

# Get Out Your Trowel – Archaeological Resources Management from CEQA through Construction

Presented at the Association of Environmental  
Professionals (AEP) Statewide Conference  
May 20, 2017

Karen Frye, SFPUC, Moderator

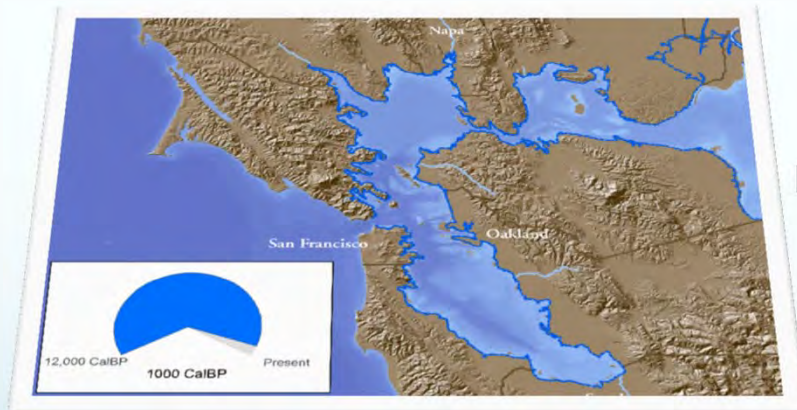
Jack Meyers, Far Western Anthropological Research Group

Randall Dean, San Francisco Planning Department

Kim Stern Liddell, San Francisco Public Utilities Commission

# Best Practices and Current Approaches to Identify and Manage Archaeological Resources Under CEQA

*More data and fewer myths*



Jack Allen Meyer, MA  
Principal Geoarchaeologist  
Far Western Research, Davis, California



2017 Meeting

About me . . .



# CEQA - Appendix G

- Pursuant to § 15064.5, the CEQA Checklist for Initial Study (IS) asks:
- Will the project cause, or have the potential to:
  - Result in substantial adverse change in the significance of an historical resource?
  - Result in substantial adverse change in the significance of an archeological resource,
  - Disturb human remains, including those interred outside of formal cemeteries?



# CEQA “Accidental Discovery” of Cultural Resources

- Lead Agency shall make provisions for “accidental finds” like the immediate evaluation (historical vs. unique) of the archeological resource.
- Work should stop within at least a 100-foot radius of the find, but can continue elsewhere in project area.
- Time and money should be allocated for appropriate mitigation such as avoidance (e.g. redesign) [§15064.5 (f)]
- If there is evidence that an archeological resource may be affected, then **mitigation measures that are directed only toward “accidental discoveries” are not appropriate.**

# Appropriate Level of Effort = Reasonable and Proportional Actions

Effort typically varies depending on . . .

- Lead Agency (standards, opinions, and permit type)
- Project Area Size and Location (big, small, good, bad)
- Project Impacts (horizontal, vertical, related earth-moving)
- CEQA Requirements (appropriate and proportional actions)
- Research Goals (site identification, testing, evaluation)
- **“Reasonable and Proportional Actions” may range from . . .**
  - (1) pre-field desktop study (records search, sensitivity assessment)
  - (2) survey, exploration, or testing in a project area, and/or
  - (3) archaeological data recovery and post-field analysis of a site.
  - (4) public interpretation, outreach (booklet, displays, school modules)



# Current Approaches: From Desktop to Data Recovery

## Pre-field Desktop Studies (Phase I):

Archival research – relevant maps, records, reports, photos, “as-builts”

Archaeological sensitivity assessments – site potential?

Project constraints and risk analysis – budget, schedule, physical, etc.

## Field Identification and Investigations:

Extended Phase I: Subsurface exploration – auger, core, or backhoe?

Phase II: Assess the nature, extent, and integrity of a site

Phase III: Mitigation (data recovery) if cannot avoid or minimize impacts to site

## Project Examples:

Candlestick Point Project

Central Corridor-Transit Center (SoMA)

SE Water Control Plant

# Beware of All or Nothing Perspectives

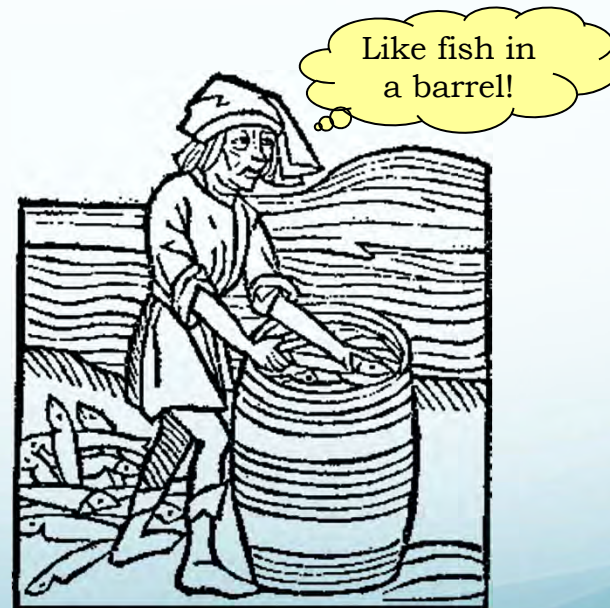
## ALL (error of co-ommission)

- All landscapes changed
- Sites could be buried anywhere
- Subsurface exploration always needed



## Nothing (error of omission)

- No landscape changes
- Sites are not buried
- Surface survey always adequate



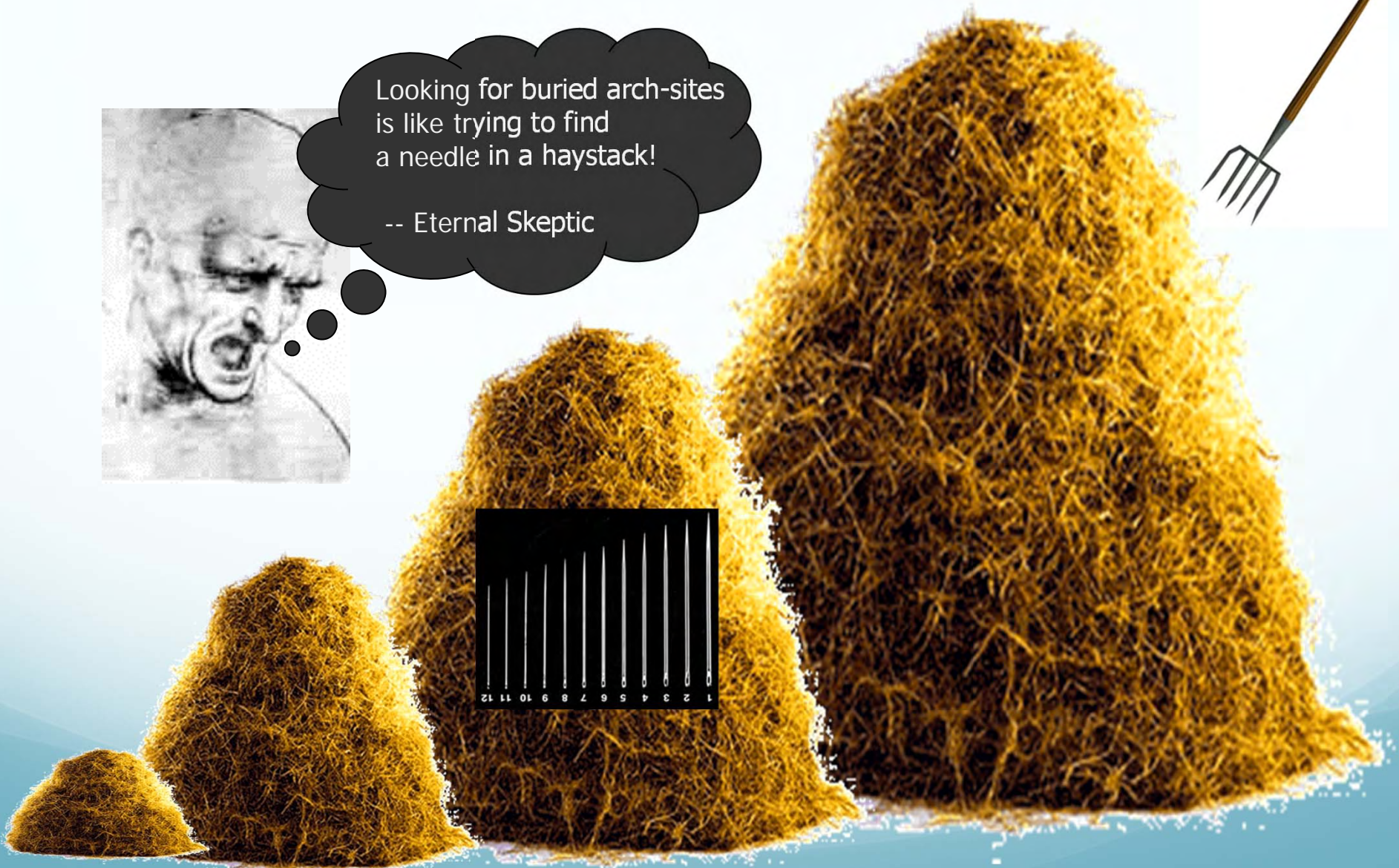


# Issue of Scale: Needles; Haystacks, and Pitchforks



Looking for buried arch-sites  
is like trying to find  
a needle in a haystack!

-- Eternal Skeptic



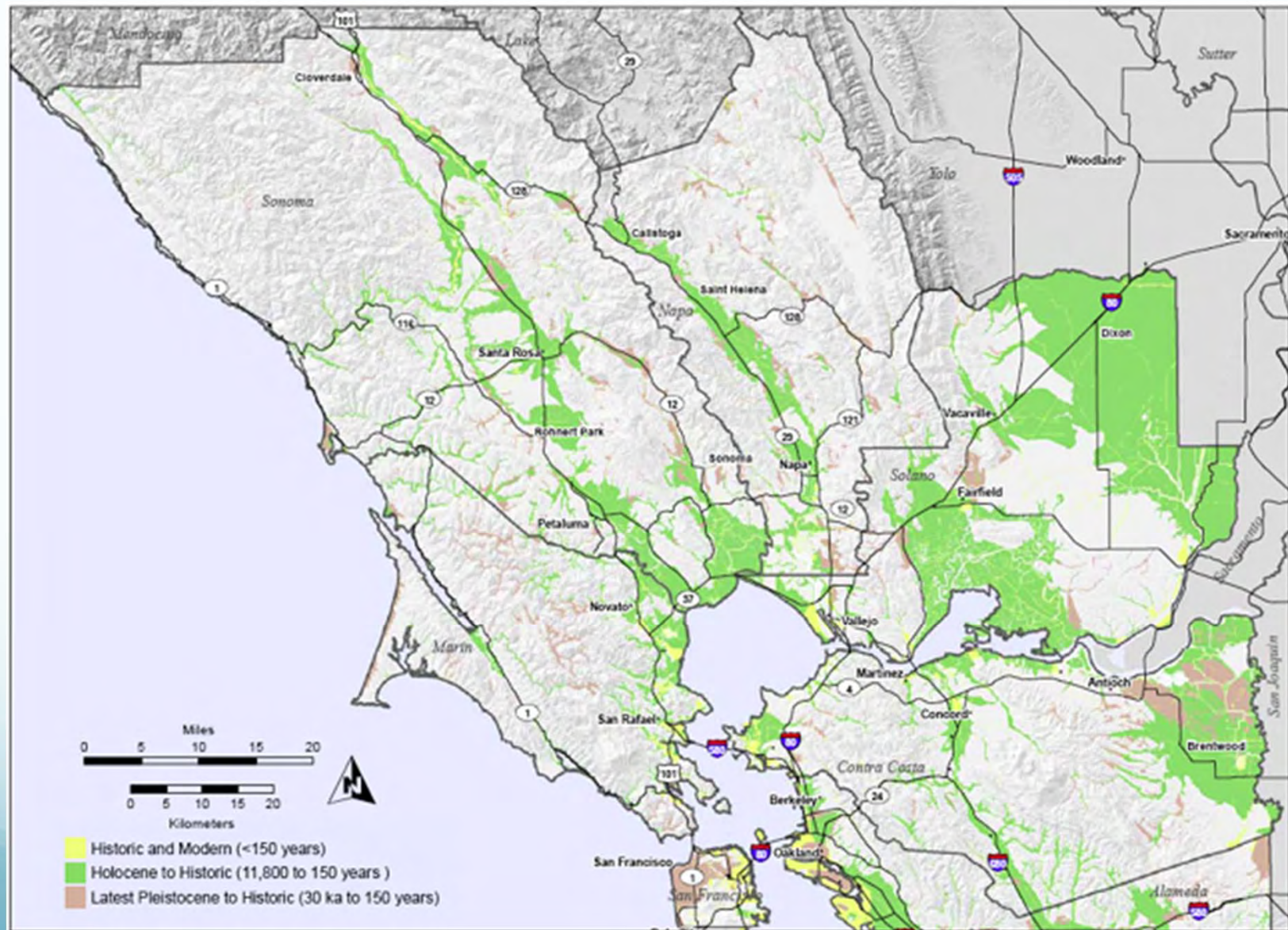


# San Francisco Bay Area – A Big Haystack?





Only about 1/3 has Holocene-age deposits



# Subsurface Exploration Methods – “Pitchforks”

## Coring

- Can be used urban settings
- Can extend deeper than backhoe
- Can penetrate wet deposits
- No shoring needed
- Limits disturbances
- *BUT . .*
- Difficult in sandy/gravelly deposits
- Very small sample/discovery window
- More expensive than backhoe (3 times)



## Backhoe

- Can be used in most settings
- Can reach 4 to 5 meters deep
- Can be used in most deposits
- Large sample/discovery window
- Lends itself to geomorphic study
- *BUT . . .*
- Difficult in soft/wet deposits
- May require shoring to enter
- Not good in urban settings





MINNESOTA DEEP TEST PROTOCOL PROJECT



Mn/DOT Agreement No. 85878  
OSA License No. 04-030

Authorized and Sponsored by:

MINNESOTA DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

Prepared by

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Daniel R. Hayes, Project Geoarchaeologist  
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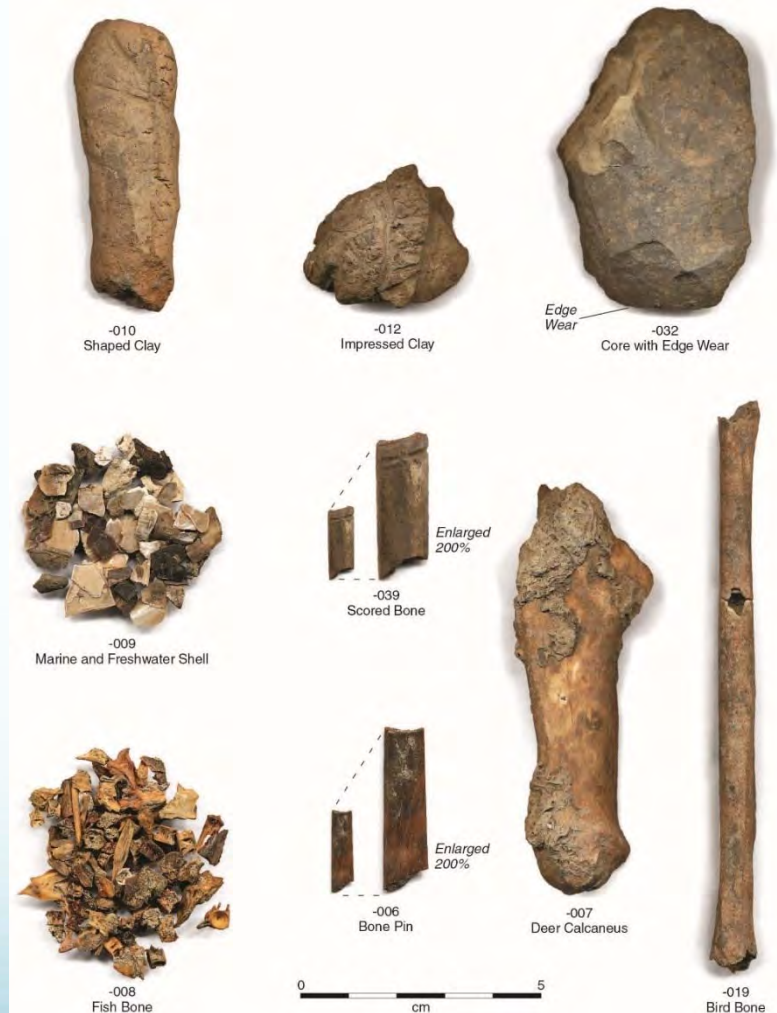
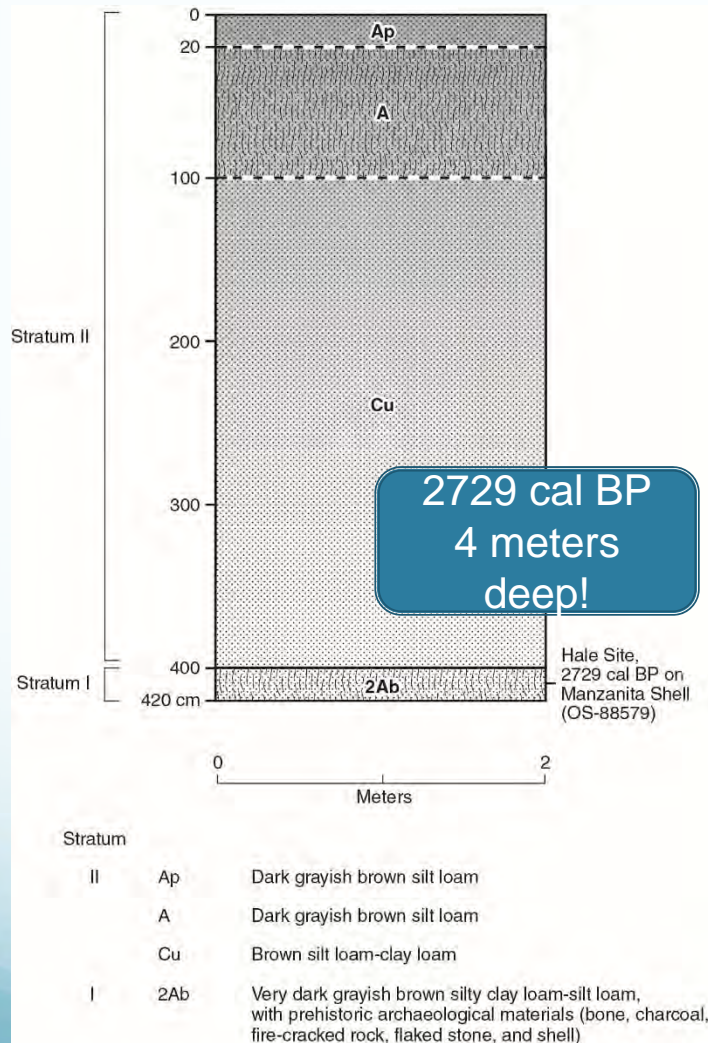
March 2006

Blind tests found **backhoe trenching** is the most effective and efficient method for locating buried sites, and for understanding geologic relationships compared to coring and geophysical methods.



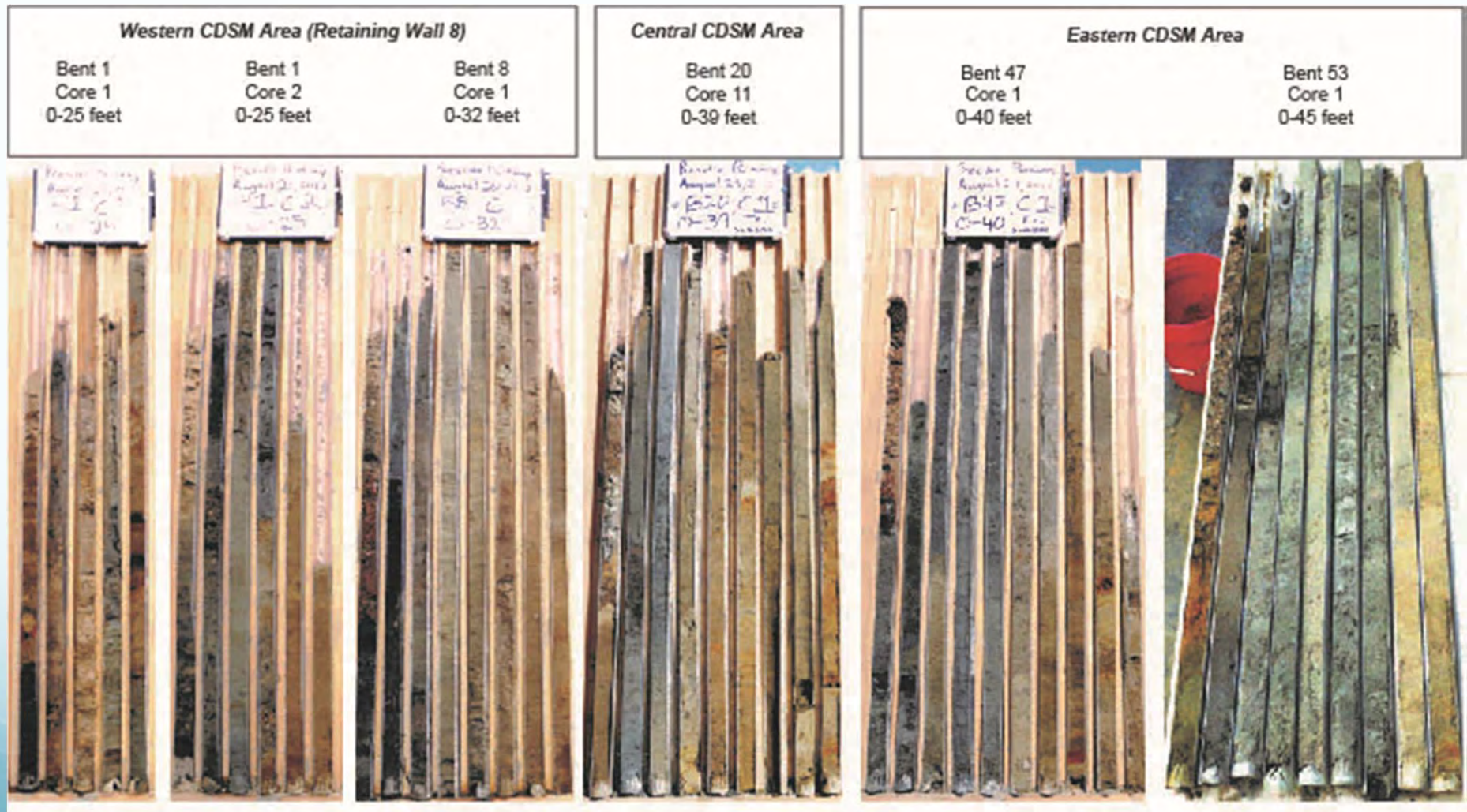
On-line at: <http://www.dot.state.mn.us/culturalresources/studies/deep-test.html>

# Prehistoric Site Along I-80 in Solano County: But buried deeper than vertical impacts!





# Doyle Drive-Presidio Parkway Project Cores





# Post-Glacial Sea-Level Rise

Sea more than 100 meters  
(300 feet) lower during the  
Last Glacial Maximum

Sea more than 70 meters (230  
feet) lower than present when  
people entered the region



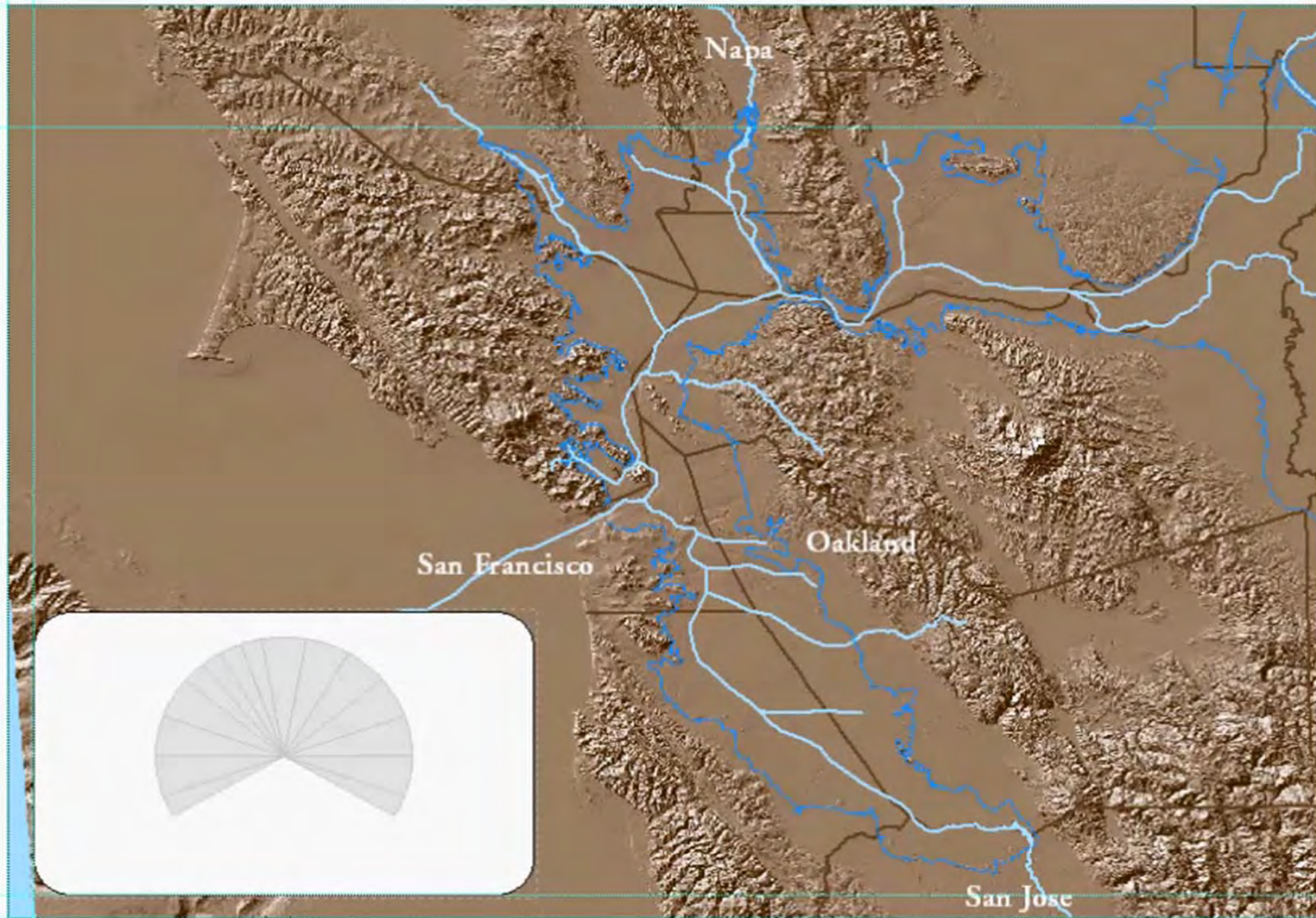
## Land Bridge to Farallon Islands

- 56 meters below current sea level (11,500 Years Ago)
- 125 meters below current sea level (22,000 Years Ago)
- 10 meters Bathymetric Contours
- Additional Extent of California 22,000 Years Ago
- Current California
- Caltrans District 3

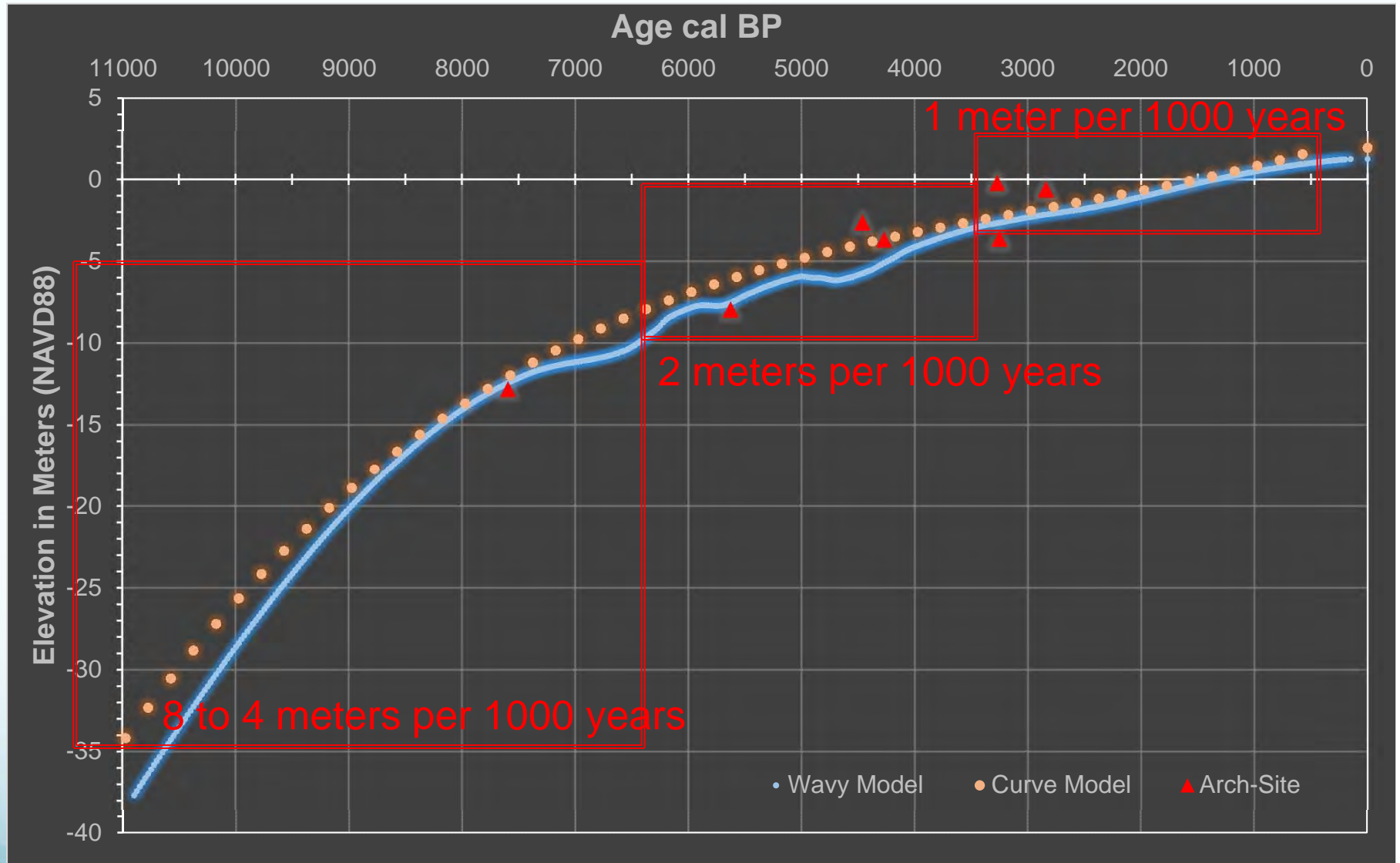




# 12,000 Years of Sea-Level Rise in 10 Seconds



# San Francisco Bay Sea Level Curve





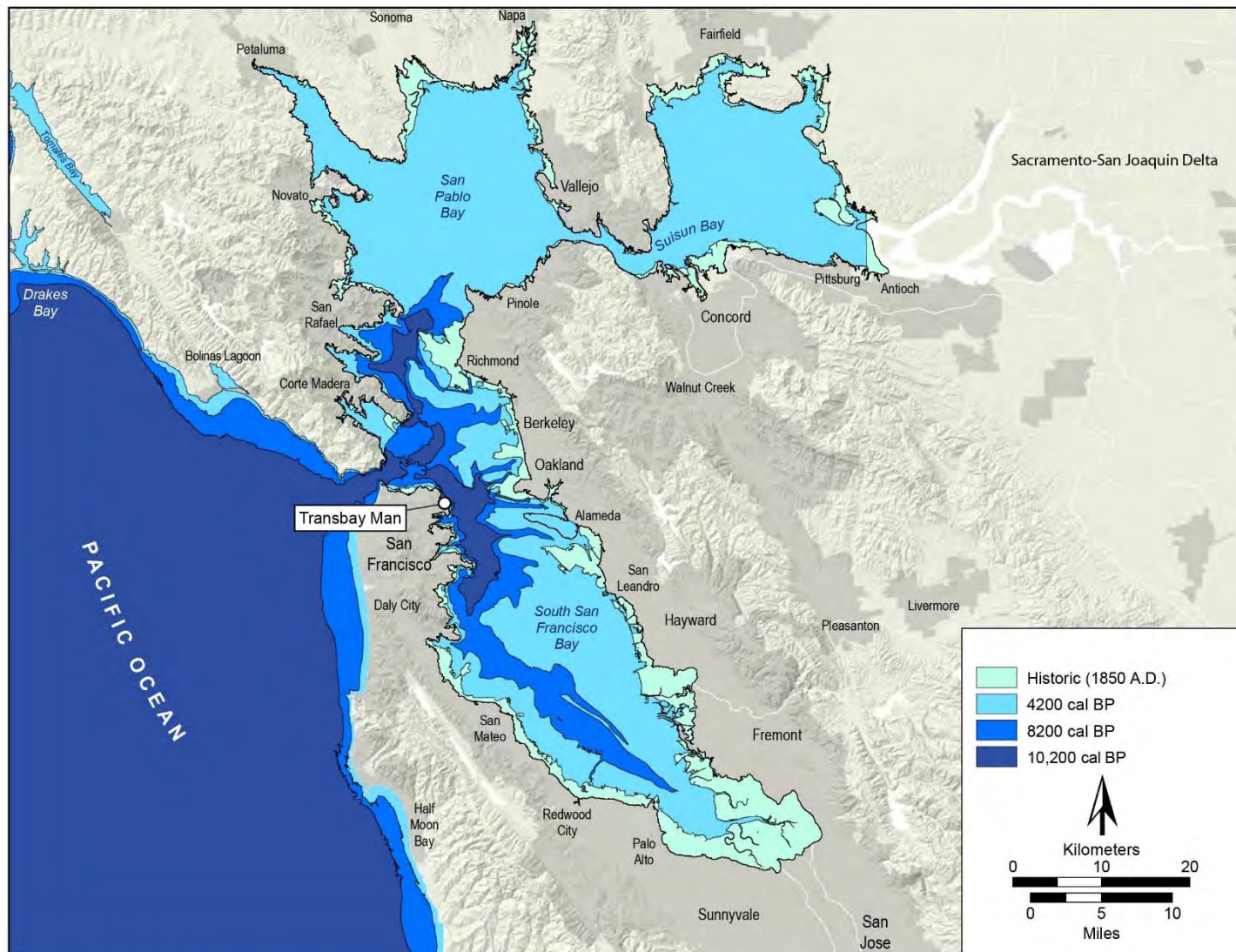
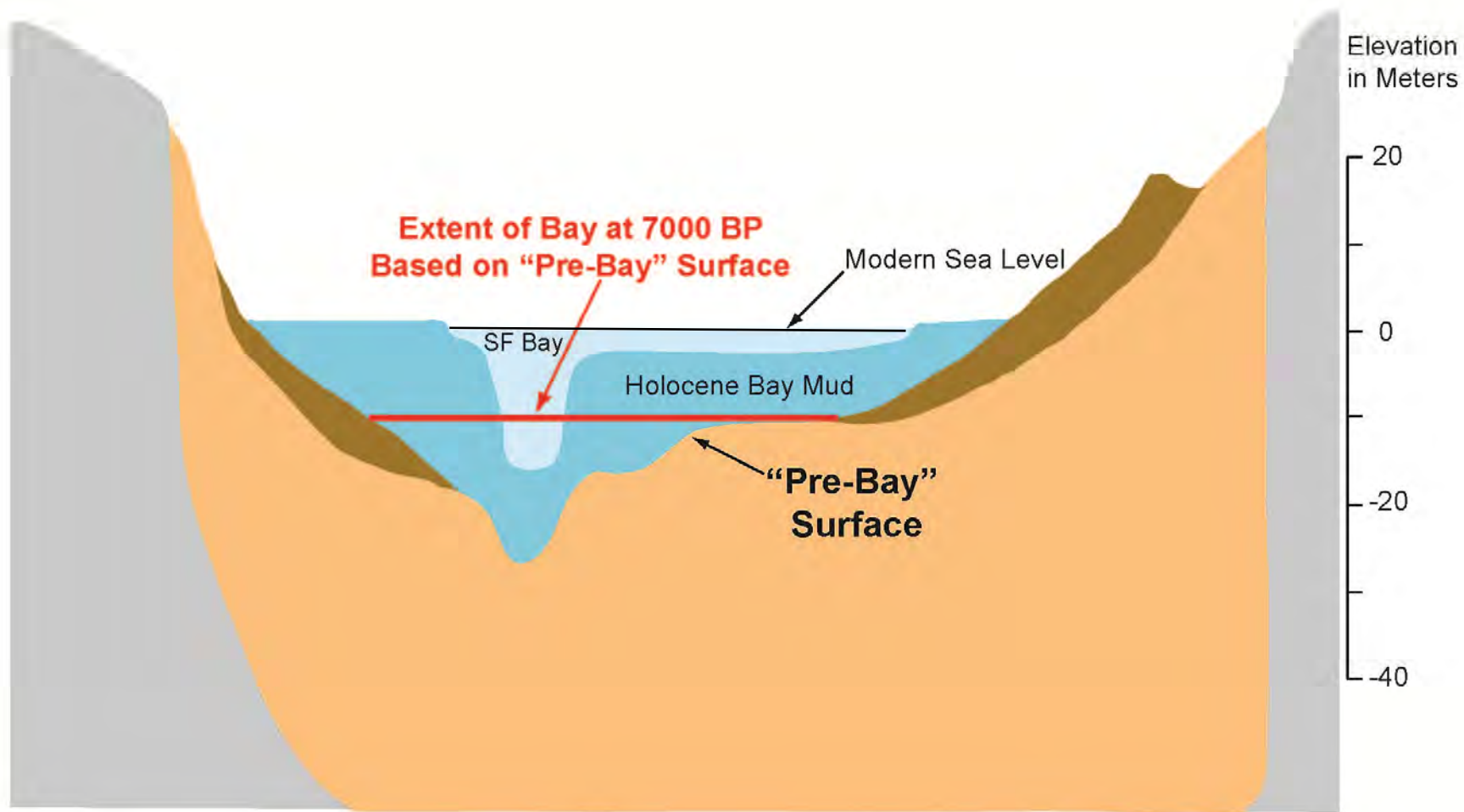


Figure X (sealevelmap). Timing and Extent of Holocene Sea-Level Rise in the San Francisco Bay Region.



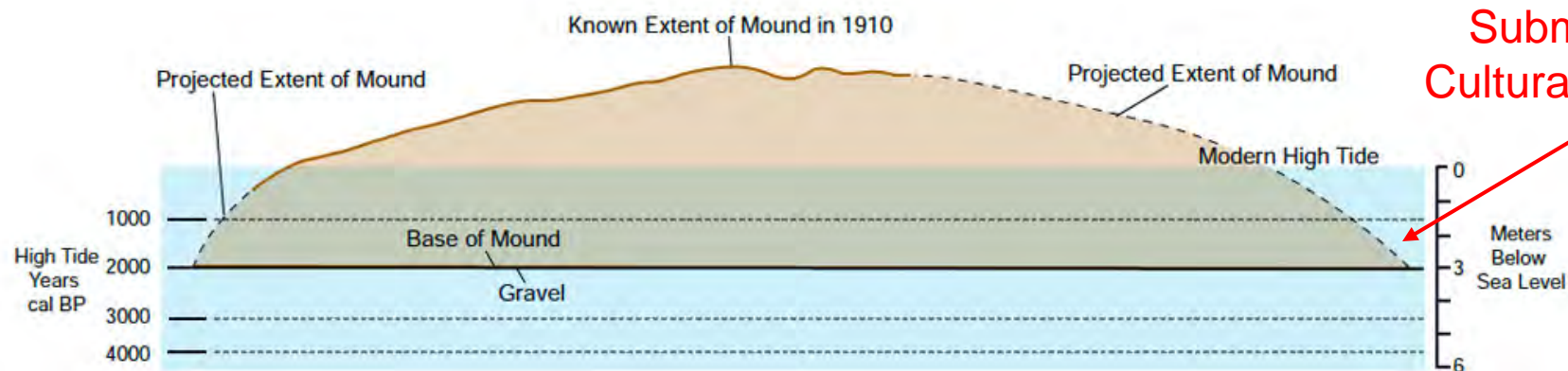
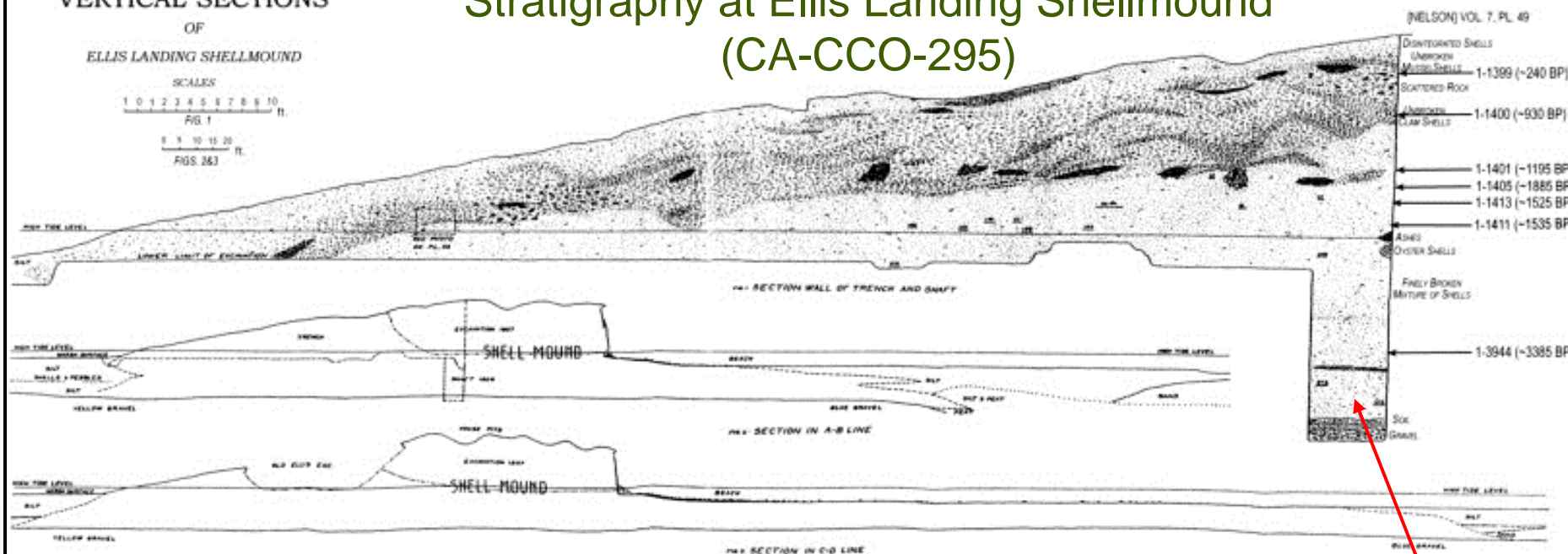
# Before Arrival of San Francisco Bay – An Inland Valley





# VERTICAL SECTIONS OF ELLIS LANDING SHELLMOUND

SCALES  
1 0 1 2 3 4 5 6 7 8 9 10  
FIG. 1  
0 5 10 15 20  
FIGS. 2&3  
ft.



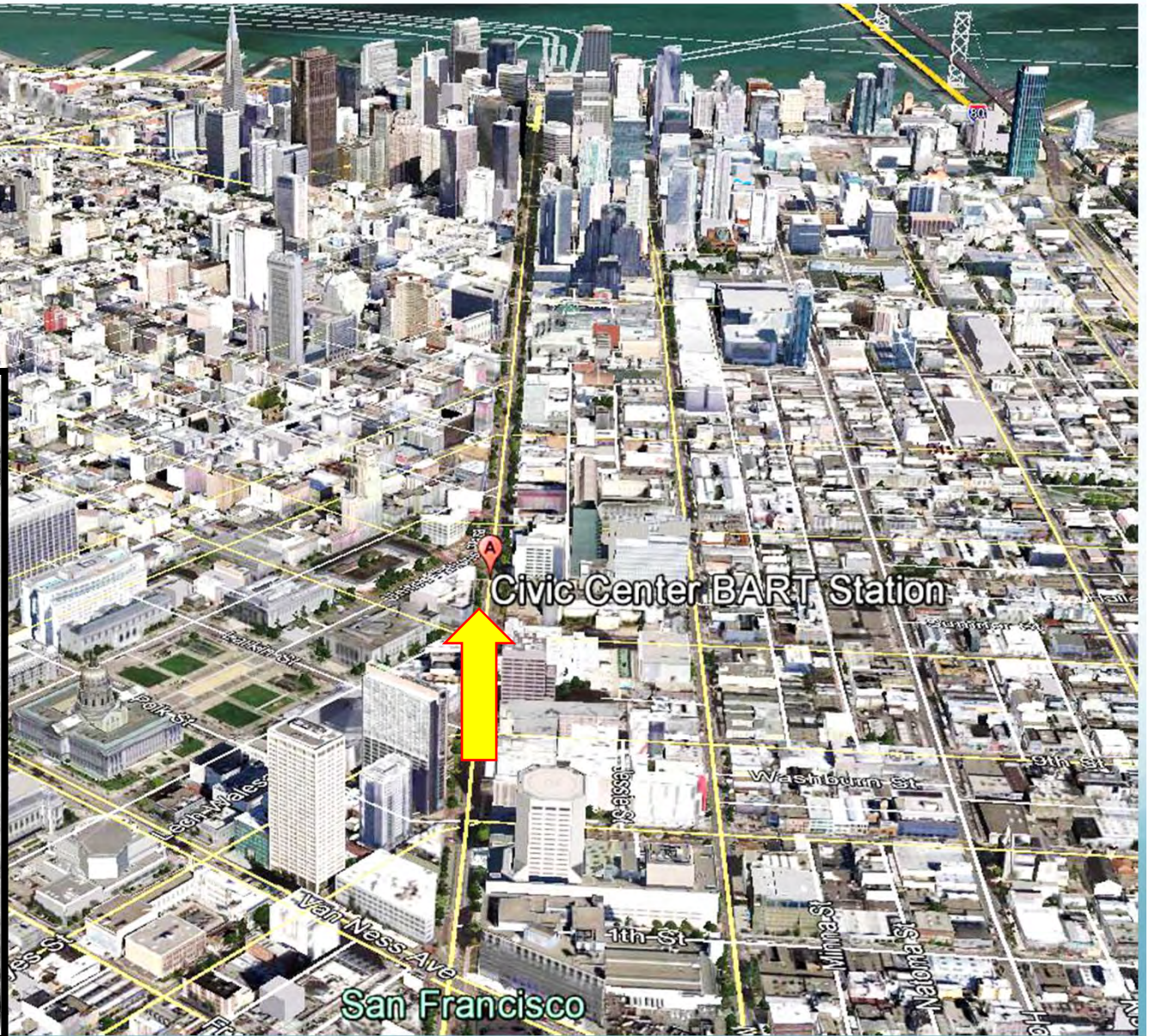
b. CCO-295, Ellis Landing Mound.



## “BART” Skeleton (CA-SFR-28): Civic Center Station

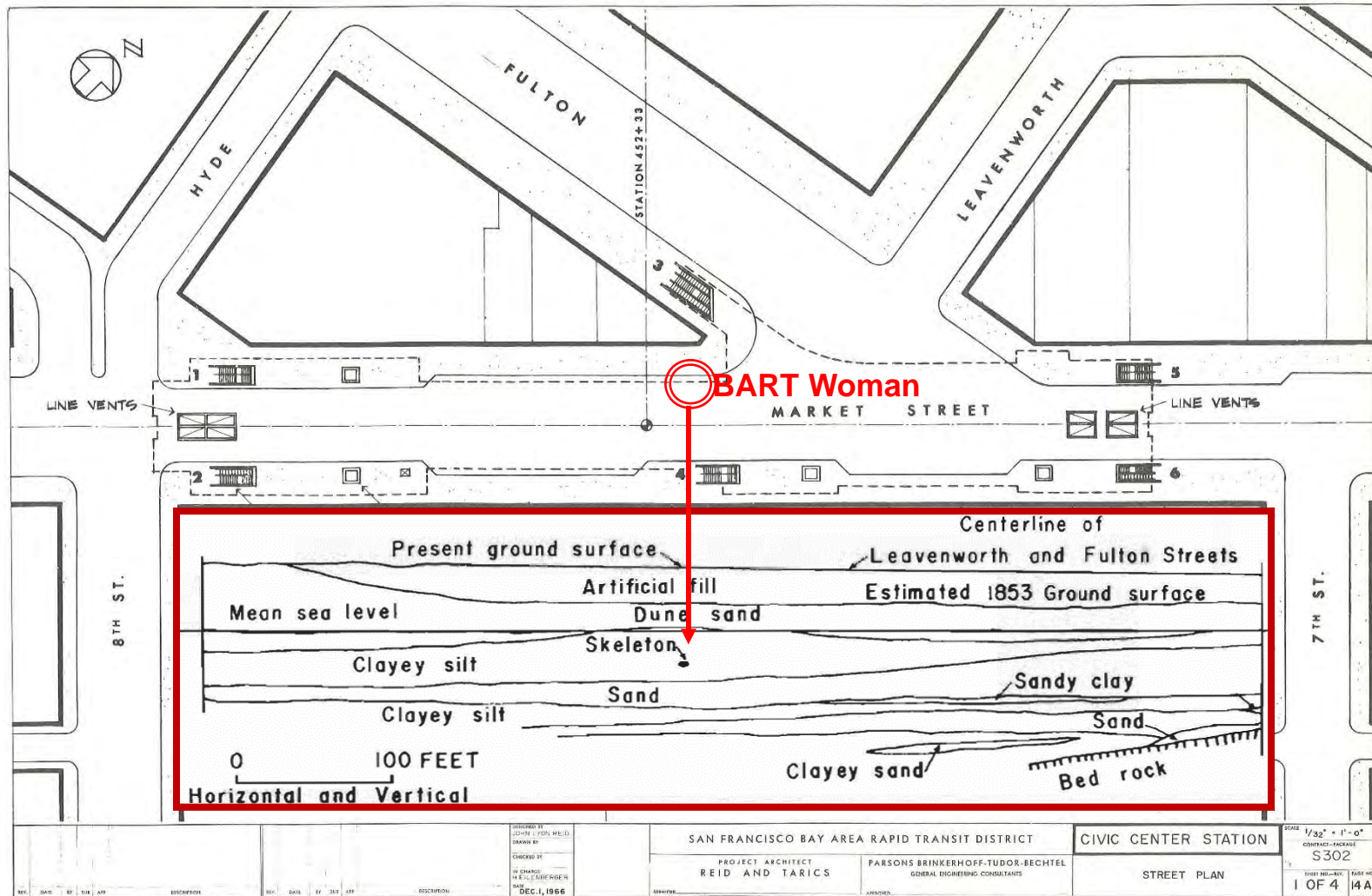
*Found while  
excavating BART  
tunnel below Market  
Street in 1969*

*Human skeleton 75  
feet (~22.9 meters)  
below street surface*





## “BART” Skeleton (CA-SFR-28): Civic Center Station





## “BART” Skeleton Discovery October 30<sup>th</sup>, 1969





## BART System Will Serve All Of The Handicapped

Planning for the handicapped within the San Francisco Bay Area Rapid Transit (BART) system is a top priority, according to BART officials. The system will be designed to serve all of the handicapped, including those who are blind, deaf, or have physical disabilities.

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## Skeleton In BART Closet

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## Skeleton In BART Closet

Who was that mysterious lady emerging from the depths of BART's Civic Center Station on Oct. 30?

That's what anthropologists from San Francisco State College and its Treganza Museum are trying to determine as they examine the remains of a female skeleton unearthed at the 75-foot level of the Market Street station in San Francisco.

Workers uncovered the bones as they were preparing to pour the foundation slab for the station, and the college was immediately notified. Work ceased until a team headed by Treganza Museum Curator Robert Schenk carefully uncovered every skeletal fragment and removed it from the construction area.

Schenk said that the bones are those of a 25-year-old woman who stood 5 feet, 5 inches tall. "These bones are in amazingly

## BART Discovery

## Oldest S.F. Bone

By Robert Gillette  
Science Writer

The partial skeleton of a prehistoric Indian woman has been unearthed 75 feet below Fulton and Leavenworth Streets in San Francisco, officials of the Bay Area Rapid Transit District disclosed today.

The dusky grey-brown thigh bones and pelvis of the young woman are estimated to be about 5000 years old, making them, by at least a century, the oldest evidence of human habitation ever found in the Bay Area.

In a mid-morning news conference in BART offices at 814 Mission St., Robert

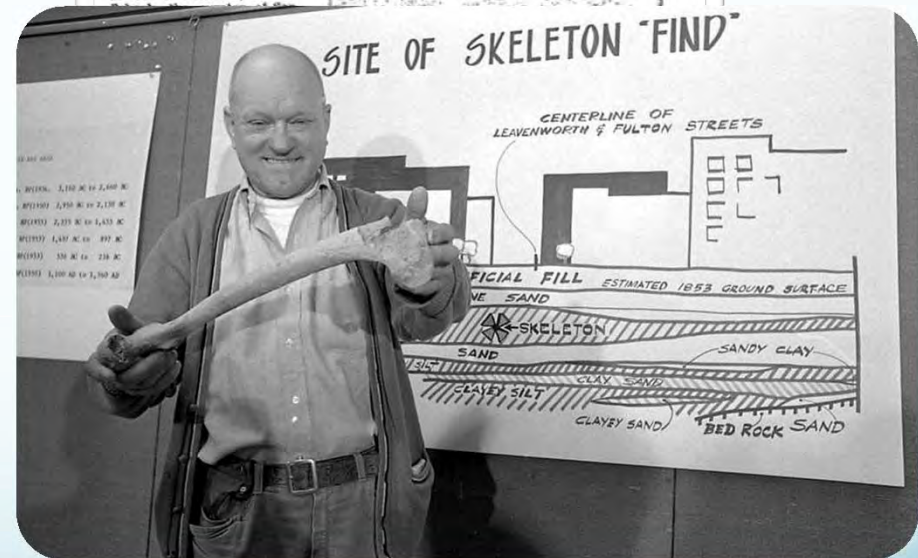


From BART December 1969 Newsletter (page 1) - October 2. Photograph has been modified to zoom in.

## From BART Newsletter, December 1969



**Radiocarbon  
Date 4900 +/- 250  
BP, or  
5630 cal BP**



BART worker Joe Pikul holds a 5,000-year-old human bone he found while excavating for the Civic Center Station in 1969.

[Photo: Peter Breinig, The Chronicle]



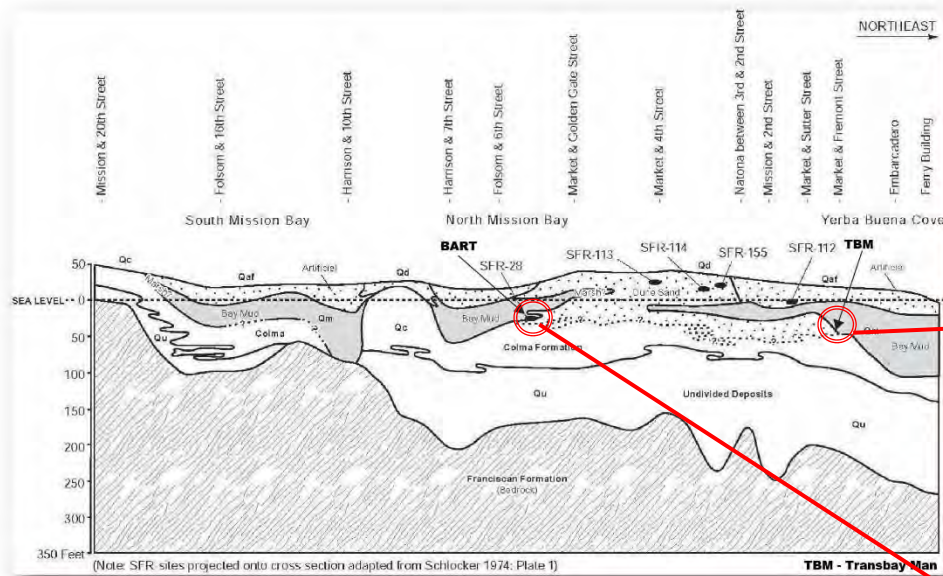
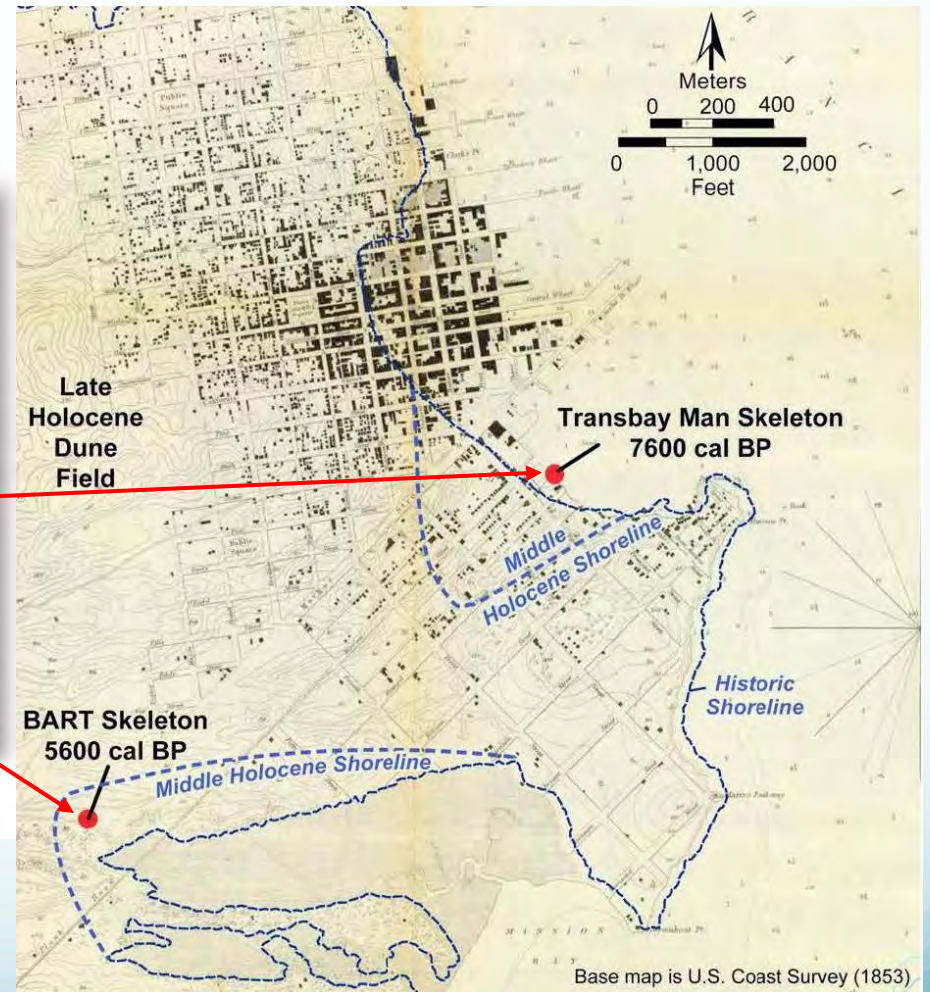


Figure histpics. Cross Section of Major Stratigraphic Units Along Transect from Mission Bay to Yerba Buena Cove. Note approximate position of the BART and Transbay Man (TBM) Skeletons are projected.







View of Freshwater Marsh Deposits Overlying Colma Sand Exposed near 2nd Street to the North



View of Freshwater Marsh Deposits on Colma Sand Southwest of Skeleton to North



View of Location where Skeleton was Removed (center-right) to the Northwest



View of Alternating Sand, Silt, and Clay Layers Exposed East of Skeleton to the Southwest (left) and West (right)

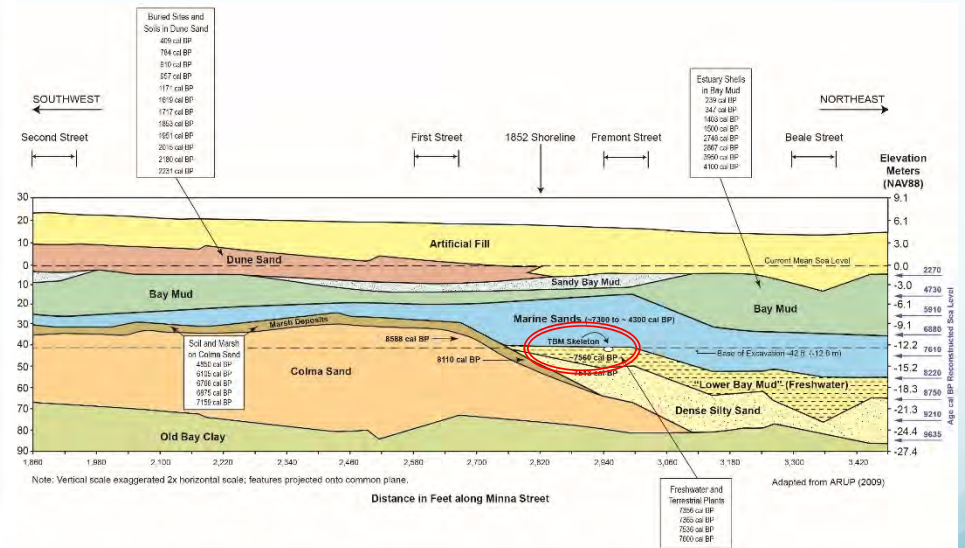
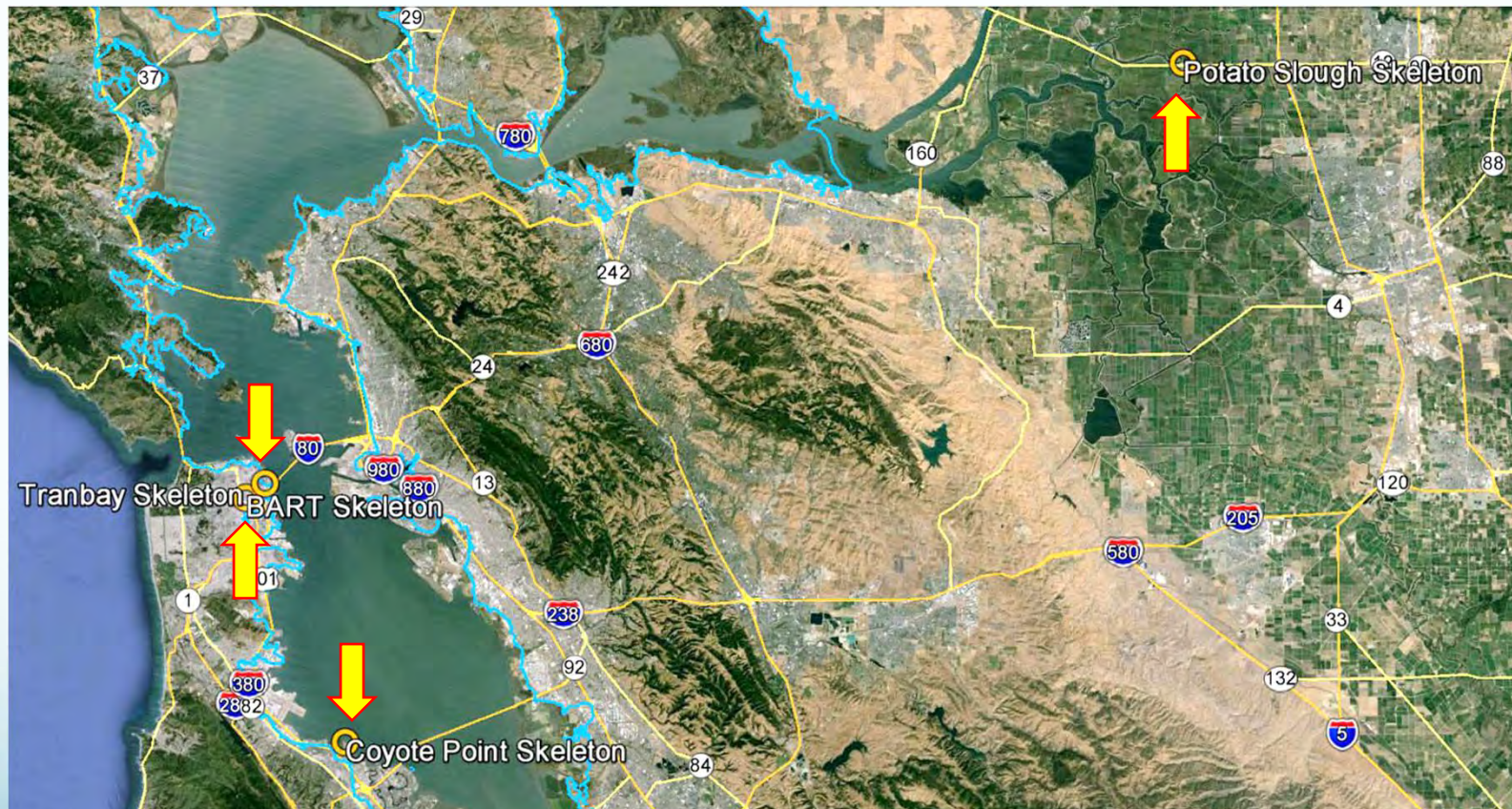


Figure proverbspics. Overview of Deposits Exposed at and near the Transbay Skeleton Site.

Figure E-Wstrat. Cross Section Showing the Stratigraphic Context of the Skeleton and Radiocarbon Dates from Yerba Buena Cove. Reconstructed sea level at right.

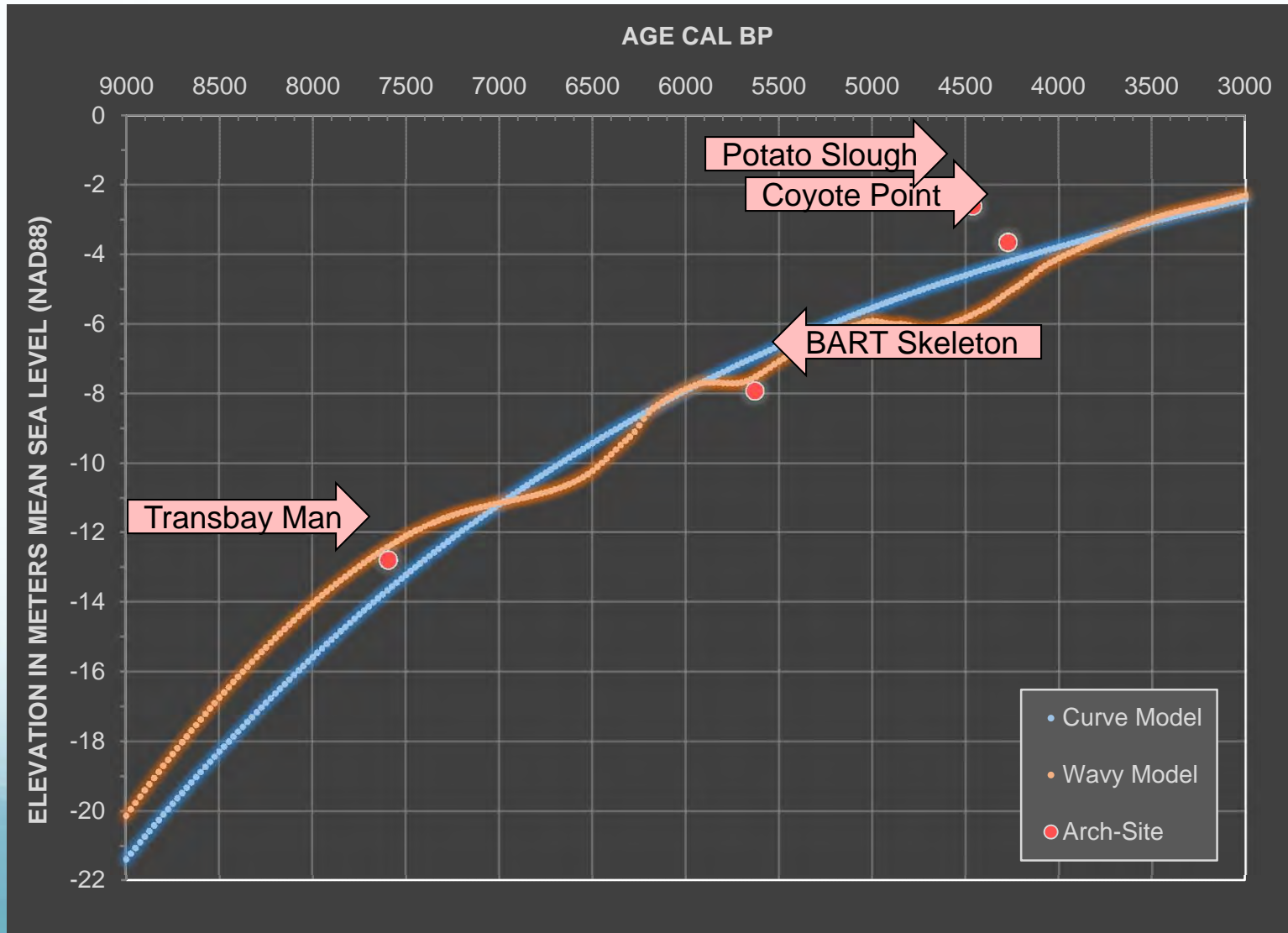


# Human Skeletons Have Been Found Below Sea Level at Four San Francisco Bay Locations!





# Age and Elevation of “Submerged” Human Remains Compared to San Francisco Bay Sea-Level Curve



**Archaeological Research Design  
and Treatment Plan  
for the Central SoMa Plan Area,  
San Francisco, California**

Planning Department Case No. 2011.1356E

*By:*

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*JRP Historical Consulting, LLC*

April 2014 FINAL

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Figure 1. Central SoMa Plan Area Location.



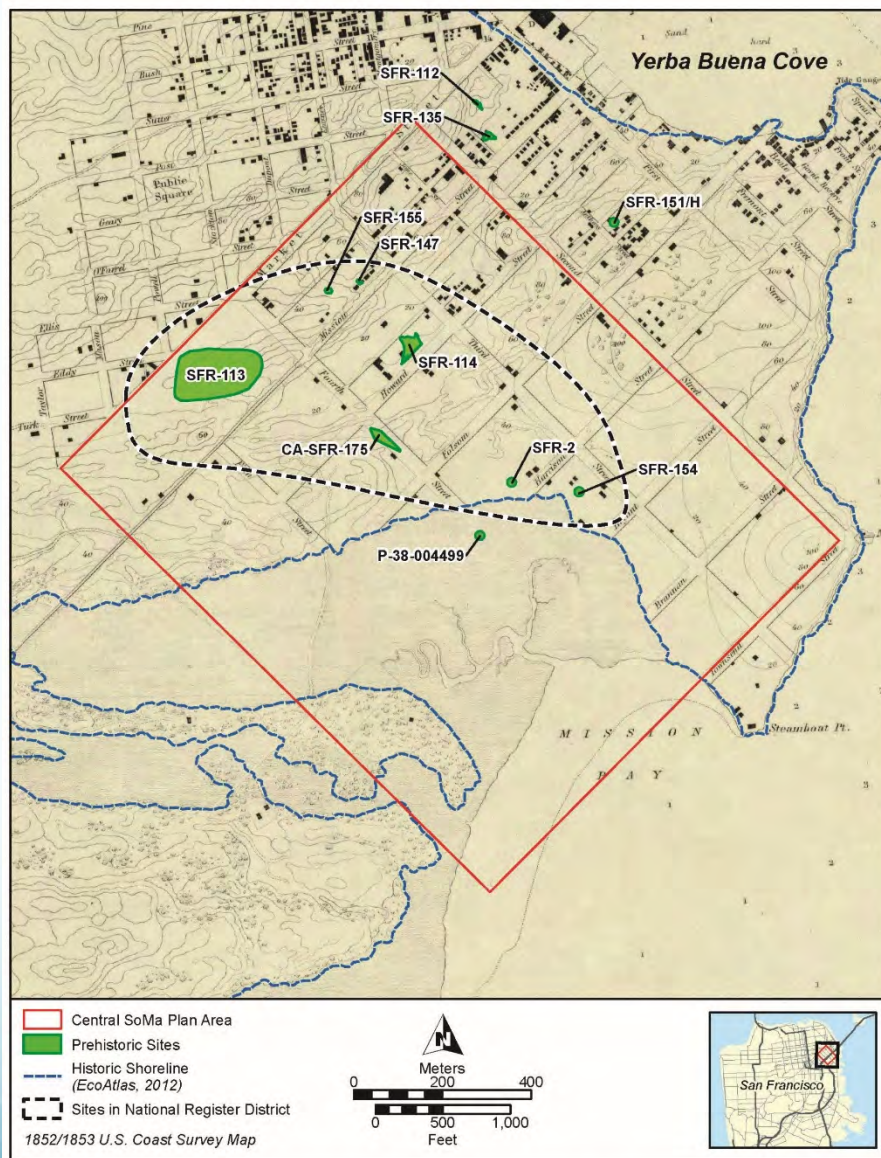
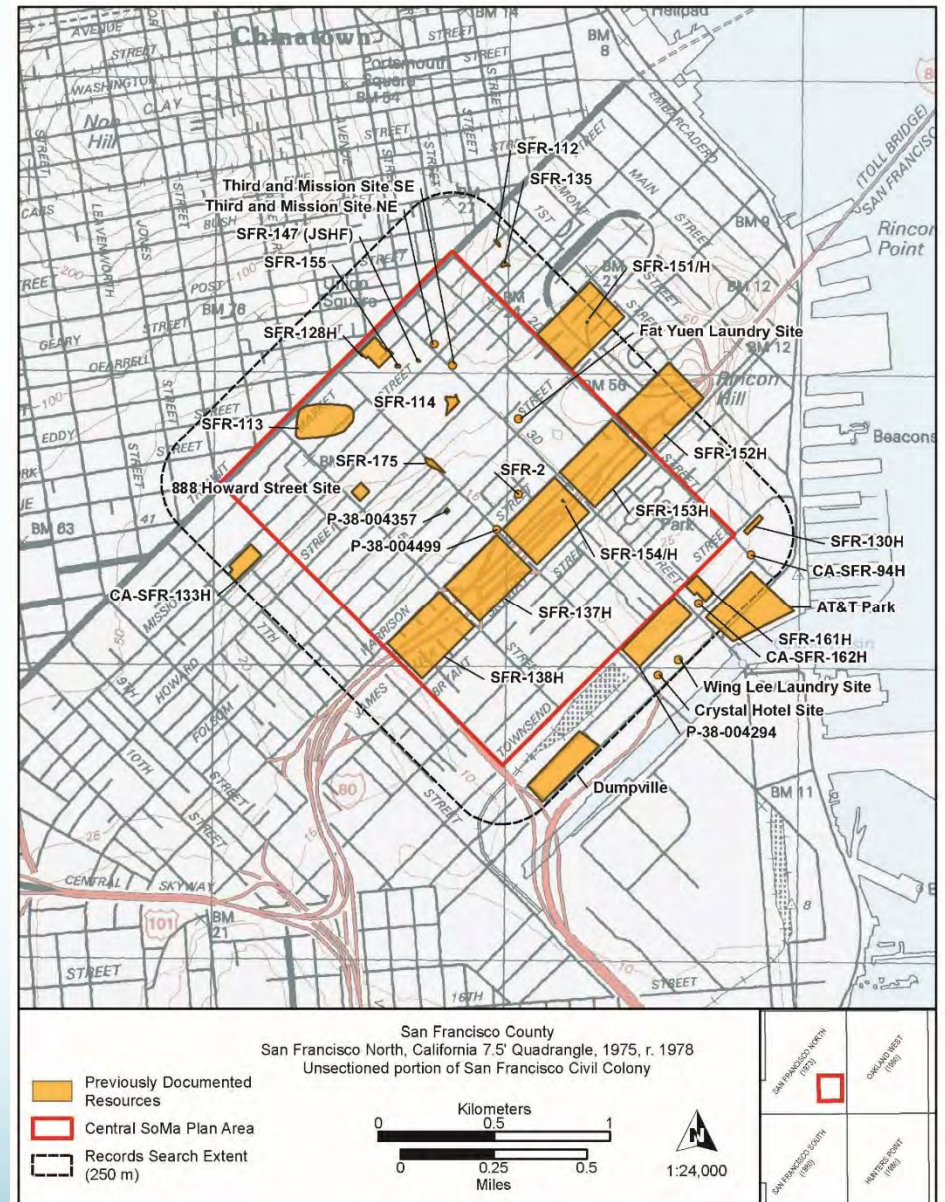


Figure 7. Distribution of Prehistoric Sites in the General Vicinity of the Plan Area.





# Analysis of Artificial Cut and Fill Using Modern and Historical Elevation Data

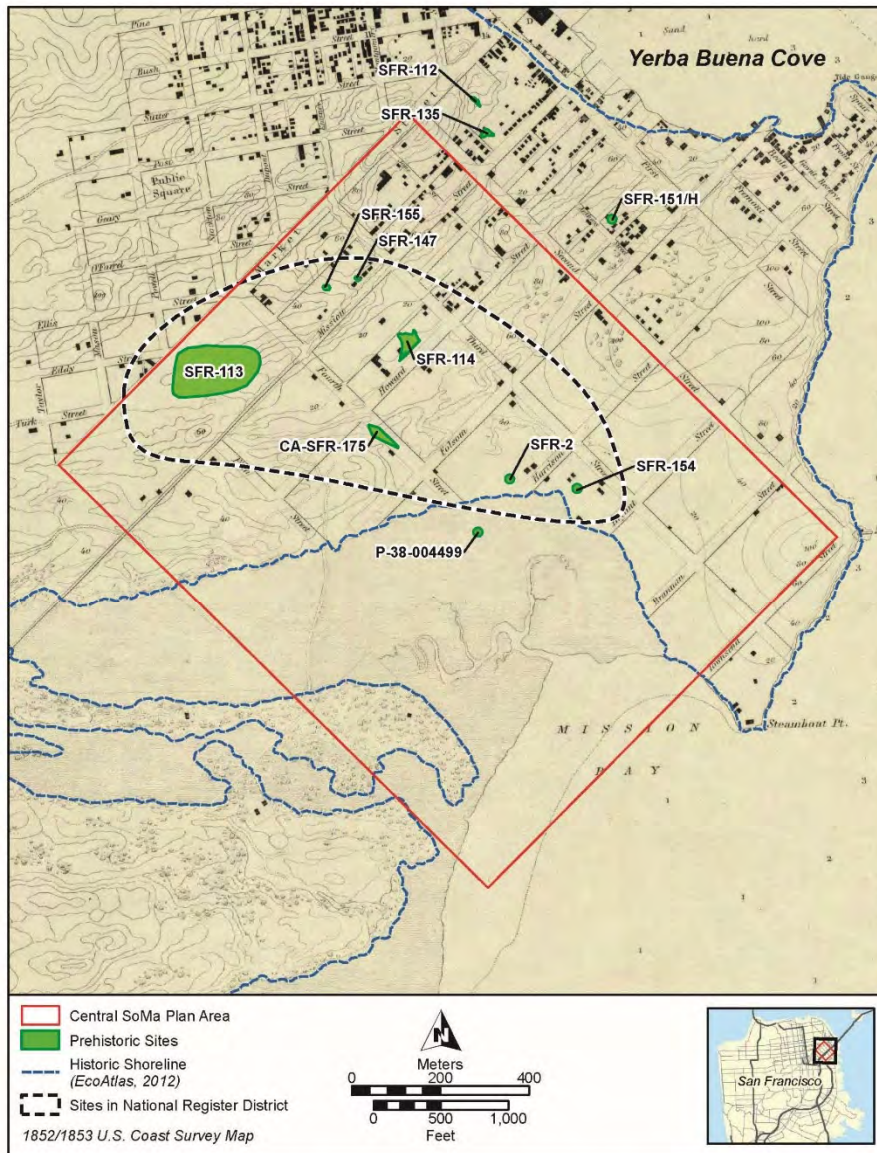


Figure 7. Distribution of Prehistoric Sites in the General Vicinity of the Plan Area.

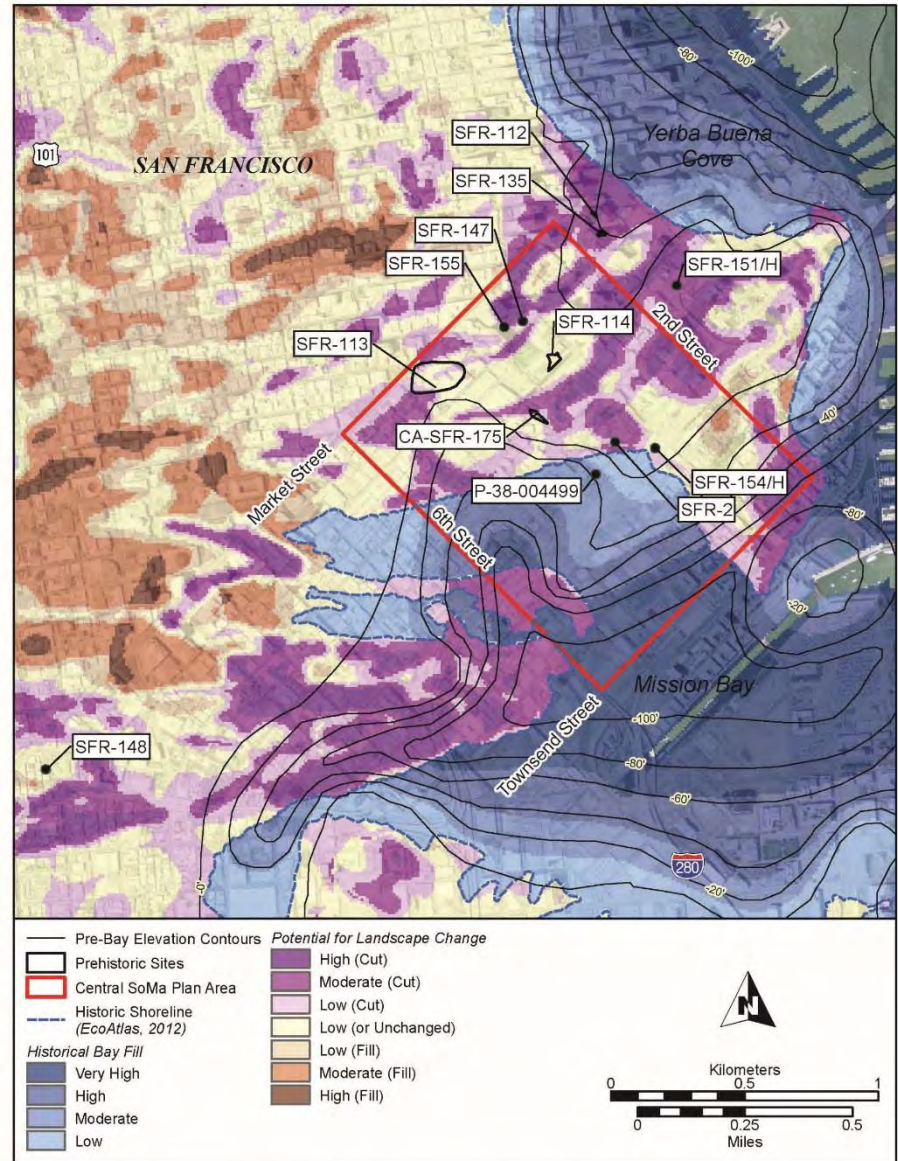
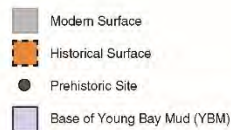
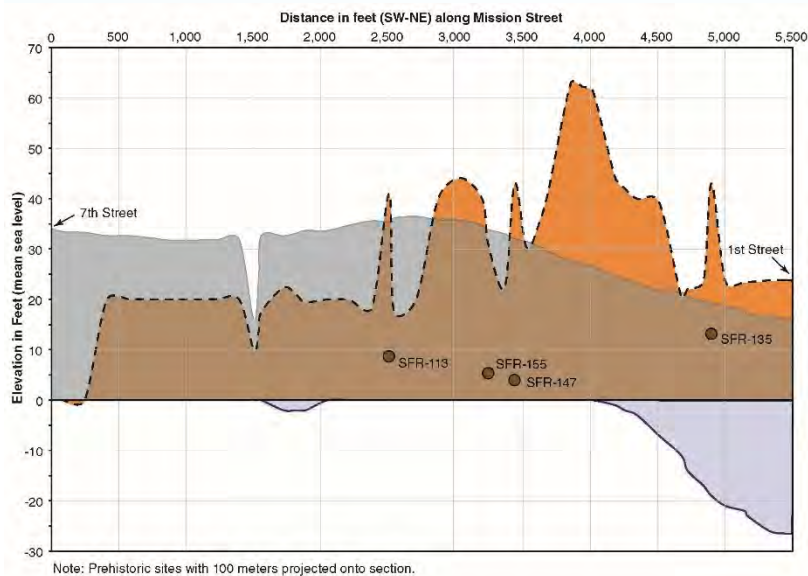


Figure 31. Relative Landscape Change within the Central SoMa Plan Area (Mid-1800s to Present).



# Analysis of Artificial Cut and Fill Using Modern and Historical Elevation Data



Mission Street Sections.

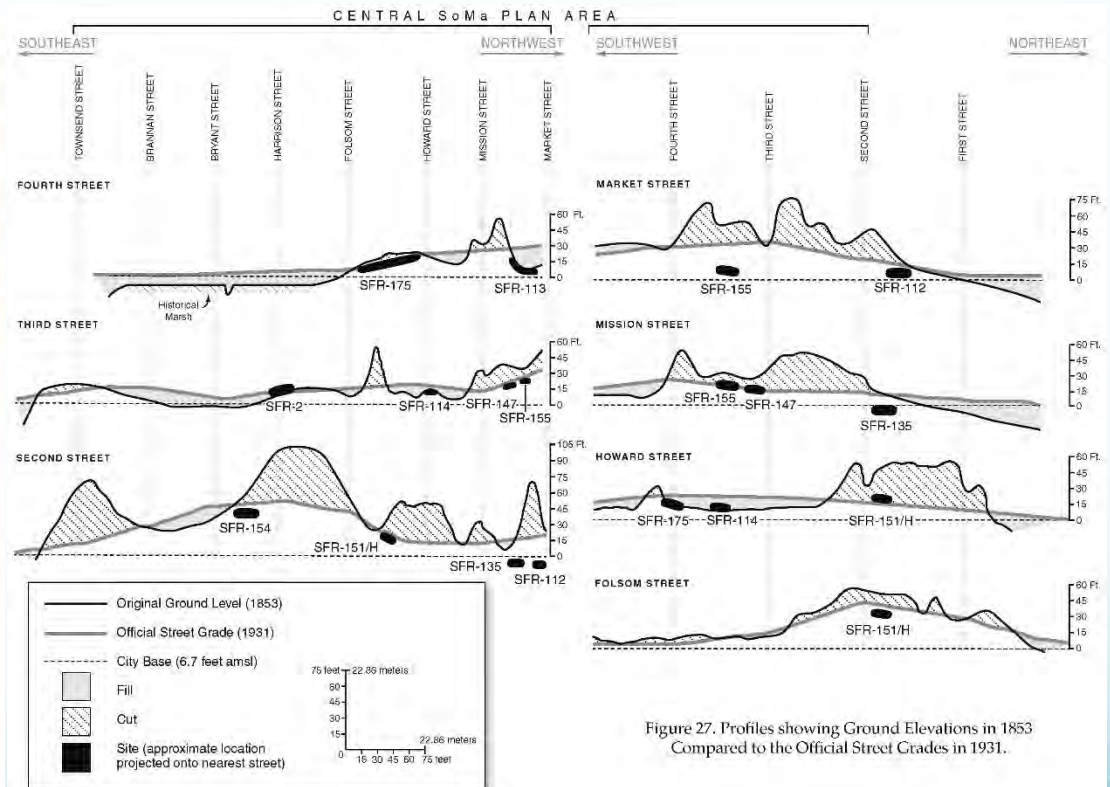


Figure 27. Profiles showing Ground Elevations in 1853 Compared to the Official Street Grades in 1931.

Adapted from Whitworth 1932: Plate 23-24.



# Buried Site Potential

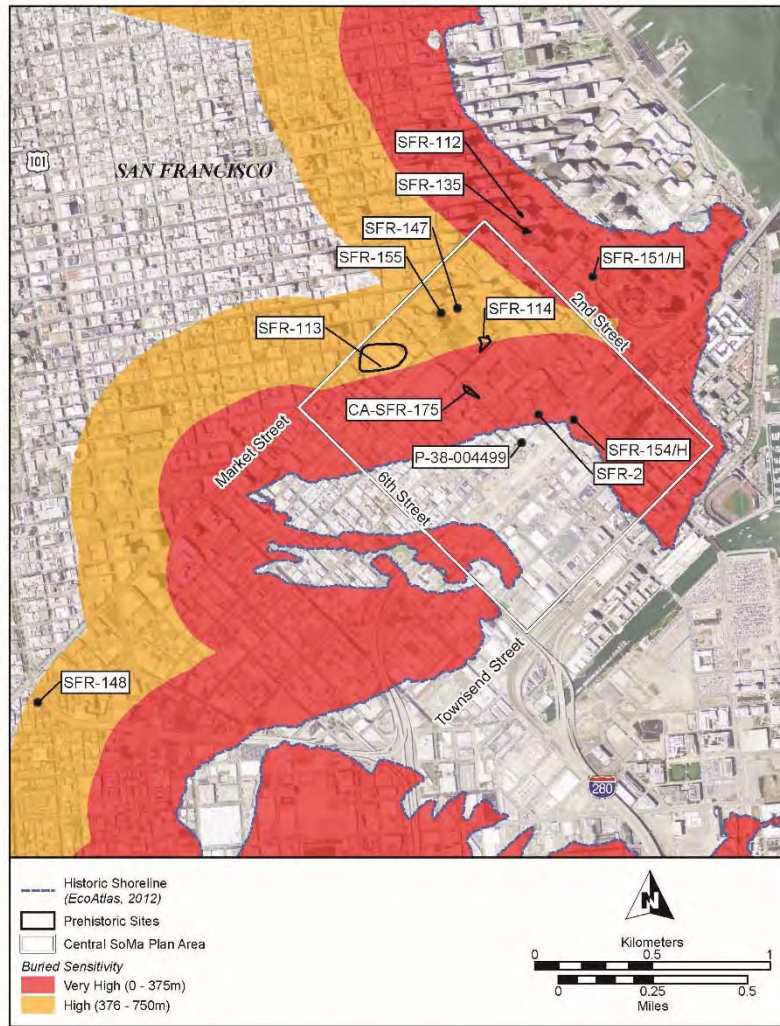


Figure 32. Areas with a High to Highest Potential for Buried Prehistoric Sites in the Plan Area.

# Submerged Site Potential

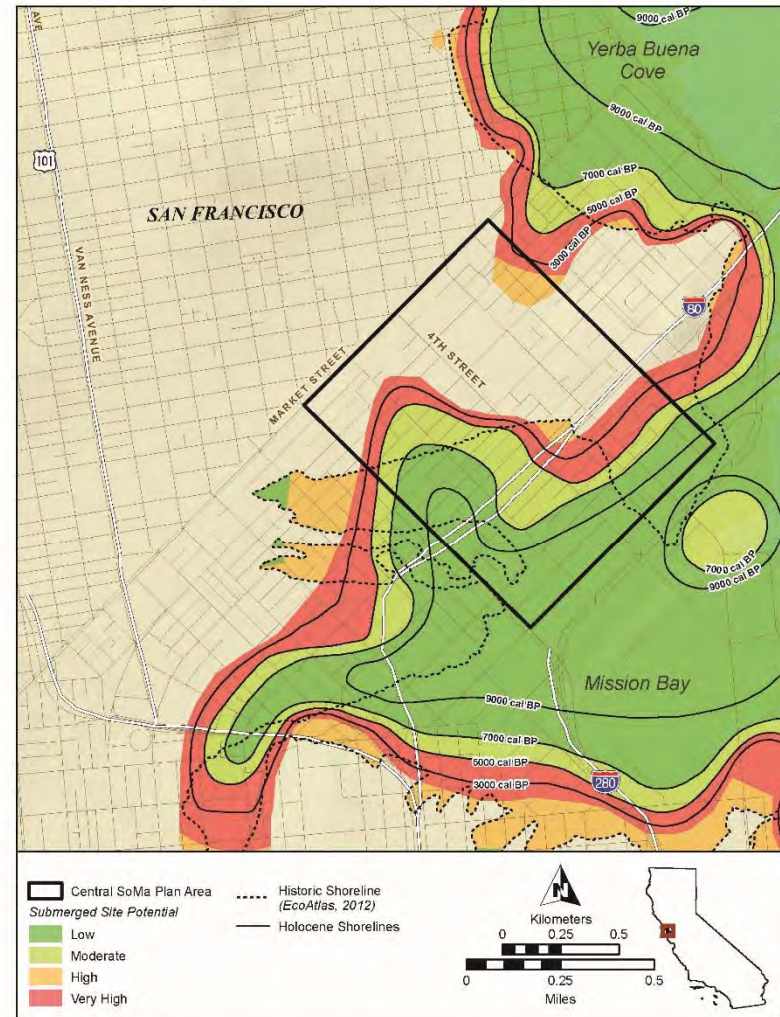


Figure 33. Extend of Submerged Prehistoric Site Potential Zones in the Plan Area.



# Challenge of Coring in the City



a. 181 Freemont Street Alley



b. 350 Mission Street Basement



c. 41 Tehama Street



d. Transit Tower

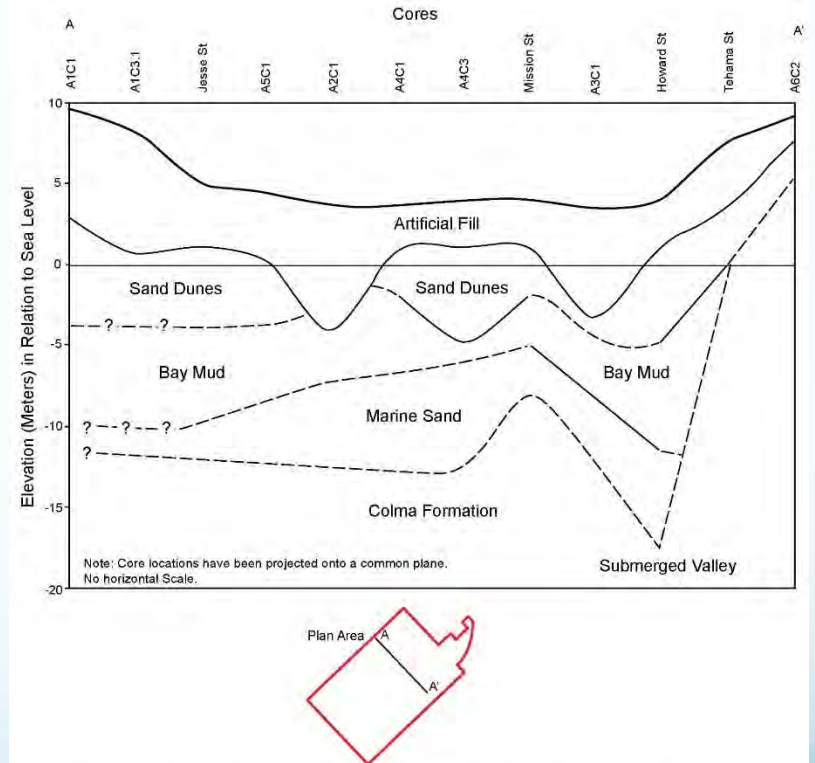


Figure 39. Geologic Cross-Section of Plan Area along First Street, Incorporating Data from Geotechnical and Geoarchaeological Investigations.



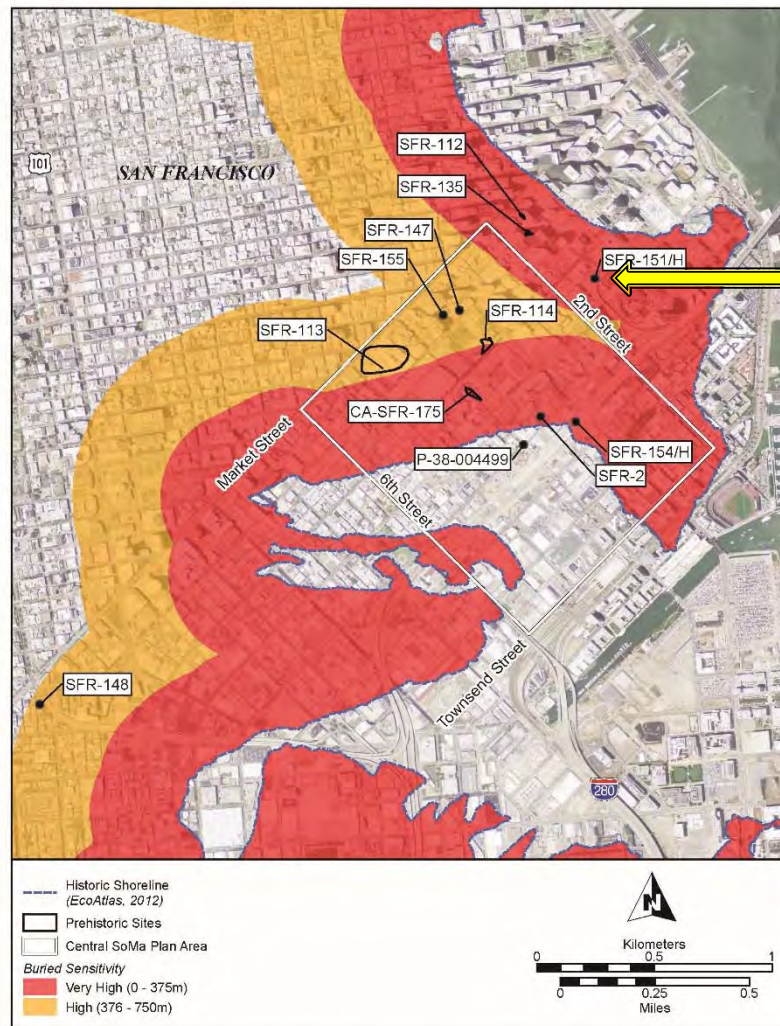


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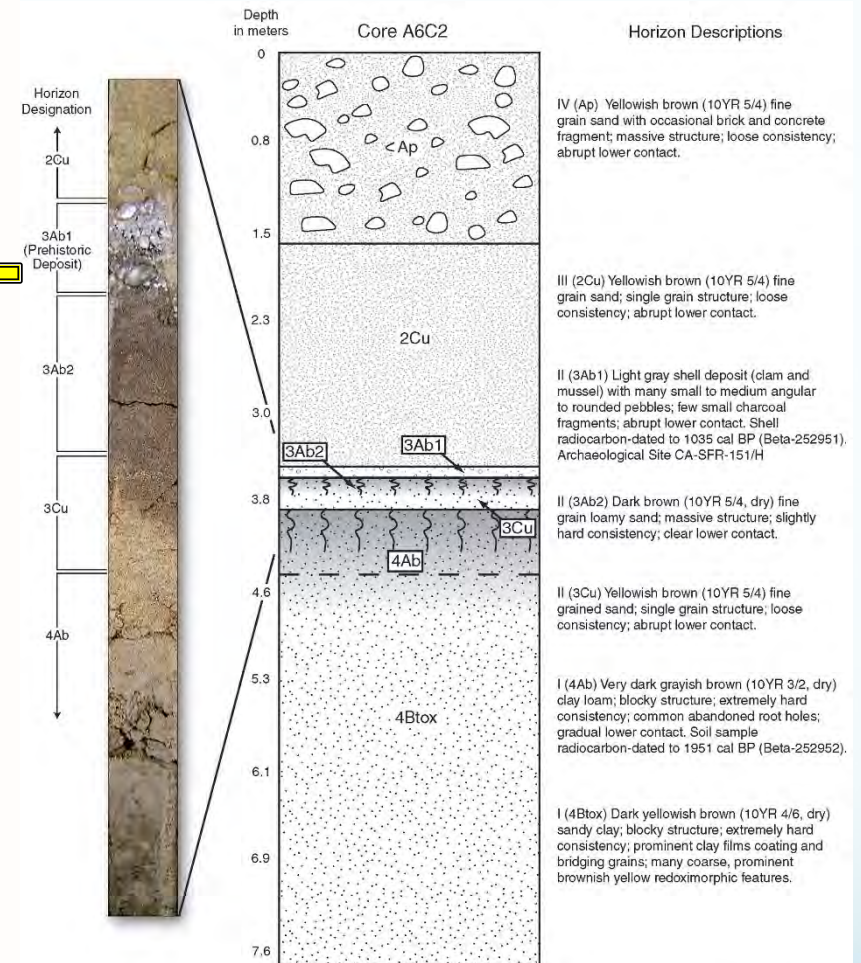


Figure 36. Tehama Street Core A6C2 Soil Stratigraphy showing Newly Discovered Site SFR-151/H.

Intact buried prehistoric deposit (SFR-151) at 11.8 ft below street surface identified in core sample



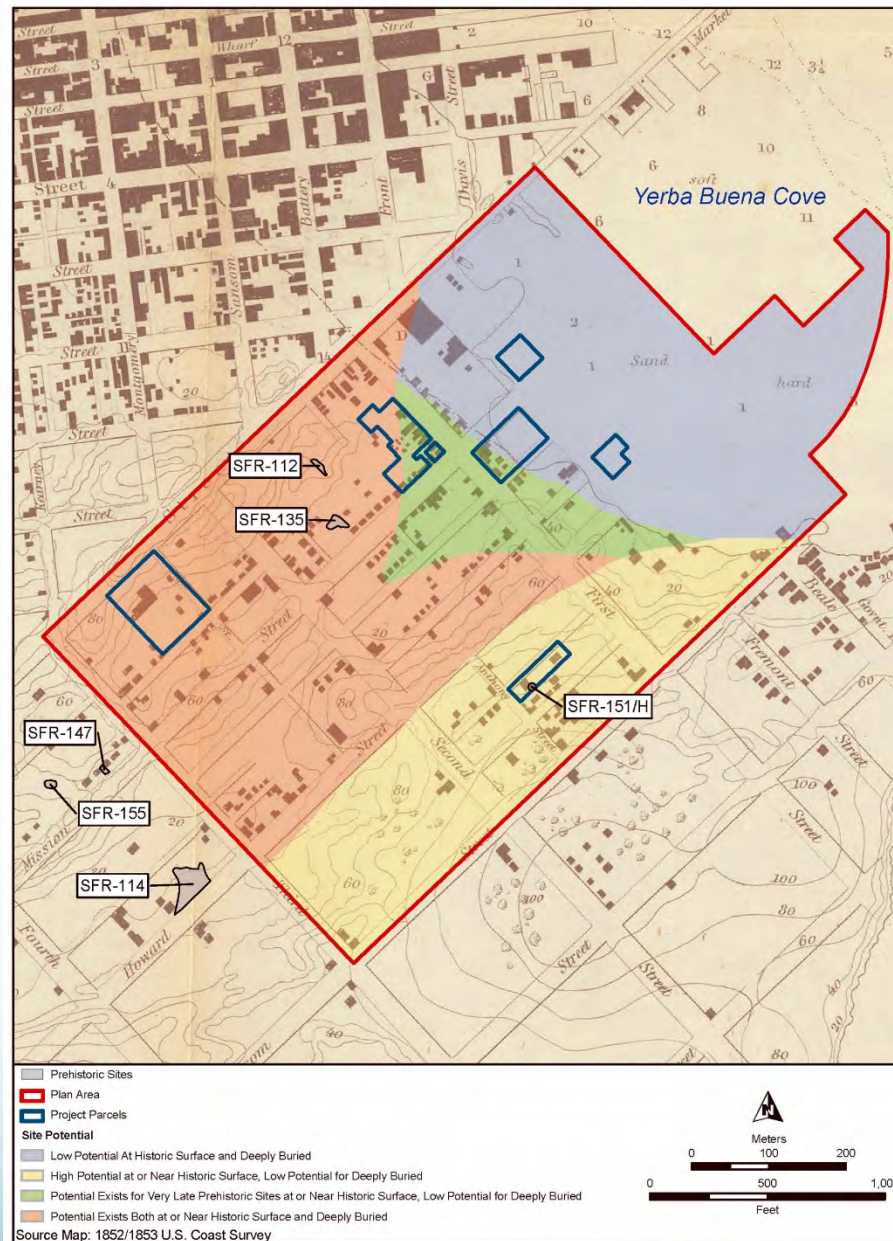


Figure 40. General Potential for Buried Prehistoric Sites in the Plan Area.

Fieldwork used to refine and delimit horizontal and vertical potential for sites

# Archaeological Sensitivity Assessment and Testing Plan for Sub-Phases CP-02 through CP-05 of the Candlestick Point-Hunters Point Shipyard Phase II Development Project, San Francisco, California

Planning Department Case No. 2007.0946E

By:

Dr. Brian F. Byrd  
Jack Meyer, M.A.  
Naomi Scher, M.A.

Far Western Anthropological Research Group, Inc.

Dr. Rebecca Allen  
Dr. Matthew Russell



July 2015



Figure 1. Candlestick Point Sub-Phases CP-02 through CP-05 Project Location.

## Prepared for:

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# Additional Prehistoric Archaeological Testing for Subphases CP-02 and CP-04 of the Candlestick Point-Hunters Point Shipyard Phase II Development Project

Planning Department Case No. 2007.0946E

By:

Jack Meyer, M.A.  
Laura Murphy, Ph.D.  
Naomi Scher, M.A.  
Brian Byrd, Ph.D.

November 2016 FINAL



Figure 2. Candlestick Point Sub-Phases CP-02 through CP-05 Project Area.

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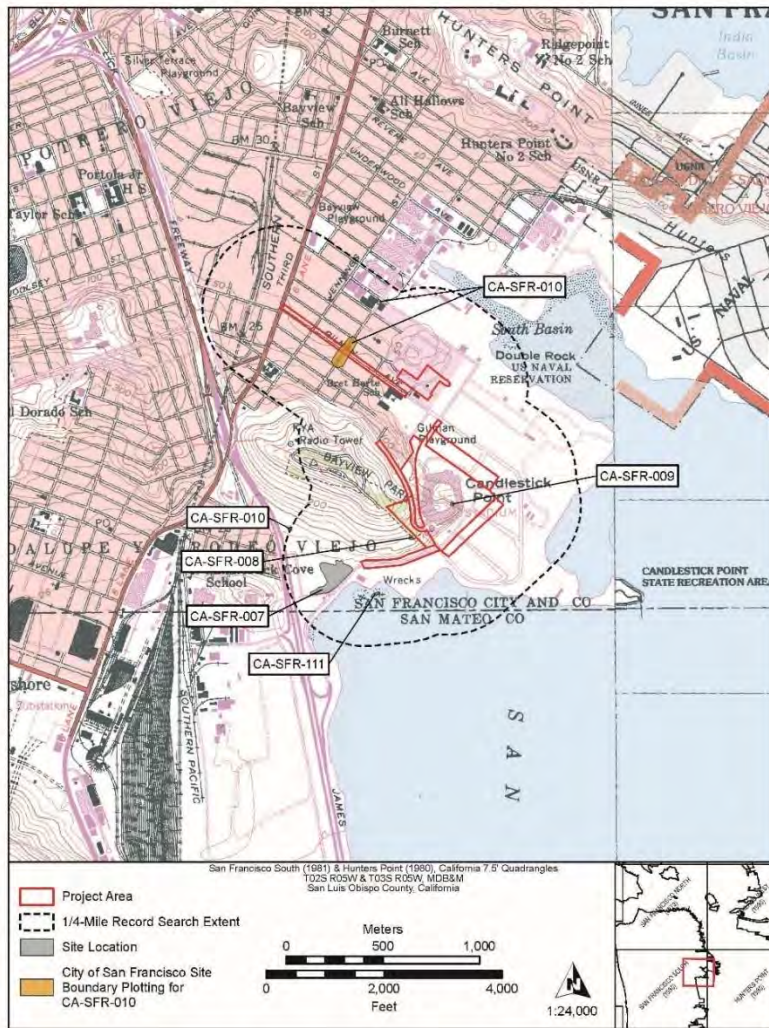


Figure 3. Candlestick Point Sub-Phases CP-02 through CP-05 Records Search Area Results.



Figure 3. Location of Previously Recorded Archaeological Sites in or near the Project Area.  
Note this is a 1905 US Coast and Geodetic Survey Map.



# Analysis of Artificial Cut and Fill Using Modern and Historical Elevation Data

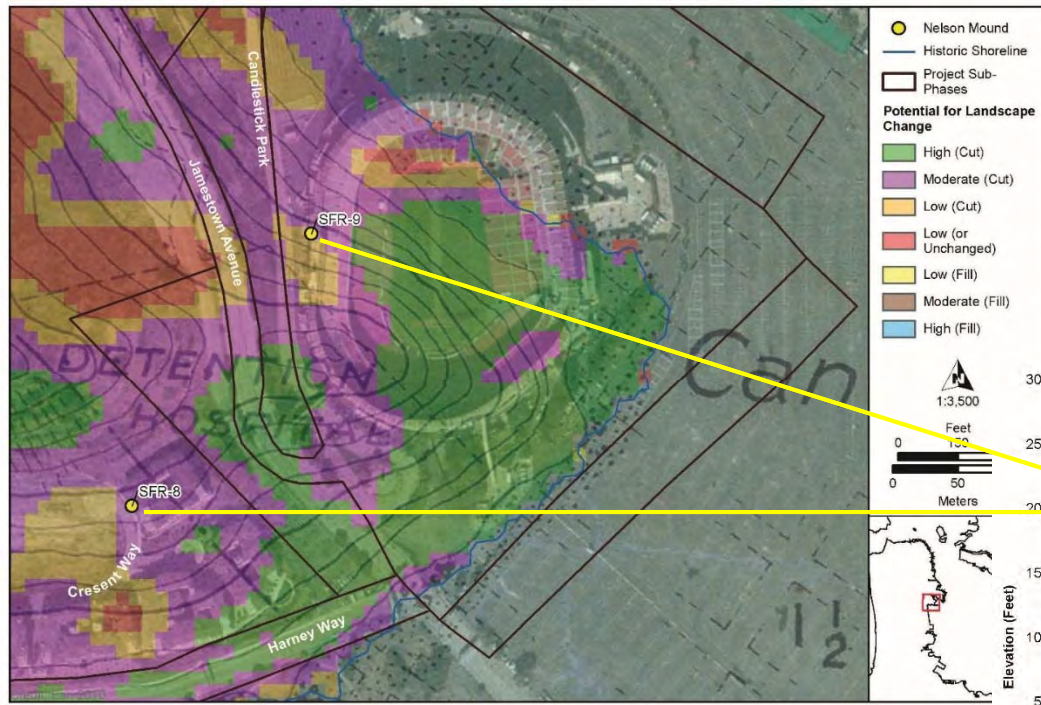


Figure 15. Relative Landscape Change within the Project Area (Mid-1800s to Present).

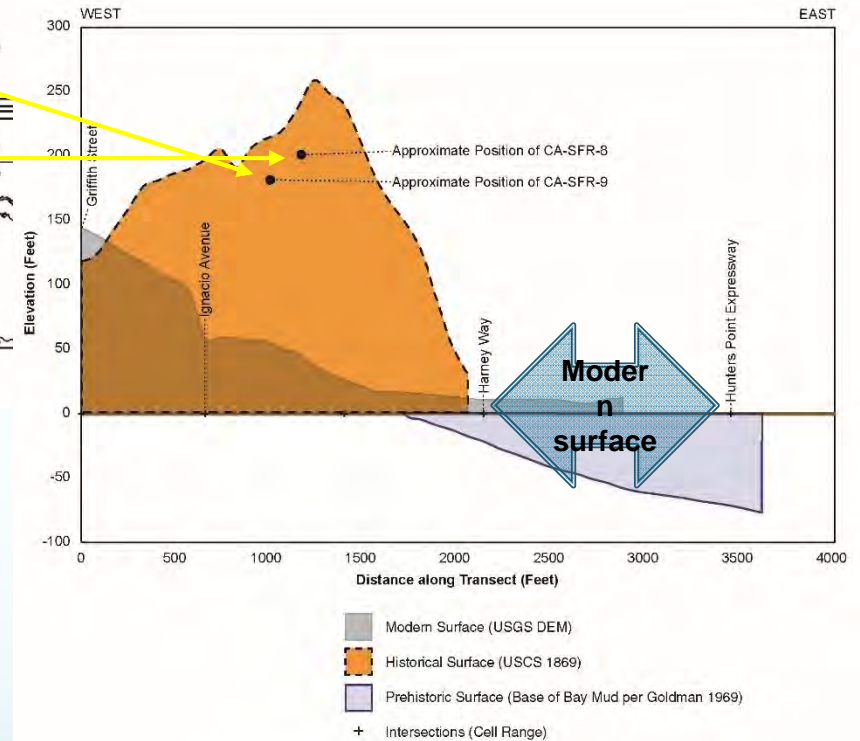


Figure 8. Elevational Transect along Jamestown Avenue.





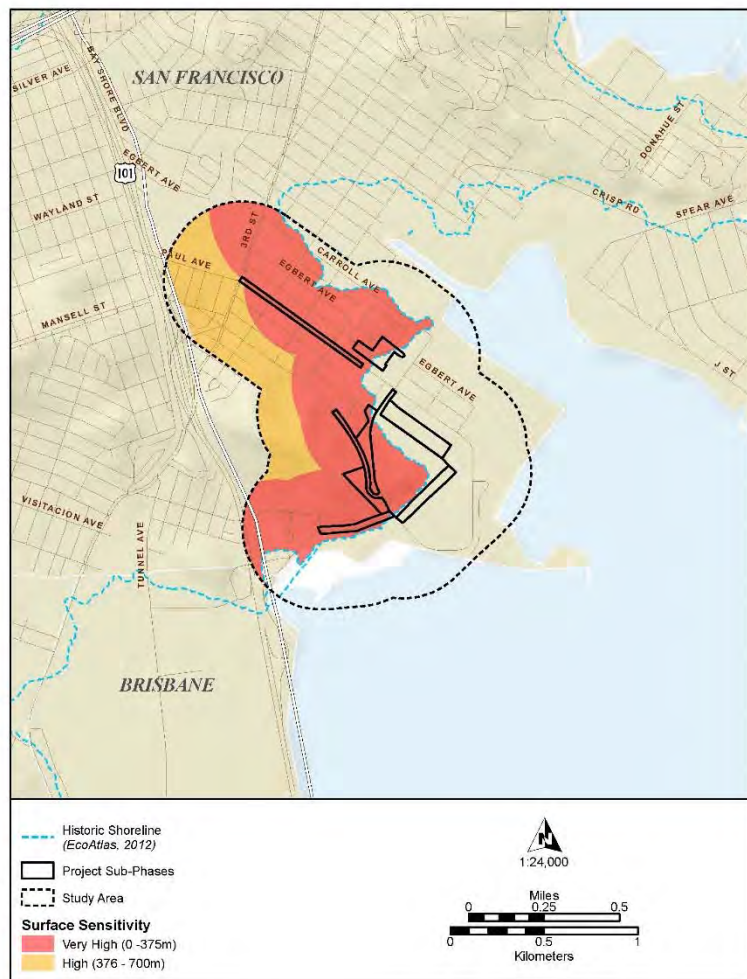


Figure 11. Surface Sensitivity for Prehistoric Sites in the Project Area.

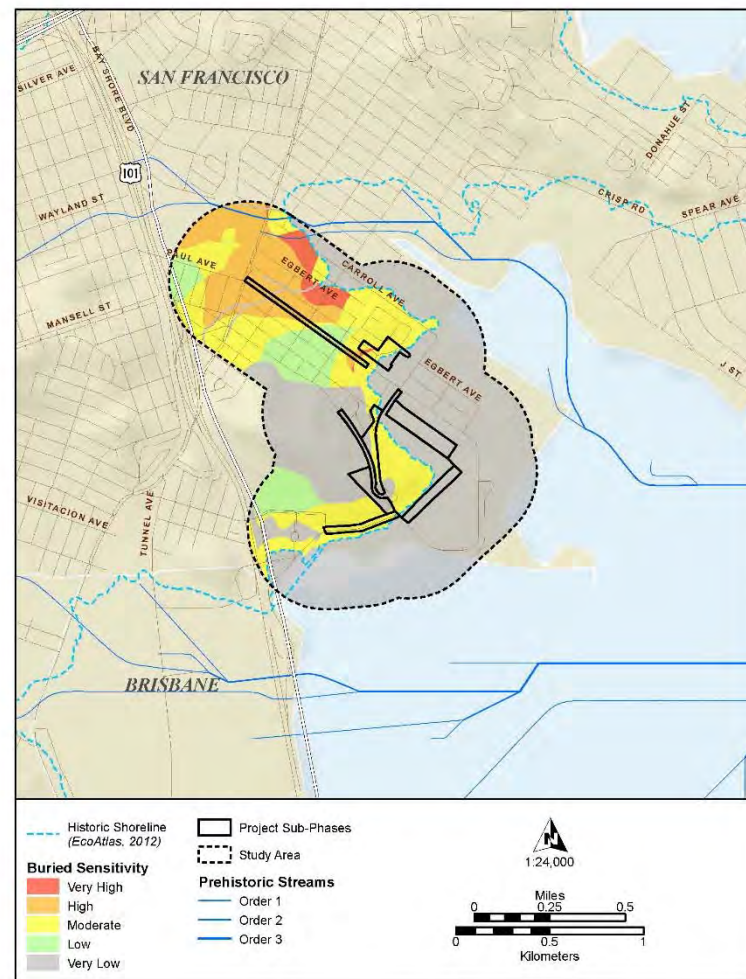


Figure 12. Extent of Buried Site Potential within the Project Area and Sub-Phases.



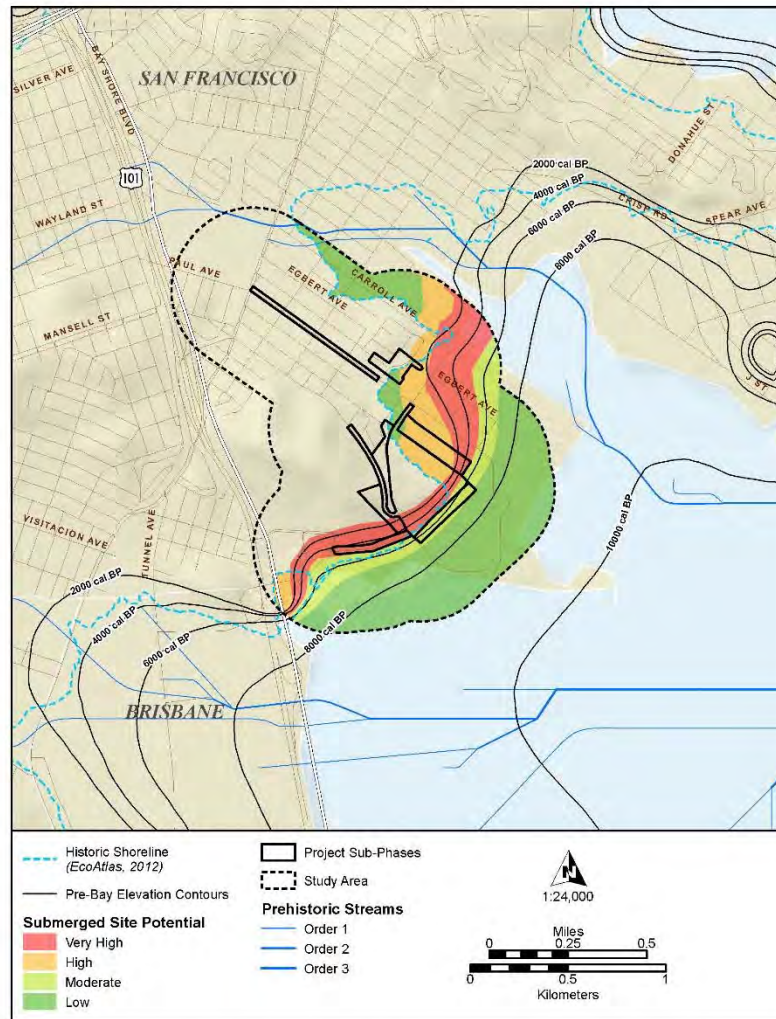


Figure 13. Extent of Submerged Archaeological Potential within the Project Area.

Archaeological Sensitivity Assessment and Testing Plan  
for Sub-Phases CP-02 through CP-06 of the Candlestick Point-  
Hunters Point Shipyard Phase II Development Project, San Francisco, California

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Far Western

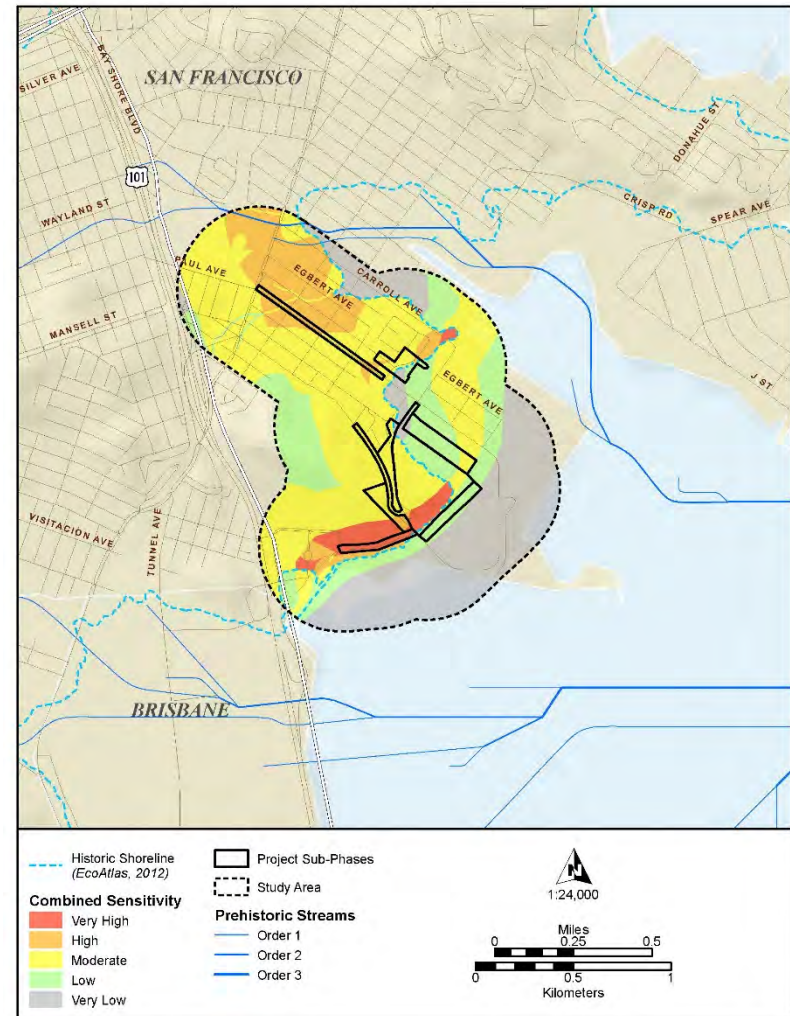


Figure 14. Cumulative Potential for Prehistoric Archaeological Resources in the Project Area.



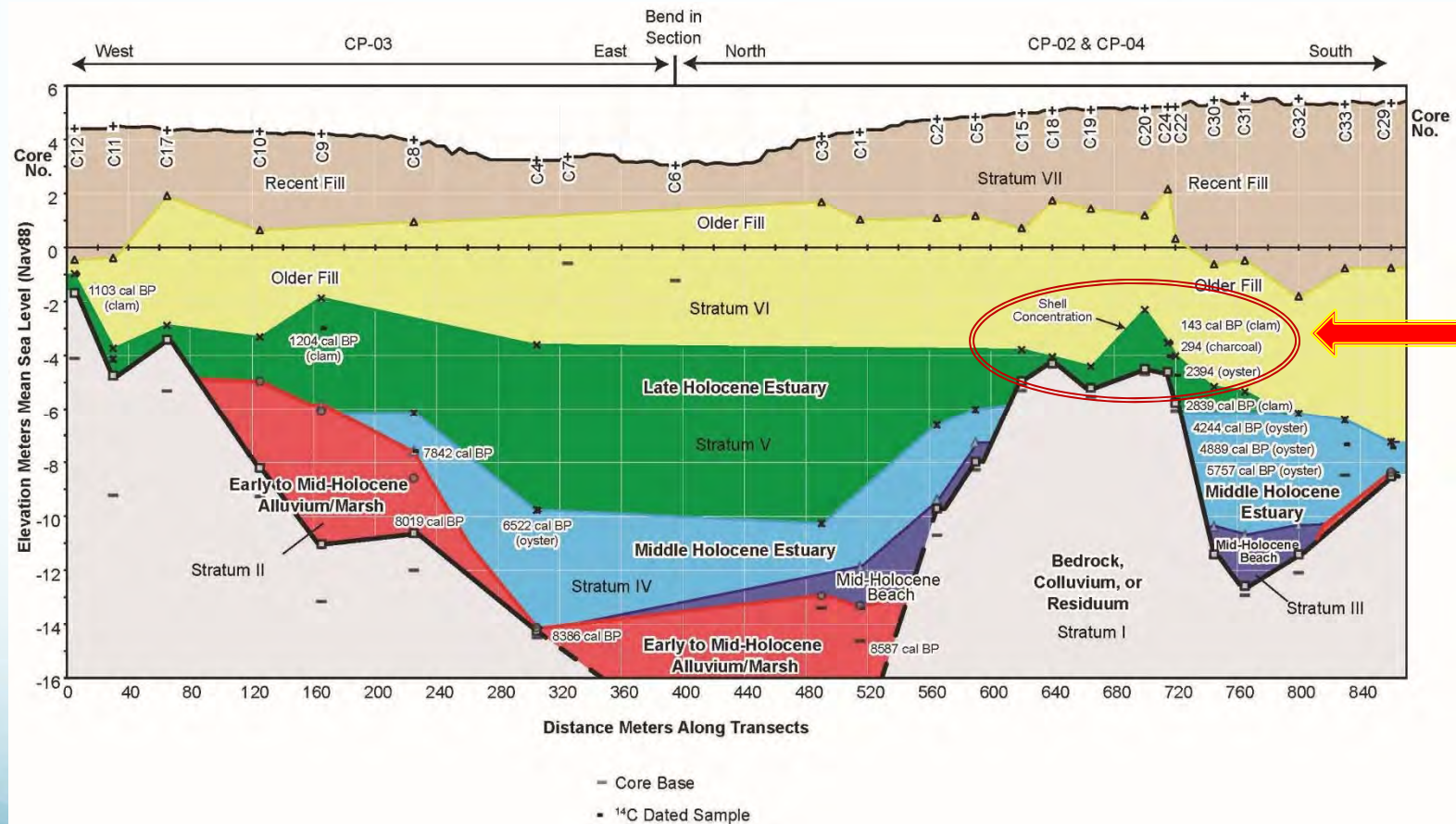
## CANDLESTICK POINT: Exploratory coring used as field identification method



Figure 4. Location of Exploratory Cores in the Candlestick Study Area.



# Shell Concentration – Natural or Cultural?





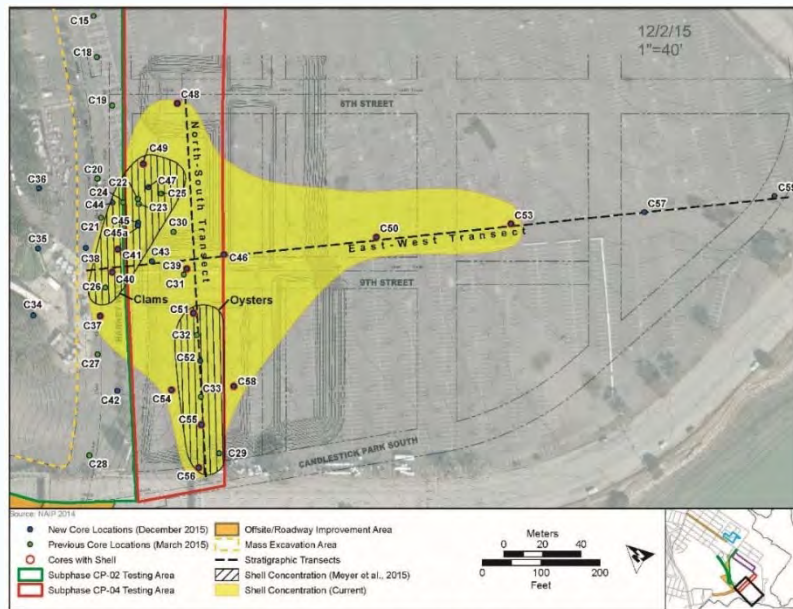


Figure 10. Extent of Shell Concentrations Identified by this and the Previous Study.



## CANDLESTICK POINT:

Additional coring used to assess the nature, extent, and context of shell concentration, and obtain larger sample

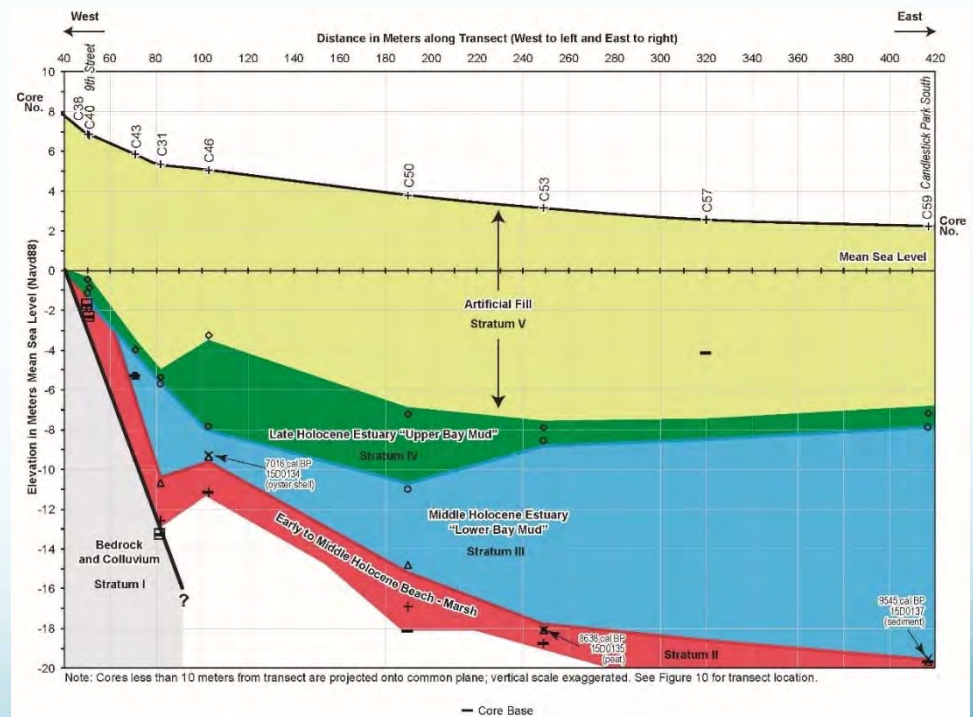
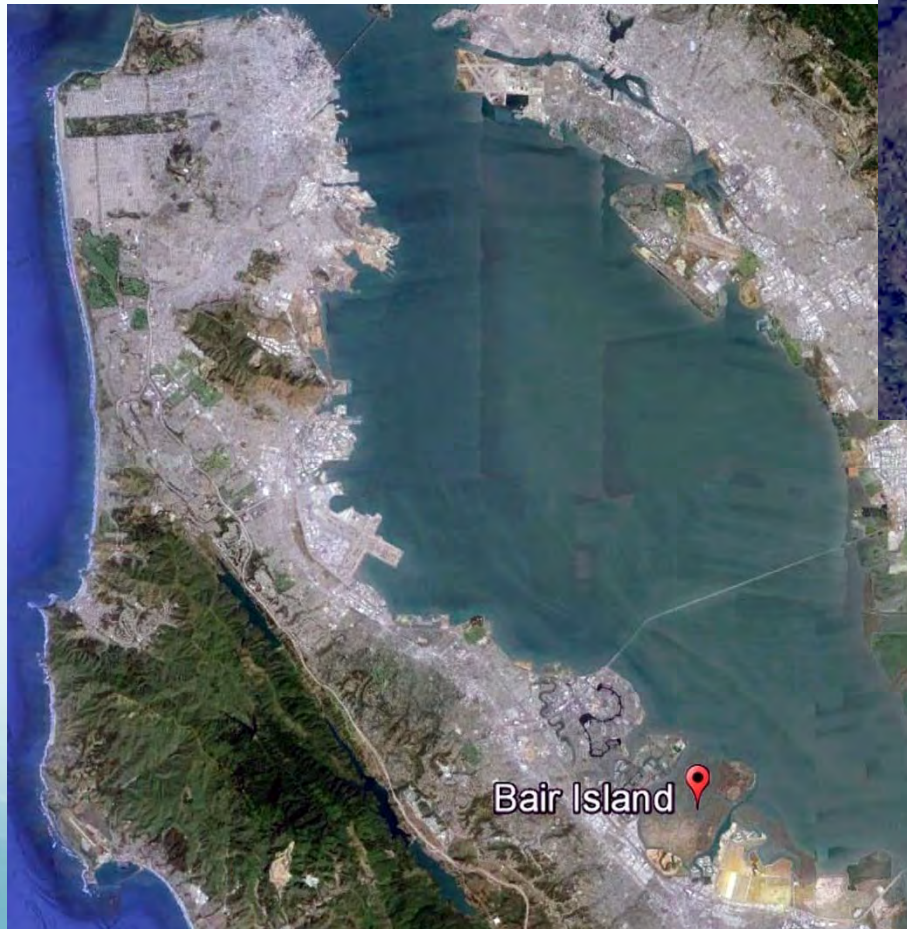


Figure 8. Cross-section of Major Strata Identified along an East to West Transect.



**Hold it!**

**Something not generally  
known?**



**Geographic variation in San Francisco Bay beach  
forms, sediments, and processes: an overview**

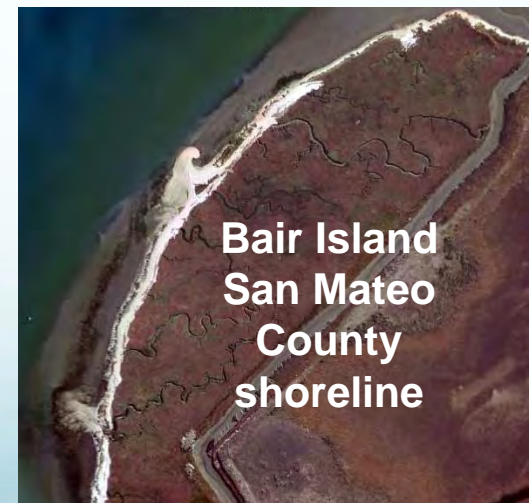
Peter Baye, Coastal Ecologist,  
Annapolis, California  
baye@earthlink.net

**State of the Sediment Workshop  
April 19-20, 2010**

**San Francisco Bay Conservation and  
Development Commission**

**U.S. Geological Survey**

**Menlo Park, California**







SE Bair Island – transgressive oyster shell hash beach: perched beach ridge above marsh scarp; beach face below scarp





# Shell Concentration is Natural (non-Cultural)

## Determination based on:

1. Lacks artifacts or features or other cultural items,
2. Deposit size (>17,655 m<sup>2</sup>) larger than known archaeological sites in Bay,
3. Contains mostly juvenile shells compared to adult shells in size,
4. Similar to natural shell deposits found along some Bay shores.



(fossil)  
*conchaphila*)

(*Ostrea lurida*, syn. *O.*



**A Geoarchaeological Study  
of the Islais Creek Estuary:  
A Framework for Future Project-Specific  
Archaeological Investigations at the  
Southeast Water Pollution Control Plant,  
San Francisco, California**

*By:*

Philip Kaijankoski, M.A.

Brian F. Byrd, Ph.D.

Jack Meyer, M.A.

September 2016 FINAL



**Prepared for:**  
Sally Salzman Morgan  
San Francisco  
Public Utilities Commission

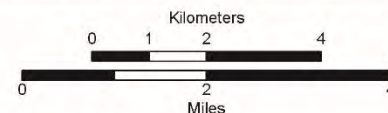
**Under Contract with:**  
Alisa Moore  
Environmental Science Associates  
550 Kearny Street, Suite 800  
San Francisco, CA 94108

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Also Pursuant to the California Public Records Act  
(Gov't Code Sect. 6250 et seq.)



FAR WESTERN ANTHROPOLOGICAL RESEARCH GROUP, INC.  
2727 Del Rio Place, Suite A, Davis, California, 95618  
<http://www.farwestern.com> 530-756-3941





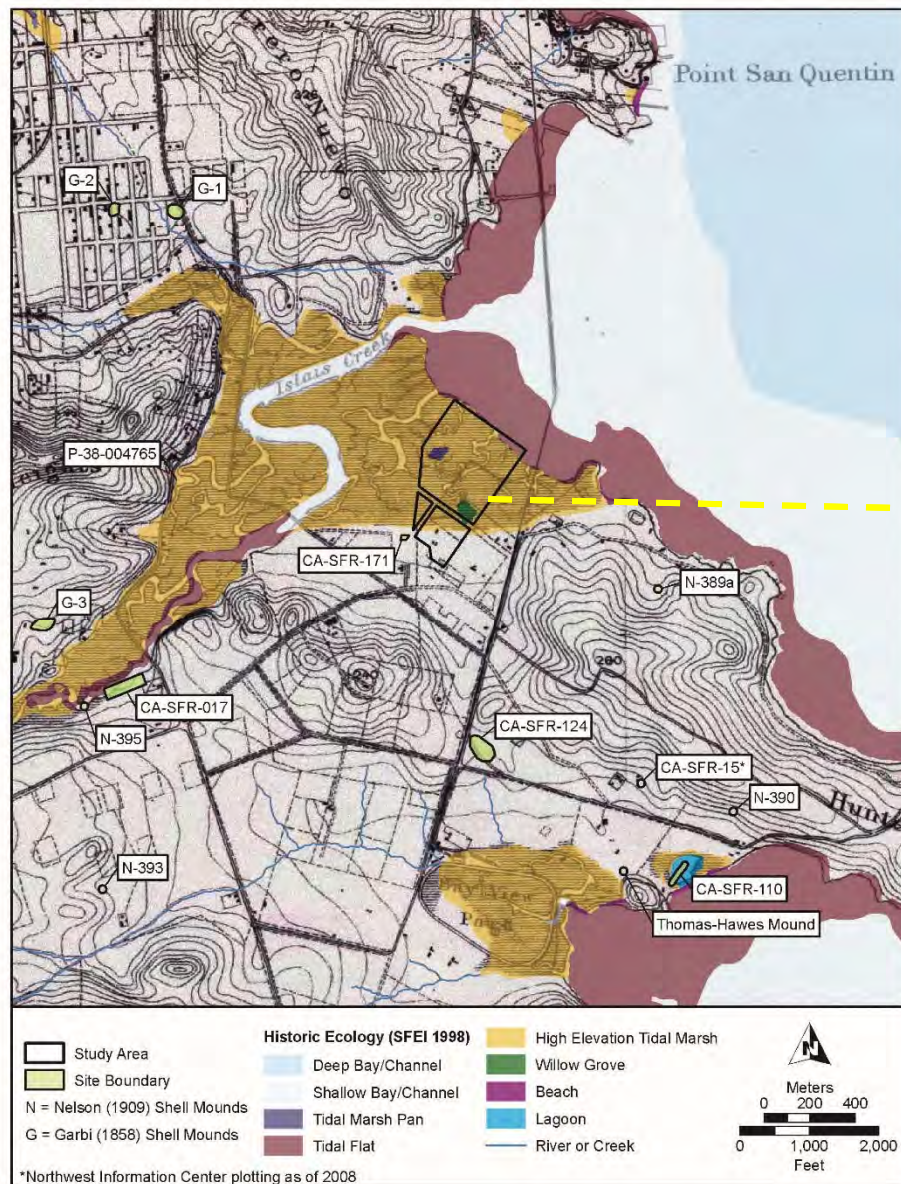


Figure 4. Study Area Overlain on the 1869 US Coast Survey Map.



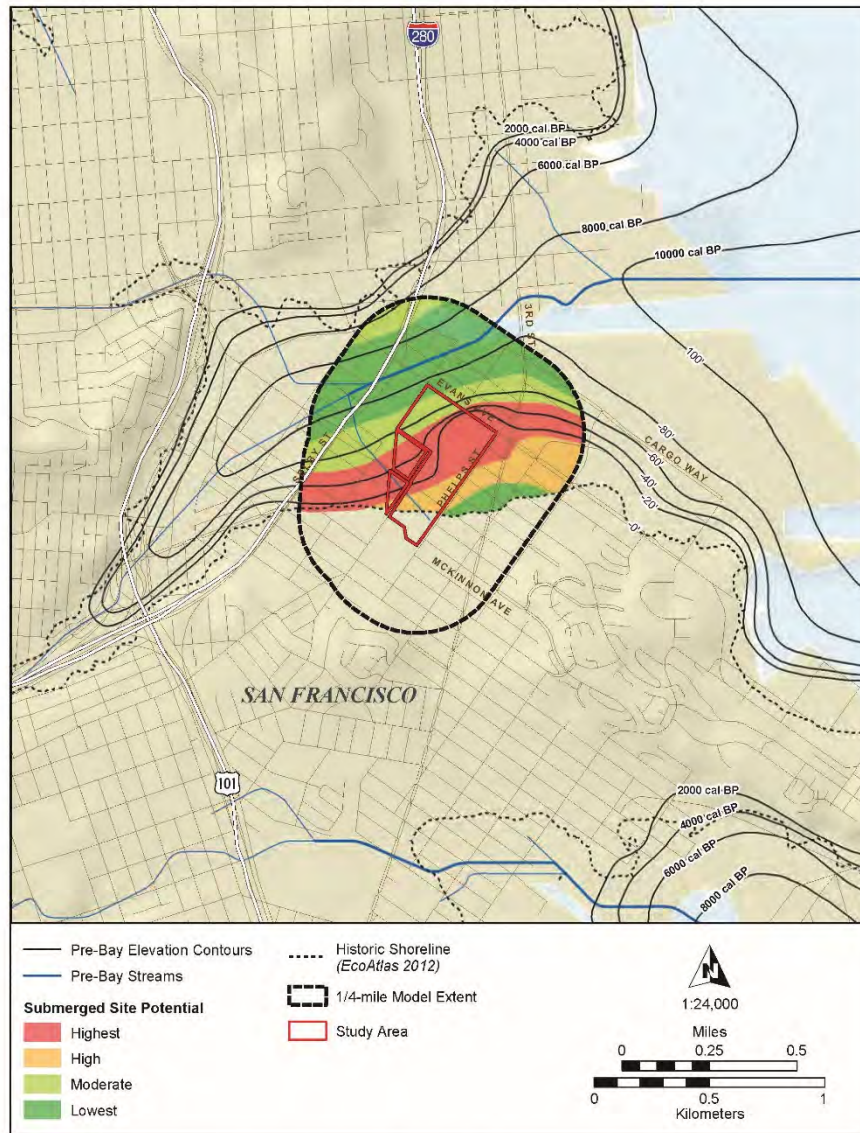


Figure 8. Estimated Potential for Off-Shore Prehistoric Archaeological Sites.

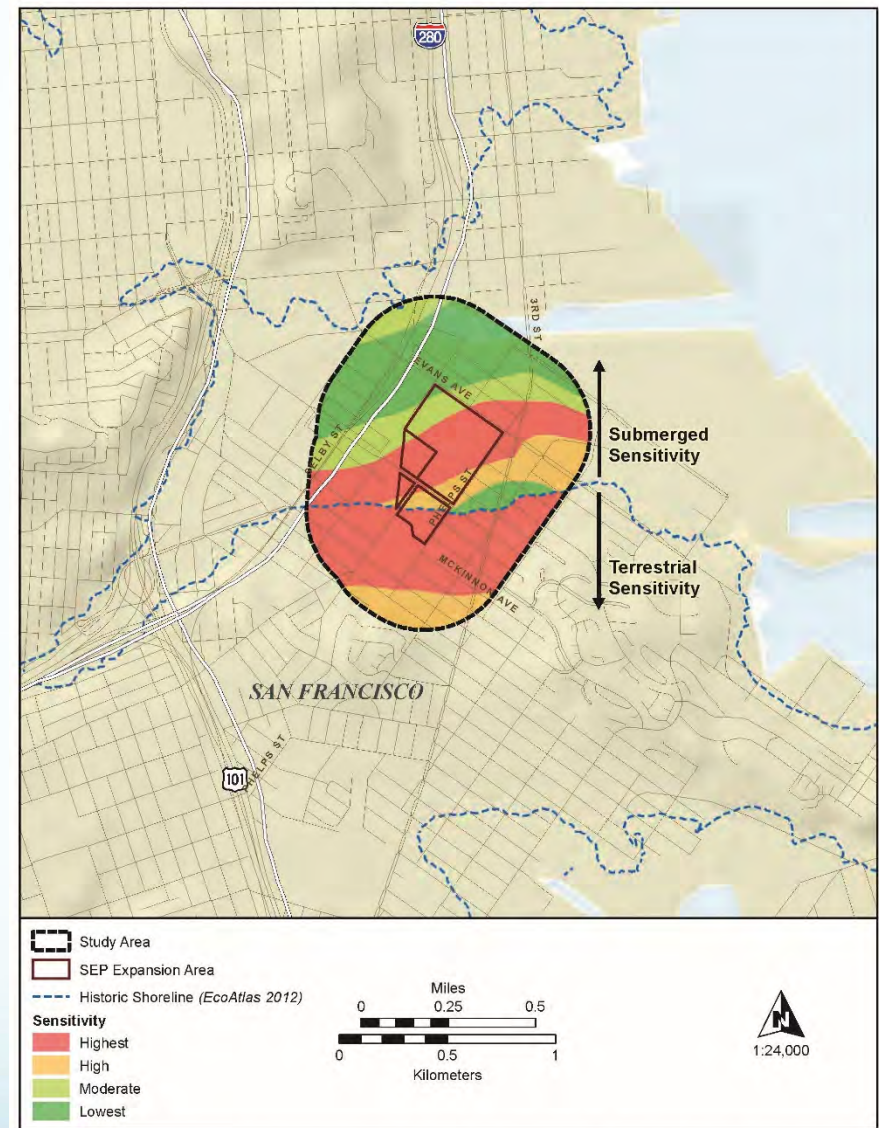


Figure 9. Estimated Potential for both Near-Surface and Off-Shore Prehistoric Sites.



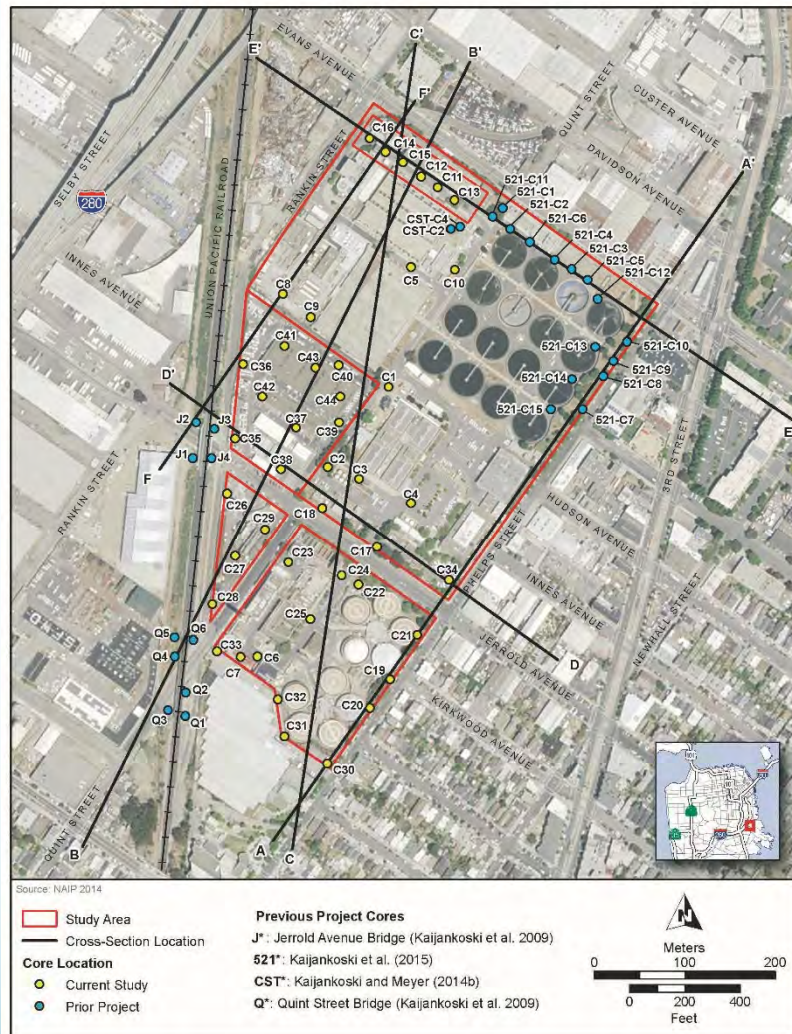


Figure 10. Core Location Map (Past and Present Studies with Cross-Section Locations).

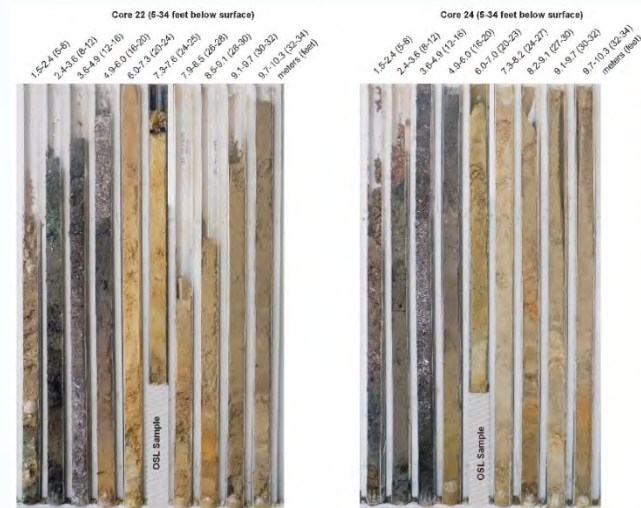


Figure 24. Cores 22 and 24.

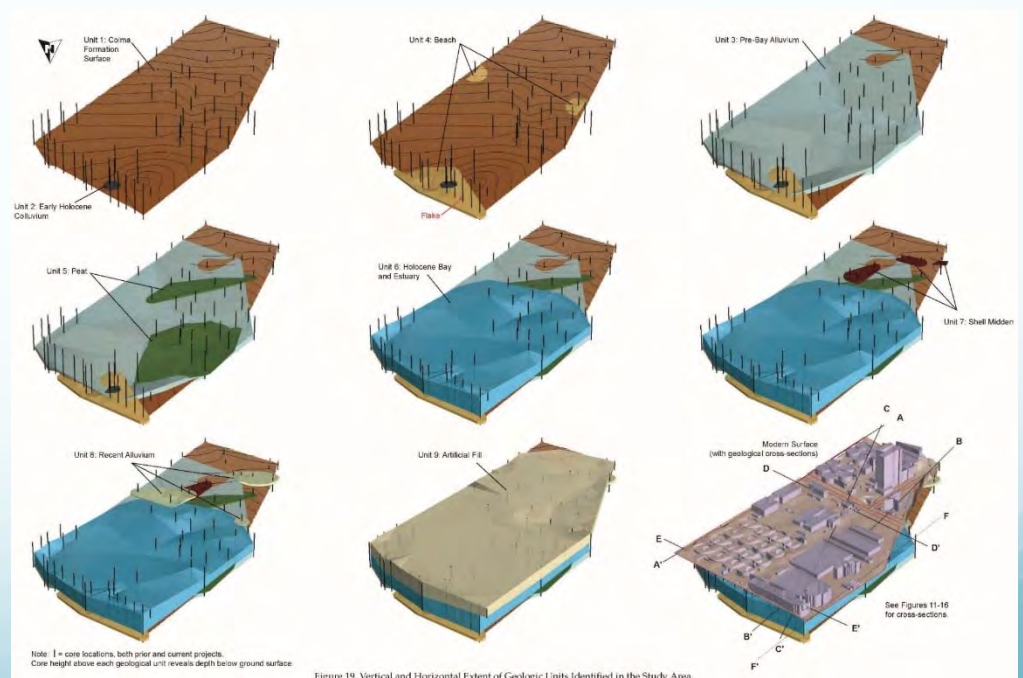
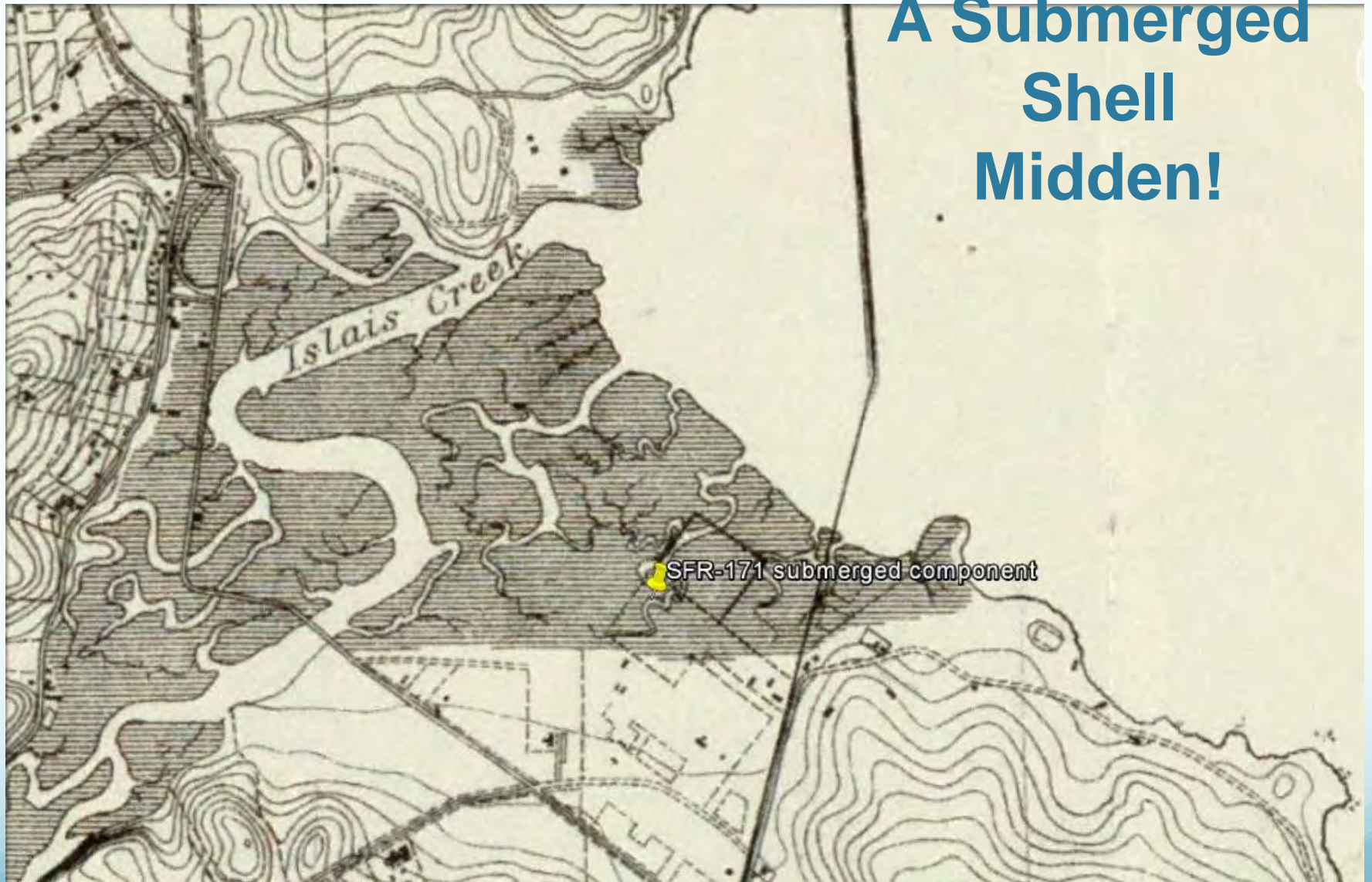


Figure 19. Vertical and Horizontal Extent of Geologic Units Identified in the Study Area.



# A Submerged Shell Midden!



1869 US Coast Survey Map



## Flake from beach deposit 48-52 feet below surface

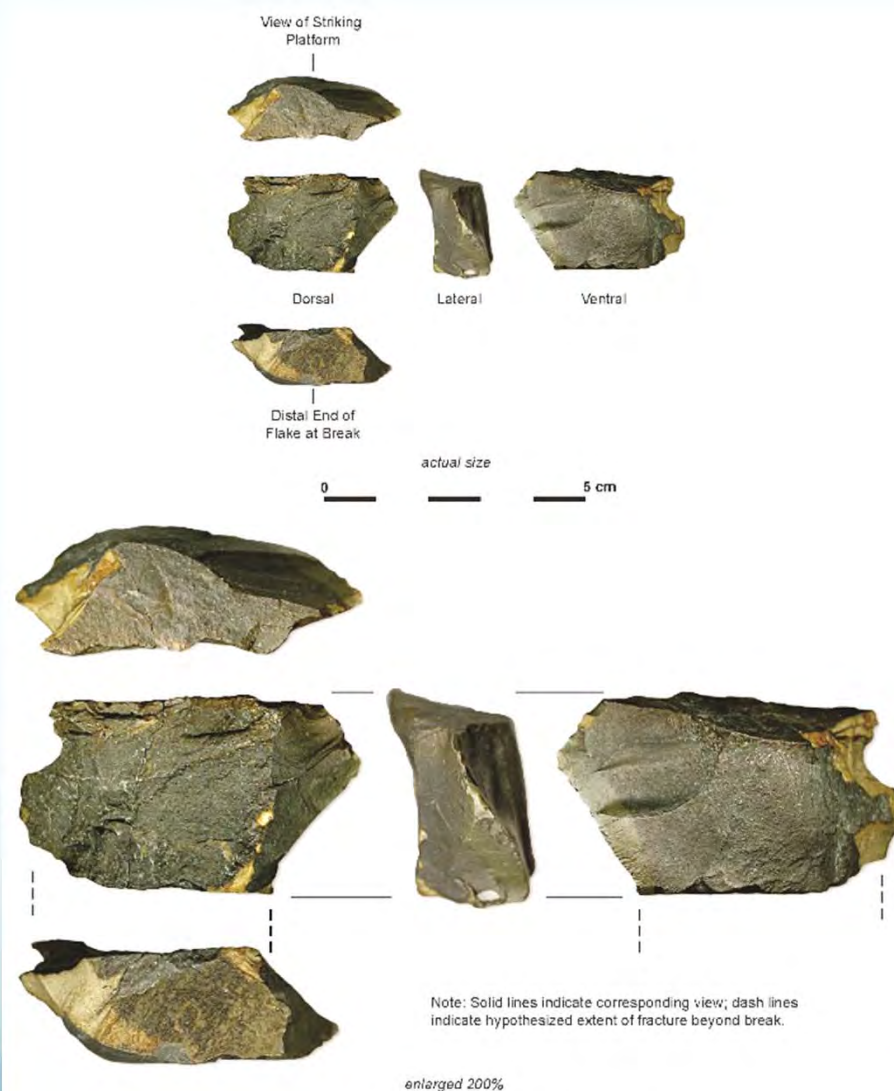
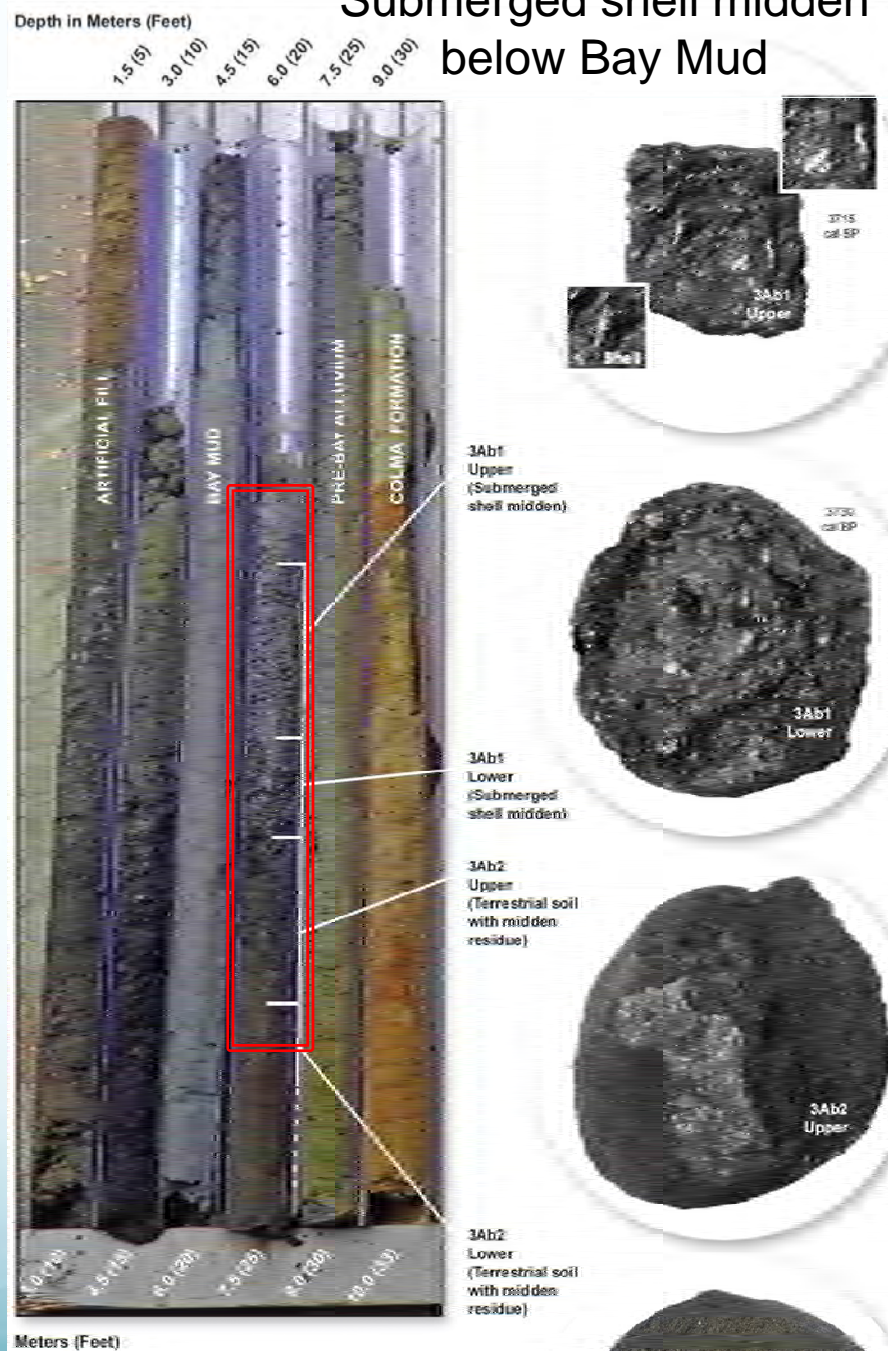
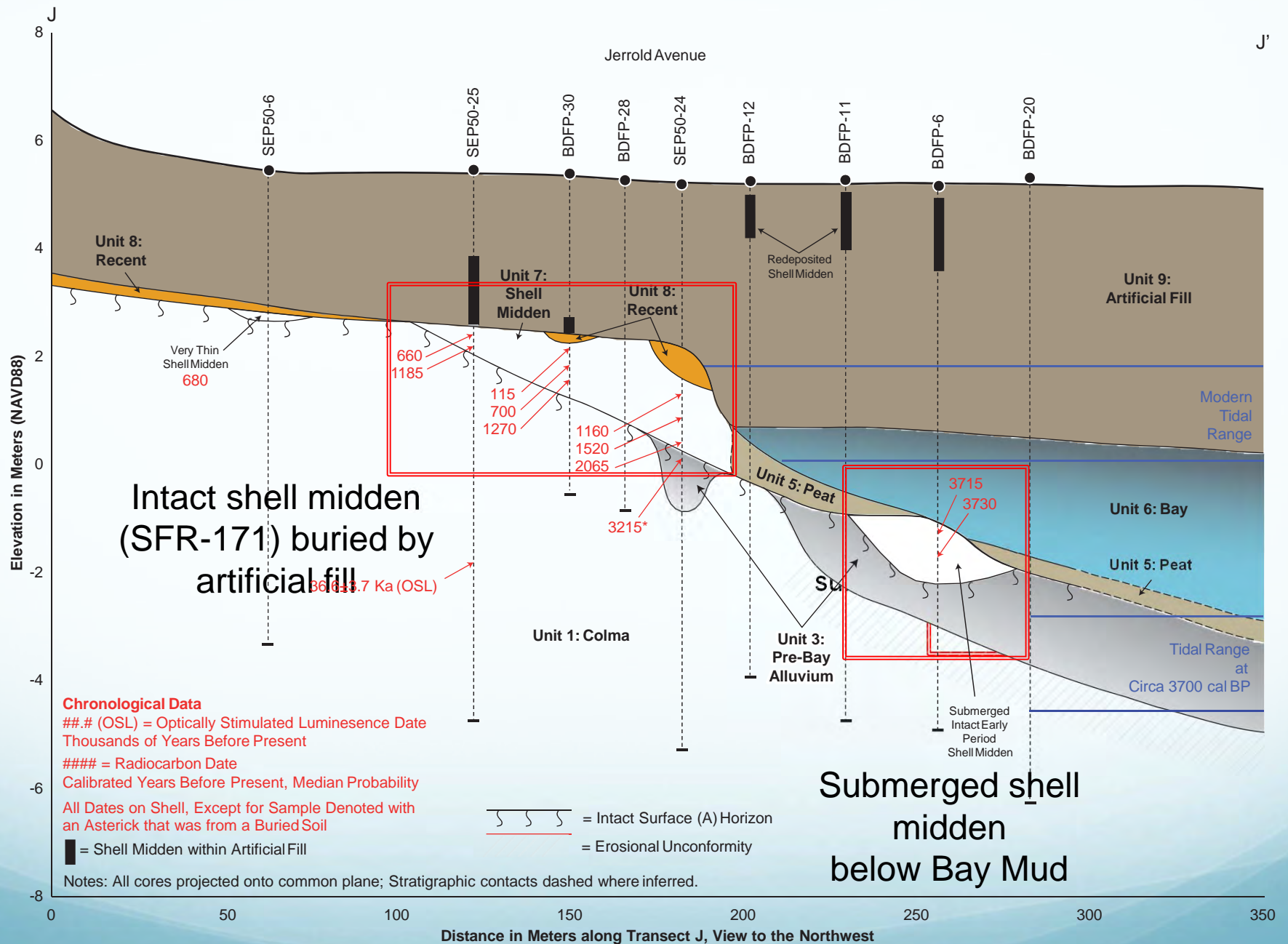


Figure 23. Flake Recovered from Wet Screening of Beach Deposit (Unit 4) in Core 15, 14.6-15.8 meters (48-52 feet) below surface.

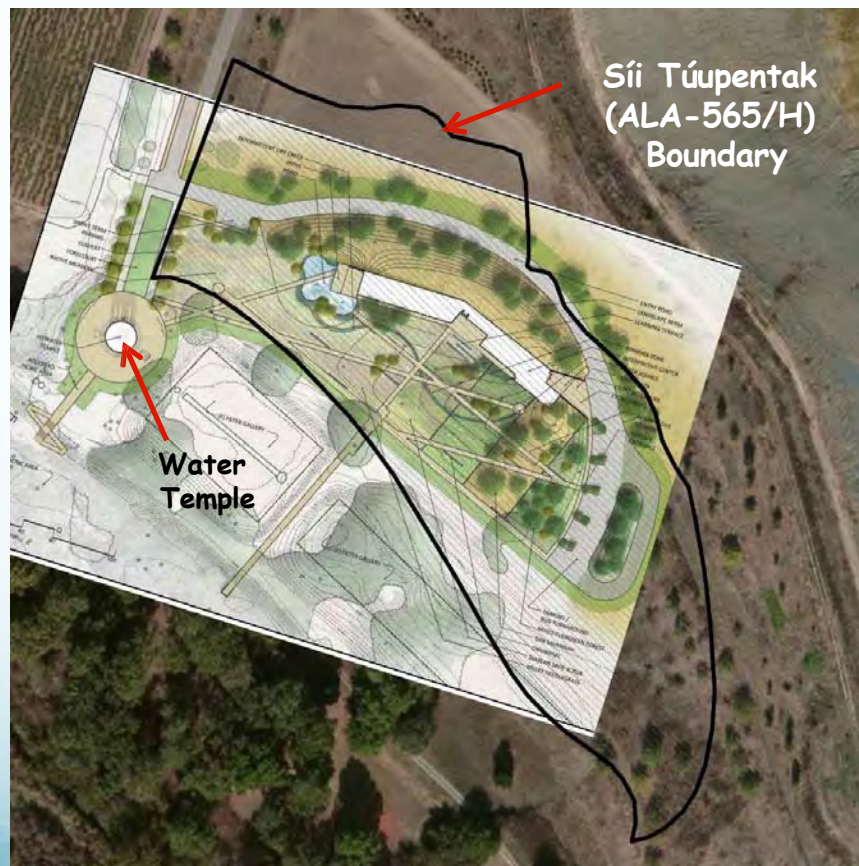
## Submerged shell midden below Bay Mud







SFPUC Constructing  
Public Outreach Watershed Center within Sii Túupentak (ALA-565/H)



Archaeological Fieldwork by Luby in  
1990s and Far Western This Year

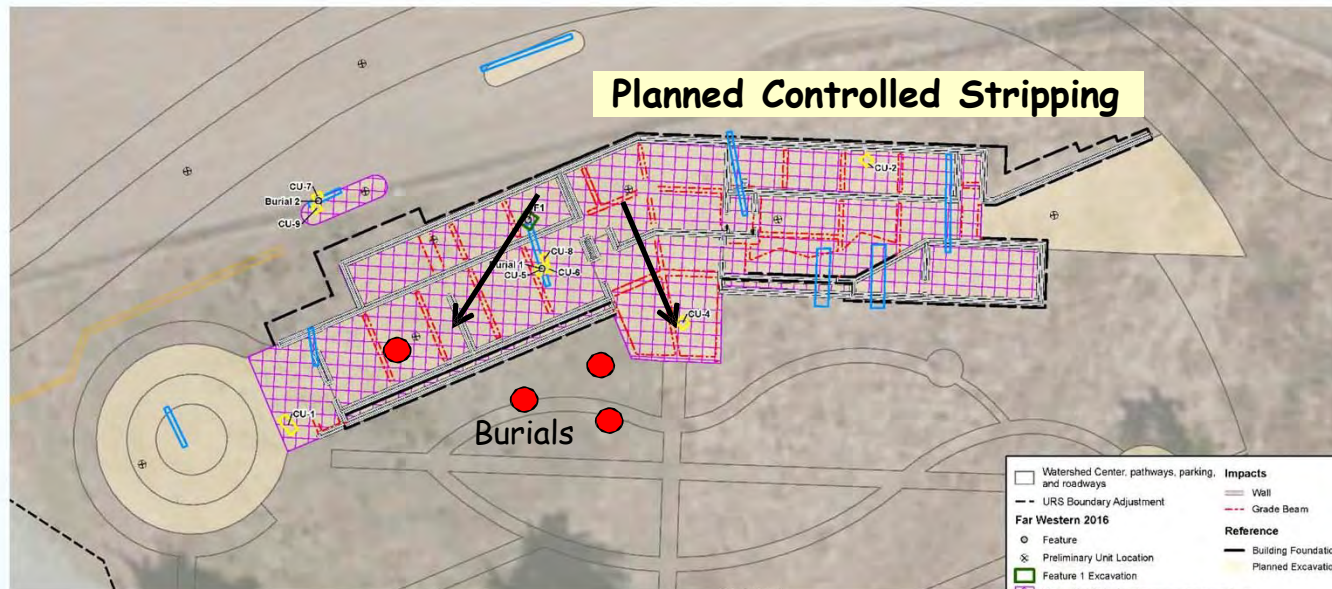
Ancestral Ohlone Village With Well-  
preserved Burials and Features

Village Occupied After AD 1520

Occupation May Have Continued After  
AD 1776, and Establishment of Nearby  
Spanish Missions



Pre-Construction Controlled Stripping of Watershed Center (1300 sq meters) Focus on Deep Impact Areas and Near Known Burials  
Carefully Recover Burials and Features



# Field Approach and Lab Methods

Carrying Out a Series of State-of-the-Art Scientific Studies  
on Each Individual Burial and Associated Artifacts

1. Burial Practices and Associated Artifact Analysis - Muwekma Ohlone and Far Western
2. Osteological Analysis - Diane DiGiuseppe and Dave Grant
3. Archeometric Analyses - Jelmer Eerkens UC Davis
4. Paleogenomics Analysis - Ripan Malhi, Univ of Illinois





# Burial Practices and Associated Artifact Analysis

Careful Field Inventory And Documentation

Lab Analysis Of Associated Artifacts

Artifact Photography

Three-dimensional Scanning For Public Outreach



# Osteological Analysis of Human Bone

Physical Characteristics, Health, And Personal Lives Of Individuals

- Age, Sex, And Stature
- Dental Wear And Disease
- Pathologies And Injuries





# Archeometric Analyses

**Goal - Gain Insight Into the Age Of Weaning And Changes In Diet, Health, And Residence Over an Individual's Life**

Analyses of Bone Collagen and Apatite Samples

C-14 Dating; Stable Isotope Ratios of Nitrogen, Carbon, Strontium, and Sulfur

Pilot Study of Teeth Calculus to Look for Bacteria (ID via their DNA), & Inhalant Chemical Compounds (e.g. Tobacco Nicotine).



## Stable Isotopes

Foods Contain Chemical "Tracers"

Some Linked To Type Of Food

Some Linked To Water Source

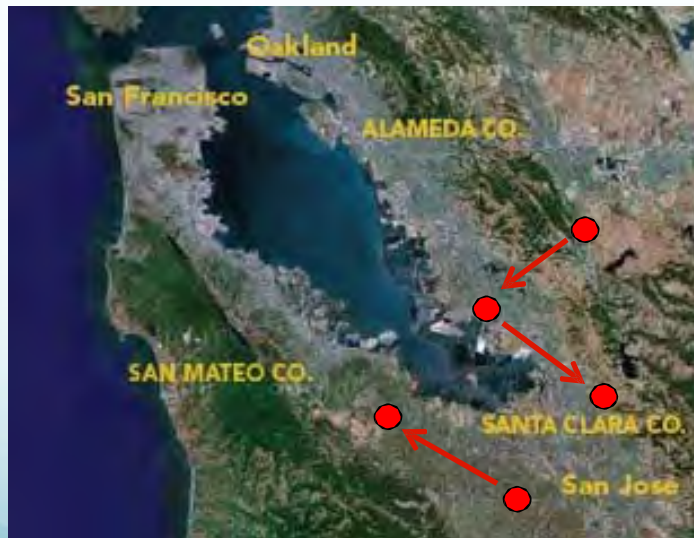
Some Linked To Underlying Geology

# Stable Isotopes – Unique for Each Individual

Can See How One's Residence and Diet Changed by Sampling Molar Teeth and Bone

Can Then Compare Differences Between Males vs Females, Old vs Young, etc

**Strontium – Shifts in Residence During Lifetime**



**Nitrogen– Diet Changes and Age of Weaning**

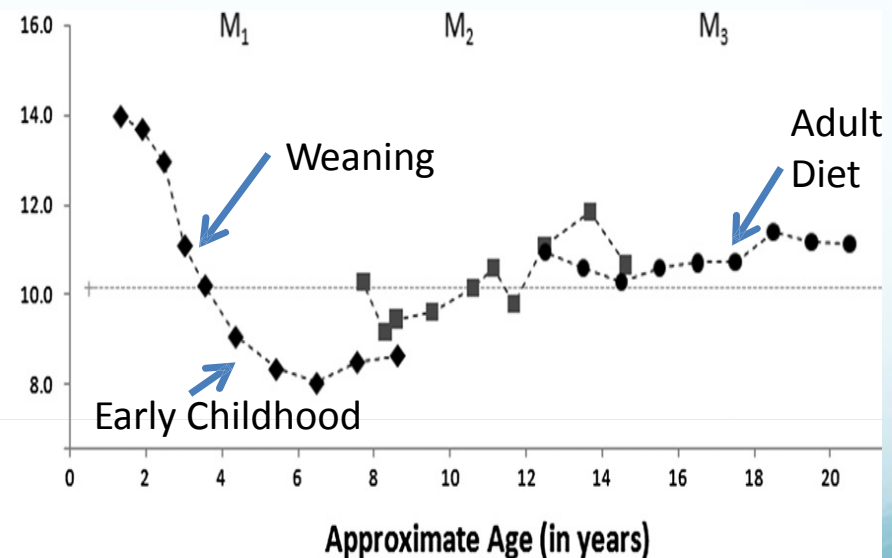


Image Use Courtesy of Dr. Jelmer Eerkens



# Paleogenomic Analysis

Involves DNA Extraction, Then Building a Genomic Library

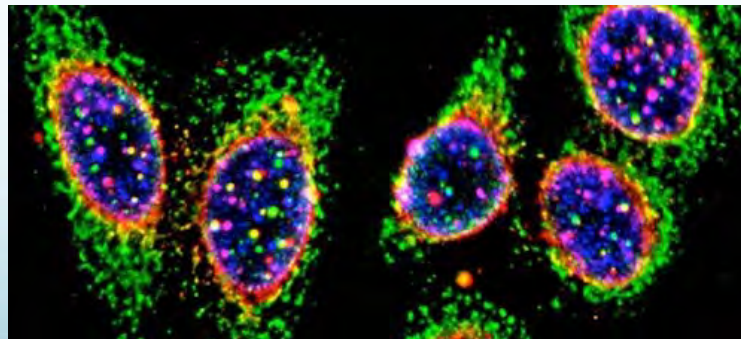
Generates about 200 Million Sequence Reads - Sorts Them Bioinformatically

Information On Sex, And Assess Ancestry

Trace the Past at an Individual & Community Level



DNA Only Analyzed  
as a Tool for History



History within Us!



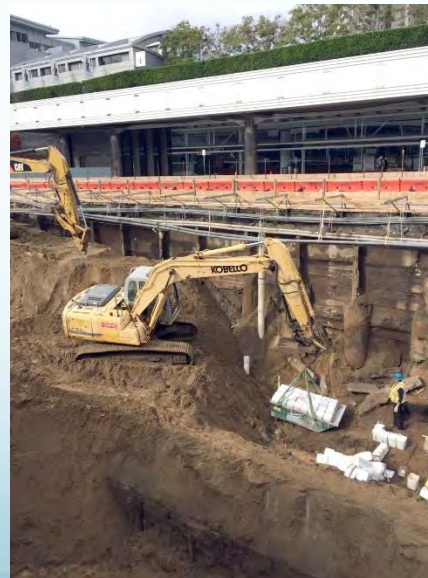
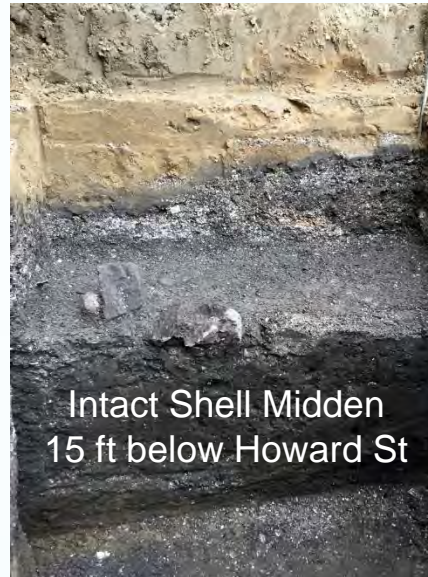


# Data Recovery at Moscone Center Site (SF-K-114)



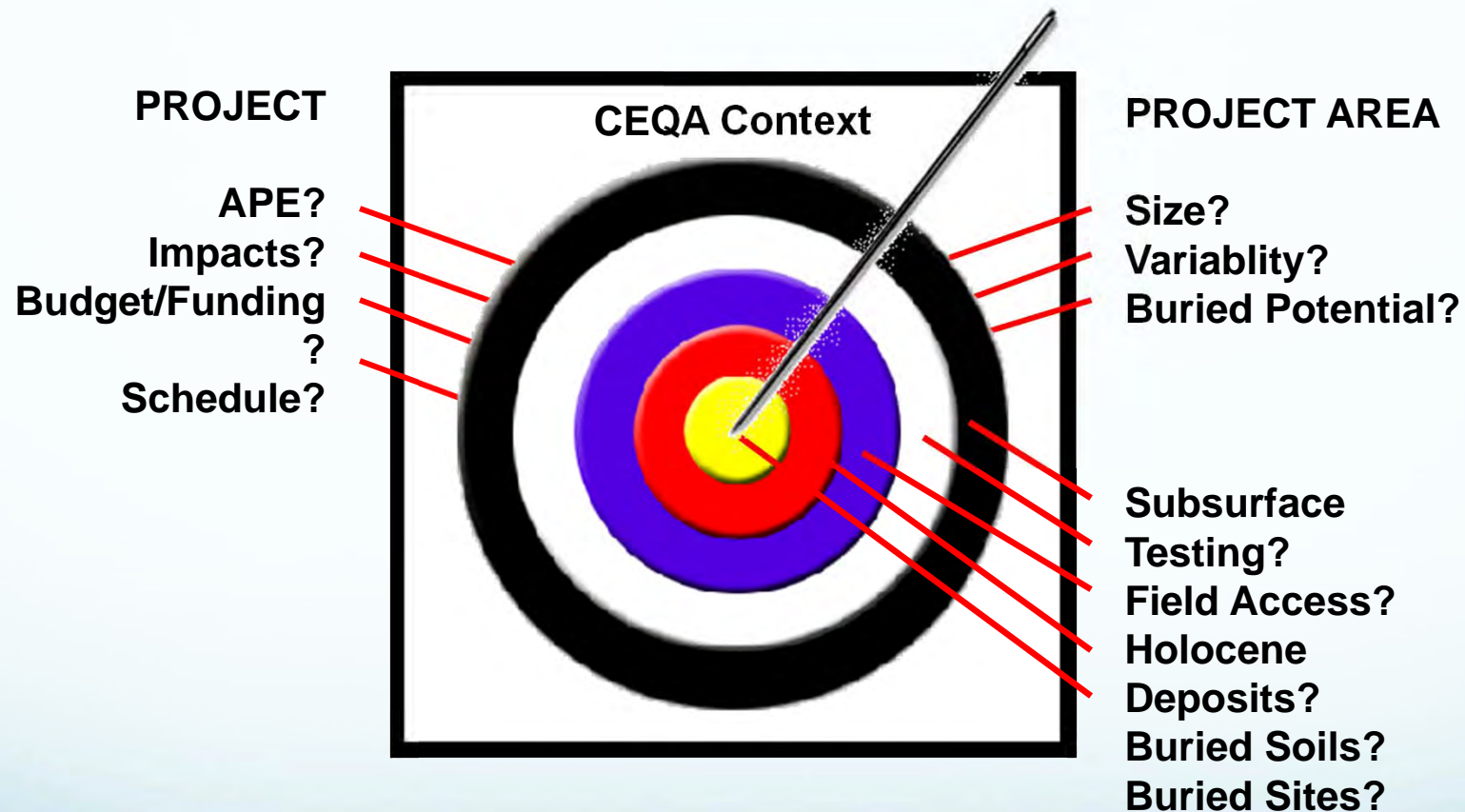


# Data Recovery at Moscone Center Site (SF-K-114)



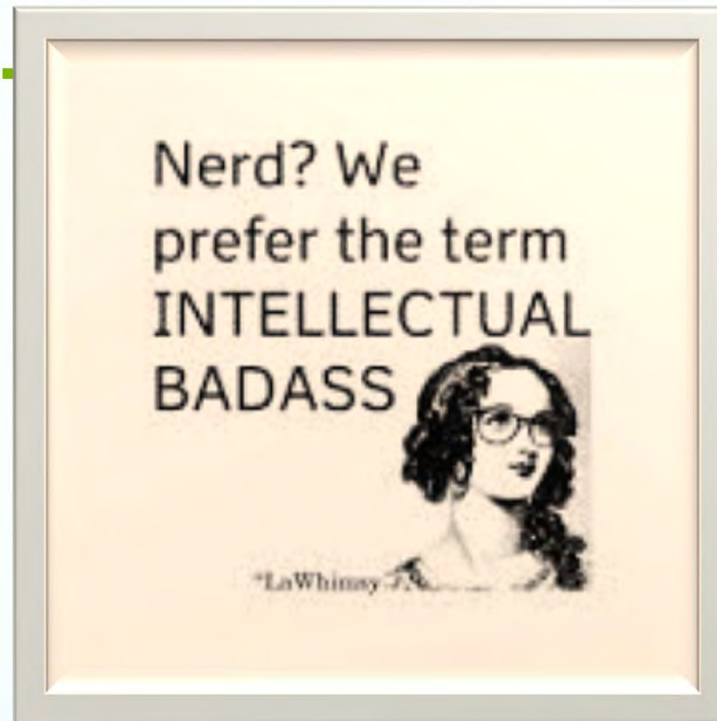


# Appropriate Level of Effort?




A Reasoned Approach that applies Proportional Actions in Good Faith

About you . . .



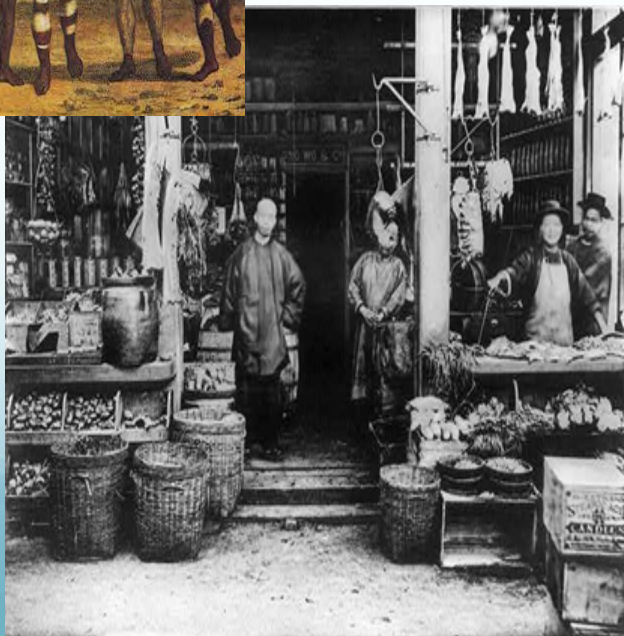
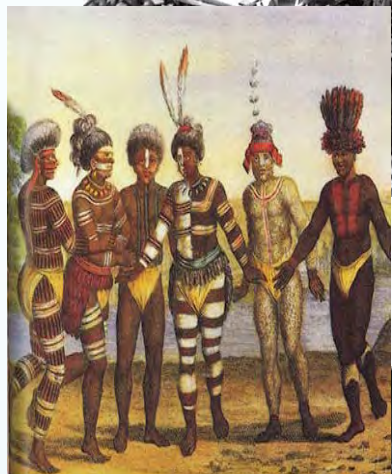


An aerial photograph of a neighborhood in San Francisco, likely the Mission District, with various colored overlays and annotations. A large blue line runs diagonally across the center. A red line runs parallel to it in the upper left. A yellow dashed line outlines a rectangular area in the lower right. A green shaded area is in the lower left. A yellow shaded area is in the center right. A red dashed line runs vertically in the lower right. The numbers 1, 2, 3, 4, and 5 are placed at various locations on the map. The text 'Some Thoughts on Archeology in San Francisco' is overlaid in large black font. The text 'Randal Dean San Francisco Planning Department Association of Environmental Professionals San Francisco May 2017' is in the bottom right. The text 'Photometry, mosaicked by City and County Department of Technology, San Francisco Enterprise GIS Program' is at the very bottom right.

# Some Thoughts on Archeology in San Francisco

Randal Dean  
San Francisco Planning  
Department  
Association of Environmental  
Professionals  
San Francisco May 2017







## **Some circumstances peculiar to archeology in San Francisco**

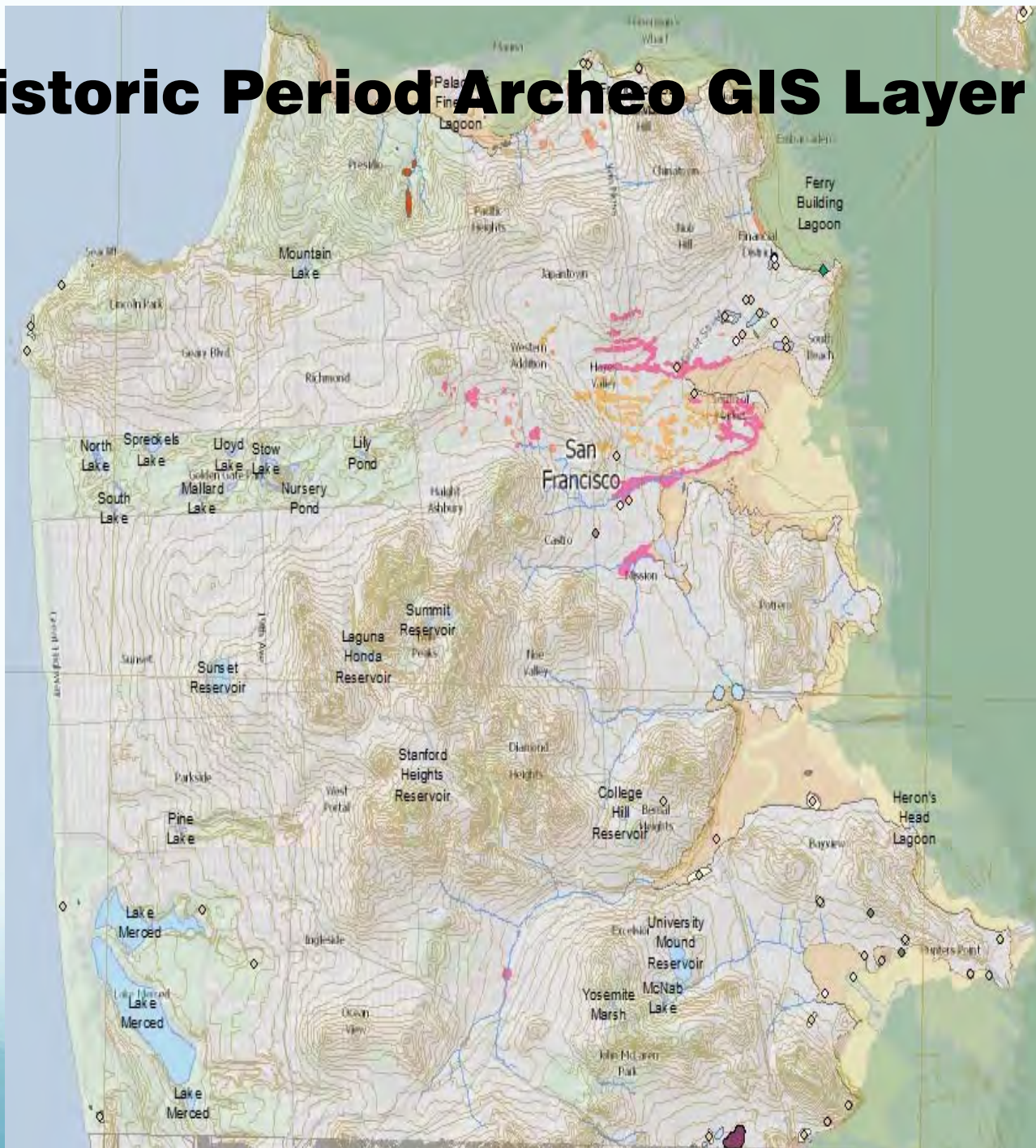
- An exceptionally complex, multi-layered archeological record
- Growth tends to be accommodated with increasingly tall structures
- These tall structures tend to be constructed in “soft” soils and, thus, require deep foundation systems
- The same areas of “soft” soils tend to be of high archeological sensitivity
- The only form of archeological mitigation available is data recovery

# **Approaches to archeology peculiar to San Francisco**

- Geoarcheology
- Archeological research design and treatment plans
- Current and substantive archeological issues
- Site record searches
- Strong pre-field research
- GIS (Geographical Information Systems) technologies
- Codified archeological districts

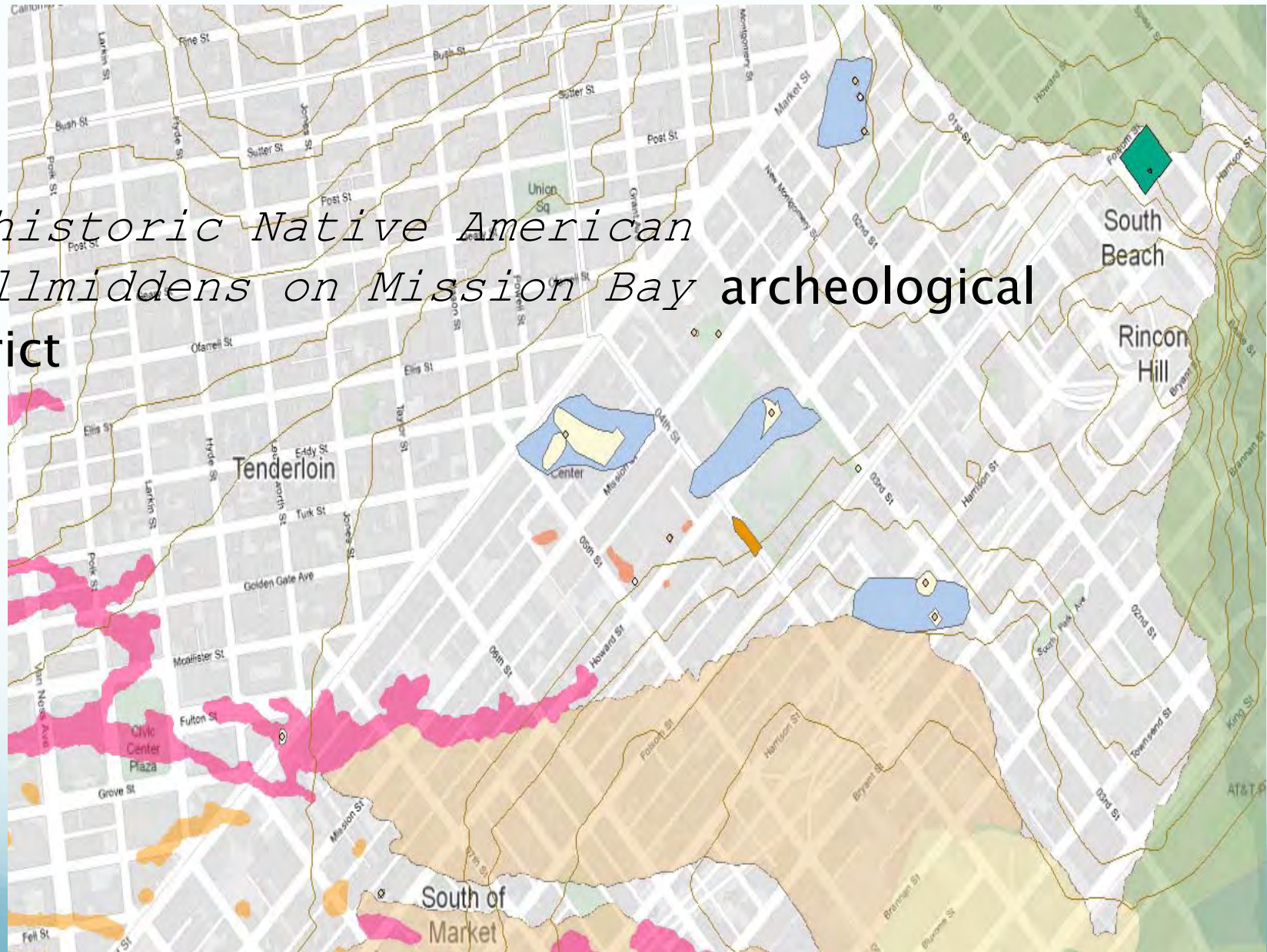


# Prehistoric Period Archeo GIS Layer





*Prehistoric Native American  
Shellmiddens on Mission Bay archeological  
district*





[illegible]

Site Record

Page 1  
*(96-60)*

ARCHAEOLOGICAL SITE INVENTORY RECORD

LABORATORY CODE(S) : 1 1 1 3 1 1	
FIELD NO. : 80-29	STATE # : WA - SR - 80
USGS 7.5' x 7.5' Aerial Photograph North Coordinates: MAP# 04-1 Long Port Wadsw. Hwy B County: Sno. Washington	
CONTROLLER (diagonal) : J. (lowest) :	J. (SR) 1 FEET 1 mil
TOWNSHIP (deg.) : RANGE : S3N	1/4 SE 1/4 N 1/4 DP
SECTION # : No section number (OFF LOCATION?) :	
COORDINATES: 326 mm R, 267 mm E FROM NW CORNER OF MAP	
U.T.M.G. COORDINATES: 14Q UTM ZONE 18	
°   °   ° WEST LONG.,   °   °   ° NORTH LATITUDE	
DESCRIBE LOCATION: Extending south from building SWW end (about) extending north under the building for approximately 50 feet; from the wall foundation runs down to the road level, continue back east approximately 20 feet, extends under both logs and foundation, and old site observation. Hazards minimal.	
Site is a small midden containing large quantities of shell in a mud <del>masonry</del> - <del>wooden</del> - <del>concrete</del> - <del>stone</del> - <del>discretionary</del> - <del>material</del> materials. There appear to be definitely varying activity phases.	
approximate DIMENSIONS: 28 meters E - S x 31.5 meters E - S ft. PLAN:	
ESTIMATED AREA: _____ square meters. describe METHOD	
USED TO DETERMINE SITE EXTENT: excavation and test pit sampling. North boundary of site cannot be determined at this time because rest of site is under asphalt roads and parts (in the old stream ground) have been disturbed by grading and construction activities.	
DEPTH OF CULTURAL DEPOSITS (Maximum 120 cm) (Minimum 30 cm) (_____ cm). describe METHOD USED TO DETERMINE DEPTH:	
1 (S eastern x 1 meter) test excavation in site.	

*S-2500 94-SR-29(3), 4*  
3/11/94  
E-S SITE  
J-P-H

mjm 10/19/94

PREHISTORIC_SITES_POINT							
Point			Feature Class				
OBJECTID	SHAPE	UID	#_Vertices	IsInternal	EQus_ID	Name_ADU	Notes_Site

[illegible]

SITE TYPE										
Table										
OBJECT	UID	SITE TYPE	SITE TYPE 2	ACCORD TYPE	SHELL TYPE	STAIN TYPE	NUMER. PASS.	TEXTURES	ARTIFACTS	COMMENTS

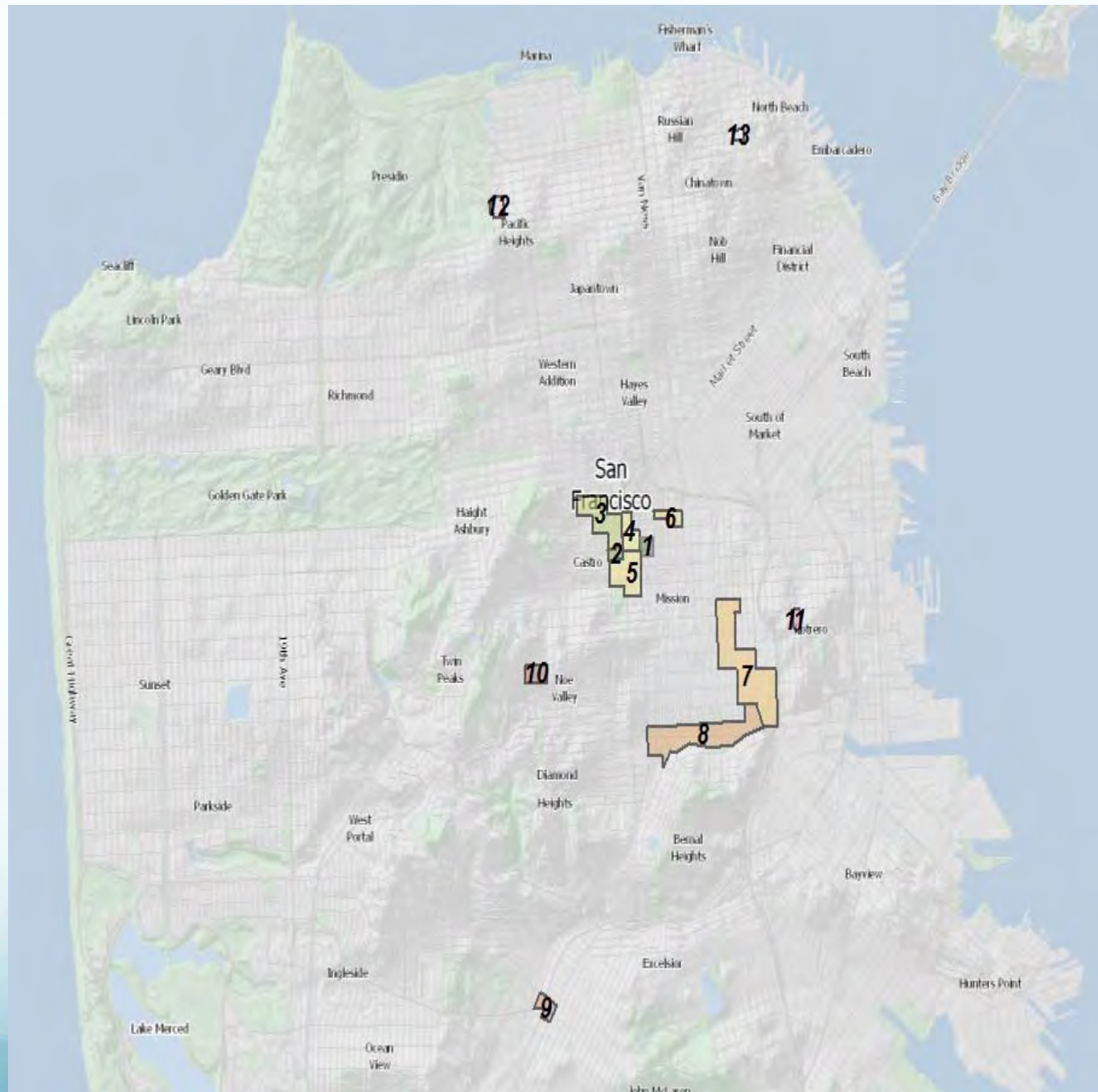
SITE DATE						
Table						
LOCATION	USE	METHOD	RESULTS	PERIOD	COMMENTS	Estimate

FEATURES									
Table									
CREATED	UID	FEAT TYPE	NUM FEAT	ASSOCIATIONS	REL FACTS	ARTISTS	COMMENTS	RATING	

HUMAN REMAINS ASSOCIATIONS										
Table										
ASSOCIATION	DOB	BOB NAME	ART. NUM.	ANAL.	PLAC. TYPE	ART. TYPE	USC	PLACEMENT	REFERENCE	CRIBATO

BIBLIOGRAPHY									
Table									
CHARACTER	LIB	BOT. ACN	SUBSTR	DATE	TITLE	REP. TYPE	REP. ACCESS	COMMENTS	IS LIB

# Hispanic Period GIS Layer





# Hispanic Period Archeo GIS Layer

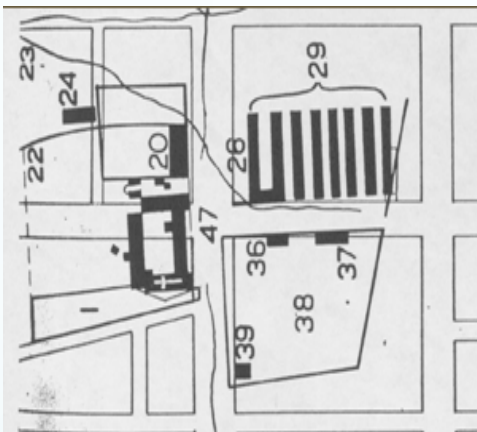
Some selected  
archeological features  
in Zones 2, 3, 4 & 5



# Hispanic Period ARCHEO GIS Layer

Source documentation:

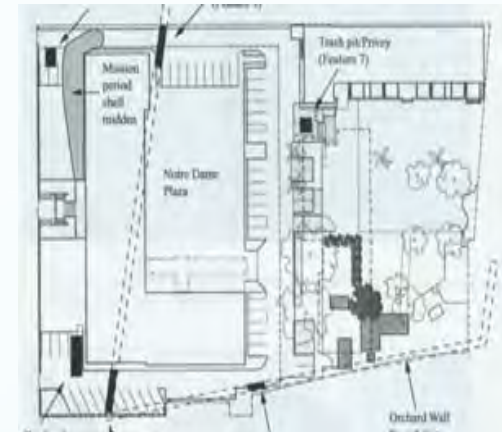
Primary historical documents; historian accounts,  
archeological record documentation



Hendry & Bowman  
1940



Black Survey 1854



R Ambro 2007



# Hispanic Period Archeo GIS Layer

## Archeological features

Attributes of Archeofeatures_Zones		
OBJECTID	ZONE_NUMBERS	Archeofeature
1	13	Juan Briones Adobe
2	12	Miranda and Briones Ojo de Agua de Figueroa Adobe Dwellings
3	12	Miranda and Briones First Ojo de Agua de Figueroa Adobe Dwelling
4	11	Potrero Hill Adobe
5	10	Noe Adobe
6	9	Carmon de Bernal Adobe
7	8	Jose Cornelio Bernal Adobe
8	8	Doss Wall
9	7	Potrero Nuevo Stone Wall and Ditch (Zanja)
10	7	First De Haro Dwelling
11	7	Second De Haro Dwelling
12	6	Noe ("Camaritas") Dwelling
13	6	Jose de Jesus Noe's House (Camaritas)
14	6	Juan Prado Adobe
15	6	First Neophyte Rancheria
16	5	Adobe Tannery
17	5	Unknown Adobe
18	5	Mission Corral
19	5	Mission Orchard
20	5	Candelario Valencia Adobe
21	5	Eustacio and Jose R. Valencia House
22	4	Servants- Guerrero Adobe
23	4	Mayordomo House
24	4	Second Neophyte Rancheria
25	3	Guerrero Adobe
26	3	Bernal Unfinished Adobe
27	3	Potrero Stone Wall
28	3	De Haro
29	3	Cuarteles (Barracks)
30	2	Third Mission (Capilla)
31	2	Third Mission Cuadrangulo (Guardrangle)
32	2	Third Mission Gardens and Cultivated Fields
33	2	Unknown Building
34	2	Reconstructed Third Mission Church (Capilla)
35	2	Fourth Mission Church (Capilla)
36	2	Fourth Mission Cuadrangulo (Quadrangle)
37	1	First Mission Church (Capilla)
38	1	First Rectory
39	1	First Mission Compound
40	1	First Mission Garden
41	1	First Mission Threshing Floor
42	1	First Mission Corral
43	1	First Mission Palisade
44	1	First Cemetery (Campo Santo)
45	1	Second Mission Church (Capilla)
46	1	Pozolera
47	2	East Mission Wall
48	2	Cemetery Wall
49	2	Mission Plaza
50	2	Esuela (School)
51	<Null>	Water Conveyance System (Phase1)
52	<Null>	Dam
53	2	Fourth Rectory
54	2	Fourth Sacristy (Sacristia)
55	2	Second Cemetery (Campo Santo)
56	2	Fifth Sacristy (Sacristia)
57	<Null>	Servant Housing and Carpentry Shop
58	<Null>	Adobe Church Annex
59	<Null>	

# Barba Buena Period Archeo GIS

ayer

The map displays a street grid with various streets labeled, such as Green St, Fresno St, Broadway, and others. Numerous archaeological sites are marked with colored squares and labeled with names and dates, such as 'Joyce, John (166)', 'Owens Brewery (34)', 'Diaz Mesa adobe (built by Cooper) (21)', and 'Vallejo, M.G. building (possible) (18)'. A river, likely the San Joaquin River, flows through the center of the map. A compass rose is visible in the upper right corner.



# The Settlement of Yerba Buena

based on various sources and superimposed on  
1852 map



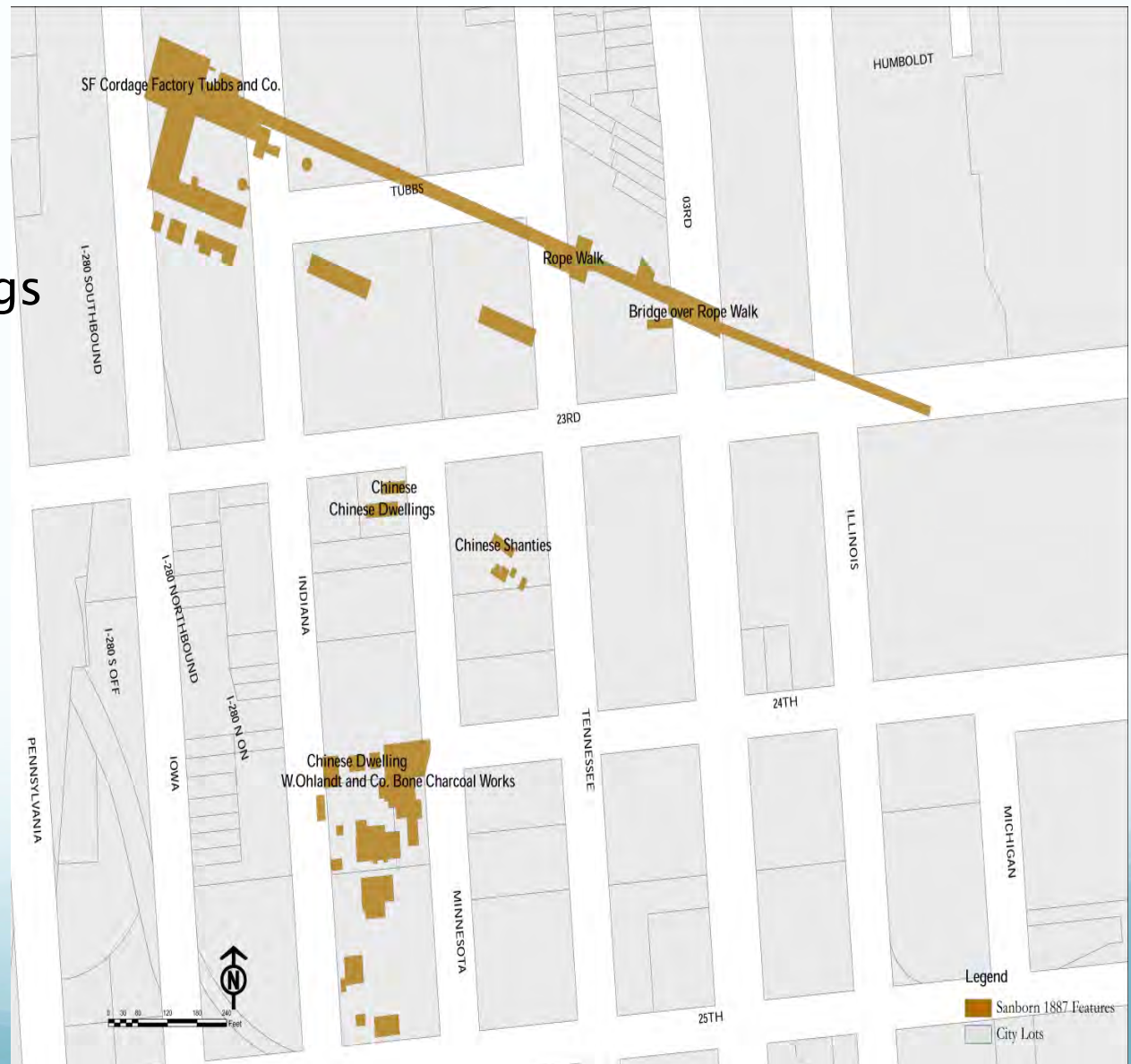






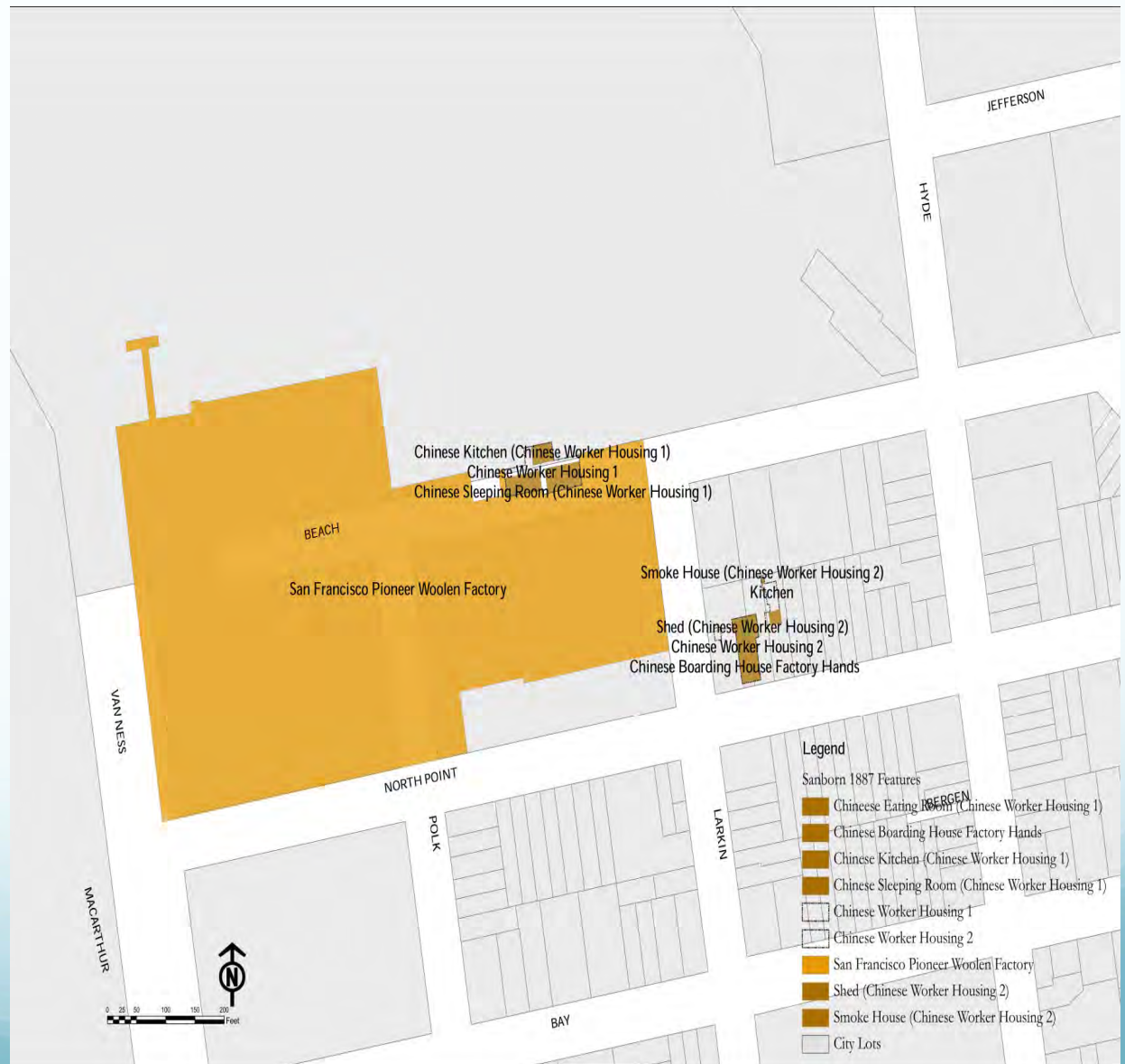
# Tubbs and Company Cordage Works (1856-1962)

Chinese worker lodgings



# San Francisco Pioneer Woolen Mill (1858-1893)

Chinese worker  
domestic-related  
structures





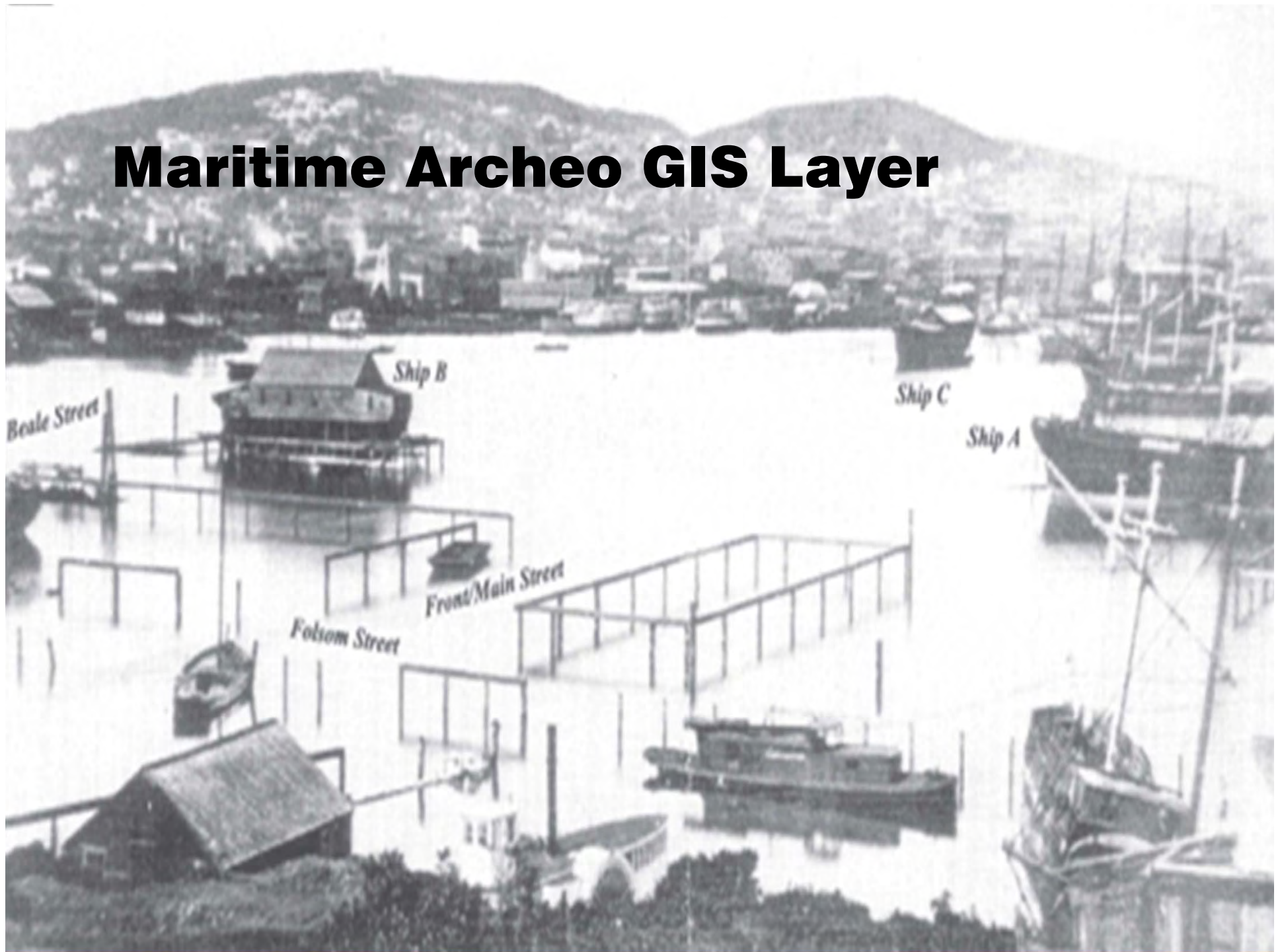
# Composite database of 19<sup>th</sup> century Chinese residents

Master Chinese San Francisco  
Address List

1

Street Name	Street Number	Floor	Property Use	Business/Resident Type	Business/Resident Name	Year	Source	Notes
—	—		Retail	Merchant	Ah Kan	1853	A.W. Morgan & Co.'s Directory	Addresses subject to the changes made in street numbers.
—	—		Industrial	PMSS Co.	Cheong Leong	1875	Bishop Co. Directory	Chinese passenger clerk.
—	—		Industrial	Fuse Company	California Fuse Co.	1889	Sanborn Map Vol 3	Map 73B. "Chinese Quarters" adjoining <i>California Fuse</i>
—	—		Service	Post Office	Wong San, interpreter	1895	Langley's Chinese Directory	
Alabama	btw 16th/Santa Clara		Residential	Chinese Dwelling	—	1889	Sanborn Map Vol 3	Map 74B. Buildings labeled "Chinese."
Anna	19		Service	Laundry	Hong Wan	1882	Wells Fargo Directory	
Austin	104		Service	Laundry	Gee Wah	1895	Langley's Chinese Directory	
Austin	104		Service	Laundry	Yuen Kee	1882	Wells Fargo Directory	
Austin	105		Service	Laundry	Win Lung Sin	1875	Bishop Co. Directory	
Bartlett Alley	14		Retail	General Merchandise	Yin Ying & Co.	1895	Langley's Chinese Directory	
Bartlett Alley	32	G (rear)	Leisure	Opium	—	1885	Supervisors' Report	Filthy. 3 bunks.
Bartlett Alley	—	G	Residential	—	—	1885	Supervisors' Report	14 occupants.
Bartlett Alley	—	B	Residential	—	—	1885	Supervisors' Report	68 occupants.
Bartlett Alley	—	G (left)	Leisure	Gambling	—	1885	Supervisors' Report	West side—3-inch plank/iron door, 3-inch plank door. Escape through plank/iron door to passage at 640 1/2 Jackson up to resataurant over fence, thence to Batlett
Bartlett Alley	East Side	B	Leisure	Opium	—	1885	Supervisors' Report	Very Filthy. 14 bunks.
Battery	80 1/2		Service	Laundry	Aming China	1853	A.W. Morgan & Co.'s Directory	Addresses subject to the changes made in street numbers.
Battery	228		Industrial	Shoe Factory	Quong Eat Chong	1878	Wells Fargo & Co. Directory	
Battery	309		Industrial/Retail	Cigars	Ah Quing	1875	Bishop Co. Directory	
Battery	311		Industrial/Retail	Cigar Factory	Havana Cigar Co.	1878	Wells Fargo & Co. Directory	
Battery	311		Industrial/Retail	Cigar Factory	Ah Quing	1882	Wells Fargo Directory	
Battery	311		Industrial	Shoe Factory	Eat Lung Sam Kee	1882	Wells Fargo Directory	
Battery	311		Industrial	Shoe Factory	Wo Gin & Co.	1882	Wells Fargo Directory	
Battery	318		Industrial	Slipper Factory	Wo Fat & Co.	1882	Wells Fargo Directory	
Battery	320		Industrial	Shoe Factory	Ging Kee	1882	Wells Fargo Directory	
Battery	406		Industrial/Retail	Cigar Factory	Lee Fook	1875	Bishop Co. Directory	
Battery	413		Industrial	Shoe Factory	Hop Sing	1882	Wells Fargo Directory	
Battery	422		Industrial/Retail	Cigars	Colfax Co.	1895	Langley's Chinese Directory	
Battery	422		Industrial/Retail	Cigars	Yng Chong	1895	Langley's Chinese Directory	
Battery	711		Service	Laundry	Wo Hen Co.	1895	Langley's Chinese Directory	
Battery	1024		Service	Laundry	Ah Sing	1895	Langley's Chinese Directory	
Battery	1024		Service	Laundry	Ah Sing	1882	Wells Fargo Directory	
Battery	near Broadway		—	—	Ah Lung	1859	Langley's SF Directory	Addresses subject to the changes made in street numbers.
Beary	127		Service	Laundry	Wing Lee	1882	Wells Fargo Directory	
Belden Place	17		Service	Laundry	Lee Joe & Co.	1895	Langley's Chinese Directory	
Belden Place	19		Industrial	Shoes/Boots	Kwong Wo Hop & Co.	1895	Langley's Chinese Directory	
Berry	126		Service	Laundry	Wing Lee	1875	Bishop Co. Directory	
Berry	206		Service	Laundry	Lee Charley	1895	Langley's Chinese Directory	
Brannan	216		Residential	Chinese Boarding	—	1887	Sanborn Map Vol 1	Map 20A. Between First and Second Street.
Brannan	224		Service	Laundry	Lung Tong San	1895	Langley's Chinese Directory	
Brannan	260		Service	Laundry	Sun Tong Sang	1875	Bishop Co. Directory	
Brannan	403		Service	Laundry	Lee John	1875	Bishop Co. Directory	

# Maritime Archeo GIS Layer

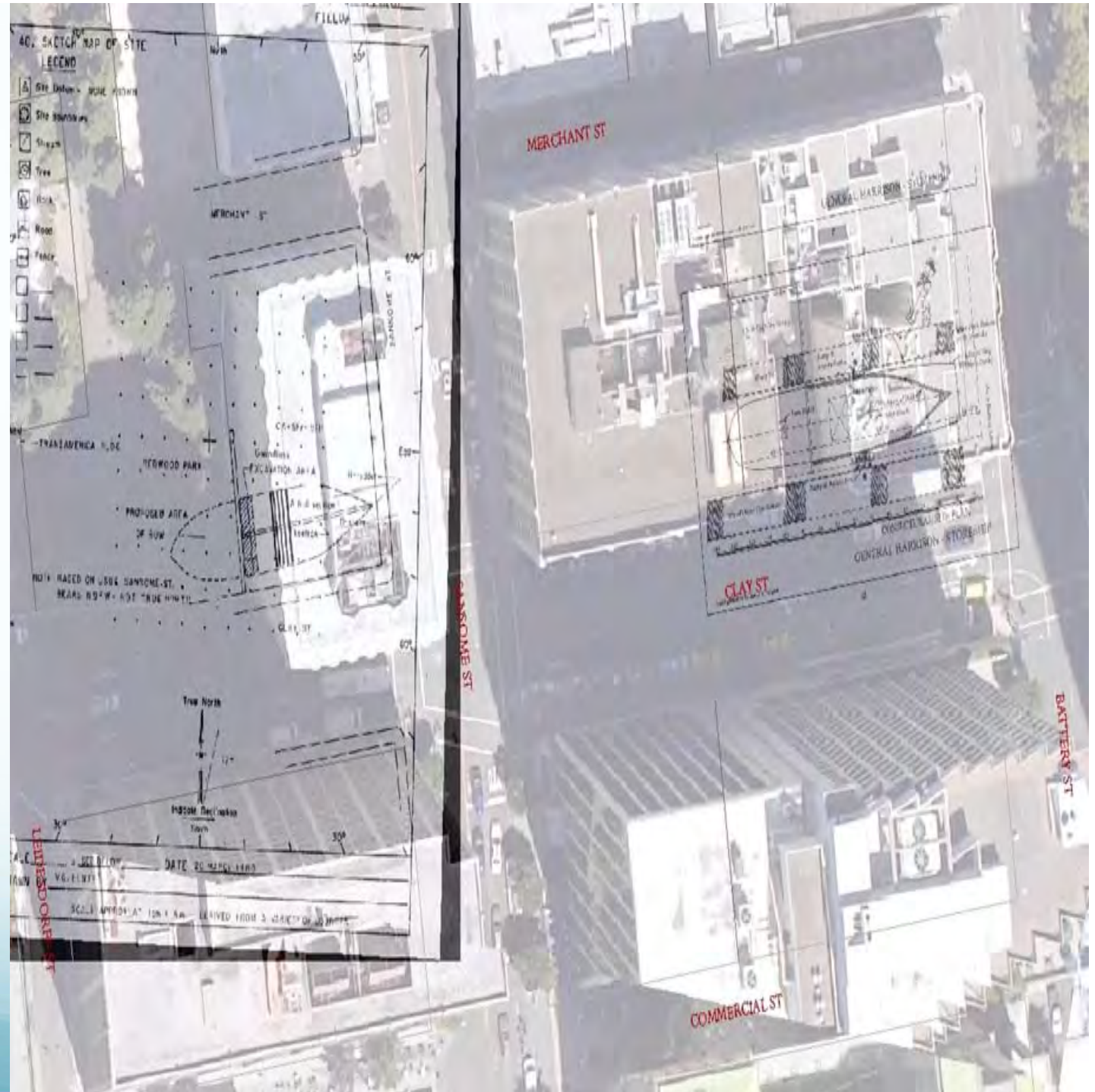




## Buried Storeship GIS layer

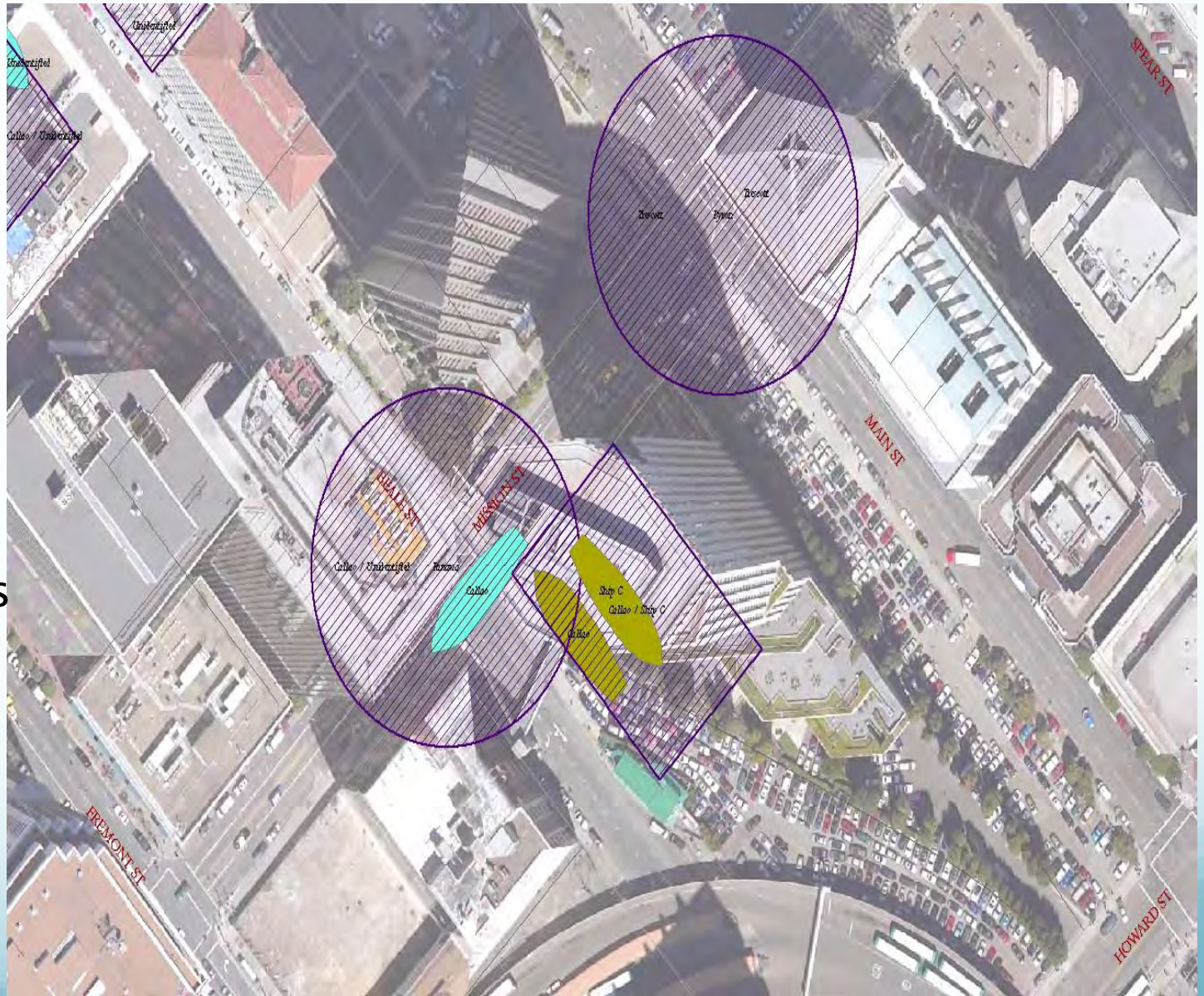


The *Niantic*  
and *General*  
*Harrison*  
storeships  
- ship plan  
views





Aerial view of  
projected  
locations  
of various 19<sup>th</sup>  
century buried  
ships/storeships





# Geodatabase Table of shipwrecks in/near San Francisco (partial)

ID Number	Ship's Name	Type	Rebuilt	Year Built	Year Sunk	Date Sunk	Cause	Owner	Captain	Length	Beam	Tonnage	Engine	County	State	Latitude	Longitude	DeclLat	DeclLong	
1052	Cadille	Yacht	0	1884	1925	12/10/1925	Storm								yes			0.0000000000	0.0000000000	
677	City of Rio de Janeiro	Iron steamer	1878	1861	12/21/1901	Grounded		Pacific Mail Steamship Company	Ward, William	345 ft	39 ft	3548		San Francisco	yes	37deg 49'24"N	122deg 28'31"W	37.8233333333	122.4727777778	
1353	Chateau Palmer	Ship	0	1856	1855/05/01	Missed slams			Bouteller			504	sail	San Francisco	yes	37deg 48'20"N	122deg 28'45"W	37.8055555556	122.4791666670	
1363	Ellen	Steamship	0	1874	1874/06/10	struck pilings		Davis and associates	Davis, Charles			20						0.0000000000	0.0000000000	
77	Poor Es Nada	Schooner	1834	1836	1836/01/07	Stranded		Isaac Williams	Kupoetz, Gerard			20	sail	San Francisco		37deg 49'00"N	122deg 28'00"W	37.8166666667	122.4666666700	
656	Pet	Steamship	1866	1870	1870/03/09	Grounded		McNair & Brewer	McNair			35		Yolo	yes			0.0000000000	0.0000000000	
565	Reliance	Steam tug	1866	1945	12/17/1945	Foundered		Soreckes Company				234		San Francisco		37deg 48'15"N	122deg 23'50"W	37.8041666667	122.3972222222	
564	Polinesta	Clipper	0	1862	1862/03/03	Stranded						1064	sail	San Francisco				0.0000000000	0.0000000000	
563	Belvedere	Excursion boat	0	1933						30 feet								0.0000000000	0.0000000000	
561	Marv and Helen	Whaler	0	1866	1866/12/17	Burned							sail					0.0000000000	0.0000000000	
531	Utility	Oil screw	1915	1928	10/3/1928	Burned						92				37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
530	Shelico	Gas screw	1917	1924	1/19/1924	Burned						124				37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
528	Tirael	Steamship	0	1861	1861/06/04	Collision										37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
572	Port Costa	Gas screw	1899	1929	11/13/1929	Burned						79				37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
527	J D Peters	0	0	1898	1898/01/02	Collision										37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
526	J C Fresno #7	Barge	1930	1951	10/23/1951	Foundered						389	none			37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
525	Ica	0	0	1863	1863/11/16	Stranded										37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
524	Hornbill	Mine sweeper	0	1942	6/30/1942	Collision		U.S. Navy								37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
522	Redondo	0	1946			Wrecked										37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
1534	P-2 Helicat	Aircraft	1940	0				U.S. Navy							San Diego	yes			0.0000000000	0.0000000000
1512	Unmanned	Scow	0	1892	1892/10/12	Stranded												0.0000000000	0.0000000000	
1501	Grays Harbor	Steam schooner	1907	1931												37deg 47'36"N	122deg 29'22"W	37.7933333333	122.4836666667	
529	Golden City	Oil screw	1920	1927	4/24/1927	Collision				172 feet	38 feet	659		San Francisco	yes	37deg 42'30"N	122deg 23'10"W	37.7083333333	122.3861111111	
589	Denny	Steamwheel Steamboat	0	1888	1888/07/17											37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
610	Pioneer #1	0	1849															0.0000000000	0.0000000000	
606	Oliver Cutts	Bark	1863	1868	1868/01/13	Grounded				143 feet	31 feet	700	sail	San Francisco		37deg 49'36"N	122deg 28'45"W	37.8272222222	122.4791666670	
605	Pioneer	Steamship	0	1872														0.0000000000	0.0000000000	
603	Nevada	Steamship	0	1940						65 feet								0.0000000000	0.0000000000	
589	Crown Princess	0	0	1850		Grounded										37deg 49'23.6"N	122deg 22'29.62"W	37.8232222000	122.3748840000	
588	Isleton	Steamship	0	1906	7/2/1906	Burned												0.0000000000	0.0000000000	
584	Liv-Van	Schooner	0	1892	1892/10/08								sail					0.0000000000	0.0000000000	
592	Governor Blaisdel	Steamship	0	0		Storm												0.0000000000	0.0000000000	
570	Lettia	Schooner	1867	1915	2/23/1915	Foundered						245				37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
590	Santa Clara	Ferry	1913	1919		Wrecked		Southern Pacific RR Co.					sail	San Francisco		37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
571	Lillebonne	Two Masted Schooner	1883	1912	9/29/1912	Foundered						218	sail			37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
568	Carlela	0	0	1850												37deg 49'30"N	122deg 25'07"W	37.8083333333	122.4186111111	
567	Antelope	Sidewheel Steamboat	0	1886		Wrecked				203 feet								0.0000000000	0.0000000000	
561	Missouri	River Steamboat	1850	1851	1851/02/17	Snagged						27						0.0000000000	0.0000000000	
580	Milan	Bark	1847	1875	1875/08/17	Anson		Pope and Talbot Lumber				73	sail					0.0000000000	0.0000000000	
578	Mary Ellen	Schooner	0	1869	1869/04/11	Burned								San Francisco		37deg 46'40"N	122deg 23'20"W	37.7777777778	122.3868888889	
574	Lizzie Patterson	Barge	0	1879	1879/03/04								none					0.0000000000	0.0000000000	
573	San Mateo	Schooner	0	1854	1854/02/14	Capsize			Lambert				sail	San Francisco		37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
512	Fiji	0	1947			Burned										37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
591	Diamond	Barge	0	1944	1944/09/10													0.0000000000	0.0000000000	
291	Saint Joseph	Ship	0	1861	1861/09/04	Collision										37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
1494	Autocrat	Ship	1859	1868	1868/04/06	Grounded						1130	sail	San Francisco		37deg 49'45"N	122deg 26'25"W	37.8291666667	122.4402777778	
470	Sea Witch	Pilot boat	0	1853	1853/03/06	Grounded								San Francisco		37deg 49'45"N	122deg 26'25"W	37.8291666667	122.4402777778	
456	Herald	Sidewheel Steamboat	1878	1912	1/14/1912	Fire		Central Pacific Co.	Crockett, Robert Lockwood					Alameda		37deg 49'00"N	122deg 22'00"W	37.8000000000	122.3666666670	
455	Alamere	Gas screw	1915	1920	1/13/1920	Burned						56				37deg 48'00"N	122deg 20'00"W	37.7920000000	122.3333333333	
453	Alice Garrett	0	0	1868	1868/03/04	Parted moorings								San Francisco		37deg 47'50"N	122deg 23'30"W	37.7972222222	122.3916666670	
450	Arkansas	0	0	1848														0.0000000000	0.0000000000	
346	Danti Alighieri #2	Gas screw	1937	1938	11/30/1938	Foundered						97						0.0000000000	0.0000000000	
320	Delta Walker	0	0													37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
474	City of Chester	Steamship	1875	1886	1886/06/22	Collision		Oregon Railroad Co. (charter PCSS)	Wallace, Thomas	205 feet	33 feet	1106		San Francisco	yes	37deg 48'00"N	122deg 28'00"W	37.8138888889	122.4666666670	
239	Quadra	0	1924													37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
60	Unimak	0	0	1943												37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
75	General Cushing	Ship	1856	1858	1858/10/16	Grounded		Dow,Varina,Hale Davis and Moss	Varina, Nicholas	150 feet	31.5 feet	661	sail	San Francisco	yes	37deg 48'37"N	122deg 28'39"W	37.8102777778	122.4775000000	
32	Ace of Clubs	Steamboat	0	1869		Snagged												0.0000000000	0.0000000000	
23	Hamlet	0	0	1878	1878/05/03											37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
22	Alma	Tug	0	1890	1890/11/12	Stranded												0.0000000000	0.0000000000	
17	Midura	0	0															0.0000000000	0.0000000000	
16	Briot	0	1913	1914	5/7/1914	Wrecked						564				37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
329	Sea Gull	0	1912													37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
500	Fannie Adele	Three Masted Schooner	1883	1904	5/24/1904	Explosion						234	sail	San Francisco		37deg 48'05"N	122deg 23'00"W	37.7805555556	122.3833333333	
611	Plumas	0	0	1854														0.0000000000	0.0000000000	
1490	Vigil Bouve	Steam screw	1909	1939	12/7/1939	Collision										37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
635	S N Bentley	River steamer	0	1866		Snagged												0.0000000000	0.0000000000	
511	F A Douv	Steam screw	1904	1944	8/9/1944	Foundered						170				37deg 45'00"N	122deg 20'00"W	37.7500000000	122.3333333333	
509	Janette	Schooner	0	1878	1878/02/27	Capsize								San Francisco		37deg 43'42"N	122deg 22'18"W	37.7283333333	122.3716666670	
507	H L Ternan	Schooner	0	1862		missed slams,grounded						142.78	sail	San Francisco		37deg 49'30"N	122deg 28'45"W	37.8250000000	122.4791666670	
504	Hartley	Revenue tender	1874	1884	4/21/1884	Old age								San Francisco		37deg 48'25"N	122deg 28'20"W	37.8084444444	122.4522222222	
472	Baldit	Tug boat	0	1947	8/31/1947	Collision				71 feet				San Francisco		37deg 49'05"N	122deg 25'10"W	37.8180555556	122.4184444444	
502	Golden Rule	Schooner	0	1874	1874/04/04	Collision							sail	San Francisco		37deg 48'25"N	122deg 28'38"W	37.8084444444	122.4688888889	
1496	Carmel	Steam schooner	1907	1931										San Francisco	yes	37deg 42'30"N	122deg 23'10"W	37.7083333333	122.3861111111	
499	Exchange	Barge	1868	1878	1878/01/22	storm		George W. Hooper	Hunt, George			130.4		San Francisco	yes			0.0000000000	0.0000000000	
498	Emily F Richard	Gas screw	1867	1927		Wrecked						52				37deg 45'00"N	122deg 20'00"W	37.7500000000		



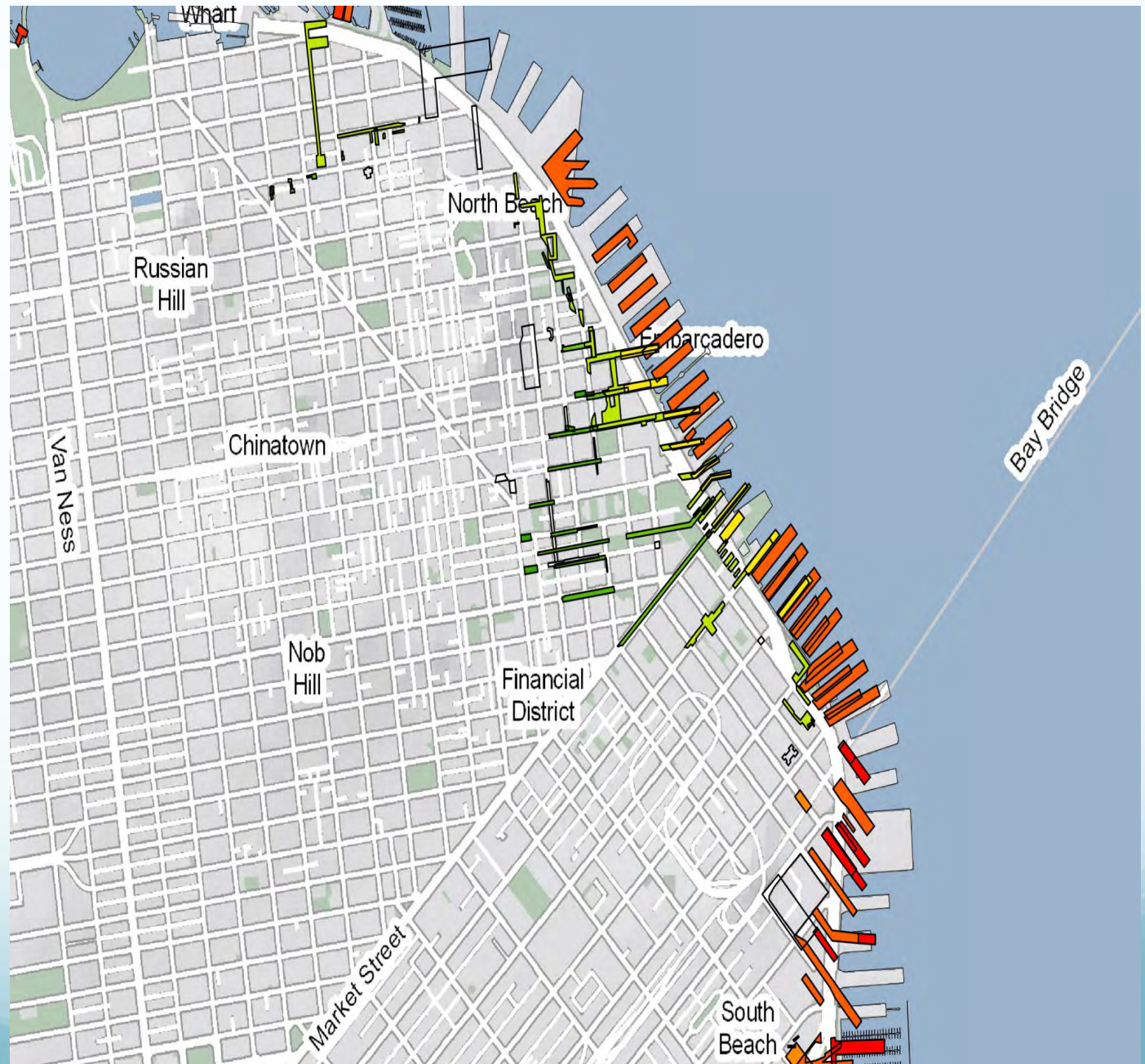
# Golden Gate Shipwrecks

## Known Wrecks from 1797-1954





Geodatabase  
table  
of 19<sup>th</sup> wharves  
(color- coded by  
date of  
construction)



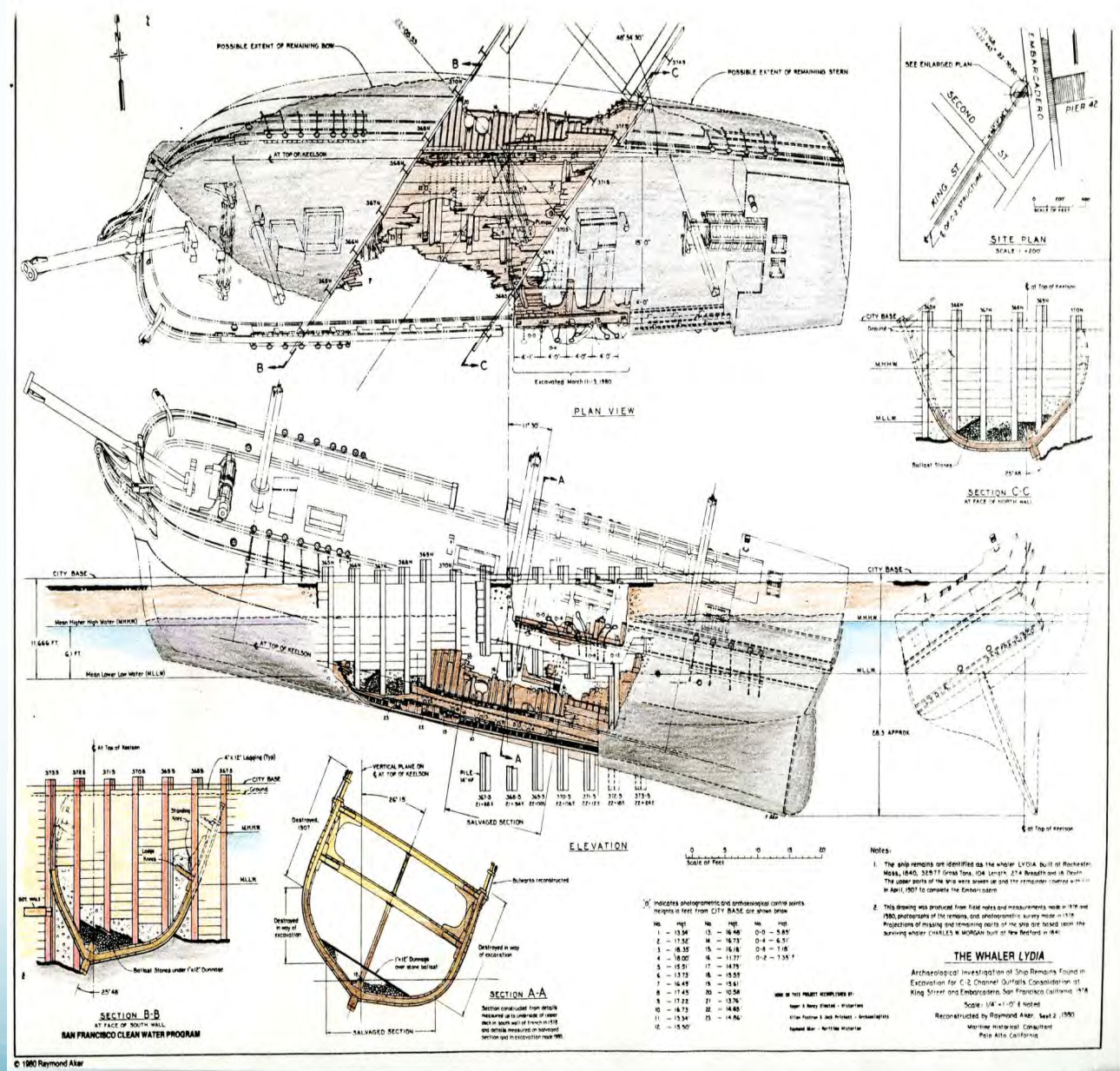


Aerial view of  
the projected  
location of the  
prison/asylum  
ship the  
*Euphemia*



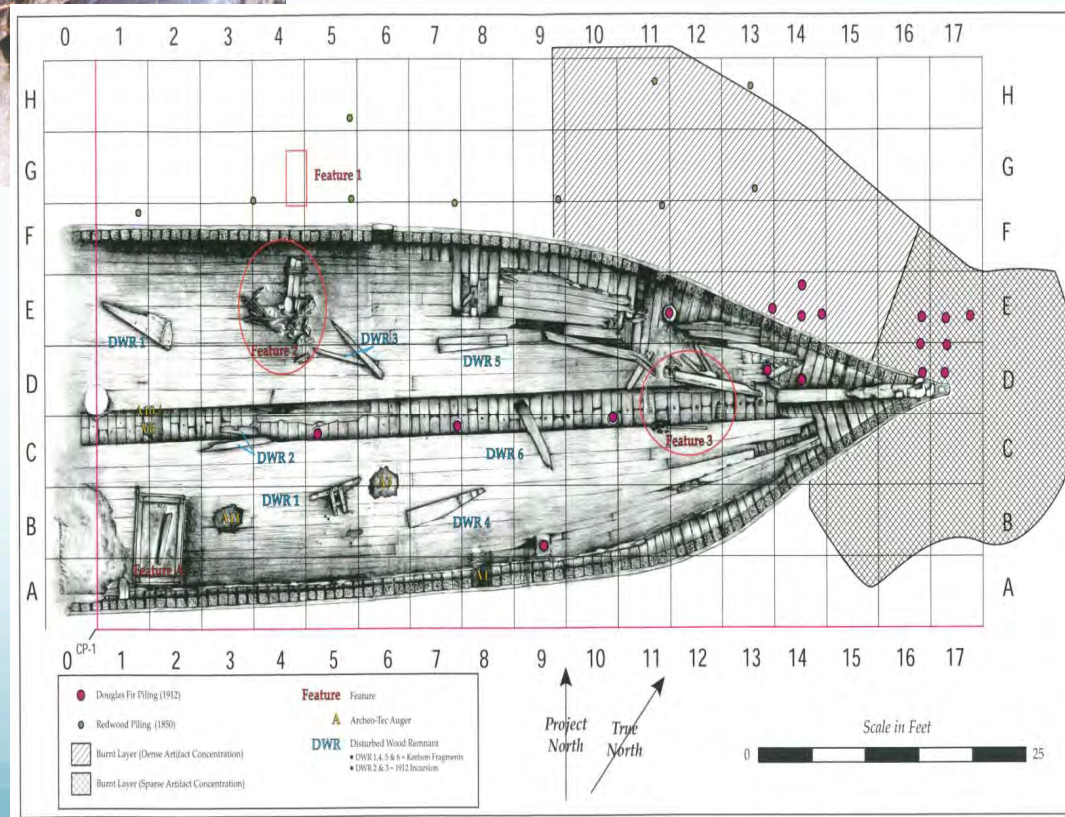
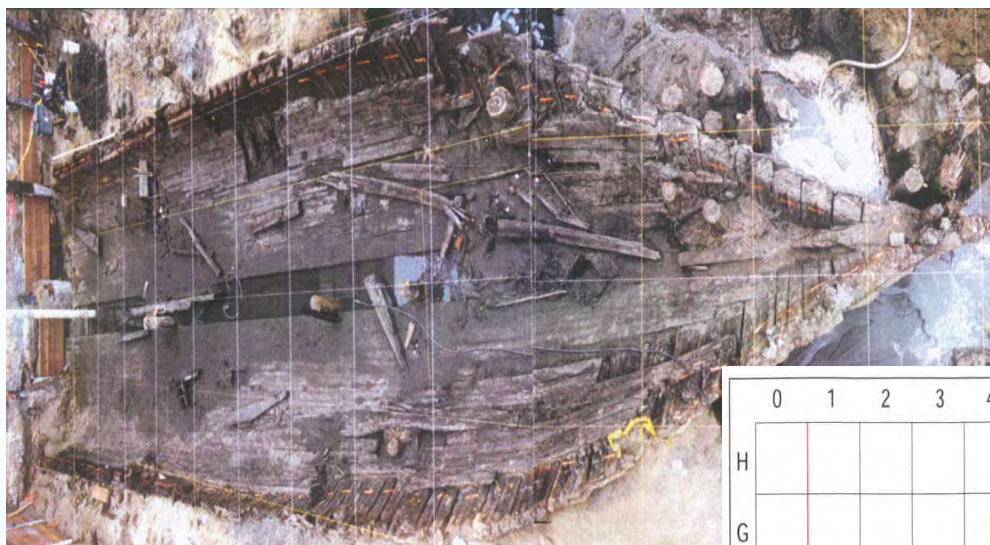


Drawing of the  
whaler the *Lydia*  
indicating the  
portion  
archeologically  
removed  
in 1979





# Harrison archeological data recovery project (2001)



Why archeology  
should seem  
like Greek  
to us





...in the past, things  
are rarely  
what they seem



San Francisco Archeo Project Staff & Interns

Angela Locke Barton Hispanic Period  
Archeological District

Chris Bowman Overseas Chinese

Rumika Chaudhry Hispanic Period, Overseas  
Chinese

Alex Makovics Maritime

Lisa Pesnichak Prehistoric Period

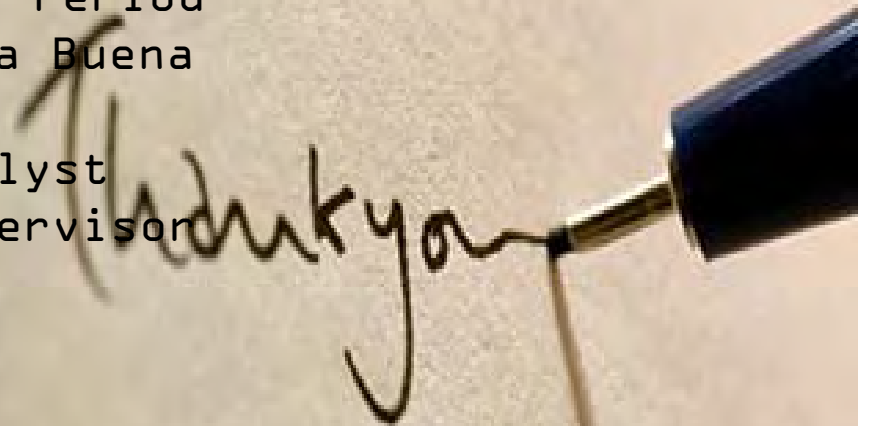
Allison Vanderslice Yerba Buena  
Period

Mike Wynne

GIS Analyst

Debra Dwyer

GIS Supervisor





# Cultural Resources Management During Construction

Kimberly Stern Liddell  
San Francisco Public Utilities Commission  
Environmental Construction Compliance Manager

# Process for CatEx Review

## Preliminary Archaeological Checklist (PAC)

- Standardized checklist approach
- SFPUC archeologist and/or consultant archaeologist does preliminary review
- SFPUC has formally adopted Standard Construction Measures addressing cultural resources
- Affords SFPUC greater management of project schedule
- SF Planning as CEQA Lead Agency has final discretion





## SAN FRANCISCO PLANNING DEPARTMENT

### San Francisco Public Utilities Commission Preliminary Archeological Checklist (PAC)

#### A. PROJECT INFORMATION:

Date: 1/3/2017 SFPUC Archeological Reviewer: Sally Morgan

Project name: TLCM Modesto Tower Geotechnical Investigation Case No: \_\_\_\_\_

Application type: ☐ EE ☒ CatEx

☐ In City ☒ Outside of City

Project address: \_\_\_\_\_

EP planner: Tim Johnston EP Archeological Reviewer designee: Adrian Praetzelis

APN/Cross streets: SJPL ROW, Modesto and Riverbank OR City/ County: Stanislaus

1. PROJECT DESCRIPTION: (include description of construction methods, all potentially ground-disturbing activities including parking, staging, equipment and spoils storage, temporary and permanent work areas, utility lines)

SFPUC proposes to conduct geotechnical drilling near 10 existing electrical transmission towers within SFPUC's San Joaquin pipeline/ transmission line right of way in the vicinity the towns of Modesto and Riverbank. At each site, a geotechnical drill rig would drill a hole approximately 6 inches in diameter and up to approximately 25 feet deep to obtain soil samples. Investigation sites would be located within 100 feet of each of 10 existing transmission towers within the right of way, with the specific location to be determined by on-site SFPUC personnel. Each investigation site would require use of an approximately 100 foot staging area within the existing transmission line ROW corridor to accommodate mobilization of the drill rig and support equipment. This use would not entail ground disturbance. The area of potential ground disturbance would be confined to a 10 foot by 10 foot area surrounding the 6-inch-diameter hole at each drill site. Once drilling is completed and required samples have been obtained, drill holes would be backfilled and the ground surface returned to its pre-investigation condition.

### SFPUC Preliminary Archeological Checklist

#### 2. POTENTIAL GROUND DISTURBANCE

- | Yes                                 | No                                  | Project Component   |
|-------------------------------------|-------------------------------------|---|
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Excavation (basement, elevator, utilities, seismic retrofit, remediation, underground vaults, septic tank system, culverts, etc.)<br>Maximum depth: _____ |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Pipeline replacement or installation (specify cut and cover, directional drilling, pipe bursting, etc.):  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Tunnels, transport storage boxes  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Bore pits, test pits  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Shallow Building Foundation (Mat, Spread Footings, etc.)<br>Depth: _____  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Piles, piers, micropiles, pilings, piling replacement   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Grading, scraping   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Demolition  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Construction staging, spoils on unpaved area, fill  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Road construction   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Geotechnical trenching (dimensions) _____   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | New rip rap   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Wharf or seawall modification   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Other (specify): geotechnical coring  |

#### Anticipated maximum extent of project ground disturbance:

Vertical: 25-30' Horizontal: 10X10 area (surficial) plus 6" core to depth at each location

APE Map Attached Y ☐ N ☒

#### 3. PREVIOUS SOILS DISTURBANCE AT PROJECT SITE:

Has the project site been previously disturbed by any of the following?

- | Yes                                 | No                                  | Component of disturbance   |
|-------------------------------------|-------------------------------------|--|
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Existing Basement --Depth: _____   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Existing Foundation (footings, perimeter, piles, micropiles, etc.) Depth: _____          |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Site remediation/UST installation or removal, other excavation. Depth: _____             |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Site Grading   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Demolition   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Dredging   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Piling installation  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Riprap   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Seawall construction   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Other (specify): pipeline installation/ TL corridor maintenance (veg. clearing), ongoing |

4. Has the entire project area previously been disturbed to the maximum depth of proposed project disturbance? Y ☐ N ☒

(Attach documentary evidence, including plans and profiles of prior trenching, utility street occupancy, historic photos, specifications from prior projects, etc.)

List attachments:



## SFPUC Preliminary Archeological Checklist

☐ Complete prior disturbance adequately documented, stop here: no further archeological assessment is required. Assessed by: \_\_\_\_\_

☒ Prior ground disturbance is unknown or cannot be adequately documented (continue to B.)

### B. ARCHIVAL AND ARCHEOLOGICAL DATA ASSESSMENT

#### 1. ARCHIVAL AND DATA REVIEW

Dates of review: 5/2006

Resources reviewed:

- ☐ Maher zone maps. Dates/ origin/ depth of fill if known \_\_\_\_\_
- ☐ Geotechnical data for project site and vicinity (Cite report \_\_\_\_\_)
- ☐ EP Archeo GIS maps (all layers or specify applicable layers) \_\_\_\_\_

- ☐ Sanborn Insurance maps (1887-93, 1899-1900)
- ☐ Coast and Geodetic Survey maps (1853, 1857, 1869)
- ☒ Information Center archeological records search (attach request and response) CCIC File # 6297LNO
- ☐ USFS/ BLM/ NPS archeological files (upcounty projects)
- ☐ NAHC Sacred Lands File
- ☒ Native American/ Ethnic group consultation
- ☐ Other: \_\_\_\_\_

#### Findings:

- ☒ No previously documented resources present
- ☐ Archival research suggests resources are or may be present within the project soils disturbance area

*If positive results, attach documentation and memo summarizing results.*

#### 2. ARCHEOLOGICAL FIELD INVENTORY

- ☐ Not warranted; no exposed ground surface in project area
- ☒ Results negative
- ☐ Results positive
- ☐ Results inconclusive

Archeologist/ Affiliation Mark Hale/ Brian Hatoff, URS Date of Survey summer and fall 2006

*Attach Archeological Survey Report/Memo; may combine with results of archival review.*

#### 3. SUMMARY OF RESULTS

##### Site History/Formation:

In 2006, URS conducted a records search, Native American outreach, and complete intensive archaeological surveys, with negative results. The only archaeological resources identified along the corridor between Oakdale Portal and Tesla were two prehistoric sites and a historic site, all near Oakdale Portal. These results are typical of many areas in the San Joaquin Valley. None of the drill sites is near a creek or other water source. All are within the right of way corridor, which is maintained relatively free of vegetation and which has been disturbed repeatedly both by pipeline and transmission tower construction and by ongoing maintenance. If a near-surface site were present, it would be expected that the past disturbance would have exposed it. The archaeological sensitivity of the corridor in general appears to be low. Although the records search is more than 10 years old, it is unlikely that any additional investigations have been conducted by other parties, or additional resources recorded, since the corridor facilities are managed and maintained by SFPUC. The geotechnical investigation would entail small areas of surficial ground disturbance and a 6-inch diameter disturbance at depth, at 10 widely distributed locations. On this basis, the potential for significant resources to be present at the work sites appears to be low, and the potential for significant impacts to result from the limited ground disturbance also would be low.

## SFPUC Preliminary Archeological Checklist

Recorded/documentated archeological sites/ investigations on/in the vicinity of the project site:  
none recorded in vicinity of any work locations

### C. CONCLUSIONS AND RECOMMENDATIONS

#### 1. NO EFFECTS TO ARCHEOLOGICAL RESOURCES EXPECTED:

- ☐ Project effects limited to previously-disturbed soils
- ☐ Project effects limited to culturally sterile soils
- ☐ Based on assessment under B, above, no potentially CEQA-significant archeological resources are expected within project-affected soils.

#### 2. AVOIDANCE AND TREATMENT MEASURES NECESSARY TO AVOID SIGNIFICANT IMPACTS TO CRHR-ELIGIBLE ARCHEOLOGICAL RESOURCES:

- ☒ Low potential to adversely affect archeological resources may be avoided by implementation of SFPUC Standard Archeological Measure I (Discovery during Construction), with implementation of Standard Archeological Measures II (Monitoring) and/or III (Testing/ Data Recovery) in the event of a discovery during construction.
- ☐ The potential of the project to adversely affect archeological resources may be avoided by implementation of the SFPUC Standard Archeological Measure II (Archeological Monitoring) during construction.
- ☐ The potential of the project to adversely affect archeological resources may be avoided by implementation of the SFPUC Standard Archeological Measure III (Archeological Testing) ☐ prior to or ☐ during construction.
- ☐ CEQA evaluation of the project requires preparation and implementation of an archaeological research design and treatment plan (ARDTP) by a qualified archeological consultant. See attached scope of work for the ARDTP.

#### D. EP ARCHEOLOGIST/ ERO-ARCHEOLOGICAL DESIGNEE REVIEW

- ☒ I concur with the conclusions and recommendations provided in Section C, above.
- ☐ Additional/ alternative measures recommended (detail):  
The archaeological inventory and records search on which this document is based are more than a decade old. However, considering the level of impact from Geoprobe testing I believe that Standard Measure 1 is appropriate in this case.
- ☐ Meeting requested.



# Invest Upfront

- Reduces risk to construction schedule and cost
- May reduce monitoring during construction
- Allow time for data recovery if needed
- May be worth doing under a separate contract agreement from prime construction contract

# Case Study: BDPL 3/4 Seismic Reliability Upgrade at Hayward Fault Project

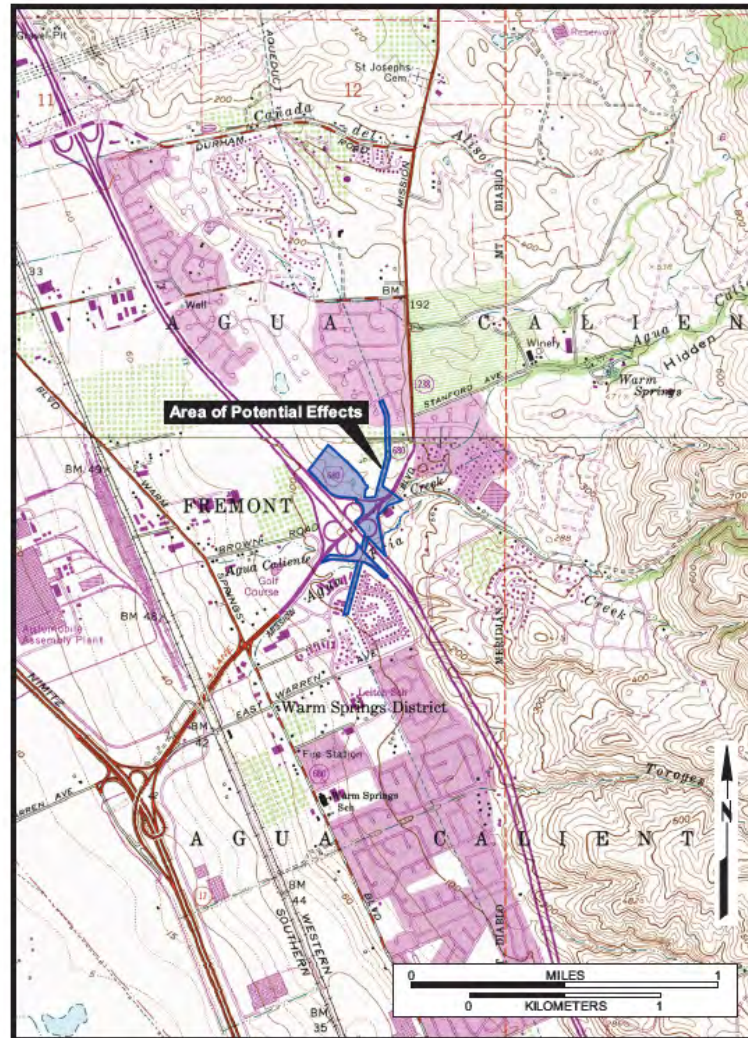
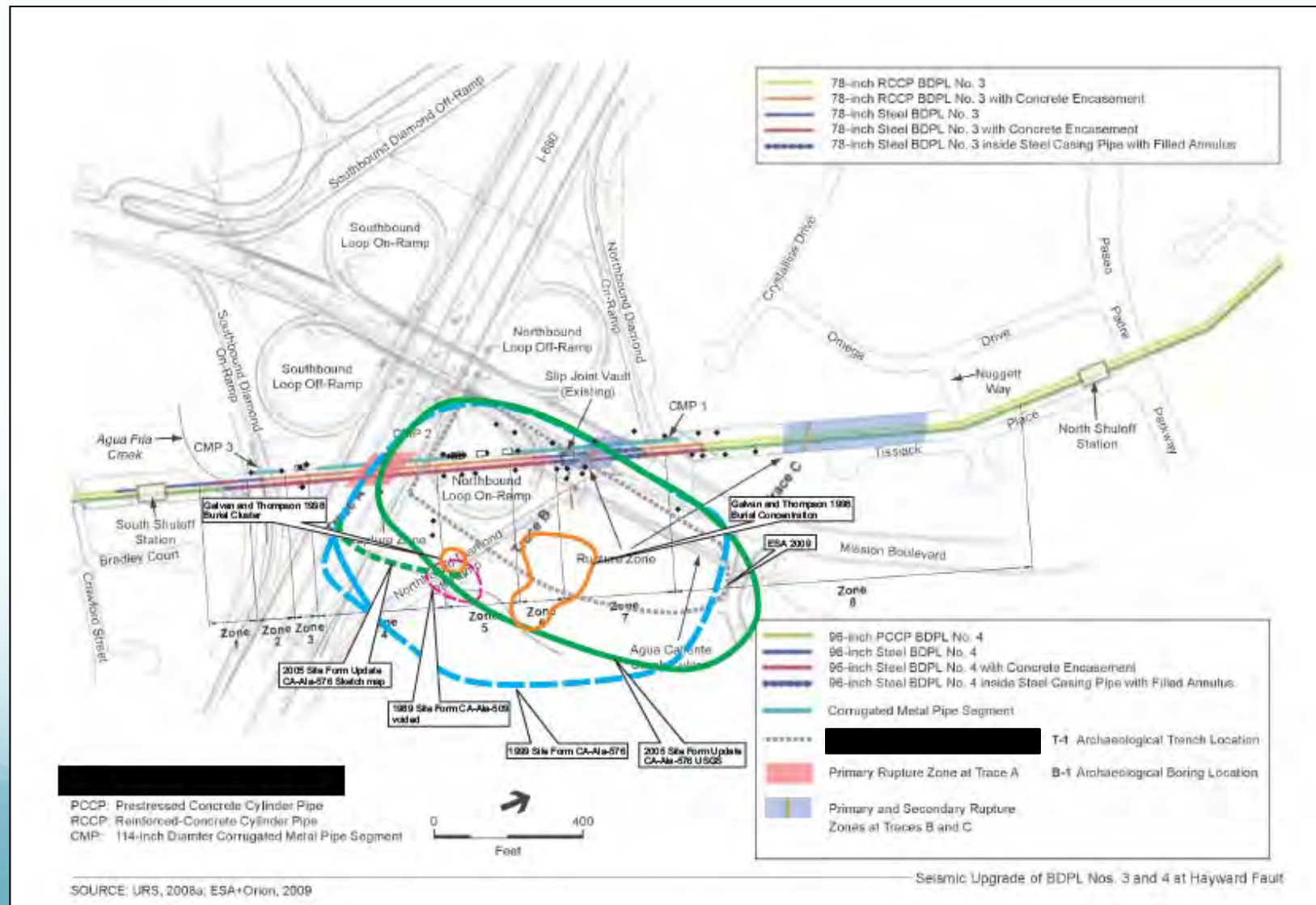


Figure 2: Project Location (USGS Niles, Calif. 1980 and Milpitas, Calif. 1980)



# Case Study: BDPL 3/4 Seismic Reliability Upgrade at Hayward Fault Project



# Case Study: BDPL 3/4 Seismic Upgrade at Hayward Fault Project

## Planned

- 5 bores
- 4 backhoe test units (15'L x 10'W x 15'D)
- 15 shovel test units (1'L x 1'W x 2'D)

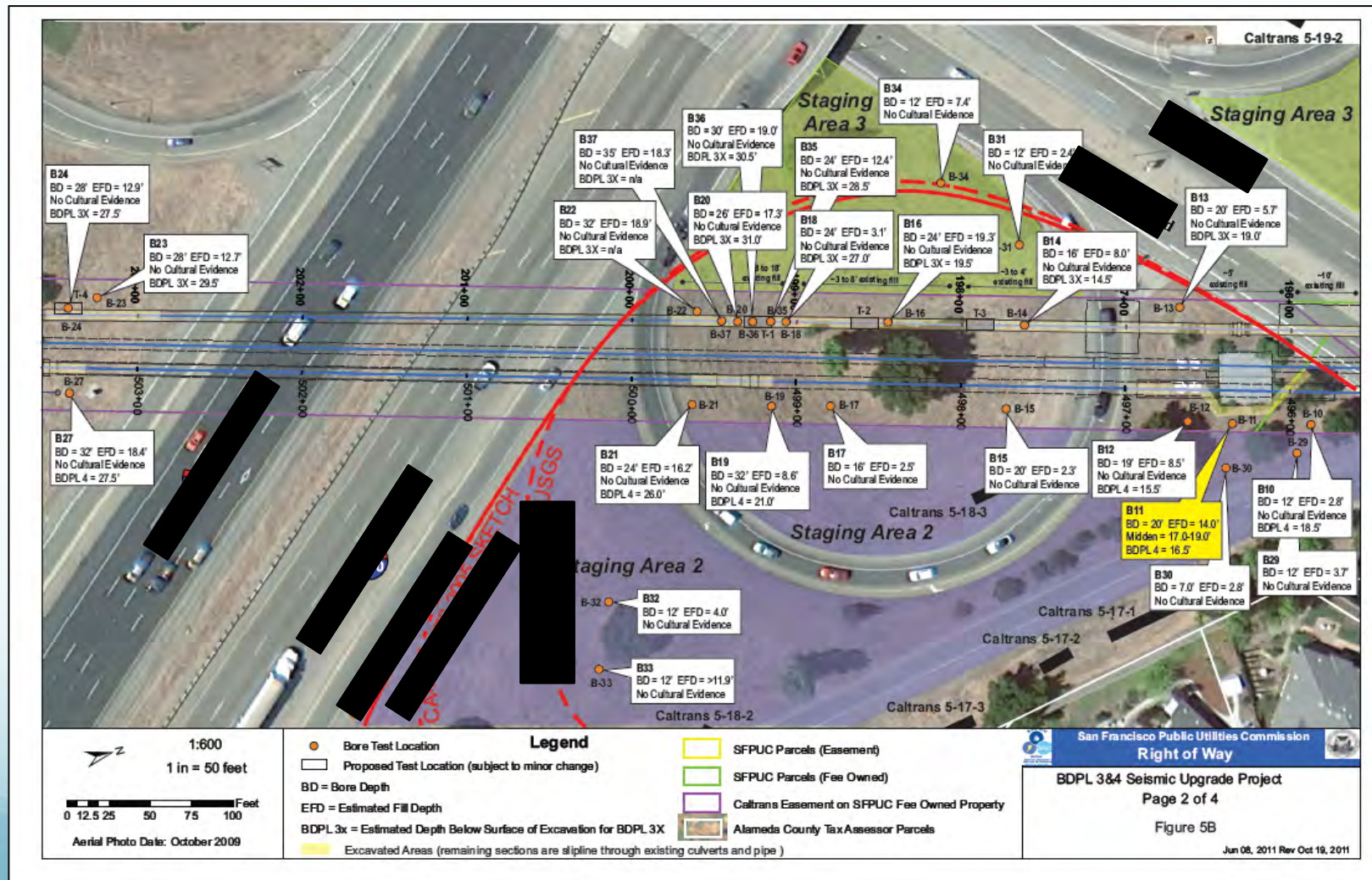
## Implemented

- 37 bores
- 2 backhoe test units (15'l x 4.5'W x 18'D) and relocated
- 0 shovel test units





# Case Study: BDPL 3/4 Seismic Reliability Upgrade at Hayward Fault Project



# Case Study: BDPL 3/4 Seismic Reliability Upgrade at Hayward Fault Project

- Bore program strongly suggested project area in depositional environments of flood plain, channel and/or near channel deposits not conducive for human occupation
- Occupational core east of project on an elevated shallow knoll between east bank of Agua Caliente Creek and west bank of Agua Fria Creek
- Would have provided excellent view of surrounding area within a foothill/riparian ecotone with immediate access to water



# Case Study: BD3/4 Seismic Reliability Upgrade at Hayward Fault Project

## Benefits to the Project

- Enhanced boring program allowed greater area of evaluation and site understanding
- Series approach allowed fine tuning methods
- Greatly reduced concern going into the project
- Reduced monitoring

# Case Study: Sunol Yard Long Term Improvements Project

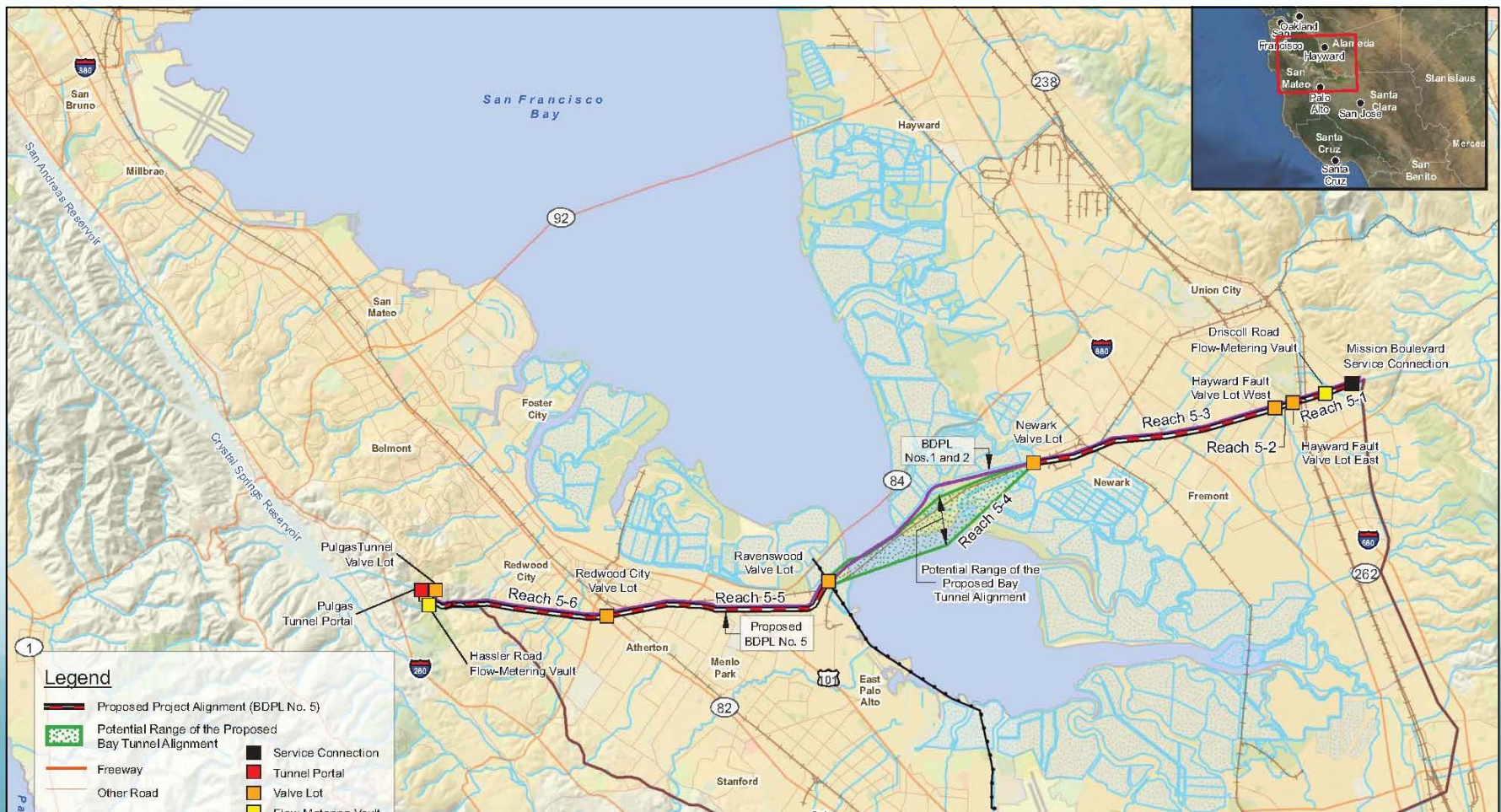
- Controlled stripping





# Get Creative during Construction

## Case Study: Bay Division Seismic Reliability Upgrade Project





# Case Study: Bay Division Seismic Reliability Upgrade Project



Native American remains 1 site

No significant resources other 5 sites



# Get Creative during Construction

## Pre-trenching

- Small crew ahead of mainline crew
- Small backhoe with modified flat blade
- 4 to 6" lifts
- Archaeological and Native American Monitors
- Soft backfill of pipe trench

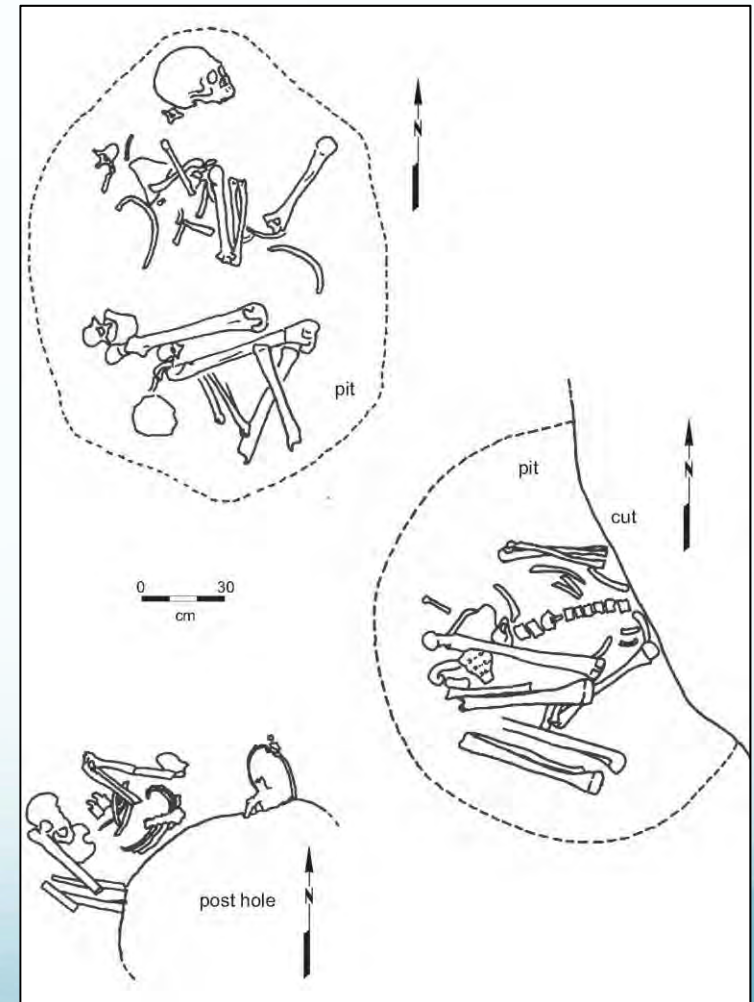




# Case Study: Bay Division Seismic Reliability Upgrade Project



- 4 adults, ~ 25 to 45 years
- Charred material - AD 660 to 810 (~ 1,200 to 1,340 years ago)



# Case Study: Bay Division Seismic Reliability Upgrade Project

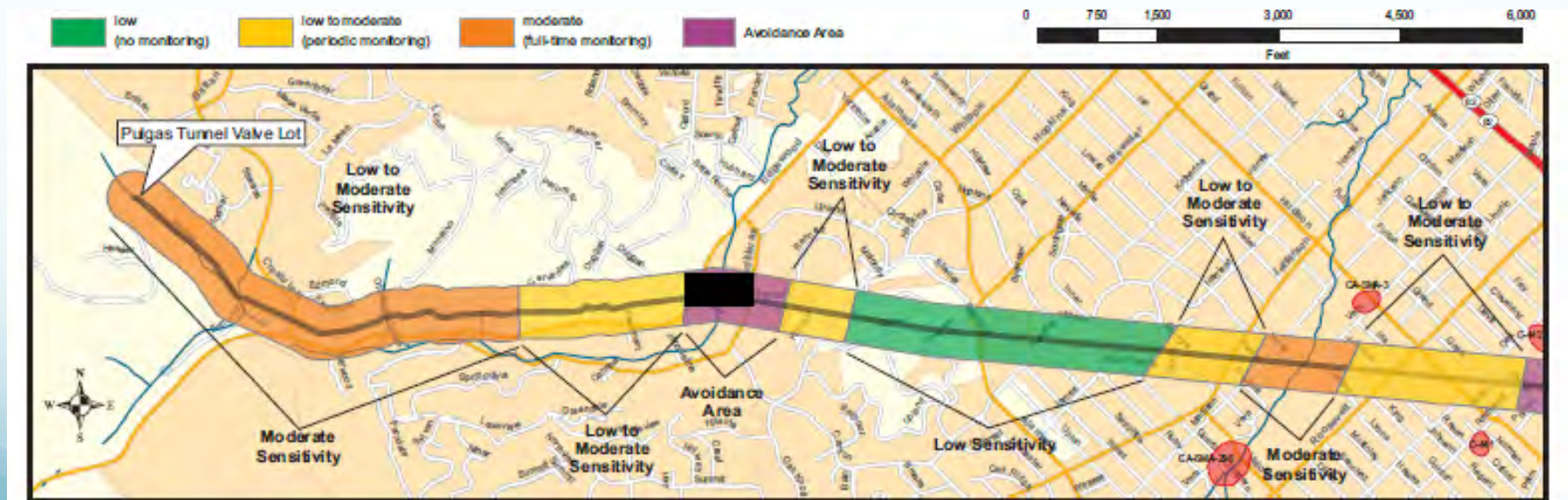
## Benefits to the Project

- Reduced cost of having to stop or relocate entire mainline crew
- Provided ample time to work with the Most Likely Descendant (MLD) to appropriately treat the resource



# Fine Tuning Monitoring

- Perform a sensitivity analysis
  - Proximity to previously recorded sites
  - Historic water resources
  - Geoarchaeological setting



# Address Cultural Resources in Contract Documents in Project-Specific Manner

Build time into contract documents upfront

- All parties clear on requirements
- Contractor able to incorporate into schedule
- Reduces schedule delays and change order costs

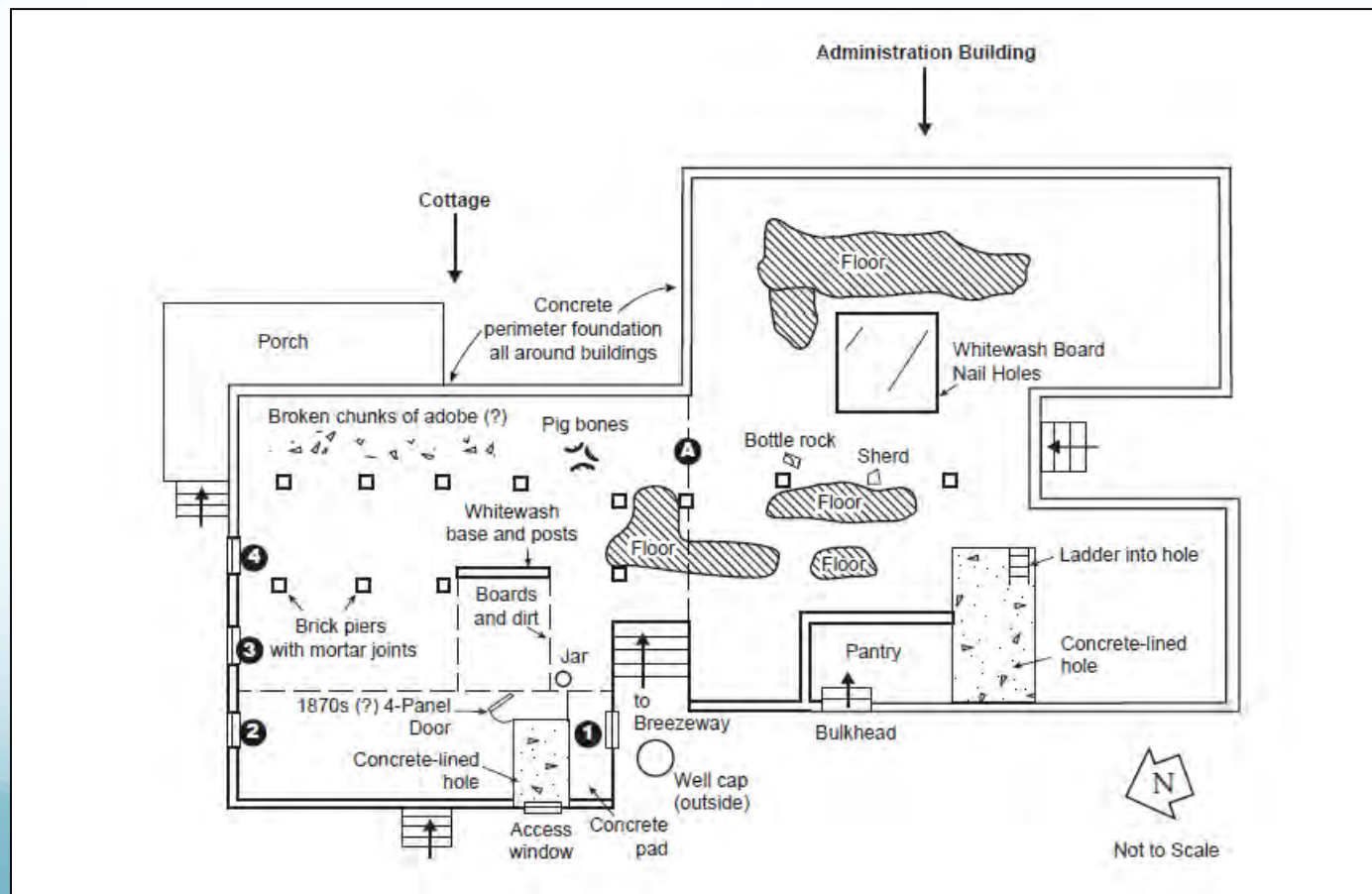
Consider “pre-purchasing” days for work stoppage or relocation to address discoveries

- Projects with high likelihood of discoveries



# Case Study: Sunol Yard Long Term Improvements Project

- Mexican Period Sunol Adobe or Hadswell homestead (1840's to 1860's)



# Case Study: Sunol Yard Long Term Improvements Project

- K. *Archeological Investigation – Demolition of the existing administration building and cottage shall be completed within the first three months after NTP has been issued for Construction. Contractor shall provide submittals for the demolition of these two buildings immediately upon receiving NTP as detailed in General Requirements 00 72 00. After demolishing this particular facility, as described in Section 01 35 43, Contractor's schedule shall allow up to four weeks before beginning construction of the new Sunol Administration Building (during which time City will complete archeological work should it become necessary). Contractor shall allow archeological team access to the site during this time period to complete their investigation. Archeological pits, if necessary, will be soft backfilled without compaction. Contractor shall ensure that after the new building excavation has taken place that all areas beneath the new building meet compaction requirements prior to installing the new foundation system. Contractor shall also dispose of any excess soil remaining from the archeological excavation. See environmental specifications for additional details on steps to take if a discovery is made during construction.*



# Addressing Cultural Resources in Contract Documents

Only include what Contractor needs to know from mitigation measures in specifications

- Notification of work approaching cultural resources area
- Identification of where monitoring is required
- Unanticipated discoveries procedures
- Contacts

# Managing Discoveries

- Meet in field with MLD and agencies immediately
- Allow archaeologist to discuss findings with MLD and agencies directly
- Don't be presumptive about the process, treat each discovery situation as a unique situation



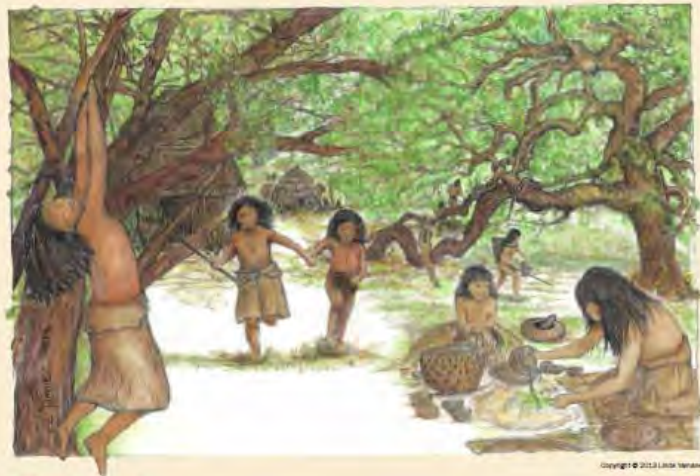
# Interpretive Programs

- Panels
- Websites
- Educational materials
- Close involvement of the MLD, commissioned for contribution

# Ohlone Families

Today you enjoy visiting this natural area. But did you know that for thousands of years Ohlone Indian children and their families lived and played here too?

Ohlone cared deeply about their families and had strong community ties. Ohlone life meant working together and helping one another. Boys and girls learned all the skills they would need in life from their parents and other adults in their village. But life was not all about work. Ohlone families also had time for singing and dancing, laughing, and playing. They had favorite games such as stick dice, hand game, hoop and pole, and juggling. They also competed in marathon-like races and team sports. Shinny is an Ohlone game that is similar to field hockey today. Just as you might go to football and baseball games today, families traveled to distant villages to watch exciting shinny tournaments.



Ohlone Timeline

10,000 BCE (Before Common Era), First People

## Hoop and Pole

One game Ohlone children played is now called "Hoop and Pole." In this game, someone rolls a hoop and one or two players try to throw a pole through it as it rolls by. Poles were made from long, straight branches. Hoops were made from natural materials such as willow branches bound into a sturdy ring. This game taught Ohlone children hand-eye coordination and cooperation. The rules for scoring points and hoop size varied from place to place. You too can play this game today. The person who throws the pole through the moving hoop the most times wins the game!



## Hummingbird Gets Fire

Storytelling was an important way of learning. In one Ohlone story, Hummingbird brings fire back to the people after the world floods so they can cook and keep warm again. That's how Hummingbird got his red throat! Remember that the next time you see Hummingbird.

## Living with Nature

Ohlone families were experts at living with nature. In Ohlone culture, boys learned from the men how to hunt and fish. Girls learned from the women how to harvest nutritious bulbs, seeds, fruits and greens for a healthy diet and for medicines. Houses, boats, baskets, rope, and tools of all kinds were made from materials found in the natural world. Ohlone people traveled by foot and also in boats made of bundled tule reeds. In these boats, they used streams like we use highways today. They travelled down to the San Francisco Bay for hunting and food gathering, to visit friends and relatives in neighboring villages, and to attend seasonal festivals where they enjoyed dancing, singing, and feasting.



## Ohlone People Today

Many Ohlone families still live in the San Francisco Bay Area today. They live modern lives and also honor and keep the memory of their ancestors alive by practicing their cultural traditions and working to protect the ancient cultural sites and sacred places they left behind.

Written by Linda Yamashita (Rumsien Ohlone) and Jakkie Kehil (Mutsun Ohlone)  
 Collaboration with Sonoma State University's Anthropological Studies Center. Additional information at [www.sfwater.org](http://www.sfwater.org)



