regional traffic. In order to serve the high volumes of commercial traffic at the North First Street interchange, the ramps should be oriented to provide direct access into the site as well as serve other area traffic demand. This will eliminate the need for project-bound traffic to turn left into the site at Arterial B or Vaughn Avenue. It will also improve the operation of the Arterial B/Commercial Drive intersection.

Separate studies should be performed in cooperation with Caltrans to identify the ultimate improvements needed at each interchange, as well as mainline I-80 considerations.

In addition, both Pedrick Road and North First Street should be widened to six-lane arterials between Interstate 80 and the first major cross street (i.e. to Arterial B for North First Street and to Professional Drive on Pedrick Road).

Impacts and Mitigation Measures

The following summarizes the impacts of the project under both existing and cumulative conditions, along with their proposed mitigation measures.

Existing Plus Project Conditions

1. Unacceptable Levels of Service for Various Intersections.

As shown in Table 5, four of the study intersections are projected to experience unacceptable levels of service during one or both peak periods as a result of the project. These are considered *significant impacts*.

- **I-80 Westbound Ramps/Pedrick Road** - operates at LOS F during the PM peak hour. The large volume of project traffic, particularly the westbound left turning movement, cannot be adequately accommodated by the existing intersection.
- **I-80 Eastbound Ramps/Pedrick Road** - operates at LOS F during both the AM and PM peak hours. Heavy eastbound right turns and northbound movements cause unacceptable operations.
- **I-80 Eastbound Ramps/North First Street** - operates at LOS E during the PM peak hour. This location is primarily affected by heavy northbound and eastbound turning movements.
- **North First Street/Arterial B** - operates at LOS F during the PM peak hour. Heavy southbound left turns and westbound right turns degrade the intersection operations.

Mitigation Measures

Implementation of the following mitigation measures would be required to reduce the impacts to a *less-than-significant level*.

- 1 a. Improve the Pedrick Road interchange with Interstate 80. Separate studies should be performed in cooperation with Caltrans to determine the ultimate improvements to the interchange.**
- 1 b. Improve the North First Street interchange with Interstate 80. Separate studies should be performed in cooperation with Caltrans to determine the ultimate improvements to the interchange. Direct access should be provided from the interchange ramps into the project site to avoid additional travel on the local street system.**
- 1 c. Construct additional turn lanes at the North First Street/Arterial B intersection. Double left turn lanes are required for the southbound approach of North First Street and the westbound approach of Arterial B. Double right turn lanes are also required for the westbound approach of Arterial B.**

2. Unacceptable Levels of Service for Various Road Segments.

Three major road segments are projected to experience unacceptable levels of service as a result of the project. These are considered *significant impacts*.

- **North First Street** - between Interstate 80 and Arterial B. Heavy volumes entering and exiting the site will use this route causing unacceptable operations for this four lane road.
- **Pedrick Road** - between Interstate 80 and Professional Drive. This four-lane road will also experience unacceptable levels of service as a result of the project.
- **Interstate 80** - Implementation of the project results in the addition of a significant volume of traffic on Interstate 80.

Mitigation Measures

Implementation of the following mitigation measures would be required to reduce the impacts to a *less-than-significant level*.

- 2 a. Widen North First Street to six lanes between Interstate 80 and Arterial B.**
- 2 b. Widen Pedrick Road to six lanes between Interstate 80 and Professional Drive.**

The above improvements should be implemented when the peak hour volume on the subject roads exceed 3,600 vehicles per hour.

2c. *Contribute to improvements on Interstate 80 adjacent to the project site. Separate studies should be performed in cooperation with Caltrans to determine the ultimate improvements to Interstate 80. The project proponent shall contribute a fair share amount toward these improvements.*

3. **Implementation of the project would introduce significant development to an area not directly served by public transit.**

Since the site is not in the City of Dixon, it is not directly served by public transit. This is considered to be a *significant impact*.

Since the Specific Plan includes the provision of bus routes, turnouts, transit shelters and park-and-ride lots and a Transportation Management Plan, sufficient facilities will be in place to accommodate the extension of transit services to the site. Therefore, no further mitigation measures are required.

4. **Implementation of the project would increase traffic volumes on surrounding streets which are planned to be used by bicyclists and pedestrians.**

Additional traffic-related conflicts will occur with bicyclists and pedestrians along the adjacent street system including Pedrick Road, North First Street and Vaughn Road. This is considered to be a *significant impact*.

Mitigation Measures

Implementation of the following mitigation measure would reduce the impact to a *less-than-significant level*.

4a. *Ensure Safety in the Design of Road Improvements. Design and implementation of roadway improvements shall ensure safe and efficient movement of bicyclists and pedestrians, including sidewalk paths, bicycle lanes and signalized crosswalks at major intersections, in accordance with City standards.*

5. **Implementation of the project includes a bikeway and pedestrian trail system for public use.**

Included in the Northeast Quadrant Specific Plan are provisions for a multimodal Class I trail system throughout the area. This is considered to be a *beneficial impact*. No mitigation is required.

Cumulative Conditions - With the Project

6. Unacceptable Levels of Service for Various Intersections.

As shown in Table 5, six of the study intersections are projected to experience unacceptable levels of service during one or both peak periods as a result of the project. These are considered *significant impacts*.

- **I-80 Westbound Ramps/Pedrick Road** - operates at LOS F during both the AM and PM peak hours. The large volume of project traffic, particularly the westbound left turning movement, cannot be adequately accommodated by the existing intersection.
- **I-80 Eastbound Ramps/Pedrick Road** - operates at LOS F during both the AM and PM peak hours. Heavy eastbound right turns and northbound movements cause unacceptable operations.
- **I-80 Eastbound Ramps/North First Street** -operates at LOS E during the AM peak hour and LOS F during the PM peak hour. This location is primarily affected by heavy northbound and eastbound turning movements.
- **North First Street/Arterial B** - operates at LOS F during the AM and the PM peak hour. Heavy southbound left turns and westbound right turns degrade the intersection operations.
- **North First Street/Vaughn Road** - operates at LOS F during the PM peak hour. The primary cause of the problem is the heavy southbound left turning movements and through movements on North First Street.
- **Arterial B/Commercial Drive** - operates at LOS E during the PM peak hour because of large volumes of site traffic accessing the site via Arterial B.

Mitigation Measures

Implementation of the following mitigation measures would be required to reduce the impacts to a *less-than-significant level*.

- 6a. ***Improve the Pedrick Road interchange with Interstate 80. Separate studies should be performed in cooperation with Caltrans to determine the ultimate improvements to the interchange.***

- 6b. *Improve the North First Street interchange with Interstate 80. Separate studies should be performed in cooperation with Caltrans to determine the ultimate improvements to the interchange. Direct access should be provided from the interchange ramps into the project site to avoid additional travel on the local street system.*
- 6c. *Construct additional turn lanes at the North First Street/Arterial B intersection. Double left turn lanes are required for the southbound approach of North First Street and the westbound approach of Arterial B. Double right turn lanes are also required for the westbound approach of Arterial B. These improvements, along with the provision of direct site access from the I-80 interchange will improve the operations of the intersection.*
- 6d. *Construct additional turn lanes at the North First Street/Vaughn Road intersection. Double left turn lanes are required for the southbound approach of North First Street and the eastbound approach of Vaughn Road. These improvements, along with the provision of direct site access from the I-80 interchange will improve the operations of the intersection.*

The provision of direct site access from the I-80 interchange will reduce the overall traffic volumes at the Arterial B/Commercial Drive intersection, and therefore can improve the operations to acceptable levels.

7. **Unacceptable Levels of Service for Various Road Segments.**

Three major road segments are projected to experience unacceptable levels of service as a result of the project. These are considered *significant impacts*.

- **North First Street** - between Interstate 80 and Arterial B. Heavy volumes entering and exiting the site will use this route causing unacceptable operations for this four lane road.
- **Pedrick Road** - between Interstate 80 and Professional Drive. This four-lane road will also experience unacceptable levels of service as a result of the project.
- **Interstate 80** - Implementation of the project results in the addition of a significant volume of traffic on Interstate 80.

Mitigation Measures

Implementation of the following mitigation measures would be required to reduce the impacts to a *less-than-significant level*.

- 7a. **Widen North First Street to six lanes between Interstate 80 and Arterial B.**
- 7b. **Widen Pedrick Road to six lanes between Interstate 80 and Professional Drive.**

The above improvements should be implemented when the peak hour volume on the subject roads exceed 3,600 vehicles per hour.

- 7c. **Contribute to improvements on Interstate 80 adjacent to the project site. Separate studies should be performed in cooperation with Caltrans to determine the ultimate improvements to Interstate 80. The project proponent shall contribute a fair share amount toward these improvements.**
- 8. **Implementation of the project would introduce significant development to an area not directly served by public transit.**

Since the site is not in the City of Dixon, it is not directly served by public transit. This is considered to be a *significant impact*.

Since the Specific Plan includes the provision of bus routes, turnouts, transit shelters and park-and-ride lots and a Transportation Management Plan, sufficient facilities will be in place to accommodate the extension of transit services to the site. Therefore, no further mitigation measures are required.

- 9. **Implementation of the project would increase traffic volumes on surrounding streets which are planned to be used by bicyclists and pedestrians.**

Additional traffic-related conflicts will occur with bicyclists and pedestrians along the adjacent street system including Pedrick Road, North First Street and Vaughn Road. This is considered to be a *significant impact*.

Mitigation Measures

Implementation of the following mitigation measure would reduce the impact to a *less-than-significant level*.

- 9a. **Ensure Safety in the Design of Road Improvements. Design and implementation of roadway improvements shall ensure safe and efficient movement of bicyclists and pedestrians, including sidewalk paths, bicycle lanes and signalized crosswalks at major intersections, in accordance with City standards.**

10. Implementation of the project includes a bikeway and pedestrian trail system for public use.

Included in the Northeast Quadrant Specific Plan are provisions for a multimodal Class I trail system throughout the area. This is considered to be a *beneficial impact*. No mitigation is required.

Table 1

LEVEL OF SERVICE DEFINITIONS FOR SIGNALIZED INTERSECTIONS

| <u>Level of Service</u> | <u>Description</u> | <u>Range of Volume Capacity Ratio</u> |
|-------------------------|--|---------------------------------------|
| A | Free Flow/Insignificant Delays: No approach phase is fully utilized by traffic and no vehicle waits through more than one red indication; excellent traffic operation. | 0.00 - 0.59 |
| B | Stable Operation/Minimum Delays: An occasional approach phase is fully utilized; platoons of vehicles are formed; very good traffic operation. | 0.60 - 0.69 |
| C | Stable Operation/Acceptable Delays: Major approach phase may become fully utilized; driver may occasionally have to wait through more than one indication; good traffic operation. | 0.70 - 0.79 |
| D | Approaching Unstable/Tolerable Delays: Queues may develop but dissipate rapidly without excessive delays; fair traffic operation. | 0.80 - 0.89 |
| E | Unstable Operation/Significant Delays: Volumes at or near capacity; vehicles may wait through several signal cycles, long queues form upstream from intersection; poor traffic operation | 0.90 - 0.99 |
| F | Forced Flow/Excessive Delays: Represents jammed conditions; intersection operates below capacity with low volumes; queues may block upstream intersections. | 1.00 - over |

Source: 1980 Transportation Research Board Circular 212

LEVEL OF SERVICE DEFINITIONS FOR STOP CONTROLLED INTERSECTIONS

| <u>Reserve Capacity (PCPH)</u> | <u>Level of Service</u> | <u>Expected Delay</u> |
|--------------------------------|-------------------------|--------------------------|
| ≥ 400 | A | Little or no delay |
| 300-399 | B | Short traffic delays |
| 200-299 | C | Average traffic delays |
| 100-199 | D | Long traffic delays |
| 0-99 | E | Very long traffic delays |
| * | F | * |

When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement to the intersection.

Source: 1985 Highway Capacity Manual

-7- 16

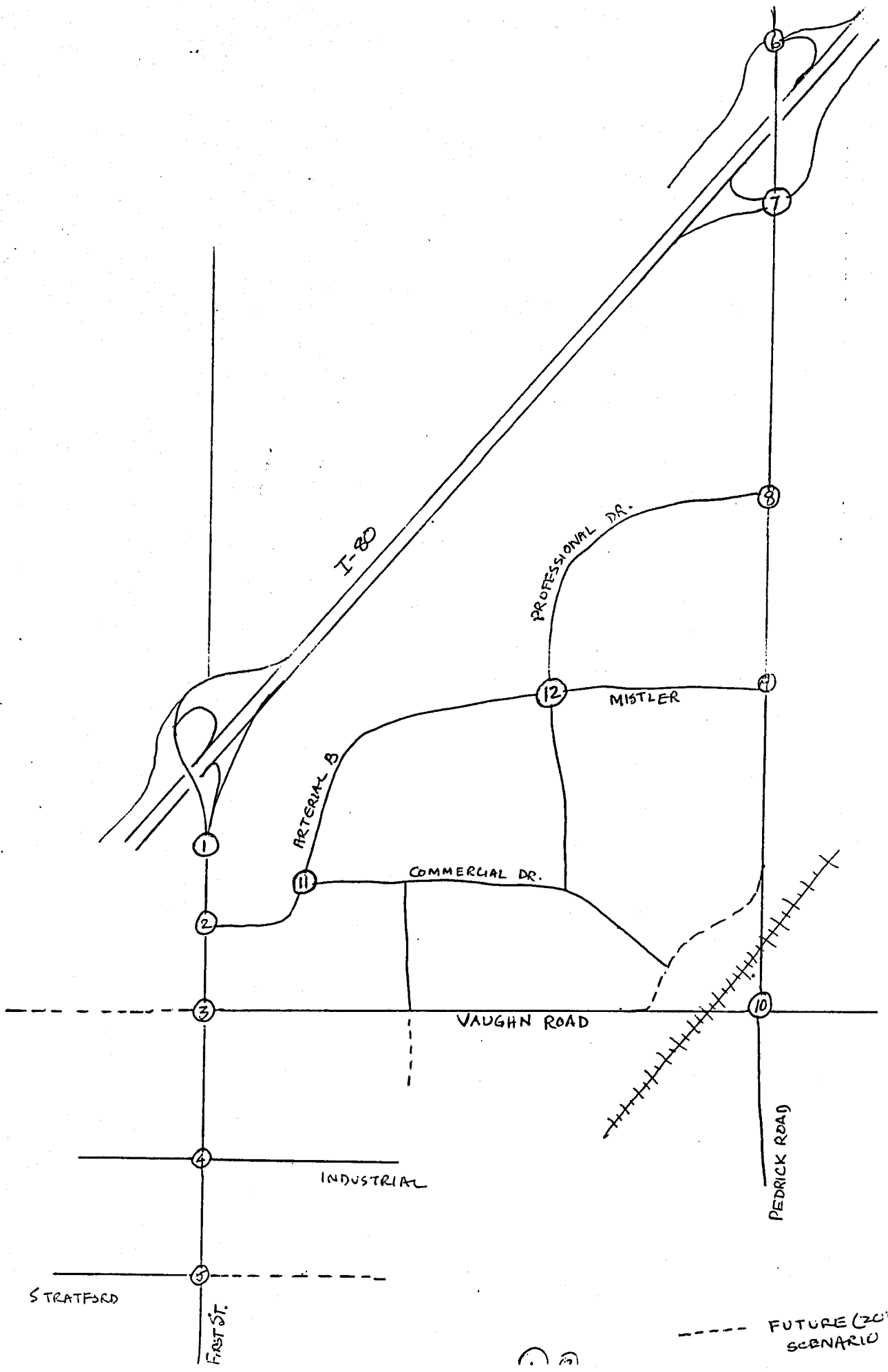
PROJECT TRAFFIC DISTRIBUTION (PERCENTAGES) (4)

| DIRECTION | EXISTING PLUS PROJECT | EXISTING PLUS PROJECT | CUMULATIVE PLUS PROJECT |
|------------------------|----------------------------------|----------------------------------|-------------------------|
| EAST VIA I-80 | 31 31 | 0 21 | 36 |
| WEST VIA I-80 | 31 31 | 31 | 36 |
| EAST VIA VAUGHN | 2 2 | 2 | 1 |
| WEST VIA VAUGHN | 0 0 | 0 | 8 |
| SOUTH VIA PEDRICK | 5 5 | 15 | 4 |
| NORTH VIA PEDRICK | 6 6 | 6 | 4 |
| SOUTH VIA N. FIRST ST. | 25 25 | 25 | 11 |
| Total | | 100 | 100 |

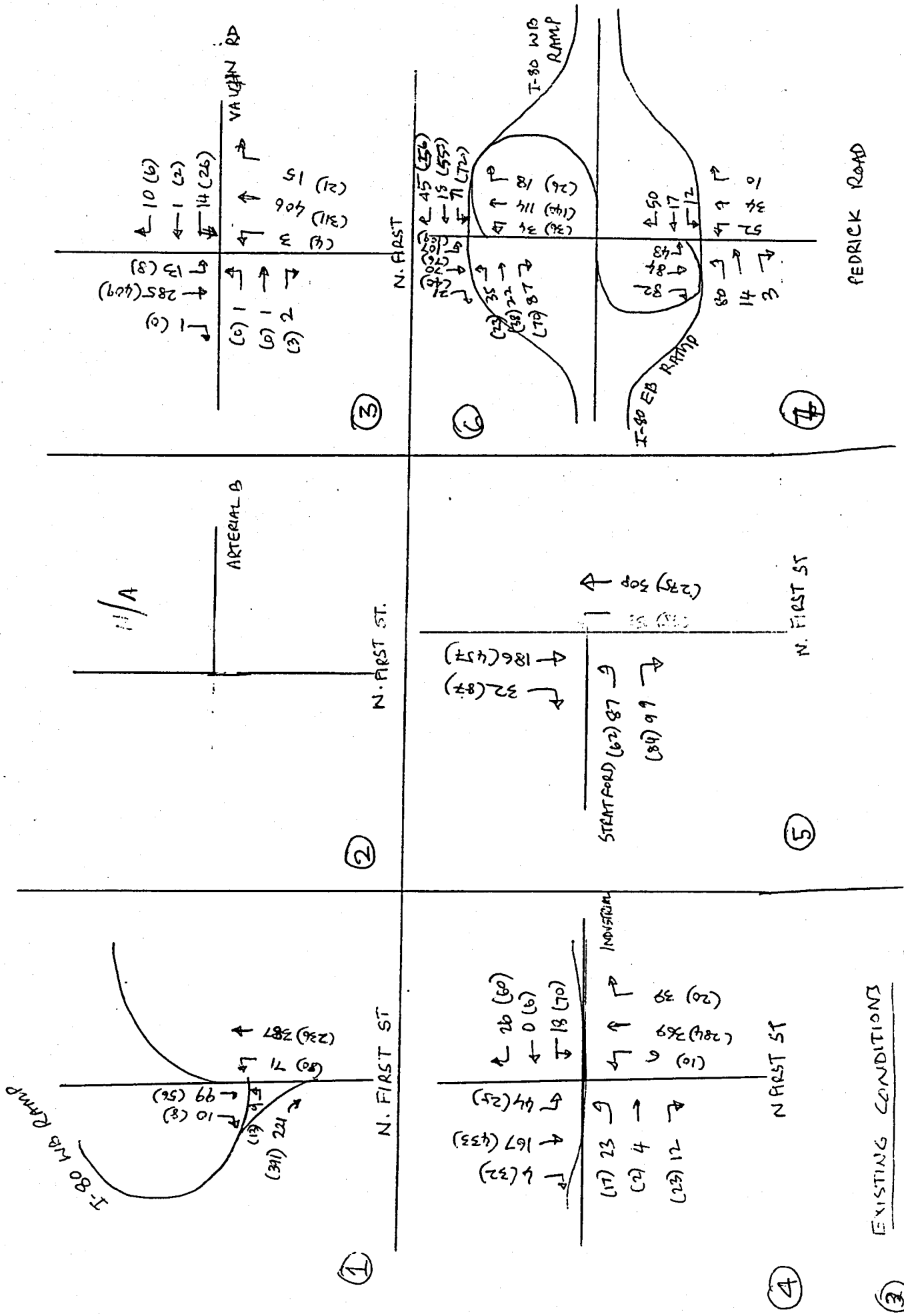
INTERSECTION LOS TABLE 5

| INTERSECTIONS | EXISTING | | | | EXISTING PLUS PROJECT | | | | CUMULATIVE | | | | CUMULATIVE PLUS PROJECT | | | |
|------------------------------------|----------|-----|------|-----|-----------------------|-----|------|-----|------------|-----|------|-----|-------------------------|-----|------|-----|
| | AM | | PM | | AM | | PM | | AM | | PM | | AM | | PM | |
| | V/C | LOS | V/C | LOS | V/C | LOS | V/C | LOS | V/C | LOS | V/C | LOS | V/C | LOS | V/C | LOS |
| 1. FIRST STREET / VAUGHN RD (3) | - | B | 0.78 | C | 0.87 | D | 0.82 | D | 0.79 | C | 1.03 | F | 0.67 | B | 0.51 | A |
| 1. FIRST STREET / INDUSTRIAL (4) | - | C | 0.65 | B | 0.75 | C | 0.46 | A | 0.62 | B | 0.69 | B | 0.53 | D | 0.43 | A |
| 1. FIRST STREET / STAFFORD (5) | ✓ | C | 0.60 | B | 0.77 | C | 0.5 | A/B | 1.00 | E | 0.43 | A | 1.32 | F | 0.34 | A |
| EDRICK N. FIRST / I-80 EB RAMP (1) | ✓ | B | 0.62 | B | 0.86 | D | - | D | 0.34 | A | 0.47 | A | 0.47 | A | 1.08 | F |
| EDRICK / VAUGHN (10) | ✓ | A | 0.51 | A | 0.80 | C/D | 0.47 | A | 1.14 | F | 0.50 | A | 1.11 | F | 1.20 | F |
| EDRICK / I-80 WB RAMP (6) | ✓ | A | 0.76 | C | 1.26 | F | 0.55 | A | 1.26 | F | 0.55 | A | 1.64 | F | 1.45 | F |
| EDRICK / I-80 EB RAMP (7) | ✓ | A | 1.26 | F | 1.26 | F | 0.64 | B | 1.36 | F | 0.55 | A | 1.86 | F | 0.55 | A |
| FIRST / ARTERIAL B (2) | ✓ | - | 0.88 | D | 0.72 | C | - | - | 0.72 | C | 0.45 | A | 0.49 | A | 0.76 | C |
| EDRICK / MISTLER (9) | ✓ | - | 0.45 | A | 0.88 | D | 0.88 | D | 0.88 | D | 0.66 | B | 0.84 | D | 0.67 | B |
| EDRICK / PROFESSIONAL (8) | ✓ | - | 0.82 | D | 0.72 | C | 0.69 | B | 0.69 | B | 0.66 | B | 0.65 | B | 0.81 | D |
| PROFESSIONAL / MISTLER RD (12) | ✓ | - | 0.66 | B | 0.89 | C | 0.89 | C | 0.89 | C | 0.72 | C | 0.99 | E | 0.81 | D |
| ARTERIAL-B / COMMERCIAL DR (11) | ✓ | - | 0.72 | C | 0.89 | C | 0.89 | C | 0.89 | C | 0.72 | C | 0.99 | E | 0.81 | D |

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--- FUTURE (2010) SCENARIO



EXISTING CONDITIONS

PEAK HOUR VOLUMES AM/PM

①

②

③

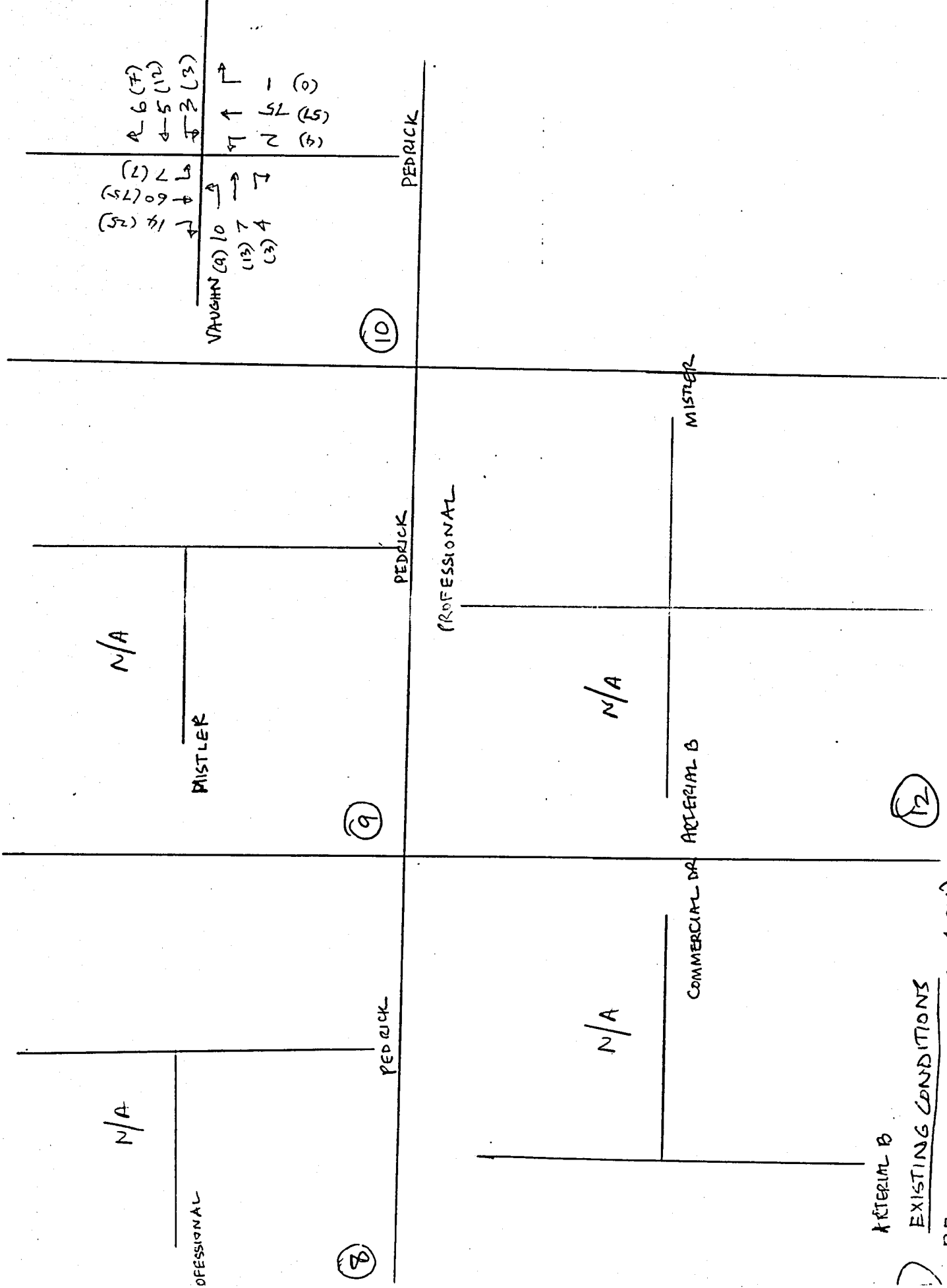
⑥

④

⑤

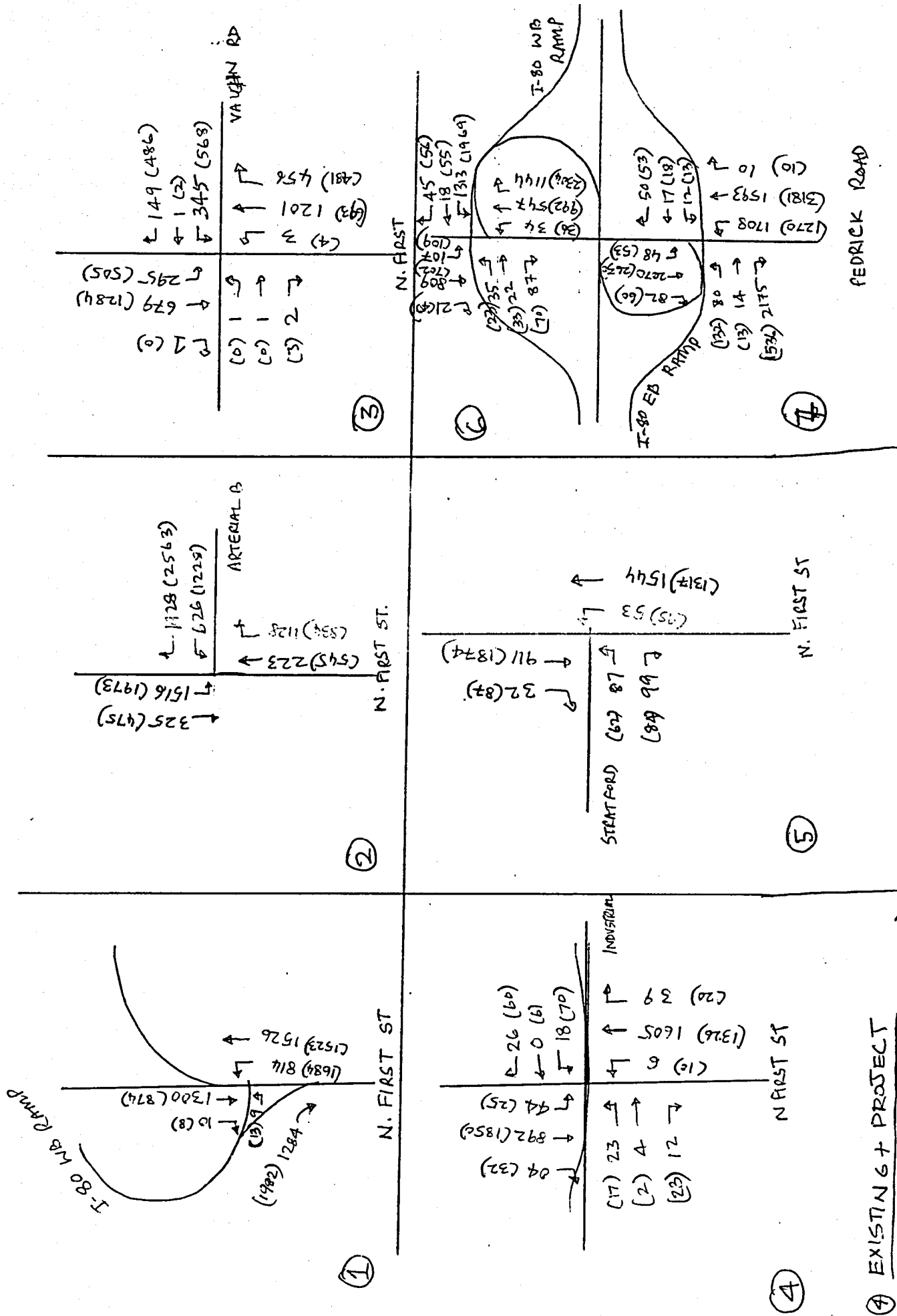
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③

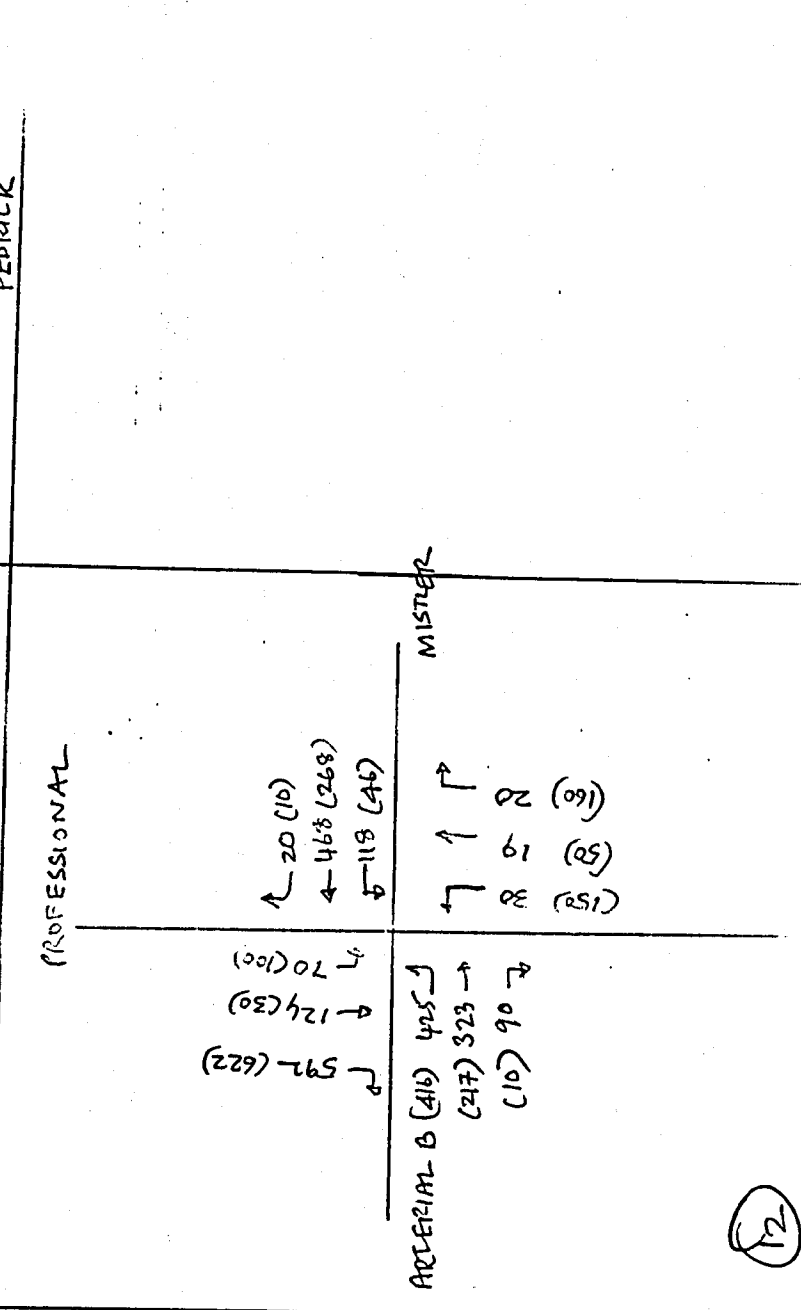
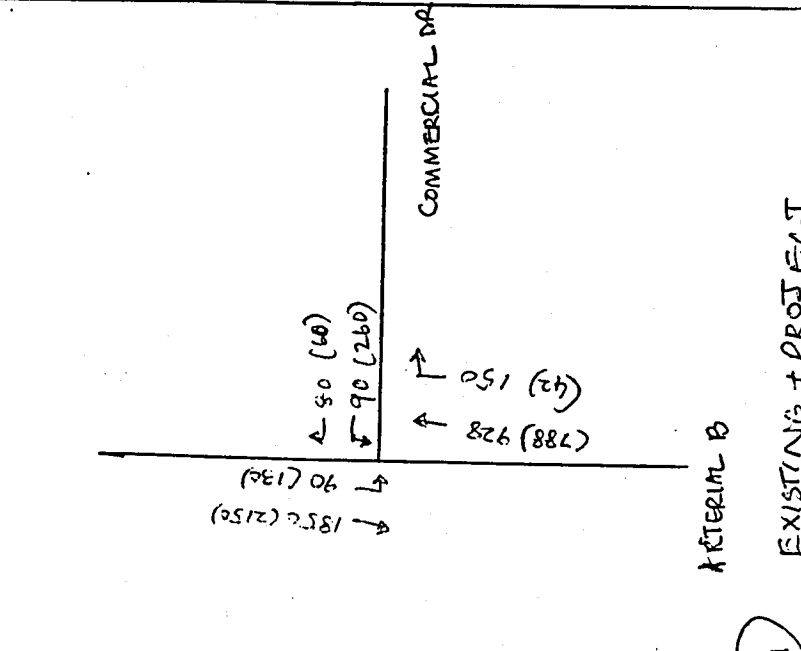
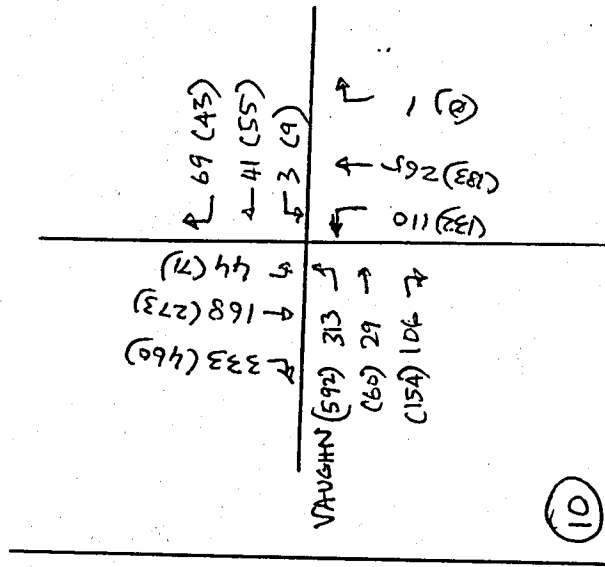
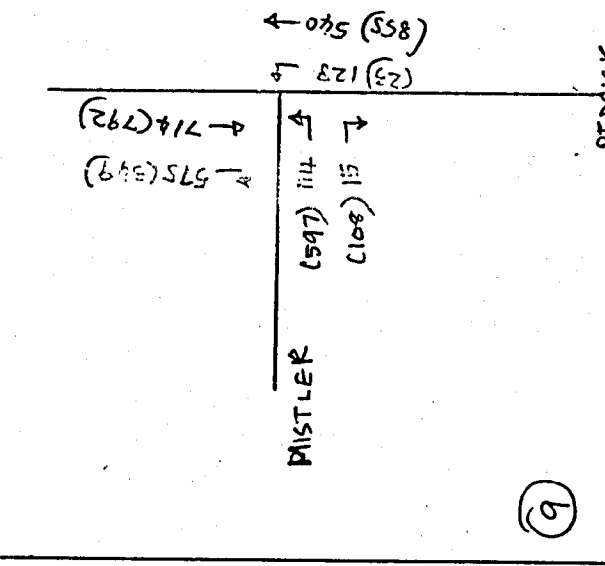
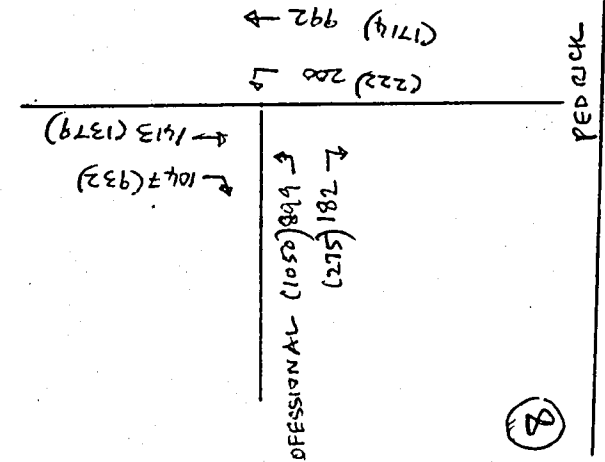


| | | |
|---------------------------------------|----------------------------------|--------------------------------|
| (2) 2 9 (52) 14 (25) (5) 7 (75) | VAUGHN (9) 10 (13) 7 (3) 4 | R-6 (F) S-5 (12) S-3 (3) |
| ↑ ↓ ← → | ↑ → ↓ | ↑ ↓ ← → |

KRITERIAL B
 EXISTING CONDITIONS
 PEAK HOUR VOLUMES AM / PM



④ EXISTING + PROJECT
PEAK HOUR VOLUMES AM (PM)

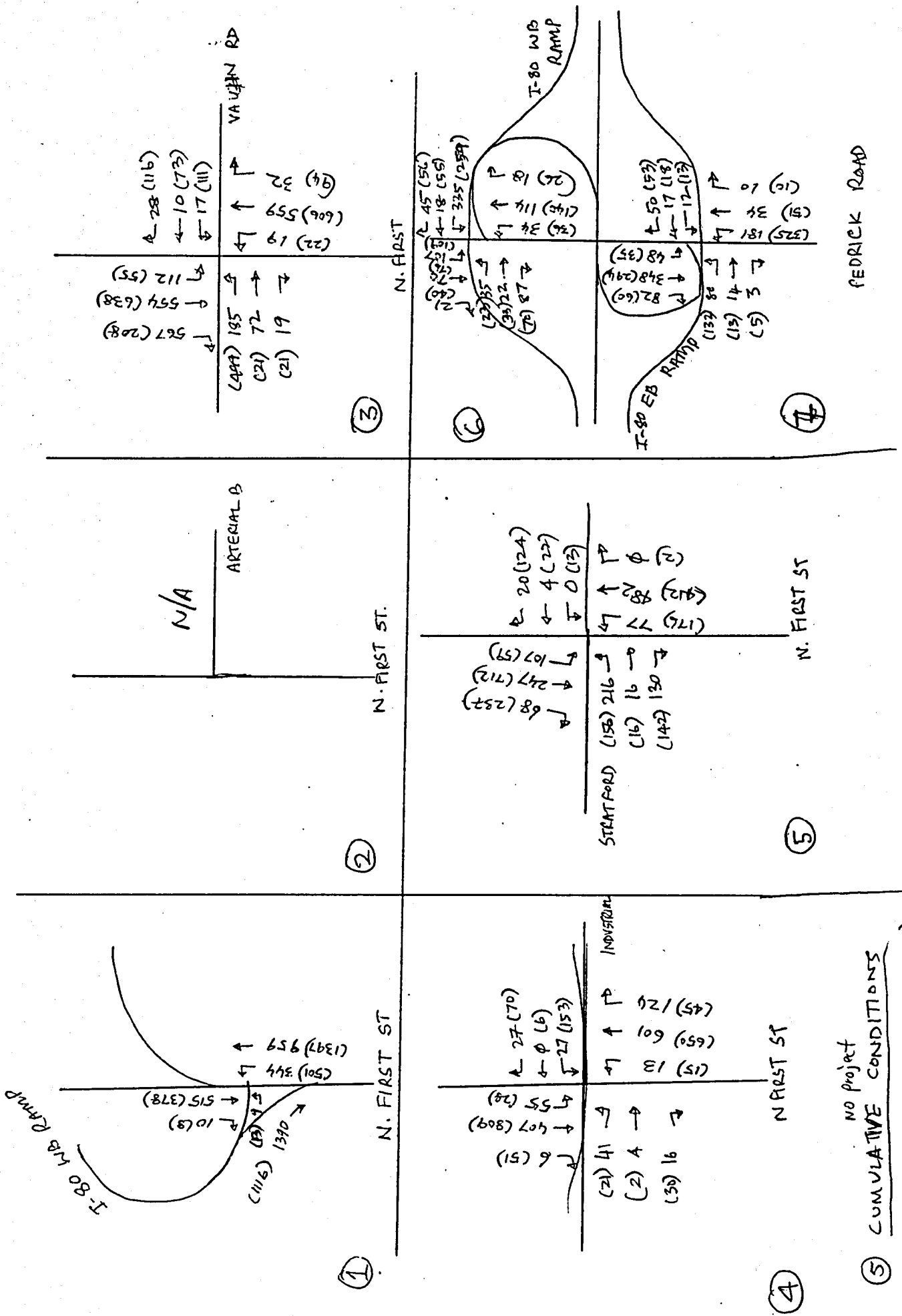


EXISTING + PROJECT

FROM 1977 TO 1978 AM (OM)

KRITERIA B

77



NO PROJECT
CUMULATIVE CONDITIONS
 PEAK HOUR VOLUMES AM/PM

| | | |
|--------------------------------|---------------------------|---------------------------|
| <p>N/A</p> <p>PROFESSIONAL</p> | <p>N/A</p> <p>MISTLER</p> | <p>N/A</p> <p>MISTLER</p> |
| <p>N/A</p> <p>PROFESSIONAL</p> | <p>N/A</p> <p>MISTLER</p> | <p>N/A</p> <p>MISTLER</p> |
| <p>N/A</p> <p>PROFESSIONAL</p> | <p>N/A</p> <p>MISTLER</p> | <p>N/A</p> <p>MISTLER</p> |
| <p>N/A</p> <p>PROFESSIONAL</p> | <p>N/A</p> <p>MISTLER</p> | <p>N/A</p> <p>MISTLER</p> |

262 (107)
 76 (185)
 7 (7)
 VAUGHN (259) 43
 (12) 7
 (3) 4
 47
 46 (7)
 45 (12)
 43 (3)

47
 46 (7)
 45 (12)
 43 (3)

8

9

10

CRITERIA B

No project

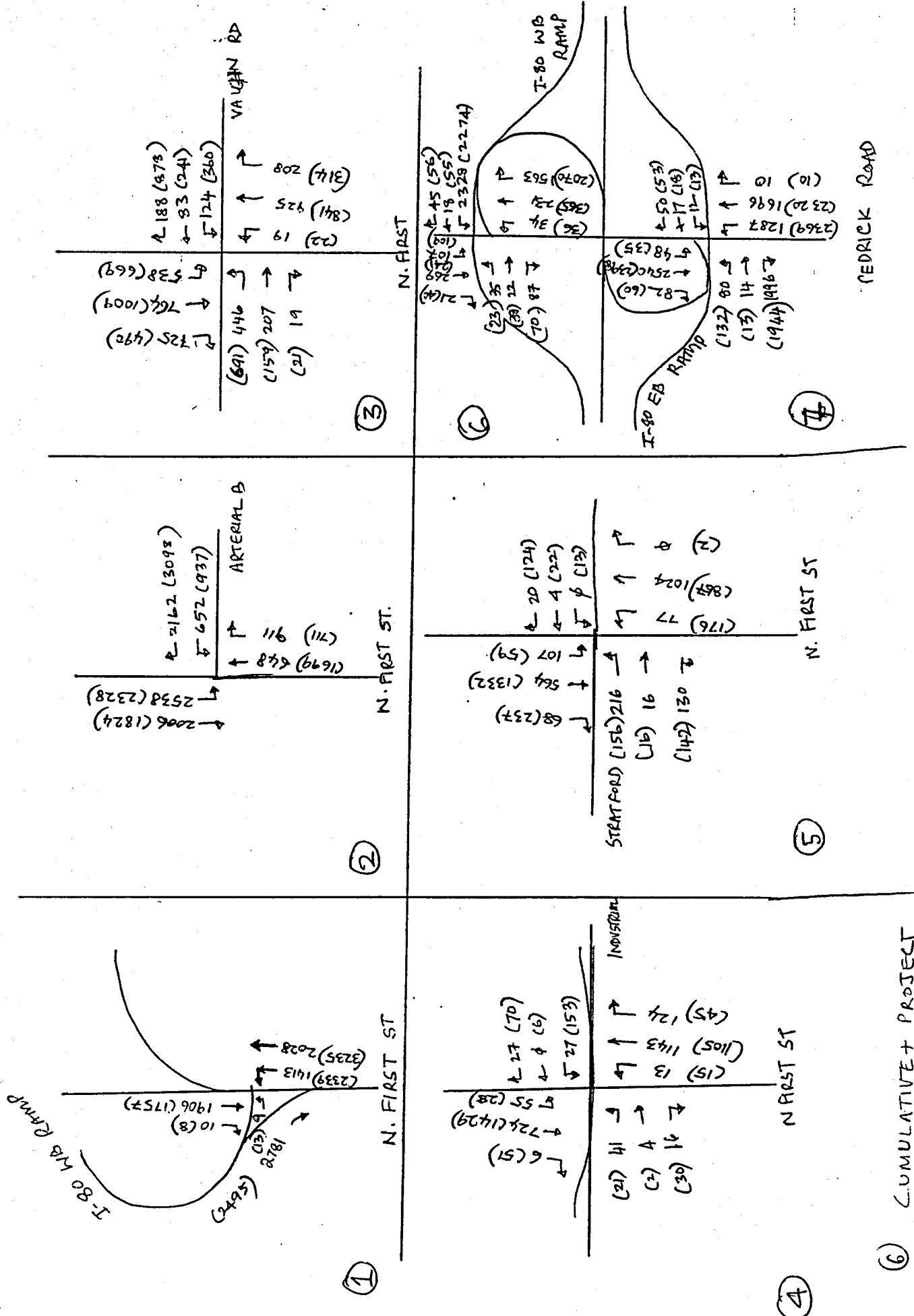
CUMULATIVE CONDITIONS

PSAV HIRE VOLUMES AMCPM

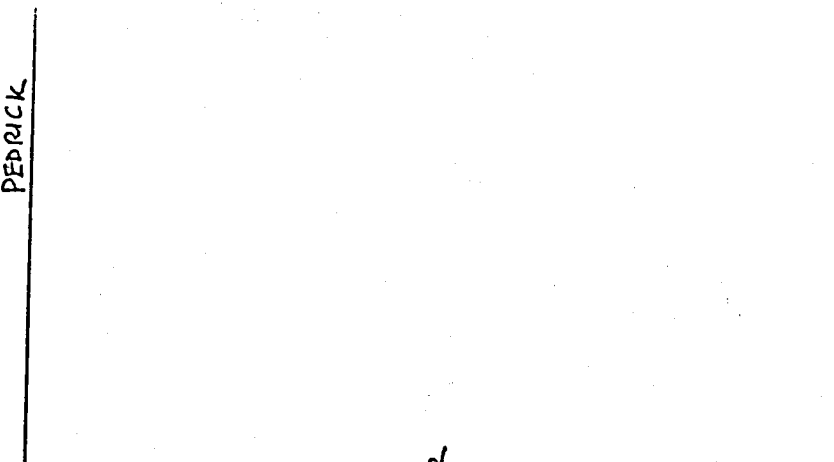
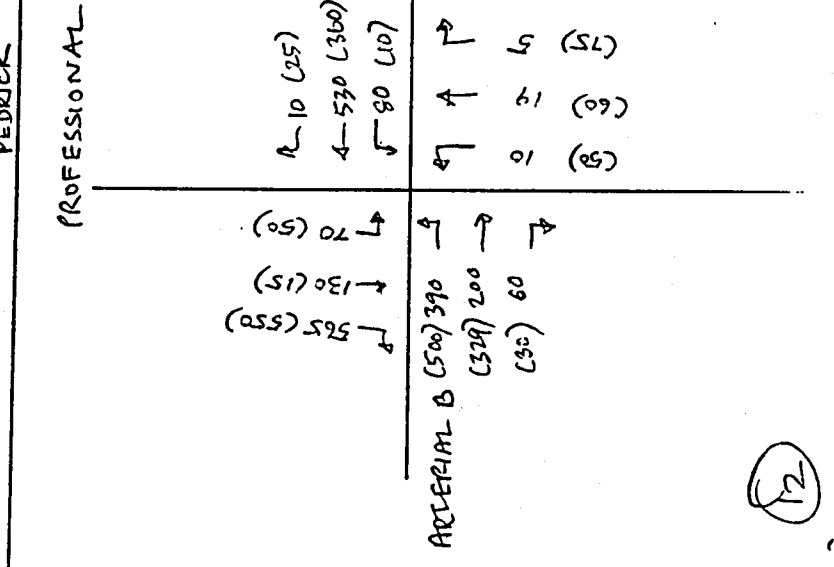
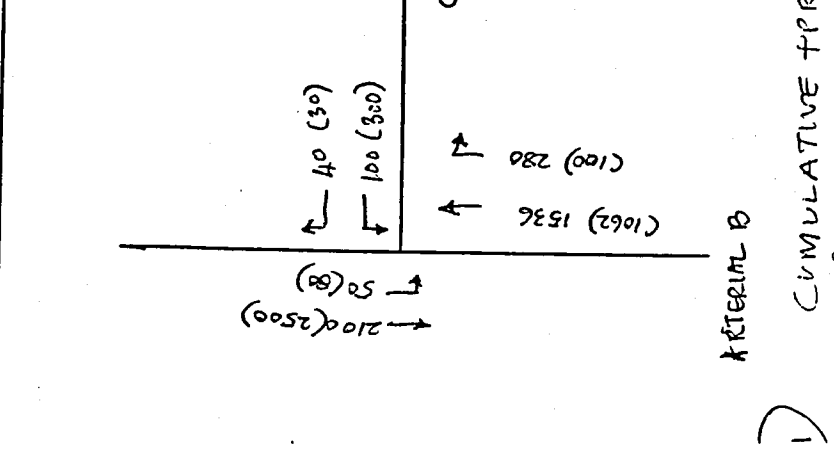
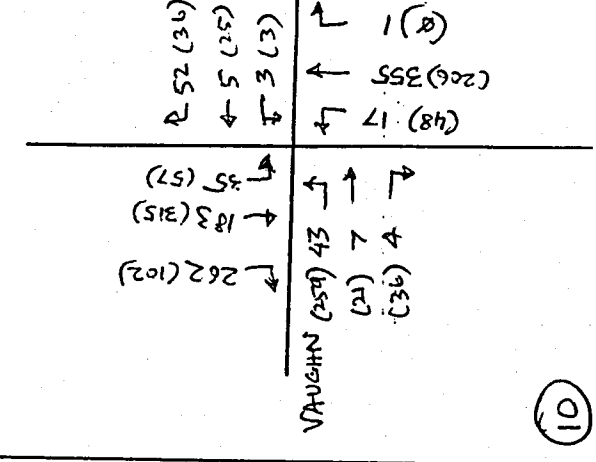
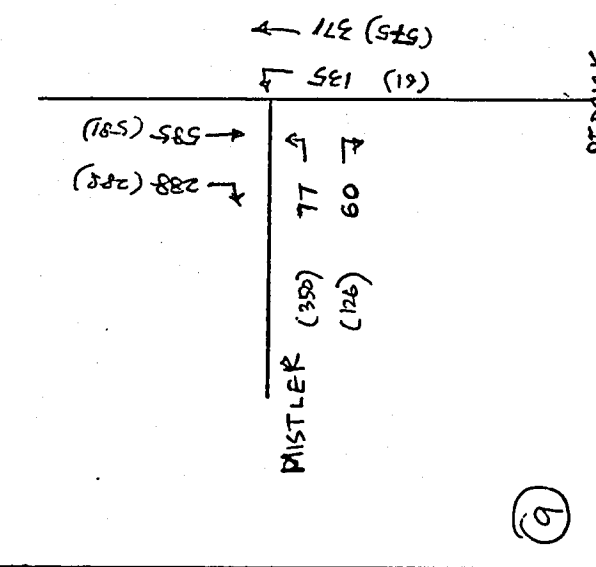
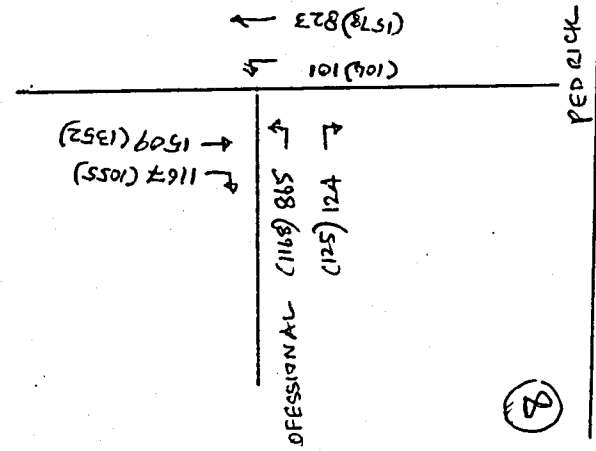
12

1

4

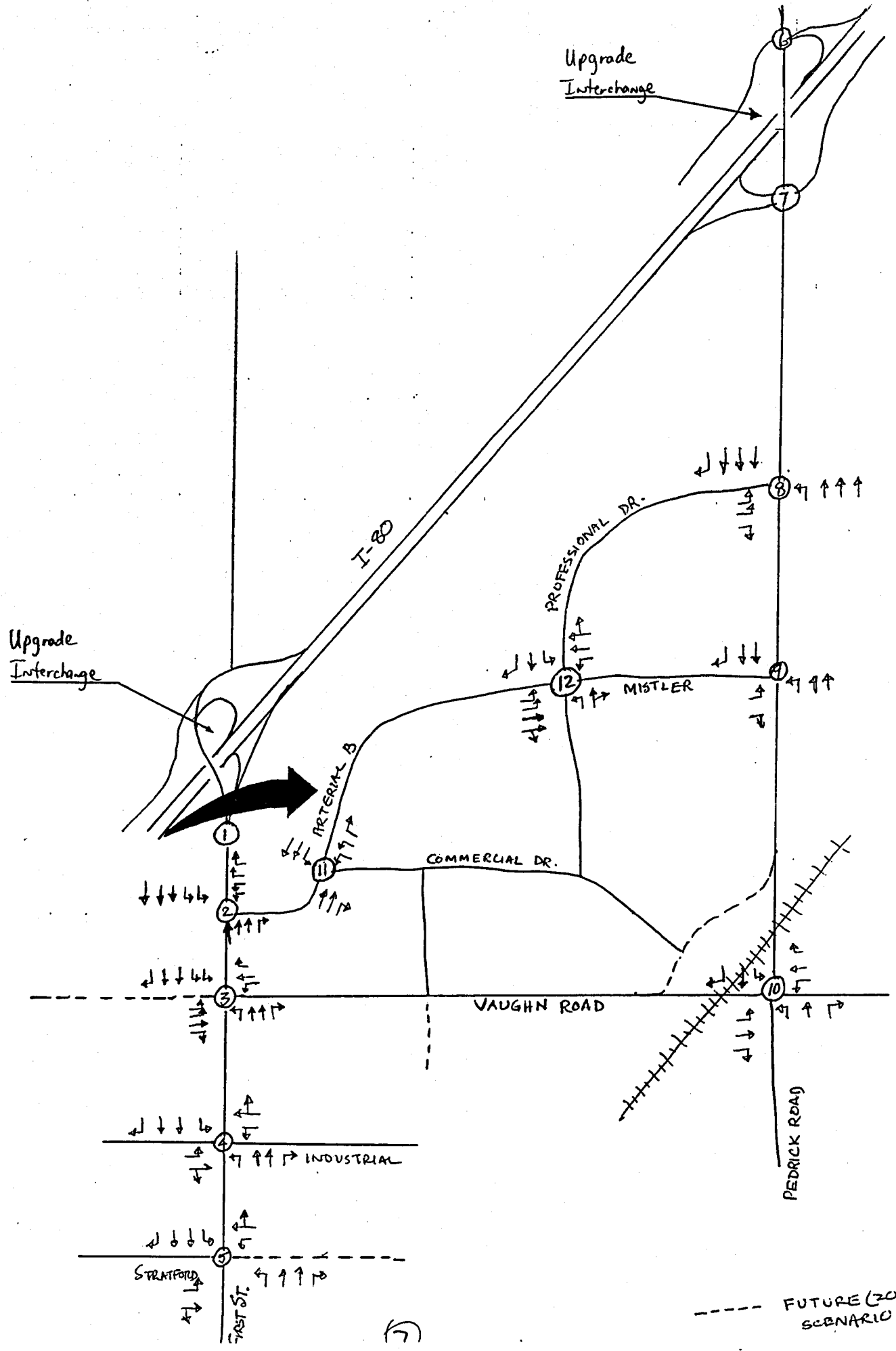


⑥ CUMULATIVE + PROJECT
 DEAR ... (PM)



CUMULATIVE PROJECT

KRITERIAL B



--- FUTURE (2010) SCENARIO

(7)