

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

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Finance Docket No. 36433

**NORTH COUNTY TRANSIT DISTRICT
PETITION FOR DECLARATORY ORDER**

NORTH COUNTY TRANSIT DISTRICT REBUTTAL

The North County Transit District ("NCTD") respectfully submits its rebuttal to the Surface Transportation Board ("STB" or "Board") in response to the replies in opposition to its Petition for Declaratory Order ("Petition") in the above-captioned proceeding. On August 28, 2020, NCTD filed this Petition to eliminate uncertainty pursuant to the STB's authority under 5 U.S.C. § 554(e) and 49 U.S.C. § 1321. First, NCTD asked that the Board find that 49 U.S.C. § 10501(b) of the ICC Termination Act of 1995 ("ICCTA") preempts any attempts by the City of Del Mar ("Del Mar") and the California Coastal Commission ("Commission") to regulate NCTD's rail line maintenance and any other upgrading activities in its rail right-of-way pursuant to the state and local coastal permitting regime set forth in the California Coastal Act. Second, NCTD sought a declaratory order that application of the Coastal Zone Management Act ("CZMA") Federal Consistency Review by the Commission when a federal action is involved to these rail maintenance and upgrading projects could not be "harmonized" with the ICCTA because this land

use regulation of crucial rail work would directly interfere with and even defeat rail operations, thereby causing an irreconcilable conflict between these two (2) federal statutes.

On October 5, 2020, five parties filed replies in opposition to the Petition, including the Commission and Del Mar. One of the overriding arguments in opposition by these parties was the Petition did not set forth a present controversy or was not ripe. They also claimed that NCTD did not provide sufficient facts regarding the rail right-of-way projects to determine properly whether local, state, and federal coastal management regulation of these activities were preempted under the ICCTA.

While NCTD believes it did provide sufficient information regarding its safety fencing project (subject to state and local coastal permitting laws) and its bluffs maintenance projects (subject to CZMA Federal Consistency Review) for the Board to determine whether preemption applies here, it is now providing supplemental information on these two projects to ensure a fuller understanding of these disputes and the present controversy.¹

Any Requirement by the Commission for a Coastal Development Permit for the NCTD Safety Fencing Project in the Rail Right-of-Way Is Clearly Preempted by the ICCTA Based on the Facts at Hand.

In its Petition, NCTD argued based on extensive STB and court precedent that any California or local coastal management permitting requirements under the California Coastal Act

¹ The Board also considers “the significance to the industry” when deciding whether to institute a declaratory order proceeding. *Union Pacific Railroad Company – Petition for Declaratory Order – Imposed Interchange Charges*, NOR 42052 (STB served June 13, 2000). Here, the significance of these preemption issues is great. Whether local, state, and federal coastal zone management permitting requirements can be used to regulate rail maintenance and improvement work in the right-of-way has broad implications across the United States because interstate rail operations commonly take place in coastal zones. Moreover, this type of regulation of rail maintenance and improvement work would result in the direct interference with rail operations, creating service issues for the nation’s railroads. Therefore, the significance of these issues to the rail industry certainly warrants a declaratory order proceeding here.

or local law for the construction of the safety fencing in its rail right-of-way would be categorically preempted pursuant to 49 U.S.C. § 10501(b).² NCTD did describe the safety fencing project and the need for it at length in its Petition. It also provided information on local opposition to this rail project by Del Mar. In addition, NCTD noted the Commission's stated public position that rail projects in the right-of-way are subject to its permitting requirements under state law.

In the various replies to the Petition, these opposing parties argued that the description of the safety fencing project was not adequate to determine whether state and local coastal permitting requirements were preempted here. Although NCTD believes its description of the construction of a fence in its rail right-of-way provided more than enough information to make this determination by the Board, it now provides additional information regarding the project to address these assertions in the replies.

As noted in the Petition, NCTD soon will begin constructing safety fencing in the following locations (measured in linear feet (LF)):

- 1) Oceanside - Cassidy Street between S. Meyers Street and Broadway Street:
 - 1800 LF between MP 227.61 and MP 227.95 EAST of railroad tracks north of Cassidy.
 - 1160 LF between MP 228.20 and MP 228.40 EAST of railroad tracks south of Cassidy.
 - 425 LF between MP 228.37 and MP 228.45 EAST of railroad tracks south of Cassidy.
 - 100 LF between MP 227.62 WEST of railroad tracks north of Cassidy Street.
 - 2110 LF between MP 227.95 and MP 228.35 WEST of railroad tracks south of Cassidy.
 - 4 (Each) 16-foot Access Gates

² Because there is no federal action here under CZMA (no federal permit or federal funding), Federal Consistency Review by the Commission would not be applicable to this safety fencing project.

2) Encinitas - Coast Highway between Encinitas Boulevard and La Costa Avenue

- 13200 LF between MP 235.10 and MP 237.60 WEST of railroad tracks.
- 13200 LF between MP 235.10 and MP 237.60 EAST of railroad tracks.
- 9 (Each) 16-foot Access Gates

3) Del Mar – Del Mar Bluffs

- 5100 LF between MP 244.2 and MP 245.15 EAST of railroad tracks.
- 200 LF between MP 245.65 and MP 245.69 EAST of railroad tracks.
- 600 LF between MP 244.1 and MP 244.22 WEST of railroad tracks.
- 6760 LF between MP 244.45 and MP 245.73 WEST of railroad tracks.
- 300 LF between MP 245.7 and MP 245.75 WEST of railroad tracks.
- 15 (Each) 16-foot Access Gates

In addition, the safety setback for the fencing shall be more than the foul zone (twenty-five (25) feet from the centerline of the closest track) as available to support consistency with NCTD's Roadway Worker Protection Program, with installation to be set back a minimum of 6" inches and a maximum of 18" from NCTD right of way boundary line to ensure installed fencing is unmistakably placed within NCTD's right of way. Fencing shall be parallel to the track, forming an open-ended envelope and allowing unrestricted movement by maintenance of way crews. Gates for maintenance of way access shall be provided where right of way access is available. NCTD is also attaching hereto a Trespasser Risk Reduction Analysis as Exhibit A which provides greater detail on this project.

As noted in the Petition, this important fencing project is anticipated to cost over \$1.5 million and will be funded solely with California monies. This fencing is crucial for the safety of the public and for inter-city passenger and interstate freight service, as well as the commuter service on the Line. In its petition, NCTD described the tragic loss of life and serious injuries that have occurred to trespassers on the NCTD 61-mile rail right-of-way. It also noted the apparent disregard some local citizens have for the danger that trespassing in the right-of-way

Double Track Railroad Project, City of Oceanside, San Diego County) (attached to Petition as Exhibit G). Because of this clear disregard of STB and court precedent by the Commission, NCTD is compelled to bring this Petition to ensure the aforementioned safety fencing project and other rail maintenance and upgrading projects in the near future will not be subject to the CZMA Federal Consistency Review due to there being no federal action, or in the alternative when federal funding action is present, there is no way to harmonize the CZMA/Coastal Act with the ICCTA for these types of projects. Therefore, this “historic disagreement between rail proponents and the Commission” (as stated in the Commission’s brief) regarding preemption is now at issue because NCTD refuses to follow this prior Commission procedure of regulating this type of project under the Federal Consistency Review process. As such, NCTD now wants to ensure that it can move forward with these crucial projects without unnecessarily having to go through this onerous state and local coastal permitting review and/or some other type of preemption litigation that will directly interfere with rail operations.³ This matter is therefore ripe for review by the Board.

³ The opposing parties still claim there is no present controversy despite their statements that the safety fencing and Del Mar bluffs projects should be subject to coastal zone management regulation. However, NCTD does not have any other reasonable options to resolve this dispute other than this Declaratory Order request. Its only other option would be to refuse to abide by these local, state, and federal regulatory requirements and have the Commission or a city bring a case against NCTD in state or federal court. NCTD asserts that the Declaratory Order path is more appropriate here as it allows the Board, which has exclusive jurisdiction over matters subject to its jurisdiction such as the ones presented by NCTD.

Del Mar Bluffs 5 Is a Stabilization Project in NCTD's Right-of-Way That the Commission Clearly Believes Is Subject to Federal Consistency Review While NCTD Does Not Agree with this Position Based on ICCTA Preemption.

NCTD also will soon begin the Del Mar Bluffs 5 project ("DMB5"), which is a bluffs stabilization project in the rail right-of-way in Del Mar. This is 1 of 5 such projects that NCTD has undertaken in its right-of-way over the last twenty years, and there will certainly be more. On September 17, 2020, the Commission, Del Mar, and the San Diego Association of Governments ("SANDAG") held a meeting regarding "mitigation alternative" options under CZMA Federal Consistency Review for DMB5 as presented by SANDAG. In response, NCTD submitted a letter to SANDAG on September 28, 2020, explaining that SANDAG did not have the authority to agree to any "mitigation conditions" with the Commission without the concurrence of NCTD. (A copy of the letter with the SANDAG meeting presentation is attached hereto as Exhibit B.) NCTD emphasized it has taken the position at the STB in its Petition that it is not subject to Federal Consistency Review under CZMA for this DMB5 project and does not consent to any "mitigation conditions" agreements entered into between SANDAG and the Commission. The Commission clearly takes the position that NCTD is subject to CZMA Federal Consistency Review for DMB5 despite the project's location in the NCTD right-of-way.

It is difficult to fathom how there is no current controversy regarding this project. The Commission has always taken the position that Federal Consistency Review applies to these types of projects, including the similar Del Mar Bluffs 1-4 projects, that were in the NCTD rail right-of-way. On the other hand, NCTD is arguing the opposite here regarding projects in its right-of-way, asserting in the Petition that CZMA Federal Consistency Review cannot be harmonized with the ICCTA for these types of projects.

Moreover, the details of the DMB5 project are not in dispute and have been provided and explained by SANDAG to the Commission and Del Mar. NCTD is conducting a slope stabilization project along the Del Mar bluffs between MP 244.1 and MP 245.7. This project will include the installation of soldier piles, lagging and other drainage and erosion control improvements. The main goal of soldier piles is to protect the track bed by stabilizing the railroad line that runs over these bluffs and is expected to have a 30-year service life. This work will take place entirely within the NCTD right-of-way. The project currently consists of the installation of 258 new soldier piles and retrofitting 245 existing soldier piles. Approximately, 8-10 of the existing piles will need lagging and three of those piles will need a second tieback. There is a 9th Street trench area, approximately 1000 feet in length, that may require an additional 100 piles or grading to remove the overburdened mass in that area. The project also involves the installation of underdrains and other improvements to drainage (new ditches, culverts, and walls) along the tracks. See October 7, 2020 SANDAG DMB5 presentation attached hereto as Exhibit C for more details on the DMB5.⁴

This project is crucial to NCTD, BNSF Railway, and Amtrak rail operations that operate over this piece of trackage. Without DMB5, the bluffs will eventually erode and not provide sufficient stability to these railroad tracks in this area, thereby making rail operations impossible. Therefore, NCTD has submitted this present controversy with the Commission over Federal Consistency Review to the Board to ensure it can complete this essential project.

⁴ While NCTD discussed an emergency bluffs stabilization project in its Petition, that Federal Consistency Review proceeding has been resolved by the Commission. However, NCTD soon will begin other stabilization projects like the DMB5 project in its right-of-way as noted in its Petition. This demonstrates the need for certainty on this issue because this type of work will continue well into the future.

Conclusion

Based on the discussion above, NCTD has demonstrated that present controversies exist⁵ and has provided ample information for the Board to determine the preemption issues at hand. Therefore, NCTD asks the Board to find that local, state, and federal coastal management regulation of these types of projects in the rail right-of-way are preempted by the ICCTA.

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October 26, 2020

⁵ See, e.g., *Chester County, PA – Petition for Declaratory Order*, FD 36169 (STB served May 16, 2018)(STB found present controversy despite no active litigation); *Rays Home Delivery Services, Inc – Petition for Declaratory Order – Transportation within Illinois*, No. MC-C-30219 (ICC served December 14, 1993)(where there was a demonstration of an actual threat of a state enforcement action, found an active controversy ripe for determination); *French Paper Company – Petition for Declaratory Order – Spur Track Determination*, FD 32559 (ICC served on January 25, 1995)(even though line had not been abandoned, found ripeness of controversy over type of track); *The May Department Stores Company and Volume Shoe Corporation – Petition for Declaratory Order – Transportation within Single State of Merchandise Imported by Water*, No. MC-C-30146 (ICC decided August 22, 1989)(declaratory order proceeding instituted where opponent would be “all but certain” to bring litigation if petitioner engaged in contested activity).

CERTIFICATE OF SERVICE

In accordance with 49 C.F.R. § 1104.12, I hereby certify that on October 26, 2020, I served a copy of this Rebuttal on counsel known to represent the parties of record by the most expedient method as follows:

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VERIFICATION

I, Matthew O. Tucker, Executive Director of the North County Transit District, hereby verify under the penalty of perjury that the foregoing Rebuttal is true and correct to the best of my knowledge. Further, I certify that I am qualified and authorized to make such verification on behalf of the North County Transit District in connection with this proceeding before the Surface Transportation Board.

Executed this 26th day of October, 2020



Matthew O. Tucker
Executive Director
North County Transit District

A

Risk Reduction & Feasibility Analysis

NCTD TRESPASSER RISK REDUCTION STUDY



Prepared by



**NORTH COUNTY
TRANSIT DISTRICT**



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FINAL 6/30/2020

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1 INTRODUCTION

This section introduces the *Trespasser Risk Reduction Study*, defining its goals, process, key definitions, methodology, and the structure of this report.

STUDY GOALS & PROCESS

The primary goal of the *Trespasser Risk Reduction Study* is to reduce the risk and occurrence of trespasser incidents and associated impacts in three focused study areas—selected due to their high incidence of trespasser events—of the San Diego Subdivision railroad corridor owned by the North County Transit District (NCTD). Figure 1 summarizes the study process, which occurred over a nine-month period between October 2019 and June 2020.



Figure 1 Study Process

This *Risk Reduction & Feasibility Analysis* report summarizes the findings of the study, including a review of existing conditions that informed the project team's assessment of trespassing issues, analysis of safety and security risks, and evaluation of potential engineering, enforcement, and educational mitigation measures.

Trespassing in railroad rights-of-way (ROW) generally occurs for one of three reasons:

- **Harm to Self:** Intentional trespass to commit harm to oneself (e.g., suicide).
- **Harm to System:** Intentional trespass to damage or endanger railroad assets, operations, or the safety of persons in the railroad corridor (e.g., sabotage).
- **“Incidental” Trespass:** Trespass of the railroad corridor to reach another destination, such as the beach or a business district. This is the most frequent type of trespassing observed in the study areas.

This study considers all reasons for trespassing in its analysis of risk as well as in the identification and evaluation of potential mitigations. Further, all forms of trespass are evaluated as security incidents because they involve human intent to enter the ROW. Incidental trespass, though not intended to do harm to self or the system, is still considered a security incident because the person still intentionally enters the railroad corridor. Therefore, this report uses the security risk assessment process for all three forms of trespass evaluation, as detailed in the methodology section below.

KEY DEFINITIONS

This report uses several key terms:

- **Safe:** freedom from *unintentional* harm to people, equipment, reputation
- **Secure:** freedom from *intentional* harm to people, equipment, reputation
- **Hazard:** real or potential condition that can cause injury, illness, death, damage
- **Threat:** any intentional action with the potential to cause harm in the form of death, injury, destruction, disclosure, interruption of operations, or denial of services
- **Vulnerability:** condition that allows for successful realization of a potential threat
- **Risk:** the probability (frequency) or likelihood of a threat or hazard measured against the outcome or consequence (severity) of the threat or hazard
- **Acceptable Risk:** when further risk reduction measures will not result in significant reduction of risk

METHODOLOGY

To understand existing conditions and help identify potential risk factors, the project team first conducted a comprehensive review of the study area that included the following components:

- **Data Review:** The project team reviewed NCTD datasets for the three study areas, including trespassing reports, strike reports, near miss reports, and auto accidents. The data generally covered the five-year period between 2015 and 2019 and were supplemented by additional strike data reaching back to 2010.
- **On-Site Review:** The project team conducted an on-site review of the study areas on October 8, 2019, escorted by NCTD safety and security staff.
- **Policy, Enforcement & Education Review:** The project team reviewed NCTD standard operating procedures (SOPs) and policies related to safety and security.

Building off the findings from the existing conditions report, the project team then assessed site-specific risk and identified potential mitigations as follows:

- **Risk Assessment Methodology:** The project team applied industry-standard risk assessment methodology, based on FTA's *Hazard Analysis Guidelines for Transit Projects* and United States Department of Defense's *Standard Practice for System Safety* (MIL-STD-882E). The criteria used in this risk reduction report were adapted for use in a transit environment. Adaptation of the matrices for specific applications, such as transit, is advised in MIL-STD-882E.
- **Review of Current Mitigation Technology:** The team reviewed a wide range of potential mitigation options, including the latest technological solutions that can provide increased benefits at a lower cost than traditional options.
- **Application of the "Three Es":** The project team considered three types of mitigation: engineering, enforcement, and education. Using multiple, overlapping forms of mitigation can provide for additional risk reduction over a single mitigation used in isolation.

REPORT STRUCTURE

This report is divided into the following sections that summarize existing conditions:

- **System & Study Area Definition:** General profile of the NCTD railroad corridor operations and systems.
- **Risk Assessment Methodology:** Description of risk assessment matrices.
- **Risk Assessment: Oceanside Study Area:** Application of risk assessment between Mile Post (MP) 227.6 and MP 228.0.
- **Risk Assessment: Encinitas Study Area:** Application of risk assessment between MP 235.1 and MP 237.6.
- **Risk Assessment: Del Mar Study Area:** Application of risk assessment between MP 244.1 and MP 245.5.
- **Mitigation Options:** Description of various mitigation options that may be applied to reduce risk.
- **Mitigation Recommendations & Costs:** Based on assessment results, recommendations for reducing risk through application of mitigations including options for “low” and “high” at each location based on cost.
- **Appendix: NCTD Proposed Fencing:** Maps of NCTD's proposed fencing project in the study areas.

2 SYSTEM & STUDY AREA DEFINITION

NCTD's coastal railroad corridor—part of the San Diego Subdivision and the Los Angeles-San Diego-San Luis Obispo (LOSSAN) Corridor—is a significant heavy railroad facility paralleling the San Diego County coastline, spanning approximately 60 miles from the Orange County line to Downtown San Diego. In general, the tracks are located approximately 1,000 to 1,500 feet inland from the coast, situated among sandstone bluffs and bisecting several historic communities.

Figure 2 shows the railroad corridor, milepost locations, and the three study areas.



Figure 2 NCTD Coastal Railroad Corridor & Study Areas (Source: WSP)

TRESPASSING ACTIVITIES

NCTD selected the three study areas due to their high incidence of trespassing activities compared to other locations along the railroad corridor. The following sections identify the most common trespassing locations in each study area, based on a combination of historical datasets and field observations.

However, many trespassing events occur every day that are not officially reported in the historical datasets. Therefore, while the datasets provide a useful baseline to begin analysis, the entirety of each study area should be considered to have a high incidence of trespassing.

RAILROAD OPERATIONS

The LOSSAN Corridor is the nation's second-busiest intercity passenger railroad corridor and is rapidly growing. The San Diego County segment of the railroad corridor, owned by NCTD, is traversed by nearly 60 daily trains, including:

- **Intercity Passenger Service:** Amtrak Pacific Surfliner connecting San Luis Obispo, Los Angeles, and San Diego, with approximately 26 trains per weekday roughly between 4:30 a.m. and 12:30 a.m.
- **Commuter Rail Passenger Service:** NCTD COASTER connecting Oceanside and San Diego, with approximately 22 trains per weekday roughly between 5:00 a.m. and 8:30 p.m.
- **Freight Service:** BNSF and subcontractor Pacific Sun, with approximately 6 trains per weekday, most in the overnight hours when passenger services are not operating.

Several double-tracking projects are in progress to meet the continually growing demand for the corridor to accommodate more trains. By 2030, the corridor is expected to serve up to 101 daily trains (Table 1).

Table 1 Planned Trains Per Day, 2020 and 2030

Service	2020 Planned	2030 Planned
Intercity (Amtrak)	26	36
Commuter (NCTD)	30	54
Freight (BNSF/Pacific Sun)	6	11
TOTAL	62	101

Source: LOSSAN Infrastructure Development Plan for San Diego County (SANDAG, 2013)

TRAIN VEHICLES & EQUIPMENT

The train vehicles and equipment used in the corridor varies by operator, but several key characteristics that affect trespassing and safety are shared by many corridor trains:

- **Train Speeds of 50-90 mph:** Train speeds in the corridor vary by location, with a maximum authorized speed of 90 mph in some locations. As detailed in the description of each study area, posted maximum speeds range between 50 mph and 90 mph in the study areas.

- **Reduced Noise from Push-Pull Operations with Rear Locomotives:** Amtrak, NCTD and freight operators routinely place one or more locomotives at the rear of trains, reducing the noise of oncoming trains.
- **Increasingly Quiet Locomotives:** New, quieter locomotives are already operating on the Amtrak Pacific Surfliner, and quieter locomotives are in procurement for NCTD's COASTER service.
- **Long Stopping Distances:** At the speeds these trains operate, and given their weight, stopping distances are very long. At 80 to 90 mph, a passenger train engineer who suddenly observes a danger ahead could need one-half mile or more to stop with application of the emergency brakes. This makes trespassing incidents even more hazardous than on light-rail lines, for example.

TECHNOLOGY & SYSTEMS

The railroad corridor contains mostly single-mode fiber optic cabling, though some multimode fiber is still in use.¹ NCTD is actively undertaking significant strand expansion along the tracks to connect its signal houses, which contain gigabit ethernet switches and operational equipment for the closed-circuit television (CCTV) system.

NCTD manages the CCTV system from a monitoring center in Oceanside as well as the Operations Control Center in Escondido. The current CCTV video management system is OnSSI Ocularis Client version 5.7. The system integrates the corridor's multiple camera types and models that vary in size, performance and quality, ranging in age from one to five years. While the CCTV system currently accommodates approximately 300 cameras, it has expansion capacity available when needed.

The railroad corridor does not contain any intrusion detection systems or other systems to monitor risks except CCTV.

SYSTEM POLICIES RELATED TO TRESPASSING

NCTD has many existing policies relevant to trespassing, safety, and security in the railroad corridor, summarized in Table 2.

Table 2 Summary of NCTD Policies Related to Corridor Trespassing

Policy Name	Description
SOP 3000.2 – Medical Incidents / Emergencies	Outlines overall guidance on the process and steps for NCTD Operations, Contractors, and Safety & Security staff to take in response to medical emergencies on NCTD property.
SOP 3000.08 – Responding to and Reporting on Derailments (supplements SOP 3000.15)	Outlines response to and steps for documenting a train derailment within the NCTD rail network. Includes specific investigation steps and requirements for Contractor personnel, including timelines for collecting and recording detailed rail vehicle and track measurements. Establishes specific actions for Train Crews, Dispatchers, Supervisors, and Managers.

¹ If any future devices require connections through pathways that currently contain multimode fiber, it is likely that then the project will require replacement with single-mode fiber.

Policy Name	Description
SOP 3000.12 – Trespassers and Intrusions into Rail Right-of-Way	Explains NCTD's response to mitigating, addressing, and documenting intrusions into the right-of-way (ROW) or at any rail facilities or assets. Describes required actions of the Operations Control Center (OCC) staff when there is an intrusion into the ROW. Applies to all NCTD rail property.
SOP 3000.15 – Accident / Incident Investigation	Establishes specific investigation steps for an accident or injury to a passenger, visitor, or Employee or Contractor on NCTD property or in service to NCTD. Provides guidance on gathering and evaluating data. Defines roles and responsibilities of specific NCTD and Contract personnel and Departments.
SOP 3000.21 – Emergency Communications - Rail	Establishes process for communications under emergency circumstances between Train Crews, the OCC, and train passengers.
SOP 3000.25 – Shared Use Rail Crossing	Outlines procedures for NCTD Dispatchers to handle incidents or reports of crossing malfunctions along the Shared Use Corridor.
SOP 3000.27 – Roadway Worker Protection Program	Outlines NCTD Roadway Worker Protection (RWP) rules, training, and inspection programs. Establishes the roles, responsibilities, and protocols for delivering and maintaining the NCTD RWP training and inspection program. References applicable NCTD rules and how they fulfill Federal Railroad Administration (FRA) regulations and APTA recommended practice.
SOP 3000.29 – Security Incidents	Outlines the steps for NCTD Safety & Security and Operations Divisions to take in response to security incidents on NCTD property. Focuses on operations- and maintenance-related security issues and the interaction with law enforcement agencies.
SOP 3000.47 – Trespasser Strike Response (subset of SOP 3000.12)	Defines the roles of NCTD employees, contractors, and law enforcement personnel after a trespasser strike on the San Diego and Escondido Subdivisions. Specific to operator employees and applies to all NCTD property and all freight carriers in covered subdivisions.
SOP 3000.82 – Closed Circuit Television Procedures	Provides guidance on use of NCTD closed circuit television (CCTV) security monitoring and recording system in the OCC, Monitoring Center and authorized staff and contractor workstations at NCTD.
SOP 3000.85 – Badge Issuance	Defines process all NCTD employees and contractors follow to receive an NCTD badge, including badge printing, access control, fare additions, badge replacement, and off-boarding.
Board Policy No. 18 – Railroad Crossing Quiet Zones and Wayside Horn Systems	Addresses accountability and liability for specific areas of quiet zones and wayside horn systems. Developed in accordance with FRA regulations, 49 CFR Parts 222 and 229. Describes process and responsibilities for Cities seeking to establish a Quiet Zone or Wayside Horn System within its jurisdiction.
OP-N-13-001 – Track and Right-of-Way Key Control Plan	Establishes the key issuance and control policy for track and ROW equipment keys issued to employees in the maintenance of way (MOW) department. Applies to all Bombardier or NCTD employees required to have access to track and ROW equipment in performance of their duties.
Design Criteria Vol. III, LOSSAN Corridor in San Diego County	Establishes design standards for NCTD property and facilities, including requirements for six-foot chain link fencing at the ROW boundaries.

3 RISK ASSESSMENT METHODOLOGY

This section describes the methodology applied to assess risk in the three study areas.

PROCESS OVERVIEW

Table 3 below illustrates the six basic steps of a risk assessment.

Table 3 Risk Assessment Process

Step	Actions
1. Define the System or Asset	— Define the physical and functional characteristics and understand and evaluate the people, procedures, facilities, equipment, and environment
2. Identify Hazards & Vulnerabilities	— Identify hazards and incidents or undesired events — Determine the causes of hazards or vulnerabilities
3. Assess Hazards & Vulnerabilities	— Determine probability or likelihood — Determine the severity or consequence without controls — Decide to accept risk or eliminate/control
4. Resolve or Mitigate the Hazards & Vulnerabilities	— Assume risk, or — Implement corrective action (eliminate and/or control)
5. Reassess Hazards & Vulnerabilities	— Assess mitigation or control for effectiveness — Apply additional mitigations or controls if Risk is not within acceptable levels
6. Follow Up	— Monitor for effectiveness — Monitor for unexpected hazards or vulnerabilities

As part of the risk assessment processes, hazards and vulnerabilities can be resolved by deciding to either accept the associated risk, or to eliminate or control the hazard or vulnerability. To bring a hazard or vulnerability to an acceptable level of risk, mitigation is applied in the following order of precedence, listed from most effective to least effective:

- Avoidance
- Elimination
- Substitution
- Engineering controls
- Warnings
- Administrative controls (such as operations and maintenance procedures)
- Personal protective equipment and guards

Figure 3 demonstrates the security risk assessment process. Security risk is evaluated as a function of threat, vulnerability, likelihood (probability), and consequence (severity). Evaluating each of these components in turn enables the future identification of effective

mitigations for assessed risks. The sections following Figure 3 describe each step in the risk assessment processes.

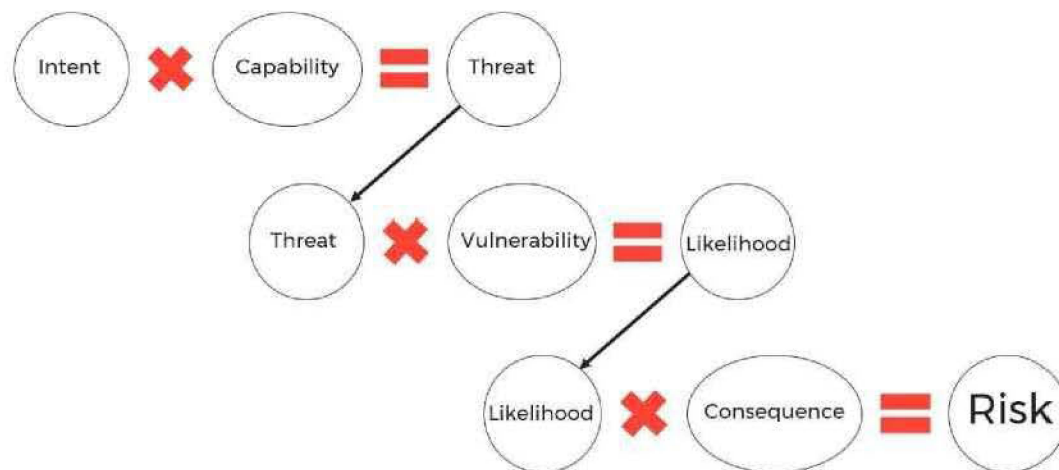


Figure 3 Elements of Security Risk

THREAT IDENTIFICATION

For security risk, threat is first evaluated based on capability and intent. Credible threats are those that demonstrate both intent and capability of the threat actors to carry out the threat. Based on the intent and capability of a threat actor, threats are assigned a rating from very high to very low; assessment of the rating is developed using security data and input from law enforcement and security professionals.

In the case of trespass, capability is less of a factor than intent, since skill is generally not required to trespass. The intent behind trespassing can range from easier access to adjacent locations to suicide. Evaluation of threat is demonstrated in Table 4 and the ratings are defined in the legend.

VULNERABILITY DETERMINATION

Each threat is then assessed for vulnerability, which is defined as any weakness, flaw or condition that can be exploited for the successful realization of a potential threat against the system.

For example, a rail corridor without fencing is generally more vulnerable to trespassing than a corridor with fencing. However, for trespassers with certain types of intent, such as sabotage, a fence may be a less effective mitigation than it would be for an incidental trespasser intending to enter the railroad corridor to get to the beach.

Vulnerability conditions can be classified into two different types of conditions: physical and procedural. A physical vulnerability condition is an actual physical deficiency, flaw, or absence of physical measures. A procedural vulnerability condition relates to the existence, implementation, legality, and oversight of policies and procedures.

The successful execution of a threat is dependent upon the presence of a physical vulnerability, a procedural vulnerability, or both. Accordingly, transit agencies generally have the greatest ability to impact risk by addressing their vulnerabilities; rarely can agencies impact threat but they can impact how vulnerable they are to a threat actor. By

identifying the physical and procedural conditions that contribute to a certain threat type and attack method, it is possible to start developing general mitigation strategies to address the vulnerability and therefore reduce the likelihood and/or consequences of a successful attack. In general, vulnerability conditions allow access to an asset in order to be attacked. Table 5 defines the criteria for assessing vulnerability.

LIKELIHOOD IDENTIFICATION

Next, the likelihood of a security event occurring is assessed by considering the combination of its assessed threat level and vulnerability of the targeted asset. Table 6 and its legend demonstrate how likelihood is measured.

CONSEQUENCE IDENTIFICATION

Once the likelihood of a security event is assessed, the consequence of the event is determined. If an intentional threat was realized, how badly would the system be damaged? Damage from a security incident should assess injuries or deaths, equipment damage, system interruption, financial impacts, and/or reputational consequences. Table 7 indicates the consequence categories applied to each threat and vulnerability scenario. Consequence definitions are agency-specific. For example, loss of a single rail vehicle may be considered moderate by a large agency but considered catastrophic by a smaller rail agency where that single rail vehicle represents a significant part of its spare ratio.

RISK RATING

Finally, the security risk rating matrix shown in Table 8 is used to determine initial risk, prior to the application of mitigations or controls, and again to determine residual risk after application of mitigations or controls. Risk ratings determine criticality of mitigation application or hazard resolution.

RISK ACCEPTANCE

The Table 8 risk rating matrix measures the acceptability or undesirability of each assessed hazard and the resulting required action or inaction. In the matrix, red indicates unacceptable risk that must be mitigated. The further to the bottom right of the risk assessment matrix, the more acceptable the risk. In some cases, risk may be acceptable “as is” without application of mitigations.

Risk acceptance is industry- and agency-specific. There is no exact delineation that determines acceptable or unacceptable risk. It is important, however, that an agency define its level of acceptable risk and its process for evaluating and responding to risk. Unlike legal/financial risk, security (and safety) risk is always owned by the agency; it cannot be insured against or assigned by contract.

Table 4 Threat Rating Matrix (Intent x Capability)

INTENT	CAPABILITY				
	Similar exploit has been used	Operational capability confirmed by credible evidence	Some evidence that operational capability exists; not confirmed	No evidence of operational capability but feasibility confirmed	No evidence and even feasibility unconfirmed
Tactic has been used in the past and an exact or similar incident will occur	Very High	Very High	High	Medium	Low
Tactic has been used in the past and an exact or similar incident may occur	Very High	High	High	Medium	Low
Tactic has not been used before but is under consideration	High	High	Medium	Medium	Low
Tactic has not been used before, but it may be under consideration	Medium	Medium	Medium	Low	Very Low
Tactic has not been used before and is highly unlikely to occur	Low	Low	Low	Very Low	Very Low

Threat Rating	Threat Rating Definition
VERY HIGH	Significant and proven threat has been demonstrated with capability and intent
HIGH	Threat exists based upon stated or demonstrated intent and capability
MEDIUM	Threat exists based upon either strong intent or some degree of stated/demonstrated capability
LOW	Threat has no proven intent or demonstrated capability but should be monitored
VERY LOW	Threat has not been demonstrated and, if demonstrated, is highly unlikely

Table 5 Vulnerability Ratings

Vulnerability Level	Assessment Criteria
Very High	- Physical and procedural mitigations that detect, delay, respond and deter are non-existent - No security awareness culture exists for employees, contractors or customers - No business or operational contingencies exist to manage known security responses that could have an impact on operations - No process is in place to track industry and local security risks internationally, nationally or local - No security drills or exercises are conducted to test system security
High	- Physical and procedural mitigations fail to identify more than two of the security components of detect, delay, respond and deter - Security awareness culture exists but fails to include more than one group (employees, contractors, customers) - Business or operational contingencies exist for at least 25% of the known security responses that could have an impact on operations - No Process is in place to track industry and local security risks using more one source (International, national, local) - Security drills or exercises are conducted every three years to test system security
Medium	- Physical and procedural mitigations fail to identify more than three of the security components of detect, delay, respond and deter - Security awareness culture exists but fails to include more than two groups (employees, contractors, customers) - Business or operational contingencies plans exist for at least 50% of the known security responses that could have an impact on operations - No process is in place to track industry and local security risks using more than two sources (international, national, local) - Security drills or exercises are conducted every two years to test system security
Low	- Physical and procedural mitigations address all the security components of detect, delay, respond and deter - Security awareness culture exists for employees, contractors and customers - Business or operational contingencies exist for at least 75% of the known security responses that could have an impact on operations - Process is in place to track industry and local security risks for all three sources (international, national, local) - Security drills or exercises are conducted annually to test system security
Very Low	- Physical and procedural mitigations are in place and annually evaluated to address the security components of detect, delay, respond and deter - Security awareness culture exists, and security awareness campaigns are conducted annually to reeducate employees, contractors and customers - Business or operational contingencies exist for all the most likely security responses that could have an impact on operations - Process is in place to track industry and local security risk throughout the industry to include all crime data from all local jurisdictions - Security drills or exercises are conducted biannual to test system security

Table 6 Likelihood Determination Matrix (Threat x Vulnerability)

Threat	Vulnerability				
	Very High	High	Medium	Low	Very Low
Very High	Almost Certain A	Almost Certain A	Highly Likely B	Likely C	Likely C
High	Almost Certain A	Highly Likely B	Highly Likely B	Likely C	Possible D
Medium	Highly Likely B	Likely C	Likely C	Possible D	Possible D
Low	Likely C	Likely C	Possible D	Possible D	Remote E
Very Low	Possible D	Possible D	Possible D	Remote E	Remote E

Likelihood Rating	Likelihood
	Characteristics
Almost Certain (A)	Vulnerability exists and threat is proven and demonstrated. Threat realization can be expected to occur during the system's operational phases.
Highly Likely (B)	Vulnerability exists and threat is proven although may not be demonstrated. Threat realization may be expected during system's operational phases.
Likely (C)	Some vulnerability exists and threat has some resource, experience, and skill, though may not be demonstrated. Threat realization may occur during the system's operational phases.
Possible (D)	Limited vulnerability and threat may be under resourced or lack experience and skill, should not occur during the system's operational phases.
Remote (E)	Limited vulnerability exists or threat has not been proven or demonstrated, not expected during the system's operational phases.

Table 7 Consequence Rating Matrix

Severity	Characteristics		
	People	Equipment/ Services	Reputational
Catastrophic 1	Several deaths and/or numerous serious injuries (per occurrence)	Total loss of equipment or system interruption, requiring months to repair	Ongoing national media coverage, irreparable reputational damage, government intervention (weeks – months)
Significant 2	Low number of deaths and/or serious injuries* (per occurrence)	Significant loss of equipment or system interruption, requiring weeks to repair	Prolonged media campaign, serious reputational damage, sustained government involvement (days – weeks)
Moderate 3	Minor injury and possible serious injury* (per occurrence)	Some loss of equipment or system interruption, requiring seven or less days to repair	Adverse media coverage, reputational damage, government involvement
Minor 4	Possible minor injury (per occurrence)	Some loss of equipment, no system interruption, less than 24 hours to repair	Local media coverage and some reputational damage
None/ Negligible 5	No injury	Minor damage to equipment no system interruption, no immediate repair necessary	No adverse media coverage or reputational damage

**Note: Serious injury (per 49 CFR 673) 1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received; 2) Results in a fracture of any bone (except simple fractures of fingers, toes, or noses); 3) Causes severe hemorrhages, nerve, muscle, or tendon damage; 4) Involves any internal organ; or 5) Involves second or third-degree burns, or any burns affecting more than 5 percent of the body surface.*

Table 8 Security Risk Rating Matrix

Severity of Consequence	Likelihood				
	Almost Certain A	Highly Likely B	Likely C	Possible D	Remote E
Catastrophic 1	Very High 1A	Very High 1B	High 1C	High 1D	Moderate 1E
Significant 2	Very High 2A	High 2B	High 2C	Moderate 2D	Moderate 2E
Moderate 3	High 3A	High 3B	Moderate 3C	Moderate 3D	Low 3E
Minor 4	Moderate 4A	Moderate 4B	Moderate 4C	Low 4D	Very Low 4E
Low/Negligible 5	Low 5A	Low 5B	Low 5C	Very Low 5D	Very Low 5E

Risk Index	Risk Rating	Action Required
1A, 1B, 2A	VERY HIGH	Risk must be immediately mitigated and constantly monitored
1C, 1D, 2B, 2C, 3A, 3B	HIGH	Risk must be treated and constantly monitored
1E, 2D, 2E, 3C, 3D, 4A, 4B, 4C	MODERATE	Risk should be managed and reduction strategies implemented
3E, 4D, 5A, 5B, 5C	LOW	Risk may be accepted after a risk review
4E, 5D, 5E	VERY LOW	Risk would normally not be treated

4 EXISTING CONDITIONS RISK ASSESSMENT: OCEANSIDE STUDY AREA

Figure 4 shows the Oceanside study area, which spans MP 227.6 to MP 228.0 east of the railroad tracks, and MP 228.0 to 228.4 west of the railroad tracks.

KEY CHARACTERISTICS

RAILROAD OPERATIONS

This 0.8-mile section of the railroad corridor is double-tracked, with a maximum authorized speed of 90 mph. The nearest stations are Oceanside Transit Center (1.2 miles north at MP 226.4) and Carlsbad Village Station (0.7 miles south at MP 229.1).

EXISTING CROSSINGS

The study area has one legal, marked crossing at Cassidy Street, and two additional crossings nearby:

- **Loma Alta Marsh Footpath (MP 227.5):** Legal pedestrian undercrossing approximately 400 feet north of the study area, connecting Buccaneer Beach Park to Coast Highway 101.
- **Cassidy Street (MP 228.0):** Roadway at-grade crossing. As described below, quiet zone improvements are expected to be implemented by the City of Oceanside in 2020.
- **Carlsbad Boulevard/Highway 101 (MP 228.8):** Roadway overcrossing approximately 0.4 miles south of the study area, across Buena Vista Lagoon.

PLANNED QUIET ZONE

The City of Oceanside is currently in the final stages of the implementation of a train quiet zone that includes the Cassidy Street at-grade crossing. This will replace the routine use of train horns—except in emergencies—with audible and visual warning devices at the crossing. The quiet zone is expected to go into effect in 2020.

FENCING

Intermittent fencing currently surrounds this section of the railroad corridor:

- **Morse Street to Cassidy Street (MP 227.7-228.0):** Chain-link fence along the west side of the corridor, with a break at the north end of study area near Buccaneer Beach Park. No fencing on the east side.
- **Cassidy Street to Vista Way (228.0-228.2):** It then becomes intermittent split-rail fence recently installed by the City of Oceanside, which helps to define gravel parking areas but provides limited trespasser security given its frequent cutouts for trash cans and trees (Figure 4). Chain-link fence along the east side of the corridor from Cassidy Street to a point about one-quarter mile south.
- **Vista Way to Eaton Street/CP Longboard (MP 228.2-228.4):** Additional intermittent split-rail fencing on the east side of the corridor.

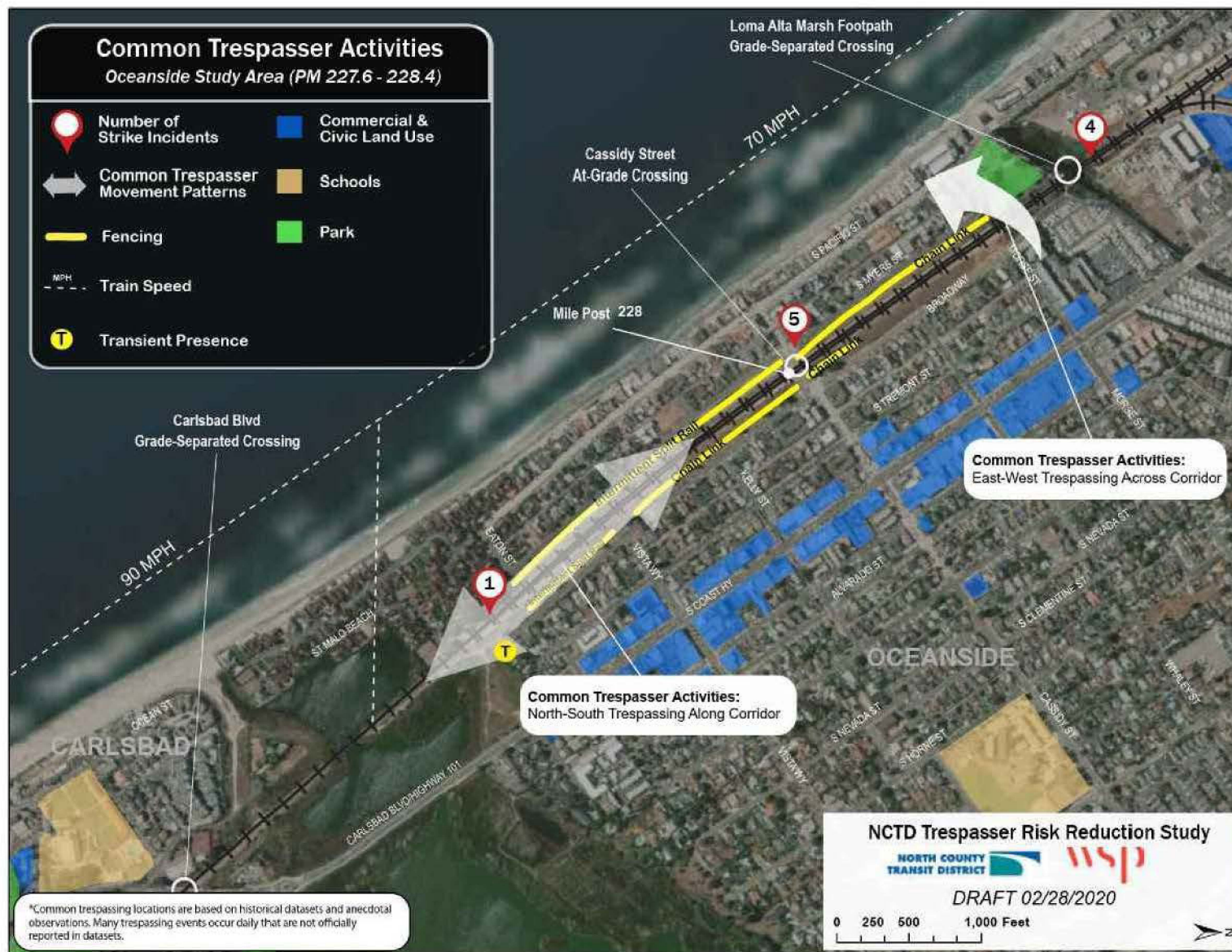




Figure 5 The City of Oceanside recently installed intermittent split-rail fencing in South Oceanside, which helps to define gravel parking areas but provides limited trespasser security with frequent cutouts for trash cans and trees. Looking east from Vista Way near MP 228.3. (Source: WSP)

TECHNOLOGY & SYSTEMS

The CCTV cameras closest to this study area are on the Oceanside Transit Center Station Platform and the Buena Vista Lagoon bridge. These cameras have a clear field of view for much of the study area in each direction.

An existing signal house is east of the railroad tracks near CP Longboard (MP 228.4). This provides potential access for additional cameras or related systems.

COMMON TRESPASSING ACTIVITIES

Figure 4 and the photos below show areas of concentrated trespassing events, corresponding with the following common behaviors in the Oceanside study area:

- **East-West Trespassing Across the Corridor at Morse Street (MP 227.6):** Corridor topography encourages east-west crossings in the north end of the study area near Morse Street (MP 227.6) to access Buccaneer Beach Park and coastal resources (Figure 6).
- **Cassidy Street At-Grade Crossing (MP 228.0):** As the only legal, marked roadway crossing in the Oceanside study area, this facility is heavily used by motorists, cyclists, and pedestrians. It is also adjacent to Lions Club Park.
- **North-South Trespassing Along the Corridor to Buena Vista Lagoon Bridge (MP 228.4-228.7):** Trespassers in the southern study area trespass near CP Longboard (MP 228.4) and travel across the Buena Vista Lagoon railroad bridge to reach Carlsbad, as well as fishing and recreational activities (Figure 7).
- **Transient Populations:** The project team observed transient encampments in and near the east side of the railroad corridor, in the vicinity of CP Longboard and Buena Vista Lagoon (MP 228.4-228.5).



Figure 6 This common trespassing site in Oceanside is only 400 feet south of a legal pedestrian undercrossing that provides access to Buccaneer Beach Park and other coastal resources and connects to Coast Highway. Looking north from Morse Street near MP 227.7. (Source: WSP)



Figure 7 The rail corridor leading to the Buena Vista Lagoon bridge is commonly used by trespassers and is adjacent to several transient encampments. Looking south from CP Longboard/Eaton Street in Oceanside near MP 228.4. (Source: WSP)

INITIAL RISK ASSESSMENT

Table 9 evaluates the primary risks in the Oceanside study area.

Table 9 Initial Risk Assessment, Oceanside Study Area

Threat Type/ Event	Potential Effects	Initial Risk Rating
Trespassing Harm to Self	– Potential deaths and/or serious injury to trespassers – Potential loss of equipment – Significant system interruption – Negative media coverage	2A-Very High – Mitigate and Monitor
Trespassing Harm to System	– Several deaths and/or numerous serious injuries – Significant loss of equipment – Significant system interruption – Negative media coverage – Loss of observational capability	1B-Very High – Mitigate and Monitor
Trespassing Incidental	– Potential deaths and/or serious injury to trespassers – Potential loss of equipment – Significant system interruption – Negative media coverage	2A-Very High – Mitigate and Monitor

5 EXISTING CONDITIONS RISK ASSESSMENT: ENCINITAS STUDY AREA

Figure 8 shows the Encinitas study area, which spans MP 235.1 to MP 237.6.

KEY CHARACTERISTICS

RAILROAD OPERATIONS

This 2.5-mile section of the railroad corridor is single-tracked, with a maximum authorized speed of 90 mph. A double-tracking project is currently in design and expected to be constructed by 2035. The nearest stations are Carlsbad Poinsettia Station (2.1 miles north at MP 233.2) and Encinitas Station (0.1 miles south at MP 237.7).

EXISTING CROSSINGS

There are several legal, marked crossings in the study area:

- **La Costa Avenue (MP 235.2):** Roadway overcrossing.
- **Leucadia Boulevard (MP 236.5):** Roadway at-grade crossing. Quiet zone improvements currently under study by City of Encinitas.
- **El Portal Street/Union Street (MP 237.0):** Pedestrian undercrossing currently in design, expected to be constructed by 2021.
- **Encinitas Boulevard (MP 237.7):** Roadway undercrossing.

PLANNED QUIET ZONE

Quiet zone improvements are under study at Leucadia Boulevard, as part of a potential citywide quiet zone to be implemented by the City of Encinitas. If implemented, a quiet zone would replace the routine use of train horns—except in emergencies—with audible and visual warning devices at the crossing.

FENCING

There is very little fencing around this section of the railroad corridor. The sole segment of fence is approximately 1,300 feet of wooden split-rail fence alongside a drainage channel east of the railroad corridor, roughly between Union Street and Orpheus Avenue.

As noted below, the La Costa to Swami Double Track Project is expected to construct a fence on both sides of the railroad corridor, per NCTD design criteria.

TECHNOLOGY & SYSTEMS

In addition to the signal house northeast of the Encinitas Boulevard overcrossing—which hosts one of the existing cameras described above—there is also an existing pole north of Encinitas Boulevard that may provide better visibility to the north, beyond the curve in the track.

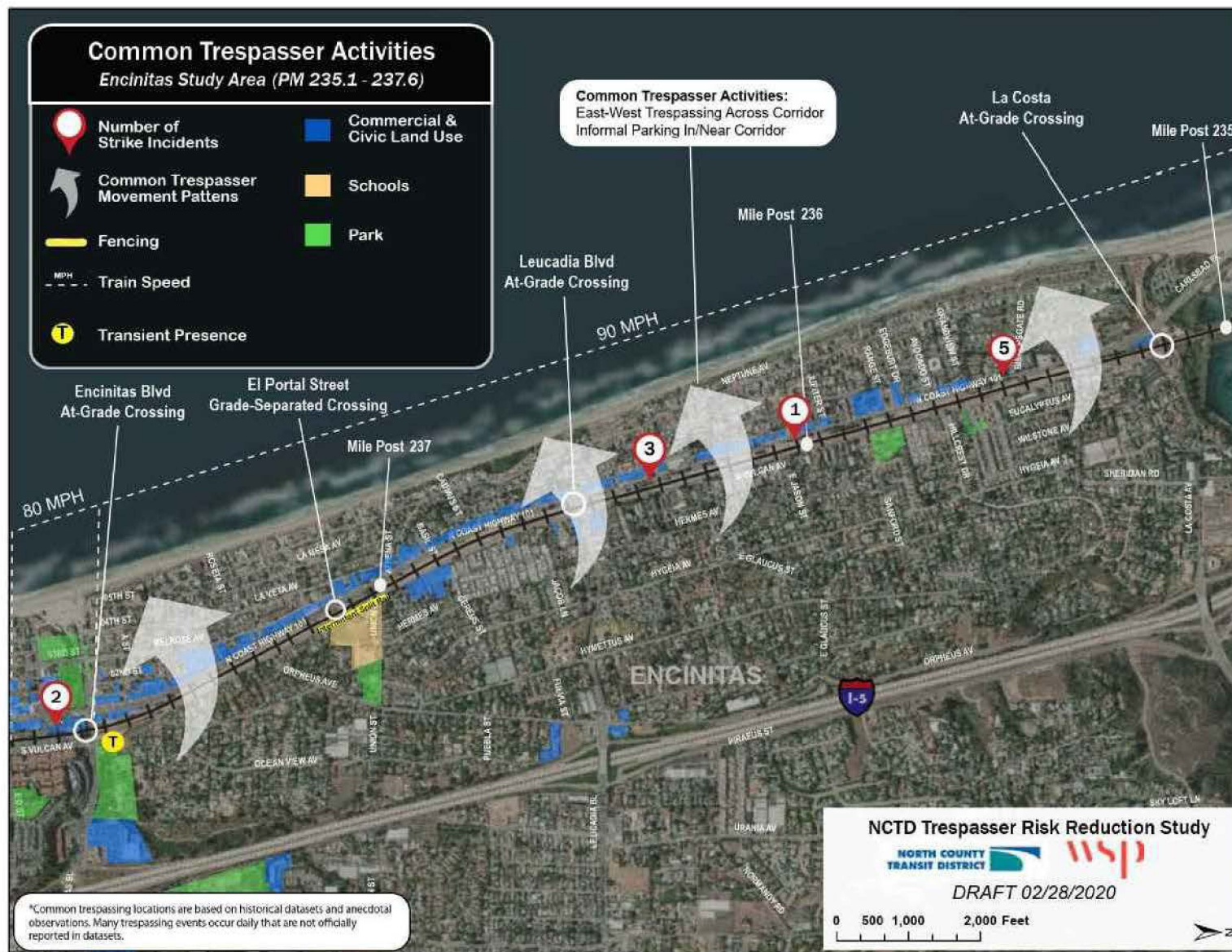


Figure 8 Encinitas Study Area (Source: WSP)

PLANNED IMPROVEMENTS

Several significant improvements are planned in the Encinitas study area:

- **Quiet Zone:** Described above.
- **La Costa to Swami Double Track Project:** SANDAG is currently designing 2.1 miles of second main track to be constructed across nearly the entire study area, between La Costa Avenue (MP 235.2) and CP Swami (MP 238.0). The project is expected to construct a fence on both sides of the corridor, per NCTD design criteria.
- **Coast Highway 101 Streetscape Project:** The City of Encinitas is revitalizing Coast Highway 101 between La Costa Avenue and A Street, to include traffic calming, roundabouts, bike facilities, pedestrian crossings, and parking areas. The project is in advanced design and expected to be implemented by 2021.
- **Coastal Rail Trail:** SANDAG is currently developing potential alignments for the Encinitas segment of this regional bicycle/pedestrian facility, which is required by the California Coastal Commission to be in or immediately adjacent to the rail corridor. The City of Encinitas and SANDAG are currently working together to evaluate whether the CRT segment will be located west or east of the railroad tracks in this area.

COMMON TRESPASSING ACTIVITIES

Figure 8 shows a broad distribution of trespasser strike events across the corridor, with the largest concentration between La Costa Avenue (MP 235.2) and Leucadia Boulevard (236.5)—a 1.3-mile section that lacks both physical barriers and legal, marked crossings.

In general, trespassing activity in the Encinitas study area is characterized by several common behaviors:

- **East-West Trespassing Across the Corridor:** Trespassers seeking access between Coast Highway 101 commercial areas, beach access points, schools, and surrounding communities frequently cross the railroad corridor (Figure 9).
- **Informal Parking In/Near the Corridor:** The undeveloped area in and adjacent to the NCTD ROW is frequently used for informal parking by people accessing commercial and coastal resources (Figure 10).
- **Little North-South Trespassing Along the Corridor:** The proximity of adjacent parallel roads Coast Highway 101 and Vulcan Avenue reduce the incidence of trespassing for north-south access along the corridor.
- **Transient Populations:** The project team observed a transient individual (but no visible encampments) in the elevated area of the railroad corridor just north of the Encinitas Boulevard rail overcrossing, near MP 237.7.



Figure 9 Newly installed pedestrian crossings of Coast Highway 101 in Encinitas may encourage trespassing in the railroad corridor. Looking north from Basil Street near MP 236.9. (Source: WSP)



Figure 10 The railroad corridor in Encinitas is commonly used for informal parking and has no physical barriers to discourage trespassers. Looking south from Jupiter Street near MP 236.0. (Source: Caltrans District 11)

INITIAL RISK ASSESSMENT

Table 10 evaluates the primary risks in the Encinitas study area.

Table 10 Initial Risk Assessment, Encinitas Study Area

Threat Type/ Event	Potential Effects	Initial Risk Rating
Trespassing Harm to Self	– Potential deaths and/or serious injury to trespassers – Potential loss of equipment – Significant system interruption – Negative media coverage	2A-Very High – Mitigate and Monitor
Trespassing Harm to System	– Several deaths and/or numerous serious injuries – Significant loss of equipment – Significant system interruption – Negative media coverage – Loss of observational capability	1B-Very High – Mitigate and Monitor
Trespassing Incidental	– Potential deaths and/or serious injury to trespassers – Potential loss of equipment – Significant system interruption – Negative media coverage	2A-Very High – Mitigate and Monitor

6 EXISTING CONDITIONS RISK ASSESSMENT: DEL MAR STUDY AREA

Figure 11 shows the Del Mar study area, which spans MP 244.1 to MP 245.5.

KEY CHARACTERISTICS

RAILROAD OPERATIONS

This 1.4-mile section of the railroad corridor is single-tracked, with a maximum authorized speed of 50 mph (north of MP 244.6) and 80 mph (south of MP 244.6). No double-tracking is planned due to physical constraints posed by adjacent coastal bluffs.

The nearest stations are Solana Beach Station (2.3 miles north at MP 241.8) and Sorrento Valley Station (3.5 miles south at MP 249.0).

EXISTING CROSSINGS

The study area has is one legal, marked crossing at Coast Boulevard, and one additional crossing just south of the study area:

- **Coast Boulevard (MP 244.1):** Roadway at-grade crossing, aligned at an oblique angle which can present visibility constraints. Contains a wayside horn as part of a train quiet zone (described below).
- **Camino Del Mar/Highway 101 (MP 245.7):** Roadway overcrossing near Torrey Pines State Beach and Los Peñasquitos Lagoon.

QUIET ZONE

The Coast Boulevard at-grade crossing is part of a train quiet zone, which does not require the routine use of train horns—except in emergencies—at the crossing. Instead, the crossing infrastructure features a wayside horn for localized audible warnings of approaching trains.

FENCING

No fencing currently exists around this section of the railroad corridor.

TECHNOLOGY & SYSTEMS

There is an existing signal house at Coast Boulevard (MP 244.1) within the study area. The nearest signal house to the south is one-half mile outside the study area, near the south parking lot of Torrey Pines State Beach (MP 246.0).

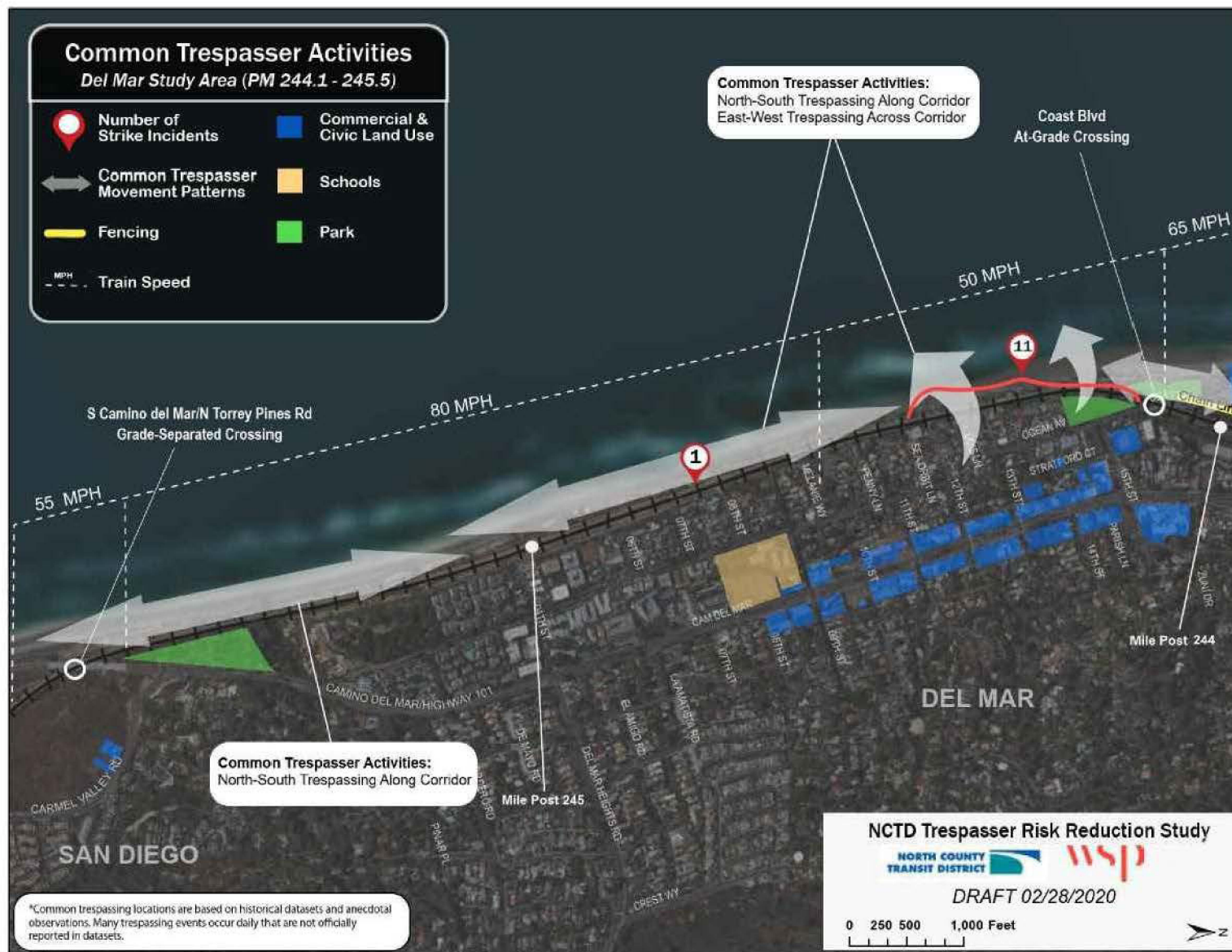


Figure 11 Del Mar Study Area (Source: WSP)

COMMON TRESPASSING ACTIVITIES

Figure 11 shows a concentration of trespasser strike events in the northern study area, particularly at a curve in the track roughly between Coast Boulevard and 13th Street (MP 244.1-244.3). In general, trespassing activity in the Del Mar study area is characterized by several behaviors:

- **North-South Trespassing Along the Corridor:** Trespassers use the corridor for north-south travel due to the lack of alternate routes, with steep bluffs on both sides of the track (Figure 12). Predominant north-south pathways include:
 - **Coast Boulevard to 13th Street (MP 244.1-244.3):** Informal path on the west side of the curved track, along the bluff edge (Figure 13, Figure 14).
 - **11th Street to 8th Street (MP 244.5-244.7):** Informal paths on both sides of the track, including use of a drainage ditch on the east side.
 - **8th Street to Camino Del Mar (MP 244.7-245.7):** Informal path on the west side of the track.
- **East-West Trespassing Across the Corridor:** Trespassers seeking a connection between the beach and neighboring communities tend to travel north-south along the corridor to reach one of the following east-west access points:
 - **15th Street (MP 244.2):** Informal access between beach and corridor.
 - **13th Street (MP 244.3):** Informal access between corridor and community.
 - **11th Street (MP 244.5):** Informal access between beach, corridor, and community.
 - **8th Street (MP 244.7):** Informal access between beach, corridor, and community, aided by a drainage inlet.



Figure 12 Steep bluffs on both sides of the railroad corridor in Del Mar encourage its use as a north-south pathway. Looking north from the vicinity of Carmel Valley Road near MP 245.5. (Source: WSP)



Figure 13 Joggers frequently use the railroad corridor in Del Mar as a north-south pathway. Looking south from the vicinity of 15th Street near MP 244.2. (Source: WSP)



Figure 14 A path delineated by guardrails leads directly to the railroad corridor from Powerhouse Park in Del Mar, encouraging trespassers. Looking north from the vicinity of 15th Street near MP 244.2. (Source: WSP)

INITIAL RISK ASSESSMENT

Table 11 evaluates the primary risks in the Del Mar study area.

Table 11 Initial Risk Assessment, Del Mar Study Area

Threat Type/ Event	Potential Effects	Initial Risk Rating
Trespassing Harm to Self	– Potential deaths and/or serious injury to trespassers – Potential loss of equipment – Significant system interruption – Negative media coverage	2A-Very High – Mitigate and Monitor
Trespassing Harm to System	– Several deaths and/or numerous serious injuries – Significant loss of equipment – Significant system interruption – Negative media coverage – Loss of observational capability	1B-Very High – Mitigate and Monitor
Trespassing Incidental	– Potential deaths and/or serious injury to trespassers – Potential loss of equipment – Significant system interruption – Negative media coverage	2A-Very High – Mitigate and Monitor

7 MITIGATION OPTIONS

Several security measures and principles can be applied to address asset and system vulnerability to trespassing and the consequence of trespassing. To ensure that a robust and effective security outcome is delivered, measures must be complementary and offer sufficient redundancy should one or more completely or partially fail. The mitigation measures offered within this section are not the full extent of risk treatment options available, but rather provide insight into protective security measures that are widely and successfully adopted for risk management within and outside of the railroad environment. The mitigation options discussed are also the most realistic—this report does not, for example, consider elevating the entire corridor as a mitigation even though it could be a highly-effective deterrence to all forms of trespassing.

Implementation of a range of mitigations is important because not every mitigation will be effective for every threat or hazard, or even for all threat sources. For example, fencing may deter “casual” trespassers—those whose intent is to take a shortcut—but may not deter those whose intent is to cause harm to themselves or the railroad.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

CPTED is a natural approach to crime prevention and differs from traditional approaches by placing emphasis on human activities and how they become exposed to crime. The National Crime Prevention Institute defines CPTED as a tool in creating safer environments and notes:

“The proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime, and an improvement in quality of life.”

CPTED offers a holistic approach based on sociology, psychology, and ecology of crime, as well as environmental criminology, criminal justice, and architecture. CPTED is applied to a physical environment or structure to reduce opportunities for violence and crime in a community and to make people feel safer. It is based on the notion that most criminals decide to commit crimes based on opportunity that is inherent on how human space is designed or being used.

CPTED complements procedural and physical security by placing emphasis on natural strategies aimed at integrating and incorporating behavior management into the design of human activity and physical resources.

While it should not be considered a stand-alone mitigation against trespassing along the LOSSAN corridor, CPTED can be used as one evaluation criterion for proposed procedural and physical mitigations measures for each study area. In other words, does a proposed mitigation support or conflict with the following four principles of CPTED:

- **Natural Surveillance:** The placement of physical features, activities, and people to maximize the visibility of people and their safety and security.
- **Natural Access Control:** The physical guidance of people coming and going from a space by the judicious placement of entrances, exits, fencing, landscaping and lighting.

- **Territorial Reinforcement:** The use of the physical attributes that express ownership, such as fences, pavement treatment, art, signage, and landscape.
- **Maintenance:** Allows for the continued use of a space for its intended purpose. It serves as an additional expression of ownership, prevents reduction of visibility from landscaping overgrowth and obstructed or inoperative lighting.

ENGINEERING MITIGATIONS

The project team considered several types of potential engineering mitigation measures.

PHYSICAL BARRIERS/FENCING

Barriers or fences are physical measures that provide visible barriers, deter unauthorized access and serve to demarcate and secure physical areas. The protection level that a barrier or fence may offer is dependent upon height, construction, the material used, and any additional security feature used to increase its performance or effectiveness, such as barbed tape topping and electronic intruder detection equipment.

Fencing shall be consistent with the NCTD design standards for property and facilities as detailed in *Design Criteria, Vol III, LOSSAN Corridor in San Diego County*.

Fencing both sides of the railroad corridor is preferred. However, the recommendations in Section 8 discuss additional considerations for areas such as Del Mar where only partial fencing may be feasible.

INTRUSION DETECTION & RESPONSE SYSTEMS

Intrusion detection systems detect unauthorized access throughout the system. This physical measure deters, detects, and responds to security events while offering a partial degree of recovery in re-establishing integrity of a site or area. An intrusion system can be integrated with CCTV and access control systems, as well as used along perimeter fencing and barriers that indicate a breach or intrusion into the system.

- **Closed Circuit Television (CCTV):** Offers detection and response elements and can be used in combination with other mitigations to reduce risk. CCTV on its own does not generally deter crime, but can aid in post-event investigation, analysis, and response. Systems can aid in the detection of security threats when they are monitored and equipped with response capabilities as a threat event is occurring, which requires resources and funding. More often, a CCTV system provides video evidence of occurrences throughout a transport system aiding in response and detection of threat targeting and reconnaissance activities assisting post event investigations. Procedures and protocols ensure that CCTV capabilities are utilized fully.

The project team evaluated three types of CCTV cameras:

- (1) **Fixed Cameras:** Static position that provides continuous and fixed areas of focus with reliability in image framing during recording and the option for integrating intrusion/notification detection.
- (2) **Pan-Tilt-Zoom (PTZ) Cameras:** Agile and adjustable field of view allowing for coverage of large spaces and tracking subjects in a live situation; best deployed as a roving camera in combination with fixed cameras for continuous coverage of specific areas.

- (3) **Thermal Cameras:** Ability to capture subjects undetectable to the human eye, particularly in poor lighting and obstructed vision situations.
- **Security Lighting & Speakers:** Supports surveillance of key areas and assets, deterring unauthorized entry to an area while aiding in detection. The positioning and usage of both regular and security lighting is part of the application of CPTED by reducing dark areas. The standard of lighting is an important consideration; lighting to a certain level of vertical lux (lighting quality and radiance) is necessary to support CCTV and human surveillance of key areas and assets. Lighting may be motion-activated and/or have speakers connected to them that facilitate providing warnings, announcements, or other verbal communications.

ENFORCEMENT MITIGATIONS & PROCEDURES

The project team considered several types of potential enforcement mitigation measures and related procedures. Generally, enforcement alone is not an effective trespassing mitigation measure. Law enforcement/security cannot be at every location trespassing occurs and when it occurs. But enforcement can be part of a layered strategy that uses some or all elements below.

INCIDENT RESPONSE PROCEDURES

Response procedures provide instruction on the processes for communicating, reacting, and responding to a security risk event. The application of procedures provides for the delay, detection, response, and recovery from a security risk and complements the agency's emergency response plans and procedures.

To address trespassing incidents, response procedures may include:

- Activation of lights, speakers, or other warnings in response to monitoring alert
- Dispatch of law enforcement in response to monitoring alert

VISIBLE SECURITY PRESENCE

A competent, permanent uniformed law enforcement presence provides deterrence, delay, detection, and response capability. An off-site police response capability reduces the security-event deterrence factor proportional to the frequency of visible site attendance.

The degree of response capability is also subject to knowledge and training provided respective to site and operation. Regular interaction with police is vital to determine and manage response capabilities and capacity.

RANDOM SECURITY SWEEPS & "BLITZES" BY LAW ENFORCEMENT

Conducting random, unpredictable security sweeps in common trespassing areas can be an effective deterrent. This multiplies the effectiveness of the visible security presence discussed above, by signaling to corridor users that trespassing enforcement will be strong, frequent, and swift.

SIGNAGE ALERTING TRESPASSERS TO LEGAL CONSEQUENCES

Unlike education-based signage (discussed below), signage focused on legal consequences is aimed at deterring trespassers by highlighting the punitive aspects of

trespassing enforcement. While these signs are less effective than other mitigations, they still should be posted to discourage trespassing and ensure regulatory compliance

EDUCATION MITIGATIONS

The project team considered the following types of potential education mitigation measures for each study area:

TRAINING

Regular training for NCTD staff and first responders can help to identify, enforce against, and prevent trespassing in the corridor. Potential training activities include:

- **Security Awareness:** Key aspects of system security for railroad employees including what to look for and what to do.
- **First Responder:** Coordinating effective responses in the railroad environment.
- **Drills & Exercises:** Playing out scenarios to provide information on response readiness that can be used to improve preparedness activities, including training.
- **Suspicious Activities & Persons:** Developing and practicing procedures to recognize and deal with suspicious activities and people.

PARTNERSHIPS

Railroads also can partner with local jurisdictions and nonprofit organizations to develop education-based mitigations. This helps the railroad extend its reach beyond the corridor and into the surrounding communities, which is where many trespassers originate.

Potential opportunities include:

- Partnership with Operation Lifesaver and local jurisdictions to regular information sessions with city councils, schools, and community groups to educate residents on the risks of railroad trespassing and the options for safer mobility.
- Partnership with local crisis prevention services to develop a suicide outreach campaign and track its effectiveness.

SIGNAGE FOCUSED ON EDUCATION & COMMUNICATION

Education-based signage is less focused on legal consequences, and more focused on helping the reader find better options than trespassing. These signs may include:

- **Wayfinding:** Identifying the best routes to nearest legal crossings
- **Operation Lifesaver:** Highlighting the safety risks of trespassing
- **Security Awareness:** Urging users if they see something to say something
- **Suicide Hotline:** Encouraging users to seek help from a 24/7 call center

MITIGATION EFFECTIVENESS

An important metric for evaluating a mitigation is its effectiveness. The effectiveness of a mitigation is in part assessed by the ability of the measure to offer deterrence, delay, detection, response, and/or recovery qualities; some measures offer more than one quality.

For example, fencing or barriers can deter and delay a threat, whereas security patrols can deter, delay, detect, respond and recover from a threat. Note, however, that other

factors affect effectiveness; while security patrols have the capacity to mitigate a threat in multiple ways, a patrol likely will not be present everywhere at all times. Table 12 indicates the properties of each mitigation measure that is applicable to trespassing.

Table 12 Security & Safety Attributes for Trespassing Mitigation Measures

Measure	Attribute →	Deter	Delay	Detect	Respond	Recover
Signage		Partial	No	No	No	No
Perimeter Barriers (CPTED)		Yes	Yes	No	No	No
Proximity to Local Traffic (Pedestrian & Vehicle) (CPTED)		Yes	Partial	Partial	Partial	No
Open Lines of Sight (CPTED – Absence of Building or Terrain Cover)		Yes	No	Yes	No	No
Area Lighting Conditions (CPTED)		Yes	No	Yes	No	No
Employee Security/Trespasser Awareness Program		Yes	No	Yes	No	No
Staff Training		Yes	Yes	Yes	Yes	Yes
Law Enforcement Response		Partial	No	No	Yes	No
Security Patrols		Yes	Yes	Yes	Yes	Yes
Emergency Management Planning		No	No	No	Yes	Partial
Communications & Public Affairs Policies & Practices		No	No	Partial	No	No
Prior Publicized Responses to Trespass		Yes	No	No	No	No
Security Access Systems		Yes	Yes	Partial	No	No
Intrusion Detection and Alarms		Yes	No	Yes	No	No
Surveillance Capability		Yes	No	Yes	No	No

8 MITIGATION RECOMMENDATIONS & COSTS

This section provides a menu of options for risk-based mitigations in each study area. In addition, it is recommended that NCTD establish an agency-wide baseline for acceptable risk and develop an agency-wide risk assessment process that defines specific consequence thresholds. Defining acceptable risk and thresholds for the agency creates consistent, defensible risk evaluation and mitigation for all agency actions.

PRIMARY RECOMMENDATIONS FOR ALL STUDY AREAS

The following primary recommendations apply to all study areas. They are listed in descending order of priority based on their effectiveness in reducing trespassing.

RECOMMENDATION #1: INSTALL PHYSICAL BARRIERS SUCH AS FENCING & SURFACE TREATMENTS

The most effective mitigation against trespassing—especially the “incidental” type that is common in the study areas—tends to be physical barriers, generally fencing, at key entry points to the railroad corridor. As such, fencing is recommended for immediate implementation across all study areas. Surface treatments and landscaping designed in accordance with CPTED principles (discussed in Section 7) also may be implemented as feasible.

As demonstrated by the post-mitigation risk assessments below, trespassing risk will remain even with fencing installed across all study areas. The primary sources of trespassers will be those who enter the corridor from at-grade crossings and those who are determined to enter in a difficult way, such as by climbing fences or steep bluffs.

Fencing both sides of the railroad corridor is preferred. However, constraints in the Del Mar study area may limit the feasibility of full fencing. In this case, a fence only on the inland side—and wherever possible on the coastal side, including at all key access points—is still likely to be an effective deterrent for many potential trespassers.

Because determined trespassers may still access the corridor via at-grade crossings or bluffs, it is important to assess the potential hazard that new fencing may create by limiting exit routes. While this is a potential risk in nearly all railroad corridors, the installation of physical barriers still provides a net benefit in terms of reducing trespassing and related impacts. To mitigate the risk, it is important to ensure that all new fencing or surface treatments:

- Cover all key access points, without leaving gaps at the interfaces between physical and natural barriers.
- Are located far enough from the railroad tracks to allow trespassers to avoid oncoming trains (e.g., NCTD’s current policy to maintain 20.5’ on each side of the tracks).

As detailed in the appendix in Section 9, NCTD and the WSP project team have recommended new fencing across all study areas. The project is currently in the development process.

RECOMMENDATION #2: INSTALL FREQUENT, CLEAR SIGNAGE INDICATING TRESPASSING RISKS

In conjunction with new fencing, stronger signage is recommended at frequent intervals along the corridor (500' is a good benchmark) as well as at key access points. The signage should use graphics and bilingual text to indicate that trespassers are entering a restricted area with no exits. These measures also can be effective in reducing liability.

Additional signage in these locations should provide the following information:

- **Wayfinding:** Identifying the best routes to nearest legal crossings
- **Operation Lifesaver:** Highlighting the safety risks of trespassing
- **Security Awareness:** Urging users if they see something, say something
- **Suicide Hotline:** Encouraging users to seek help from a 24/7 call center

RECOMMENDATION #3: CONSTRUCT ADDITIONAL LEGAL CROSSINGS

Providing more legal crossings has proven to be very effective in reducing trespassing, particularly the “incidental” type that is most common in the study areas. However, installing new crossings is largely outside the purview of NCTD as a railroad operator. As noted below, NCTD can encourage the use of legal crossings by installing wayfinding signage that identifies safe routes from common trespassing areas to those crossings.

The City of Encinitas and SANDAG are designing a new grade-separated crossing in the Encinitas study area (at El Portal St/Union St), with additional crossings (at Grandview Street/Hillcrest Drive or Sanford Street/Jupiter Street) designated as high priority for subsequent implementation. However, these additional crossings are unfunded and likely many years from construction.

RECOMMENDATION #4: INSTALL INTRUSION DETECTION & RESPONSE SYSTEMS FOR INTEGRATION WITH ENFORCEMENT PROCEDURES

While intrusion detection and response systems (including cameras) generally do not deter trespassing directly, they still offer several primary benefits:

- Provides visibility and awareness throughout the rail corridor.
- Can be set to trigger enforcement procedures such as activation of warning lights, sounding of audible warnings, and dispatching of law enforcement.
- Allows for information collection to better identify trespassing trends and focus future resources.
- Provides information for post-event investigation, analysis, and response.

RECOMMENDATION #5: IMPLEMENT EDUCATION PROGRAMS

The recommended education programs include the following elements:

- Provide trespassing-related security training to staff and emergency responders that covers what to look for and how to respond, including drills and exercises.
- Establish a partnership with local crisis prevention services to develop a suicide outreach campaign and track its effectiveness.
- Using resources provided by Operation Lifesaver, collaborate with local jurisdictions and school districts to implement a public outreach campaign that emphasizes the importance of safety in the rail corridor, and also notifies the public that enforcement efforts will be increasing to protect public safety.

RECOMMENDATIONS FOR OCEANSIDE STUDY AREA

Table 13 shows three potential scenarios for mitigation options in the Oceanside study area, in ascending order based on the level of investment and anticipated benefits. On the following pages:

- Table 14 shows the estimated capital costs of each investment scenario.
- Table 15 evaluates the residual risks with implementation of the recommended mitigations.

Table 13 Recommended Mitigation Options, Oceanside Study Area

Level of Investment	Mitigations	Anticipated Benefits
Minimum Investment	– Fencing across entire study area as proposed by NCTD & WSP (see Appendix for specific locations)	Physical barrier to trespassing. Most effective against “incidental” trespass (most frequent type in study area).
Moderate Investment	– Minimum investment plus: – 1 pole, 2 fixed cameras – Fixed cameras point in each direction of track, with capability to integrate intrusion detection software – Procedures for response to intrusion detection and trespass, including drills and exercises	CCTV does not generally deter trespassing, but can aid in post-event investigation, analysis, and response when appropriate procedures are in place. “No Trespassing” signage is generally ineffective except for legal protections, but signage providing targeted information that addresses the root causes of different forms of trespass can reduce risk.
High Investment	– Minimum investment plus: – 1 pole, 2 fixed cameras, 1 PTZ camera – Fixed cameras point in each direction of track, with capability to integrate intrusion detection software – PTZ camera provides tracking and enhanced visual capability – Speakers & lights triggered when intrusion is detected – Procedures for response to intrusion detection and trespass, including drills and exercises	In addition to the benefits described above, this option adds a wider field of visibility and added potential to warn and deter trespassers and/or initiate law enforcement and response.

NOTE: The recommended improvement locations are based on an assessment of risk and high-level engineering feasibility. They were developed at a conceptual level using Google Earth and other digital tools. All improvements will require further engineering evaluation and design.

CAPITAL COSTS

Table 14 Estimated Capital Costs of Mitigation Options, Oceanside Study Area

Item	Construction Unit Cost	Minimum Investment	Moderate Investment	High Investment
Chain Link Fence, 6' Tall	\$40 / LF	5,400	5,400	5,400
Gate, 16' Wide	\$3,000 EA	4	4	4
Signs Every 500'	\$100 EA	11	11	11
Pole	\$50,000 EA		1	1
Fixed Camera	\$40,000 EA		2	2
PTZ Camera	\$50,000 EA			1
Motion Sensor Lights	\$10,000 EA			1
Speakers Connected to Lights	\$10,000 EA			1
SUBTOTAL CONSTRUCTION		\$229,100	\$359,100	\$429,100
Design & Engineering	15%	\$34,365	\$53,865	\$64,365
Environmental Clearance, Coastal Permitting & Stakeholder Coordination	15%	\$34,365	\$53,865	\$64,365
SUBTOTAL WITH DESIGN & PERMITTING		\$297,830	\$466,830	\$557,830
Non-Construction Contingency (PM, CM, Overhead, DSDC)	40%	\$119,132	\$186,732	\$223,132
Construction Contingency	30%	\$89,349	\$140,049	\$167,349
TOTAL ESTIMATED CAPITAL COST		\$506,311 \$0.51 M	\$793,611 \$0.79 M	\$948,311 \$0.95 M

NOTES:

- Costs are in 2020 dollars and do not include escalation.
- Construction unit costs include the following elements:
 - Infrastructure: Foundation, encasements, trenching, pathway, cables, clearing/grubbing, device integration, software programming, testing, and commissioning.
 - Construction: Night work, flaggers, circuit outages, safety zones, and down time.
- Abbreviations: LF = linear foot; EA = each; PM = project management; CM = construction management; DSDC = design services during construction.

OPERATIONS & MAINTENANCE COSTS

The estimated costs for operations and maintenance of the equipment listed in Table 13 are relatively low. Modern cameras and related systems use relatively little energy and generally have low upkeep requirements. Given the large number of cameras that NCTD already manages, the marginal increase in energy and upkeep costs for these additional proposed units is expected to be negligible. The estimated lifespan of the systems is 10 years or more before major rehabilitation or replacement would be required.

It is not anticipated that the proposed new cameras and related systems would require additional staffing in the NCTD Operations Control Center. The cameras would not require constant monitoring, relying instead on intrusion-detection systems to alert NCTD staff of potential trespassing incidents. Given the large number of cameras that NCTD already manages, the marginal increase in staff resources required to manage these new assets is expected to be negligible.

Table 15 Security & Safety Risk Analysis, Oceanside Study Area

Threat Type/ Event	Potential Mitigation Measures		Initial Risk Rating	Residual Risk Rating
Trespassing Harm to Self	– Provide physical security barriers (fences) for corridor – Provide intrusion detection and response systems that integrate CCTV for high-risk areas: – Restrict access to railroad right-of-way from legal crossings – Provide security-standard, motion-activated lighting that illuminates to levels necessary for other installed measures (e.g., CCTV) – Install signage that provides the following information related to trespassing: • Suicide hotline • See something/Say something – Confirm compliance with CPTED principles	– Provide periodic patrol and random enforcement checks against trespassing – Train security personnel to recognize trespassers and take appropriate action – Implement suspicious activity reporting procedures for locomotive engineers/ railroad personnel, and the public	2A-Very High – Mitigate and Monitor	2B-High – Treat and Monitor
Trespassing Harm to System	– Ensure cameras and other key assets are tamper-resistant – Provide physical security barriers (fences) for corridor – Provide intrusion detection and response systems that integrate CCTV for high-risk areas: – Restrict access to railroad right-of-way from legal crossings – Provide security-standard, motion-activated lighting that illuminates to levels necessary for other installed measures (e.g., CCTV) – Install signage that provides the following information related to trespassing: • Operation Lifesaver • See something/Say something – Confirm compliance with CPTED principles	– Provide periodic patrol and random enforcement checks against trespassing – Train security personnel to recognize trespassers and take appropriate action – Implement suspicious activity reporting procedures for locomotive engineers/ railroad personnel, and the public	1B-Very High – Mitigate and Monitor	1C-High – Treat and Monitor
Trespassing Incidental	– Ensure cameras and other key assets are tamper-resistant – Provide physical security barriers (fences) for corridor – Provide intrusion detection and response systems that integrate CCTV for high-risk areas: – Restrict access to railroad right-of-way from legal crossings – Provide security-standard, motion-activated lighting that illuminates to levels necessary for other installed measures (e.g., CCTV) – Install signage that provides the following information related to trespassing: • Operation Lifesaver • Wayfinding to safe crossing • Legal consequences – Confirm compliance with CPTED principles	– Provide periodic patrol and random enforcement checks against trespassing – Train security personnel to recognize trespassers and take appropriate action	2A-Very High – Mitigate and Monitor	2B-High – Treat and Monitor

RECOMMENDATIONS FOR ENCINITAS STUDY AREA

Table 16 shows three potential scenarios for mitigation options in the Encinitas study area, in ascending order based on the level of investment and anticipated benefits. On the following pages:

- Table 17 shows the estimated capital costs of each investment scenario.
- Table 18 evaluates the residual risks with implementation of the recommended mitigations.

Table 16 Recommended Mitigation Options, Encinitas Study Area

Level of Investment	Mitigations	Anticipated Benefits
Minimum Investment	– Fencing across entire study area as proposed by NCTD & WSP (see Appendix for specific locations) – Signage for suicide prevention, wayfinding, Operation Lifesaver, security awareness	Physical barrier to trespassing. Most effective against “incidental” trespass (most frequent type in study area).
Moderate Investment	– Minimum investment plus: – 1 pole, 2 fixed cameras – Fixed cameras point in each direction of track, with capability to integrate intrusion detection software – Procedures for response to intrusion detection and trespass, including drills and exercises	CCTV does not generally deter trespassing, but can aid in post-event investigation, analysis, and response when appropriate procedures are in place. “No Trespassing” signage is generally ineffective except for legal protections, but signage providing targeted information that addresses the root causes of different forms of trespass can reduce risk.
High Investment	– Minimum investment plus: – 1 pole, 2 fixed cameras, 1 PTZ camera – Fixed cameras point in each direction of track, with capability to integrate intrusion detection software – PTZ cameras provide tracking and enhanced visual capability – Speakers & lights triggered when intrusion is detected – Procedures for response to intrusion detection and trespass, including drills and exercises	In addition to the benefits described above, this option adds a wider field of visibility and added potential to warn and deter trespassers and/or initiate law enforcement and response.

NOTE: The recommended improvement locations are based on an assessment of risk and high-level engineering feasibility. They were developed at a conceptual level using Google Earth and other digital tools. All improvements will require further engineering evaluation and design.

CAPITAL COSTS

Table 17 Estimated Capital Costs of Mitigation Options, Encinitas Study Area

Item	Construction Unit Cost	Minimum Investment	Moderate Investment	High Investment
Chain Link Fence, 6' Tall	\$40 / LF	26,500	26,500	26,500
Gate, 16' Wide	\$3,000 EA	15	15	15
Signs Every 500'	\$100 EA	53	53	53
Pole	\$50,000 EA		1	1
Fixed Camera	\$40,000 EA		2	2
PTZ Camera	\$50,000 EA			1
Motion Sensor Lights	\$10,000 EA			1
Speakers Connected to Lights	\$10,000 EA			1
SUBTOTAL CONSTRUCTION		\$1,080,300	\$1,210,300	\$1,280,300
Design & Engineering	15%	\$162,045	\$181,545	\$192,045
Environmental Clearance, Coastal Permitting & Stakeholder Coordination	15%	\$162,045	\$181,545	\$192,045
SUBTOTAL WITH DESIGN & PERMITTING		\$1,404,390	\$1,573,390	\$1,664,390
Non-Construction Contingency (PM, CM, Overhead, DSDC)	40%	\$561,756	\$629,356	\$665,756
Construction Contingency	30%	\$421,317	\$472,017	\$499,317
TOTAL ESTIMATED CAPITAL COST		\$2,387,463	\$2,674,763	\$2,829,463
		\$2.39 M	\$2.67 M	\$2.83 M

NOTES:

- Costs are in 2020 dollars and do not include escalation.
- Construction unit costs include the following elements:
 - Infrastructure: Foundation, encasements, trenching, pathway, cables, clearing/grubbing, device integration, software programming, testing, and commissioning.
 - Construction: Night work, flaggers, circuit outages, safety zones, and down time.
- Abbreviations: LF = linear foot; EA = each; PM = project management; CM = construction management; DSDC = design services during construction.

OPERATIONS & MAINTENANCE COSTS

The estimated costs for operations and maintenance of the equipment listed in Table 16 are relatively low. Modern cameras and related systems use relatively little energy and generally have low upkeep requirements. Given the large number of cameras that NCTD already manages, the marginal increase in energy and upkeep costs for these additional proposed units is expected to be negligible. The estimated lifespan of the systems is 10 years or more before major rehabilitation or replacement would be required.

It is not anticipated that the proposed new cameras and related systems would require additional staffing in the NCTD Operations Control Center. The cameras would not require constant monitoring, relying instead on intrusion-detection systems to alert NCTD staff of potential trespassing incidents. Given the large number of cameras that NCTD already manages, the marginal increase in staff resources required to manage these new assets is expected to be negligible.

SPECIAL CONSIDERATIONS IN ENCINITAS STUDY AREA

The Encinitas study area has several special considerations that are likely to influence the physical, financial, and political feasibility of the proposed mitigations:

- **Potential Community Opposition:** In the past, community members have expressed opposition to fencing and other development in this section of the rail corridor.
- **Modification of Fence Standards:** NCTD's standard fence is 6' foot chain link, which the City of Encinitas recently opposed in the southern section of its rail corridor. In this area, a new 4' post-and-cable fence was installed in lieu of the 6' chain link, with the City agreeing to cover the cost difference and accept the associated liability. However, the 4' post-and-cable fence is much easier to climb, cut, or otherwise bypass, making it less effective in preventing trespassing.

Table 18 Security & Safety Risk Analysis, Encinitas Study Area

Threat Type/ Event	Potential Mitigation Measures		Initial Risk Rating	Residual Risk Rating
Trespassing Harm to Self	– Provide physical security barriers (fences) for corridor – Provide intrusion detection and response systems that integrate CCTV for high-risk areas: – Restrict access to railroad right-of-way from legal crossings – Provide security-standard, motion-activated lighting that illuminates to levels necessary for other installed measures (e.g., CCTV) – Install signage that provides the following information related to trespassing: • Suicide hotline • See something/Say something – Confirm compliance with CPTED principles	– Provide periodic patrol and random enforcement checks against trespassing – Train security personnel to recognize trespassers and take appropriate action – Implement suspicious activity reporting procedures for locomotive engineers/ railroad personnel, and the public	2A-Very High – Mitigate and Monitor	2B-High – Treat and Monitor
Trespassing Harm to System	– Ensure cameras and other key assets are tamper-resistant – Provide physical security barriers (fences) for corridor – Provide intrusion detection and response systems that integrate CCTV for high-risk areas: – Restrict access to railroad right-of-way from legal crossings – Provide security-standard, motion-activated lighting that illuminates to levels necessary for other installed measures (e.g., CCTV) – Install signage that provides the following information related to trespassing: • Operation Lifesaver • See something/Say something – Confirm compliance with CPTED principles	– Provide periodic patrol and random enforcement checks against trespassing – Train security personnel to recognize trespassers and take appropriate action – Implement suspicious activity reporting procedures for locomotive engineers/ railroad personnel, and the public	1B-Very High – Mitigate and Monitor	1C-High – Treat and Monitor
Trespassing Incidental	– Ensure cameras and other key assets are tamper-resistant – Provide physical security barriers (fences) for corridor – Provide intrusion detection and response systems that integrate CCTV for high-risk areas: – Restrict access to railroad right-of-way from legal crossings – Provide security-standard, motion-activated lighting that illuminates to levels necessary for other installed measures (e.g., CCTV) – Install signage that provides the following information related to trespassing: • Operation Lifesaver • Wayfinding to safe crossing • Legal consequences – Confirm compliance with CPTED principles	– Provide periodic patrol and random enforcement checks against trespassing – Train security personnel to recognize trespassers and take appropriate action – Enforce no parking in informal parking areas and coordinate with nearby businesses for them to provide formal parking	2A-Very High – Mitigate and Monitor	2B-High – Treat and Monitor

RECOMMENDATIONS FOR DEL MAR STUDY AREA

Table 19 shows three potential scenarios for mitigation options in the Del Mar study area, in ascending order based on the level of investment and anticipated benefits. On the following pages:

- Table 20 shows the estimated capital costs of each investment scenario.
- Table 21 evaluates the residual risks with implementation of the recommended mitigations.

Table 19 Recommended Mitigation Options, Del Mar Study Area

Level of Investment	Mitigations	Anticipated Benefits
Minimum Investment	– Fencing across entire study area as proposed by NCTD & WSP (see Appendix) – Signage for suicide prevention, wayfinding, Operation Lifesaver, security awareness	Physical barrier to trespassing. Most effective against “incidental” trespass (most frequent type in study area).
Moderate Investment	– Minimum investment plus: – 10 poles, 10 fixed cameras – Cameras work together to provide east-west and north-south coverage along the track. All have capability to integrate intrusion detection software – Procedures for response to intrusion detection and trespass, including drills and exercises	CCTV does not generally deter trespassing, but can aid in post-event investigation, analysis, and response when appropriate procedures are in place. “No Trespassing” signage is generally ineffective except for legal protections, but signage providing targeted information that addresses the root causes of different forms of trespass can reduce risk.
High Investment	– Minimum investment plus: – 10 poles, 10 fixed cameras, 10 PTZ – Fixed cameras work together to provide east-west and north-south coverage along the track. All have capability to integrate intrusion detection software – PTZ cameras provide tracking and enhanced visual capability – Speakers & lights triggered when intrusion is detected – Procedures for response to intrusion detection and trespass, including drills and exercises	In addition to the benefits described above, this option adds a wider field of visibility and added potential to warn and deter trespassers and/or initiate law enforcement and response.

NOTE: The recommended improvement locations are based on an assessment of risk and high-level engineering feasibility. They were developed at a conceptual level using Google Earth and other digital tools. All improvements will require further engineering evaluation and design.

CAPITAL COSTS

Table 20 Estimated Capital Costs of Mitigation Options, Del Mar Study Area

Item	Construction Unit Cost	Minimum Investment	Moderate Investment	High Investment
Chain Link Fence, 6' Tall	\$40 / LF	7,400	7,400	7,400
Chain Link Fence, 6' Tall, West Bluff	\$50 / LF	5,500	5,500	5,500
Gate, 16' Wide	\$3,000 EA	14	14	14
Signs Every 500'	\$100 EA	15	15	15
Pole	\$50,000 EA		10	10
Fixed Camera	\$40,000 EA		10	10
PTZ Camera	\$50,000 EA			10
Motion Sensor Lights	\$10,000 EA			10
Speakers Connected to Lights	\$10,000 EA			10
SUBTOTAL CONSTRUCTION		\$614,500	\$1,514,500	\$2,214,500
Design & Engineering	15%	\$92,175	\$227,175	\$332,175
Environmental Clearance, Coastal Permitting & Stakeholder Coordination	15%	\$92,175	\$227,175	\$332,175
SUBTOTAL WITH DESIGN & PERMITTING		\$798,850	\$1,968,850	\$2,878,850
Bluff-Related Contingency for Construction Access	25%	\$199,713	\$492,213	\$719,713
Allowance for Reinforcement Against Vandalism	15%	\$119,828	\$295,328	\$431,828
Non-Construction Contingency (PM, CM, Overhead, DSDC)	40%	\$319,540	\$787,540	\$1,151,540
Construction Contingency	30%	\$239,655	\$590,655	\$863,655
TOTAL ESTIMATED CAPITAL COST		\$1,677,585	\$4,134,585	\$6,045,585
		\$1.68 M	\$4.13 M	\$6.05 M

NOTES:

- Costs are in 2020 dollars and do not include escalation.
- Construction unit costs include the following elements:
 - Infrastructure: Foundation, encasements, trenching, pathway, cables, clearing/grubbing, device integration, software programming, testing, and commissioning.
 - Construction: Night work, flaggers, circuit outages, safety zones, and down time.
- Abbreviations: LF = linear foot; EA = each; PM = project management; CM = construction management; DSDC = design services during construction.

OPERATIONS & MAINTENANCE COSTS

The estimated costs for operations and maintenance of the equipment listed in Table 19 are relatively low. Modern cameras and related systems use relatively little energy and generally have low upkeep requirements. Given the large number of cameras that NCTD already manages, the marginal increase in energy and upkeep costs for these additional proposed units is expected to be negligible. The estimated lifespan of the systems is 10 years or more before major rehabilitation or replacement would be required.

It is not anticipated that the proposed new cameras and related systems would require additional staffing in the NCTD Operations Control Center. The cameras would not require constant monitoring, relying instead on intrusion-detection systems to alert NCTD staff of potential trespassing incidents. Given the large number of cameras that NCTD already manages, the marginal increase in staff resources required to manage these new assets is expected to be negligible.

SPECIAL CONSIDERATIONS IN DEL MAR STUDY AREA

The Del Mar study area has several special considerations that are likely to influence the physical, financial, and political feasibility of the proposed mitigations:

- **Bluff Stability & SANDAG Coordination:** SANDAG is currently preparing to conduct a slope stabilization project along the Del Mar bluffs in the study area, between MP 244.1 and MP 245.7. This includes the installation of piles, lagging and retaining walls, and other drainage and erosion control improvements. Any proposed trespasser mitigations—including fencing, poles, and related cabling—should be installed in coordination with the stabilization project, which is currently scheduled for construction in 2021-2022. Installing new facilities poles prior to this project may incur higher foundation costs given the uncertainty of the stabilization of the soil. In addition, this could require removal and replacement of the new facilities once the stabilization project is underway.

At this preliminary planning level, the capital cost estimates for the Del Mar study area include a 25% allowance for these bluff-related constraints.
- **Potential Community Opposition:** In the past, community members have expressed opposition to fencing, cameras, and other development in this section of the rail corridor.
- **Vandalism:** NCTD reports frequent vandalism in this part of the corridor, often to signs posted at the ends of east-west streets. As noted above, the capital cost estimates for the Del Mar study area include a 15% allowance for potential physical reinforcement, which could include mounting the proposed equipment higher than normal or in difficult-to-access locations.

Table 21 Security & Safety Risk Analysis, Del Mar Study Area

Threat Type/ Event	Potential Mitigation Measures		Initial Risk Rating
Trespassing Harm to Self	– Provide physical security barriers (fences) for corridor – Provide intrusion detection and response systems that integrate CCTV for high-risk areas: – Restrict access to railroad right-of-way from legal crossings – Provide security-standard, motion-activated lighting that illuminates to levels necessary for other installed measures (e.g., CCTV) – Install signage that provides the following information related to trespassing: • Suicide hotline • See something/Say something – Confirm compliance with CPTED principles	– Provide periodic patrol and random enforcement checks against trespassing – Train security personnel to recognize trespassers and take appropriate action – Implement suspicious activity reporting procedures for locomotive engineers/ railroad personnel, and the public	2A-Very High Mitigate and Monitor
Trespassing Harm to System	– Ensure cameras and other key assets are tamper-resistant – Provide physical security barriers (fences) for corridor – Provide intrusion detection and response systems that integrate CCTV for high-risk areas: – Restrict access to railroad right-of-way from legal crossings – Provide security-standard, motion-activated lighting that illuminates to levels necessary for other installed measures (e.g., CCTV) – Install signage that provides the following information related to trespassing: • Operation Lifesaver • See something/Say something – Confirm compliance with CPTED principles	– Provide periodic patrol and random enforcement checks against trespassing – Train security personnel to recognize trespassers and take appropriate action – Implement suspicious activity reporting procedures for locomotive engineers/ railroad personnel, and the public	1B-Very High Mitigate and Monitor
Trespassing Incidental	– Ensure cameras and other key assets are tamper-resistant – Provide physical security barriers (fences) for corridor – Provide intrusion detection and response systems that integrate CCTV for high-risk areas: – Restrict access to railroad right-of-way from legal crossings – Provide security-standard, motion-activated lighting that illuminates to levels necessary for other installed measures (e.g., CCTV) – Install signage that provides the following information related to trespassing: • Operation Lifesaver • Wayfinding to safe crossing • Legal consequences – Confirm compliance with CPTED principles	– Provide periodic patrol and random enforcement checks against trespassing – Train security personnel to recognize trespassers and take appropriate action	2A-Very High Mitigate and Monitor

9 APPENDIX: PROPOSED FENCING LOCATIONS

In 2019 NCTD proposed new fencing throughout the study areas. As part of this study, WSP reviewed and recommended refinements to the fence locations, as detailed in the attached maps which were adapted from the originals by NCTD.

Note: *The recommended fence locations are based on an assessment of risk and high-level engineering feasibility. They were developed at a conceptual level using Google Earth and other digital tools. Any fencing or other improvements will require further engineering evaluation and design.*





Oceanside Study Area



Note: The recommended fence locations are based on an assessment of risk and high-level engineering feasibility. They were developed at a conceptual level using Google Earth and other digital tools. Any fencing or other improvements will require further engineering evaluation and design.





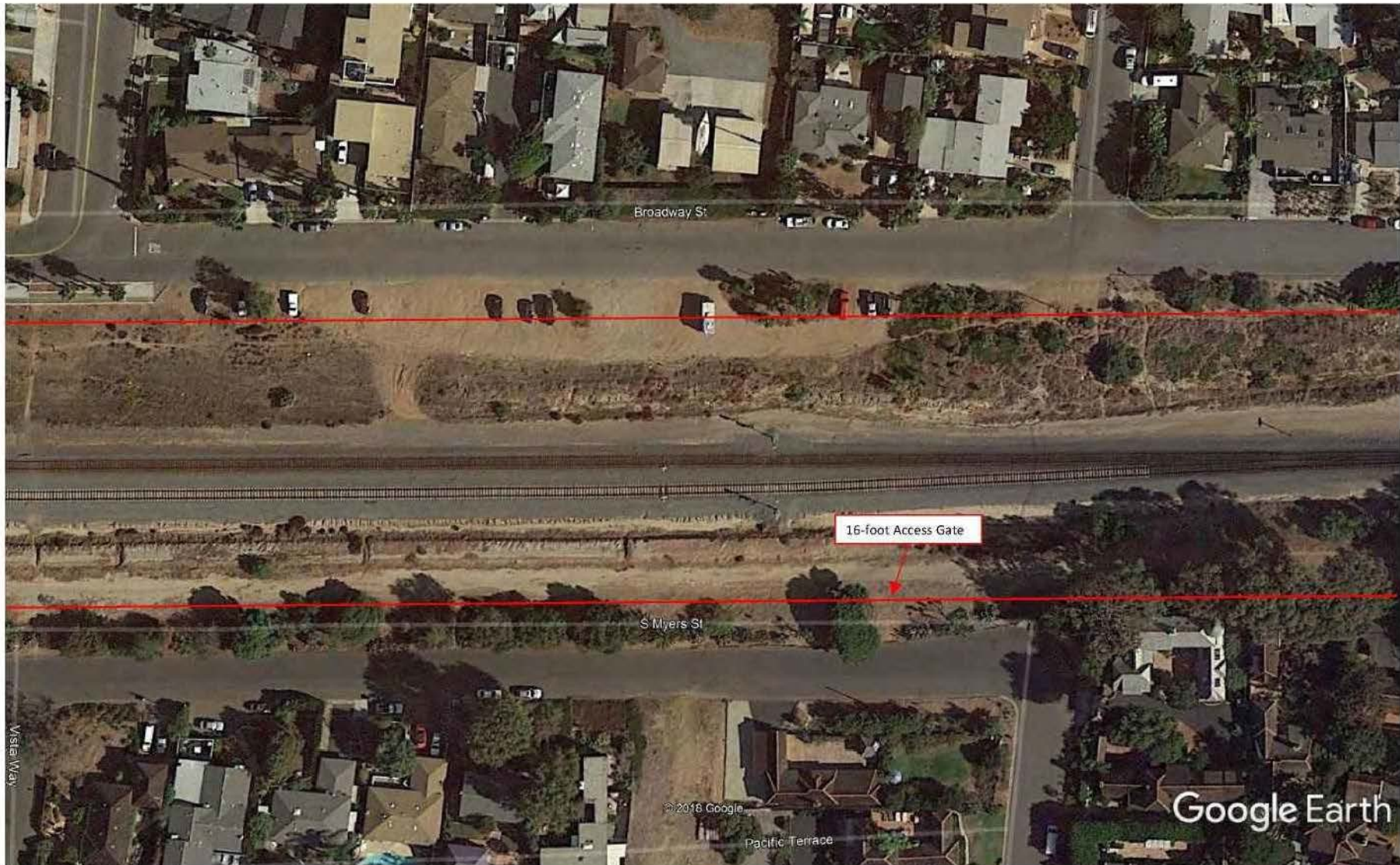
Oceanside Study Area



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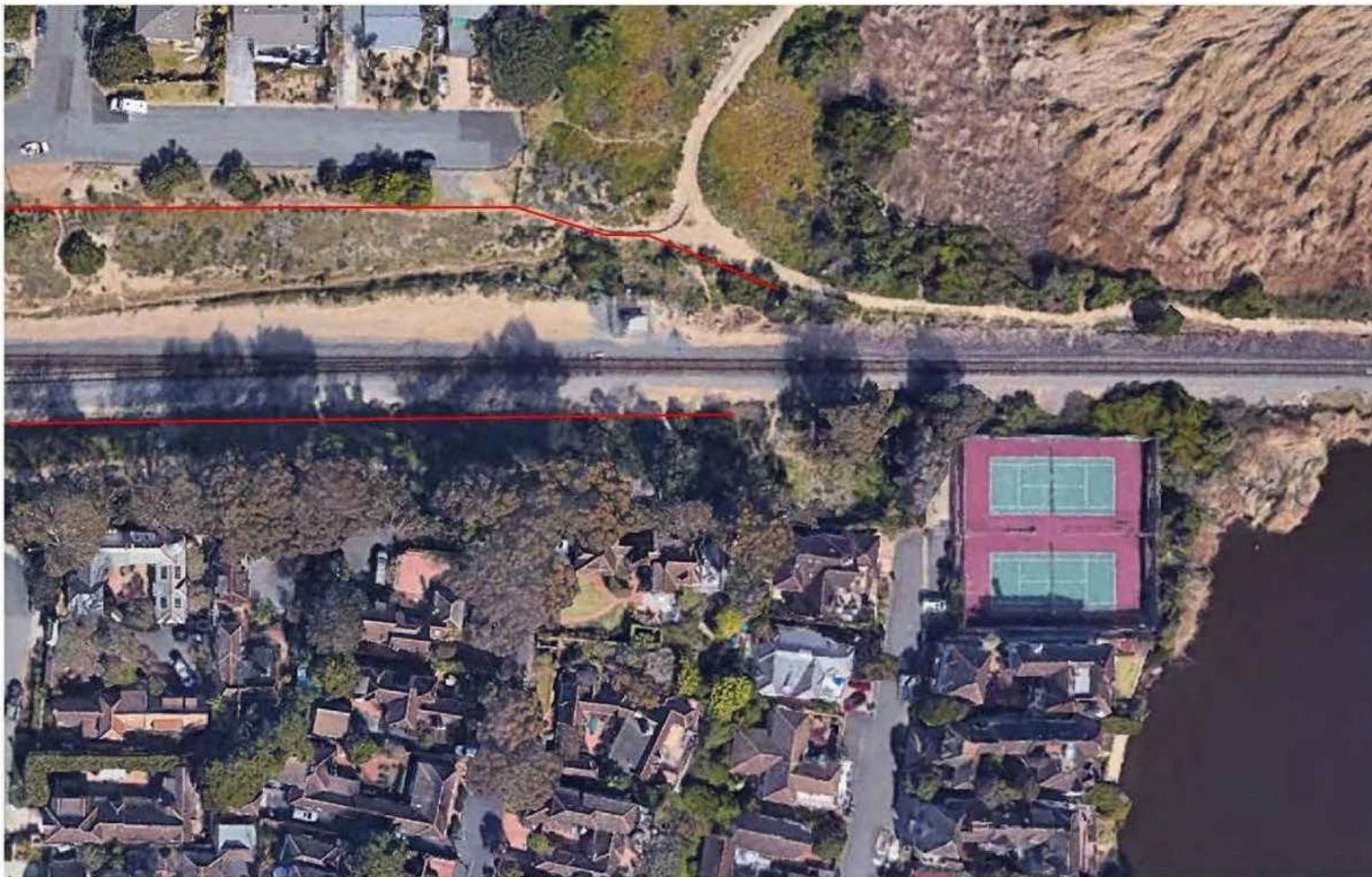


Oceanside Study Area



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Oceanside Study Area

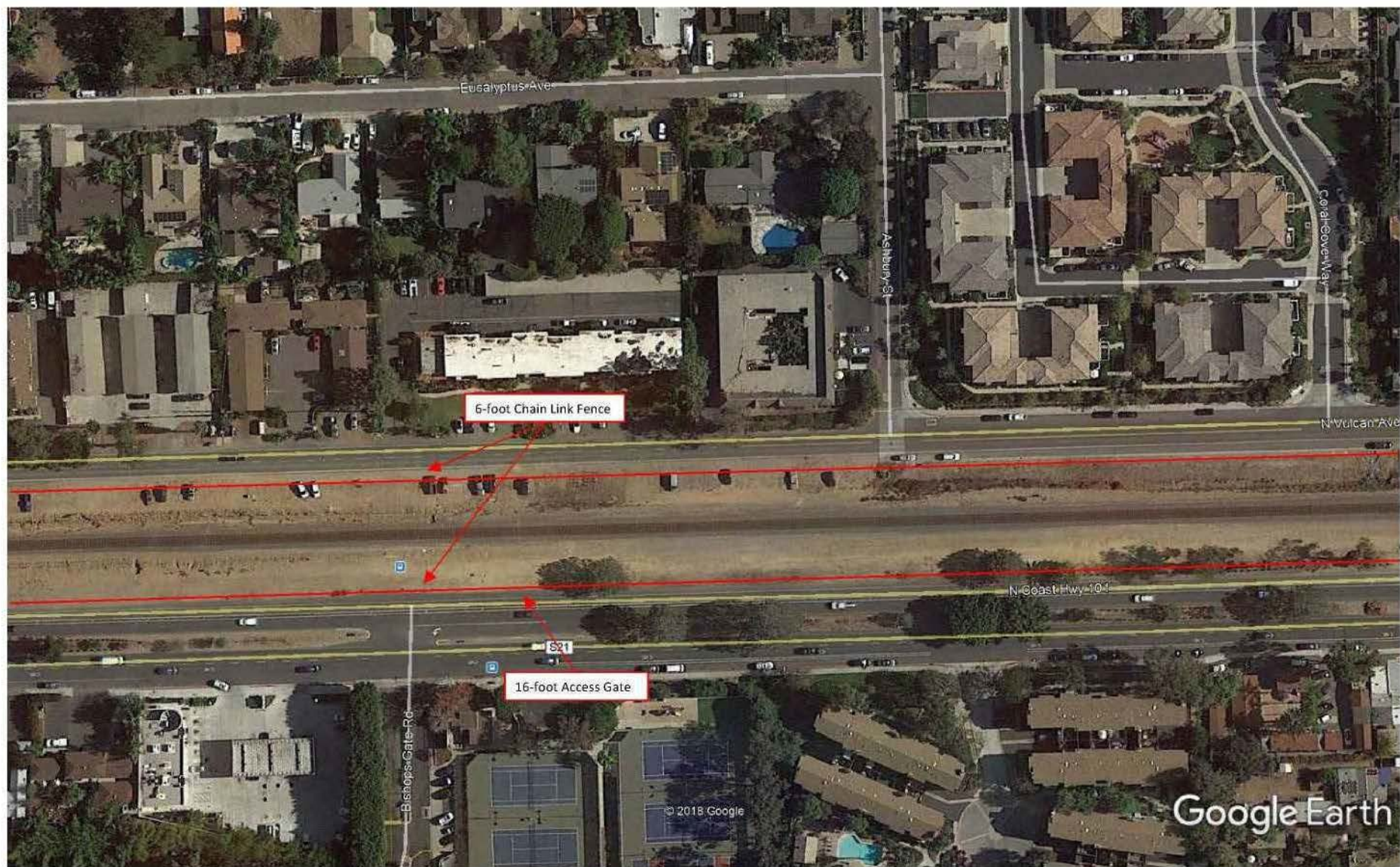


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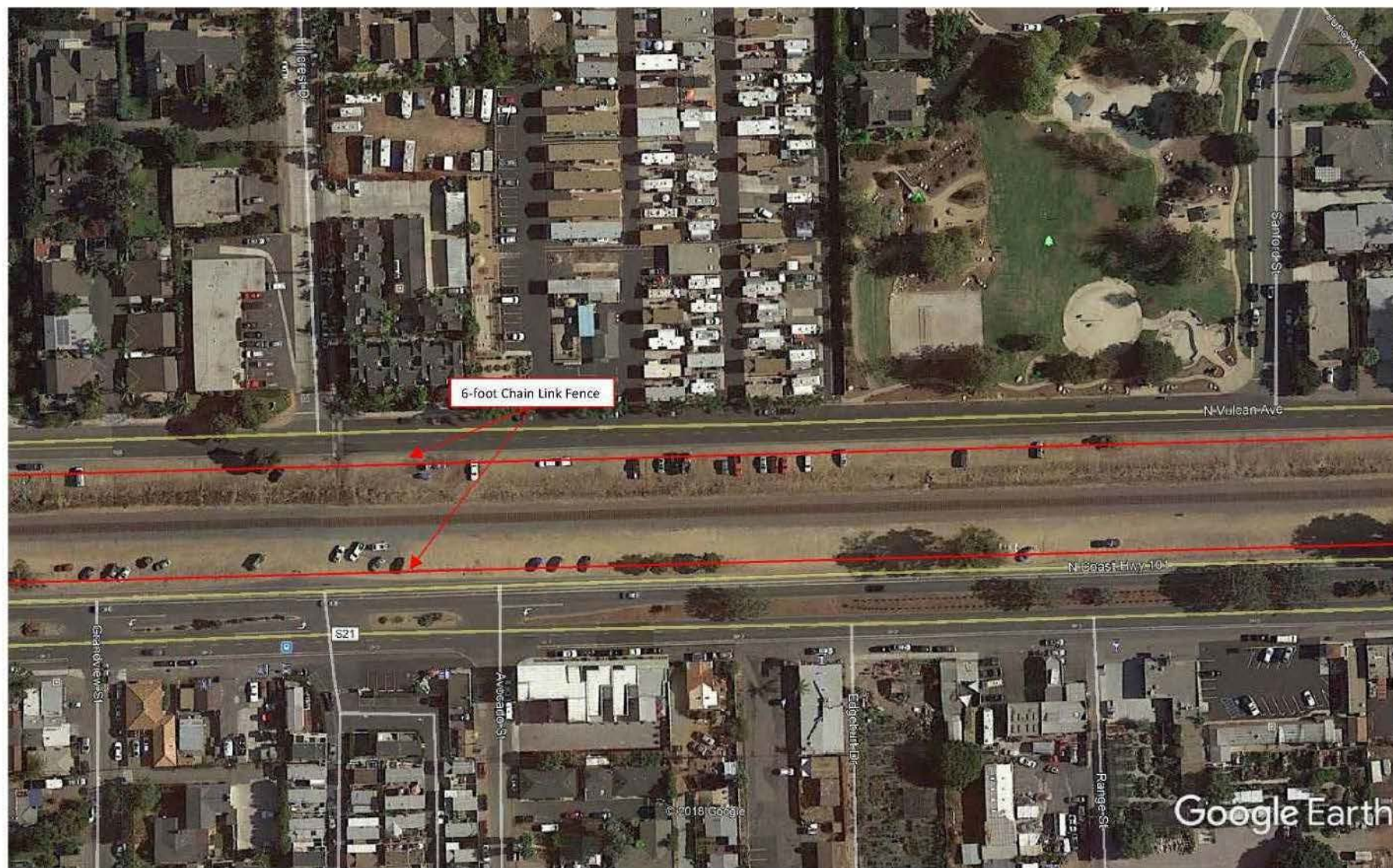
Encinitas Study Area



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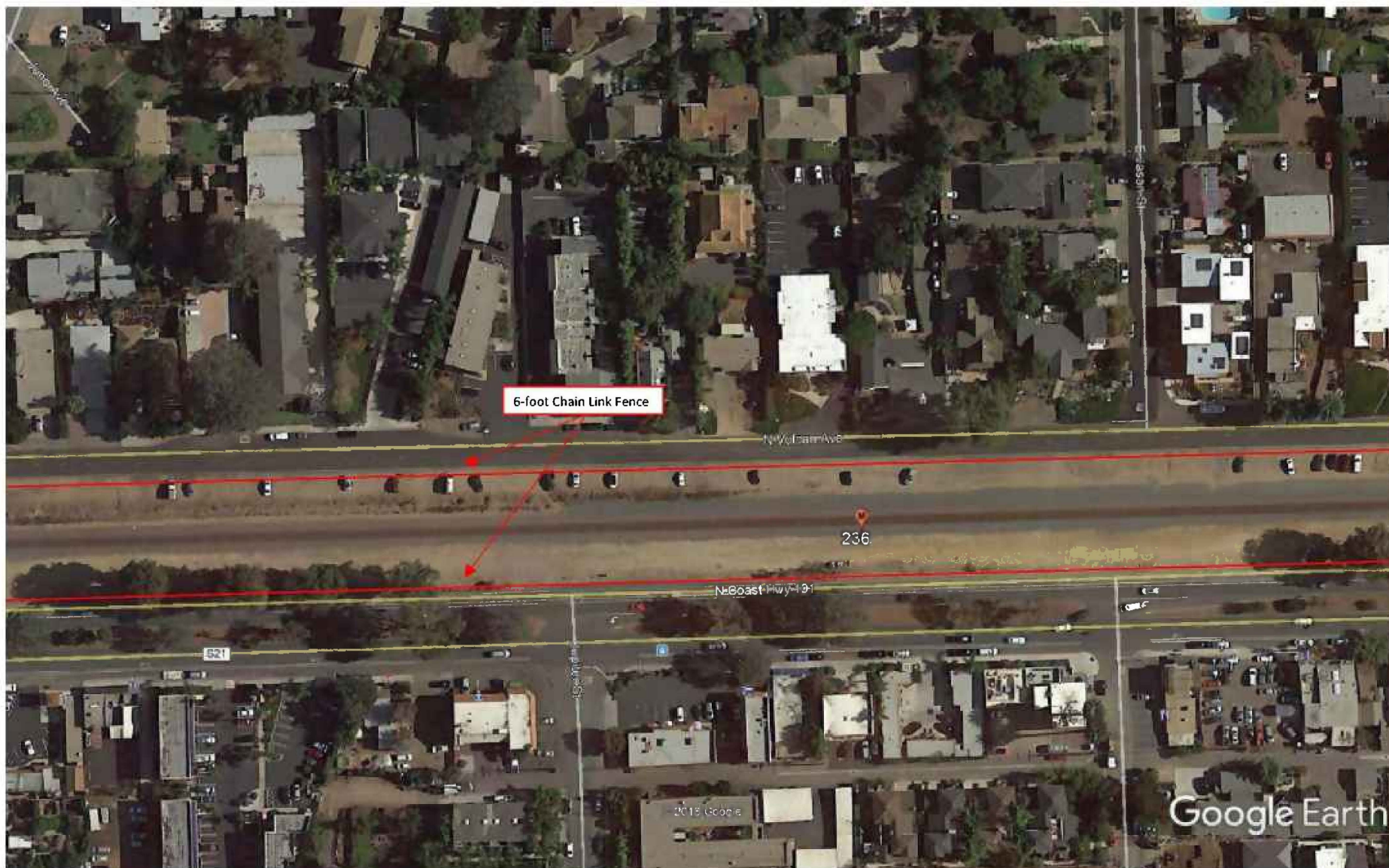


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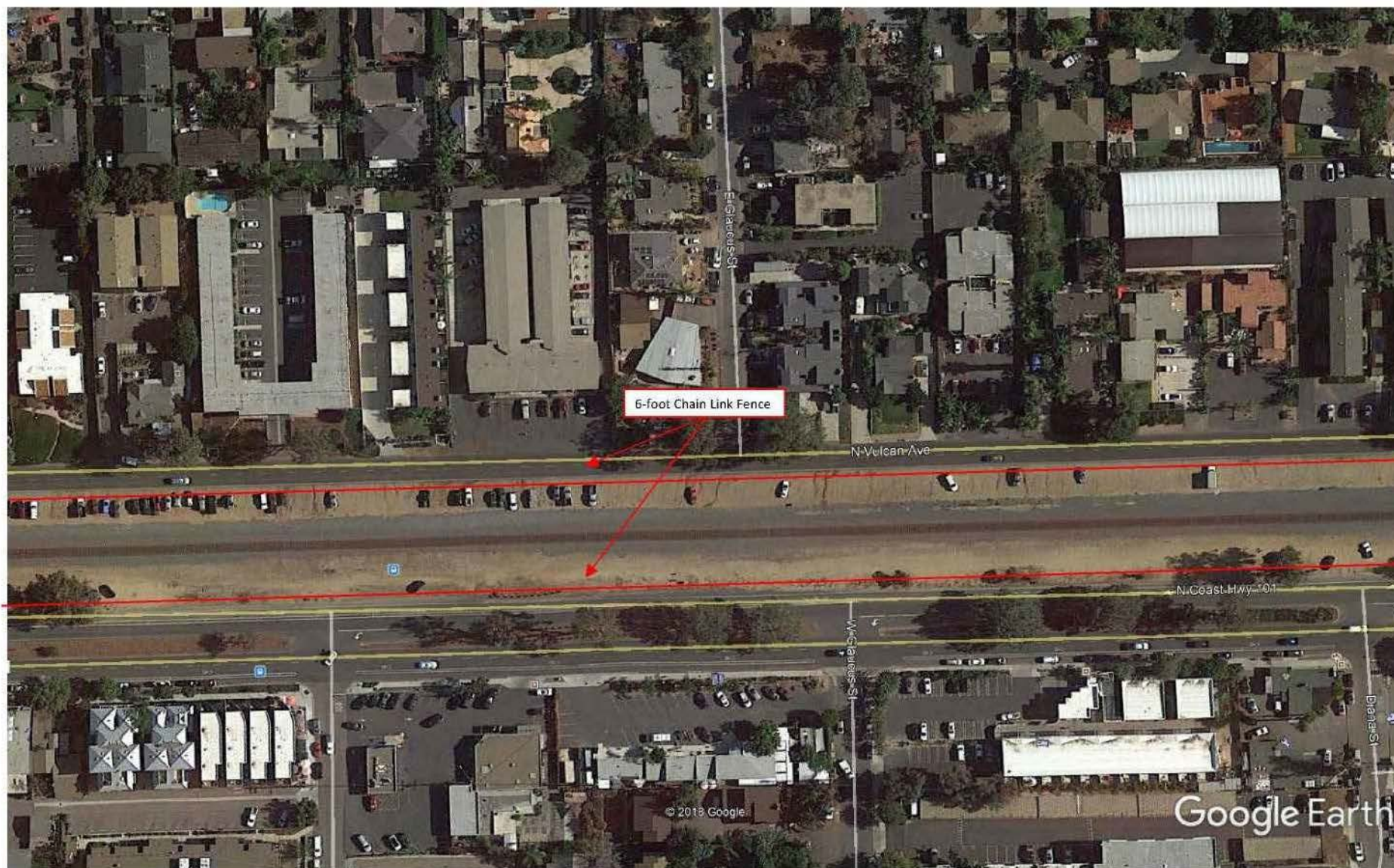


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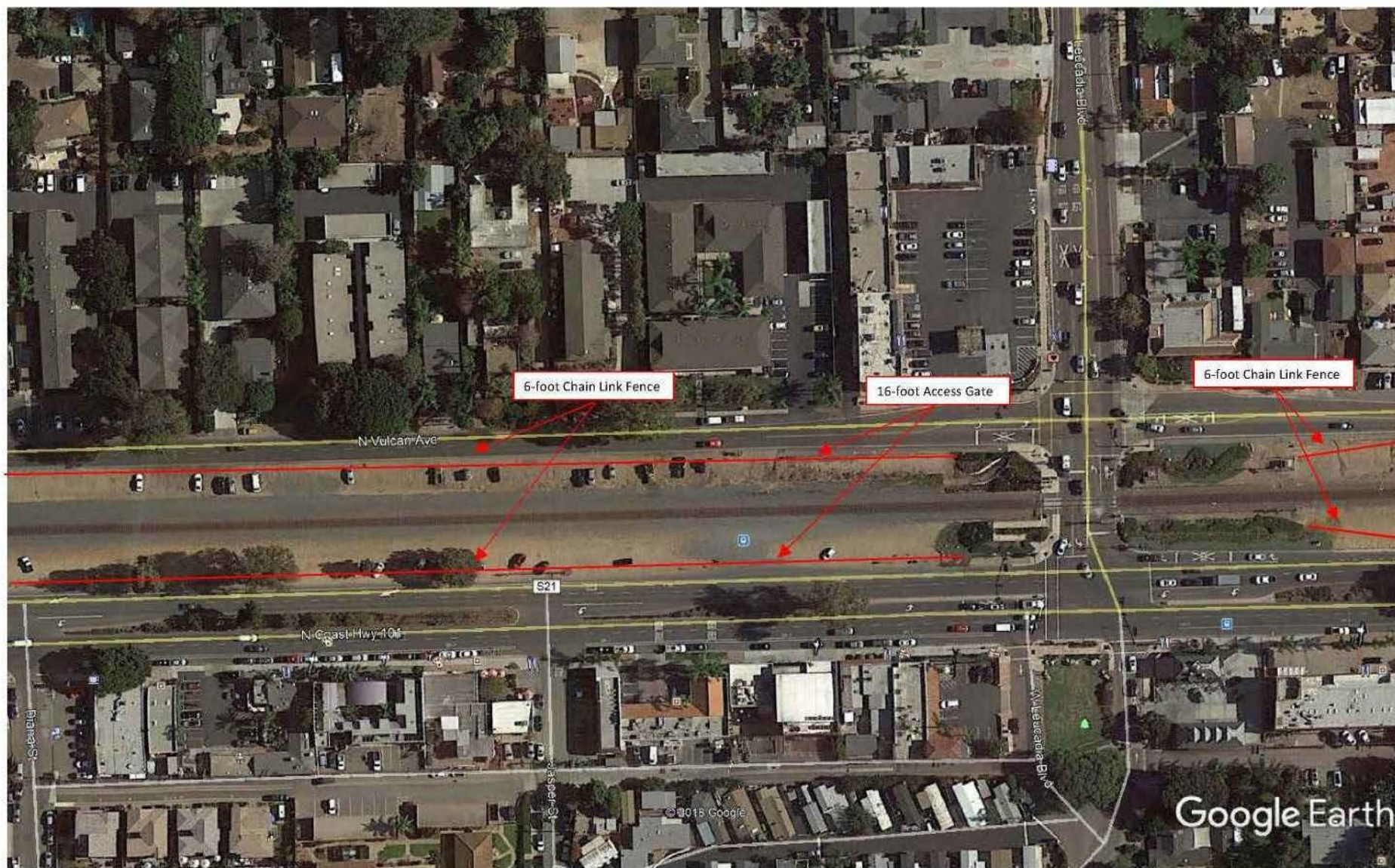
Encinitas Study Area



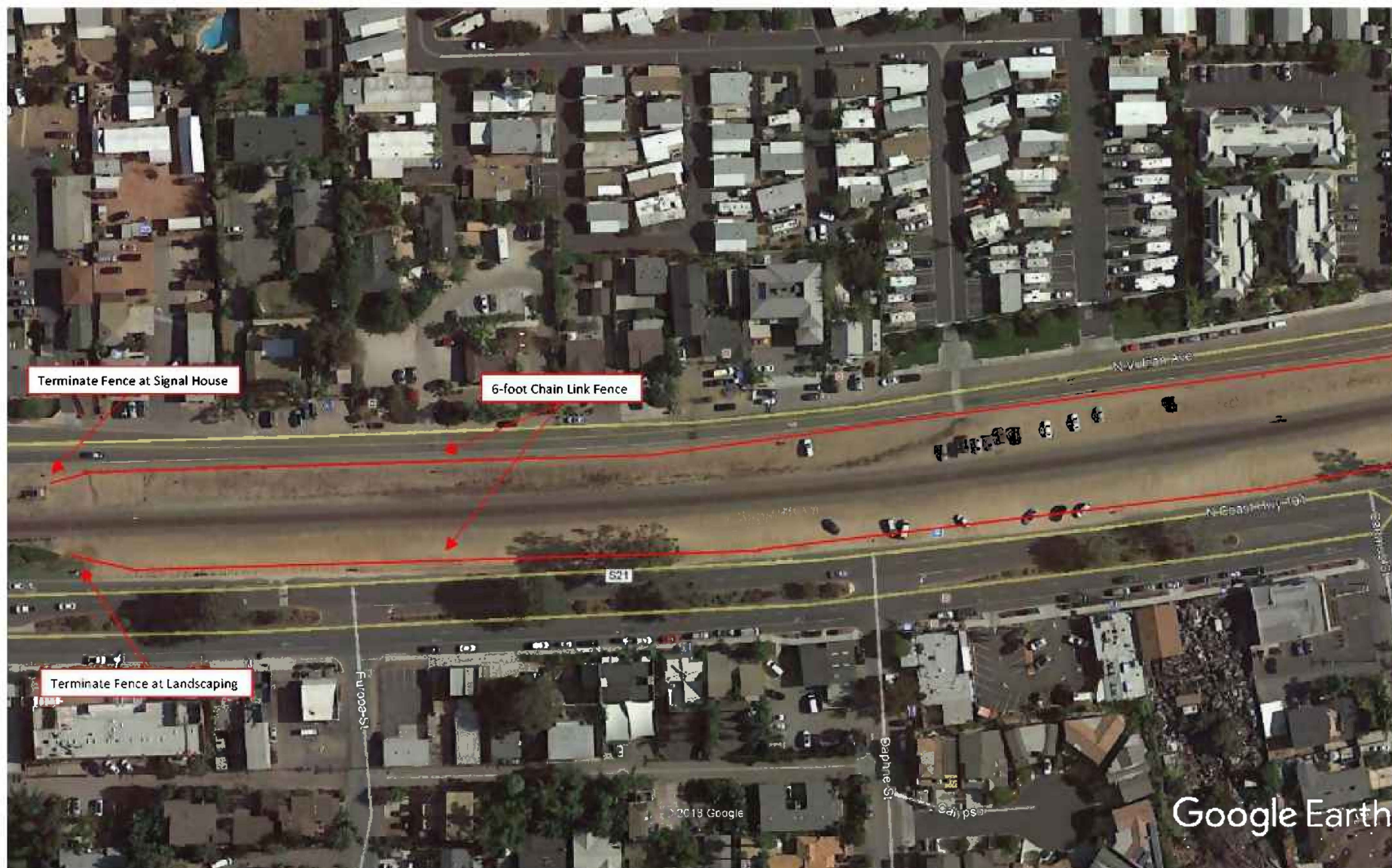
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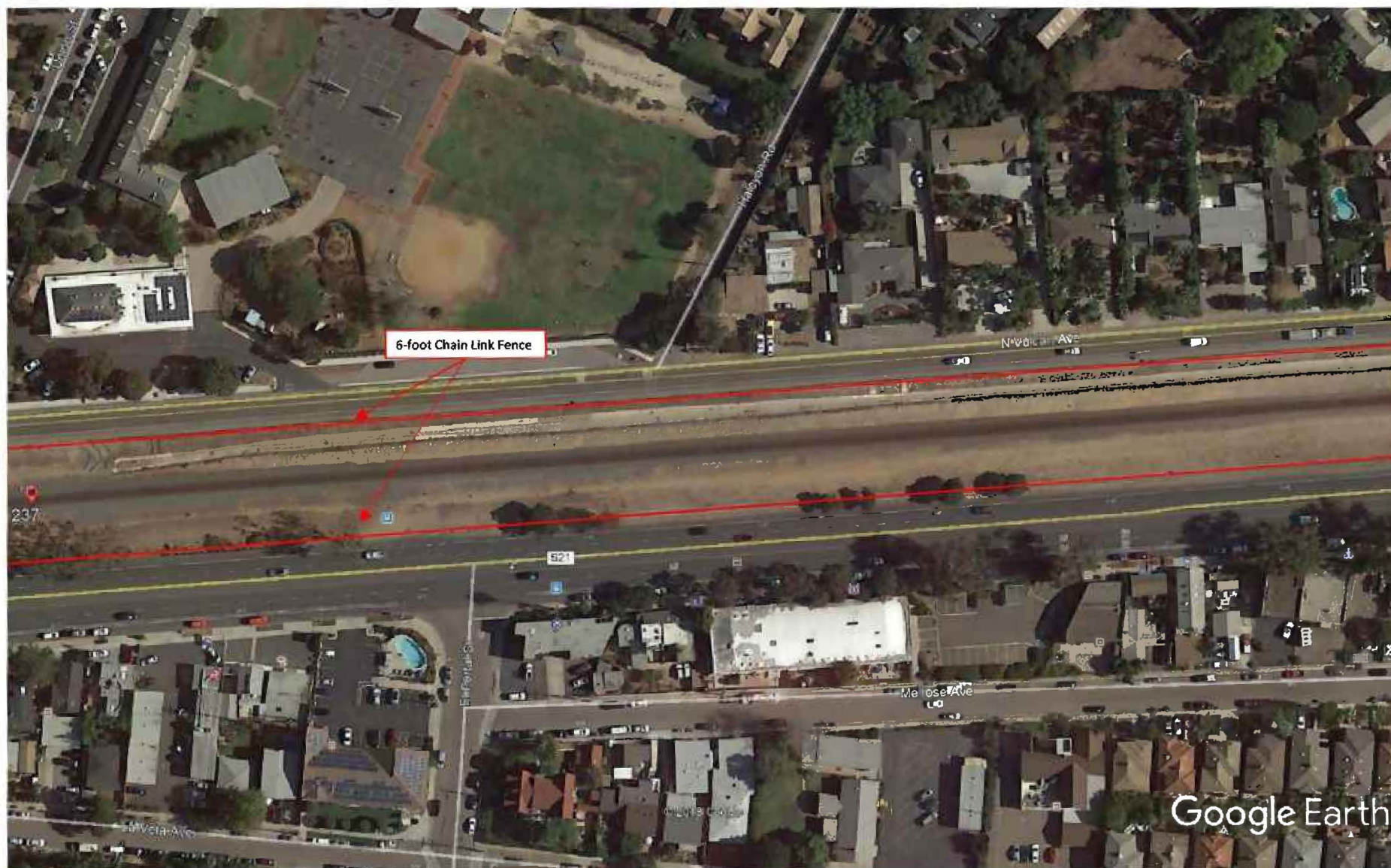
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Del Mar Study Area



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Del Mar Study Area



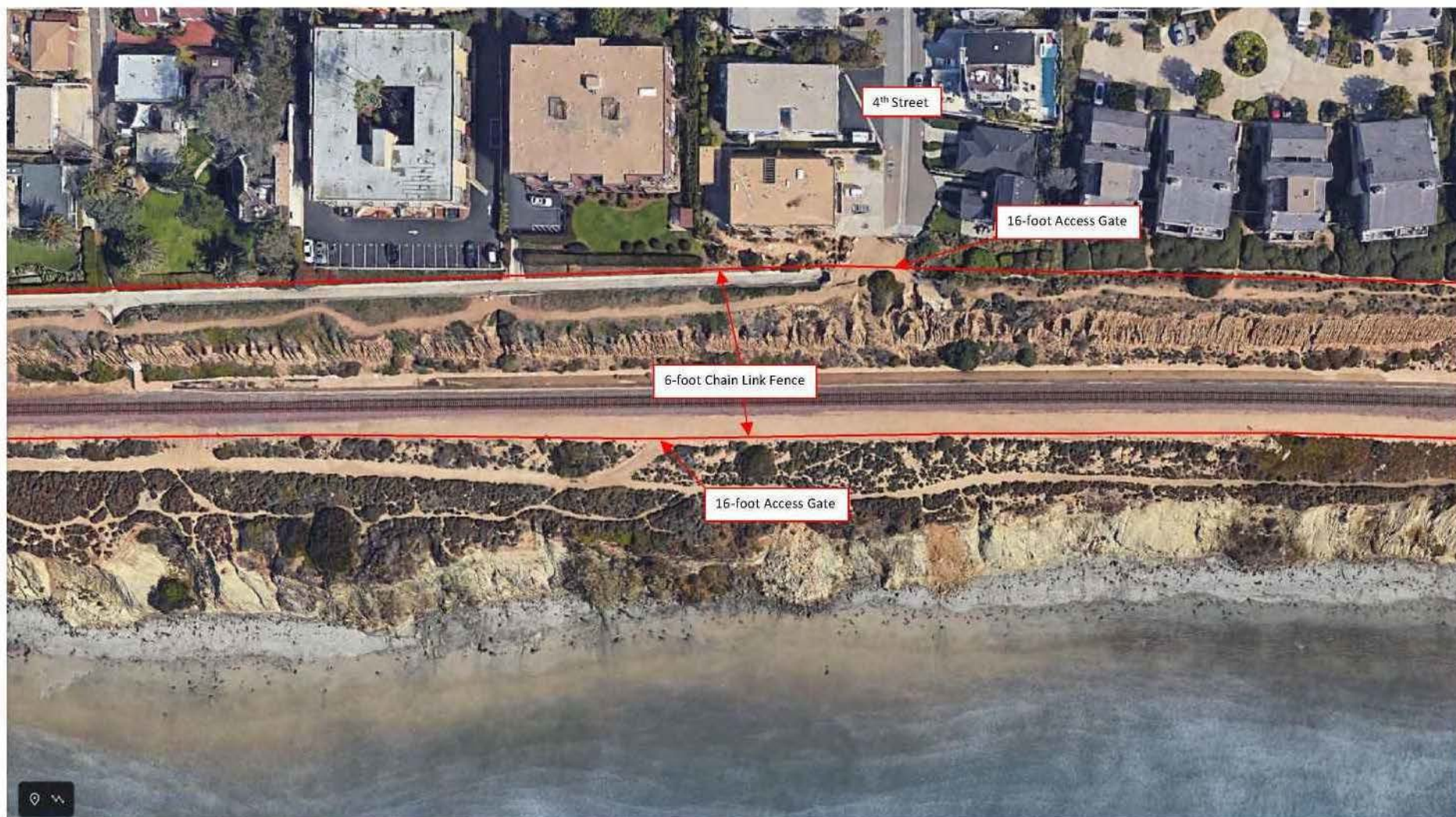
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Board Policy No. 18 Railroad Crossing Quiet Zones and Wayside Horn Systems

Summary

This policy addresses accountability and liability for specific areas of quiet zones and wayside horn systems implementation.

Background

On September 18, 2006, the Federal Railroad Administration (FRA) implemented its final rule regarding requirements for the sounding of locomotive horns for at-grade public crossings in 49 CFR Part 222 and 229, more commonly known as the Train Horn Rule.

49 CFR Part 222 enables a public authority (herein referred to as "City"), defined as public entities responsible for traffic control and law enforcement at public highway-rail grade crossings, but not railroads or train operators, to establish "Quiet Zones." In addition, 49 CFR Part 222 establishes the requirements of Cities or NCTD to implement the use of Wayside Horn Systems at highway-rail grade crossings. The implementation of Quiet Zones and Wayside Horn Systems allow for locomotive horns not to be routinely sounded at public highway-rail grade crossings during normal operations, provided minimum safety requirements and thresholds are met.

NCTD is the owner of and maintains the railroad facility and rights-of-way between the Orange/San Diego County boundary and the Del Mar/San Diego City boundary (a portion of the "San Diego Subdivision"), and between Oceanside and Escondido ("Escondido Subdivision").

NCTD maintains the railroad facility between the Del Mar/San Diego City boundary and "E" Street in the City of San Diego, pursuant to a joint use agreement.

Certain Cities and the County of San Diego have, or may indicate a desire to establish, Quiet Zones or implement the use of Wayside Horn Systems on the rail right-of-way within their boundaries.

NCTD desires to cooperate with the Cities who wish to pursue and establish Quiet Zones or use Wayside Horn Systems under the federal regulation so as to encourage improved grade crossing safety and consistency of design, construction, maintenance, and operation of the NCTD system and railroad infrastructure.

The federal regulation enhances the safety of grade crossings included within Quiet Zones and establishes a federal standard of care, which preempts state rules and tort law for the purpose of providing immunity to NCTD, the Cities and the rail operators against liability for accidents at Quiet Zone grade crossings, if the supplementary safety measures, required by the federal regulation, Quiet Zones are present.

Board Policy No. 18 – Railroad Crossing Quiet Zones and Wayside Horn Systems

Purpose

NCTD adopts a position of support for Cities which seek to develop and fund future Quiet Zone and Wayside Horn projects within their jurisdictions pursuant to 49 CFR Part 222.

To ensure maximum safety, uniformity and reliability of all Quiet Zone and Wayside Horn related facilities NCTD shall develop standard procedures pursuant to the requirements of CFR 49 Part 222.

Lead Agency

The City seeking to establish a Quiet Zone or Wayside Horn System within its jurisdiction shall act as the lead agency and shall comply with the requirements set forth in 49 CFR Part 222. As the lead agency, the City is responsible for securing the funding, permitting, and approvals necessary to create a Quiet Zone or implement a Wayside Horn System and for producing studies and documentation as may be required by the regulations or administrative policies and procedures of the FRA, the California Public Utilities Commission (CPUC), and NCTD.

Cost-Neutral to NCTD

The evaluation, application, planning, development, and review processes necessary to implement a Quiet Zone or Wayside Horn System shall be cost neutral to NCTD. All costs incurred by NCTD in association with any Quiet Zone project, including but not limited to staff time, consultant fees, attorneys' fees, environmental studies, permits, inspection fees, flag-protection fees and engineering fees, will be reimbursed by the City under a construction and maintenance agreement ("Construction and Maintenance Agreement").

NCTD Assistance

NCTD shall offer its assistance to the City in the analysis, planning, and review required to evaluate the viability, design, and construction of improvements necessary to implement a Quiet Zone or Wayside Horn System.

Quiet Zone and Wayside Horn System Design

The design of all railroad improvements necessary for the implementation of a Quiet Zone or Wayside Horn System shall be supported by NCTD with approval of applicable regulatory entities, following comprehensive diagnostic reviews and processes. Said improvements may include, but are not limited to, warning devices, gates, power-out indicators, wayside horns, Quiet Zone confirmation signals, exit management systems, grade crossing panels, signal system modifications, additions and alterations of signal housing and cases, pedestrian control devices, third-party utility connections, relocations, modifications, upgrades, and in-pavement loop detectors, if applicable.

The design and costs associated with all non-railroad items including but not limited to paving, striping, pavement signage, curbs, medians, roadway signage, in-pavement loop detectors, and other traffic and pedestrian control devices shall be the responsibility of the City and shall be coordinated with the design of railroad improvements, as provided in the Construction and Maintenance Agreement.

Board Policy No. 18 – Railroad Crossing Quiet Zones and Wayside Horn Systems

Construction and Maintenance Agreement

NCTD and each City will enter into a Construction and Maintenance Agreement, which will contain all the pertinent provisions concerning the construction and maintenance of the crossing improvements, right-of-entry and use provisions, relocation provisions, indemnification and insurance provisions, and the cooperation on defense provisions.

Construction

The construction of all railroad improvements necessary for the implementation of a Quiet Zone or Wayside Horn System shall be supported by NCTD.

Quiet Zones and Wayside Horn Systems will be constructed in a manner as to not interfere with the safe use of the railroad corridor during and subsequent to construction.

The Construction and Maintenance Agreement shall provide that the City shall pay the estimated cost of design and construction of all railroad improvements necessary for the implementation of the Quiet Zone or Wayside Horn System to NCTD, in advance.

If the City decides to design and construct the railroad improvements themselves, NCTD and NCTD's Signal Engineer of Record will be required to review and approve all design drawings and will provide Railroad Signal Inspection at the City's cost. The City shall pay the estimated cost of design review and inspection in advance.

The City shall be responsible for the construction and cost of all non-railroad items. All non-railroad related work shall be coordinated with railroad improvements to be constructed by NCTD, as provided in the Construction and Maintenance Agreement.

Maintenance

Pursuant to the Construction and Maintenance Agreement, NCTD shall provide required maintenance for additions to and/or modifications of any railroad equipment improvements necessary for the implementation of the Quiet Zone, both for existing and for new or expanded at-grade public crossings. The Construction and Maintenance Agreement shall specify the portion of the cost of the required maintenance which shall be passed on to the Cities. Wayside Horn Systems shall be maintained by the City.

Indemnification

Each City shall indemnify, defend, and hold harmless NCTD and its Board, and each member of the Board, the National Railroad Passenger Corporation ("Amtrak"), the BNSF Railway ("BNSF"), the Southern California Railroad Authority ("SCRRA"), , Pacific Sun Railroad ("PSRR") and any other entity performing maintenance work on the right-of-way, and any other entity providing passenger rail operation services for NCTD on the right-of-way, and any other entity providing dispatch services to NCTD for the right-of-way, their officers, agents, and employees ("Indemnitees"), from any and all liability, loss, expense (including reasonable attorneys' fees and other defense costs), demands, suits, liens, damages, costs, claims, including, but not limited to, claims for bodily injury, death, personal injury, or property damage, that are incurred by or asserted against the Indemnitees arising out of or connected with a failure to comply with the federal rule and any negligent acts or omissions on the part of the City, its council, officers, agents,

Board Policy No. 18 – Railroad Crossing Quiet Zones and Wayside Horn Systems

contractors, or employees under or in connection with any work, authority or jurisdiction of City required by the federal rule and related to the establishment and operation of the Quiet Zones or Wayside Horn Systems at highway-rail crossings.

NCTD agrees to indemnify, defend, and hold harmless the Cities and their respective board members, officers, agents, volunteers, contractors, and employees from any and all liability, loss, expense (including reasonable attorneys' fees and other defense costs), demands, suits, liens, damages, costs, claims, including but not limited to, claims for bodily injury, death, personal injury, or property damage, that are incurred by or asserted against the City Indemnitees arising out of or connected with any negligent acts or omissions on the part of NCTD, its Board, officers, agents, contractors, or employees, under or in connection with any work, authority or jurisdiction delegated to NCTD under the Construction and Maintenance Agreement between NCTD and the City.

Insurance

1. During construction:

- a. In the event Cities engage in construction activities within the crossing covered by the Construction and Maintenance Agreement, the Cities shall cause to be procured and maintained, in full force and effect, during construction of the said improvements, general and railroad protective insurance, as required by NCTD, in the amounts, coverage, and terms and conditions specified, and issued by insurance companies in the Temporary Right of Entry Agreement.
- b. NCTD shall cause to be procured and maintained, in full force and effect, during construction of the Quiet Zone or Wayside Horn System Improvements, general and railroad protective insurance, and the cost of said insurance shall be a cost of construction of the Improvements, which shall be passed on to the Cities.

2. Post-construction:

- a. NCTD shall procure and maintain the insurance, which shall, if available on the open market, name the Cities as additional insureds. To the extent the procurement and maintenance of the insurance containing coverage for liability resulting from the implementation of the Quiet Zone or Wayside Horns System and/or the improvements required to implement the Quiet Zone or Wayside Horn System, costs more than a policy without said coverage, the incremental increase in insurance costs shall be paid by City and other Cities which have Quiet Zones or Wayside Horn Systems on NCTD's right-of-way. The City's incremental cost shall be determined on an annual basis and will be proportional to the number of highway-rail grade crossings with Quiet Zones or Wayside Horn Systems within each City.

Termination

In the event NCTD shall be unable to procure liability insurance described in paragraph 10(b) above, the Cities shall, at their discretion, have the right to terminate the Quiet Zone designation or Wayside Horn System, and those provisions contained in the Construction and Maintenance Agreement relating to indemnification and insurance, as set forth in the Construction and Maintenance Agreement.

Board Policy No. 18 – Railroad Crossing Quiet Zones and Wayside Horn Systems

Cooperation in Defense of Claims

NCTD and each City will agree in the Construction and Maintenance Agreement to cooperate in good faith in any claim or litigation alleging liability of the City and NCTD, to seek a prompt disposition of the City and NCTD, by way of dismissal or summary judgment.

Approvals

Handwritten signature of the Board Chair in blue ink.

Board Chair

10/17/2019

Date

Handwritten signature of the Executive Director in blue ink.

Executive Director

10/17/2019

Date

Handwritten signature of the General Counsel in blue ink.

General Counsel

10/17/2019

Date

Board Policy No. 18 – Railroad Crossing Quiet Zones and Wayside Horn Systems

DATE	REVISION NO.	RESOLUTION NO.	COMMENTS
10/18/2012	ADOPTED	12-10	
10/17/2013	1	13-07	2013 REVISION
10/16/2014	2	14-04	2014 REVISION
10/20/2016	3	16-10	2016 REVISION
10/17/2019	4	19-06	2019 REVISION



NORTH COUNTY
TRANSIT DISTRICT



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Coastal Rail Corridor

San Diego Segment

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Del Mar Bluffs Stabilization Project 5 – Workshop 2, Day 1

October 7, 2020

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Del Mar Bluffs 5

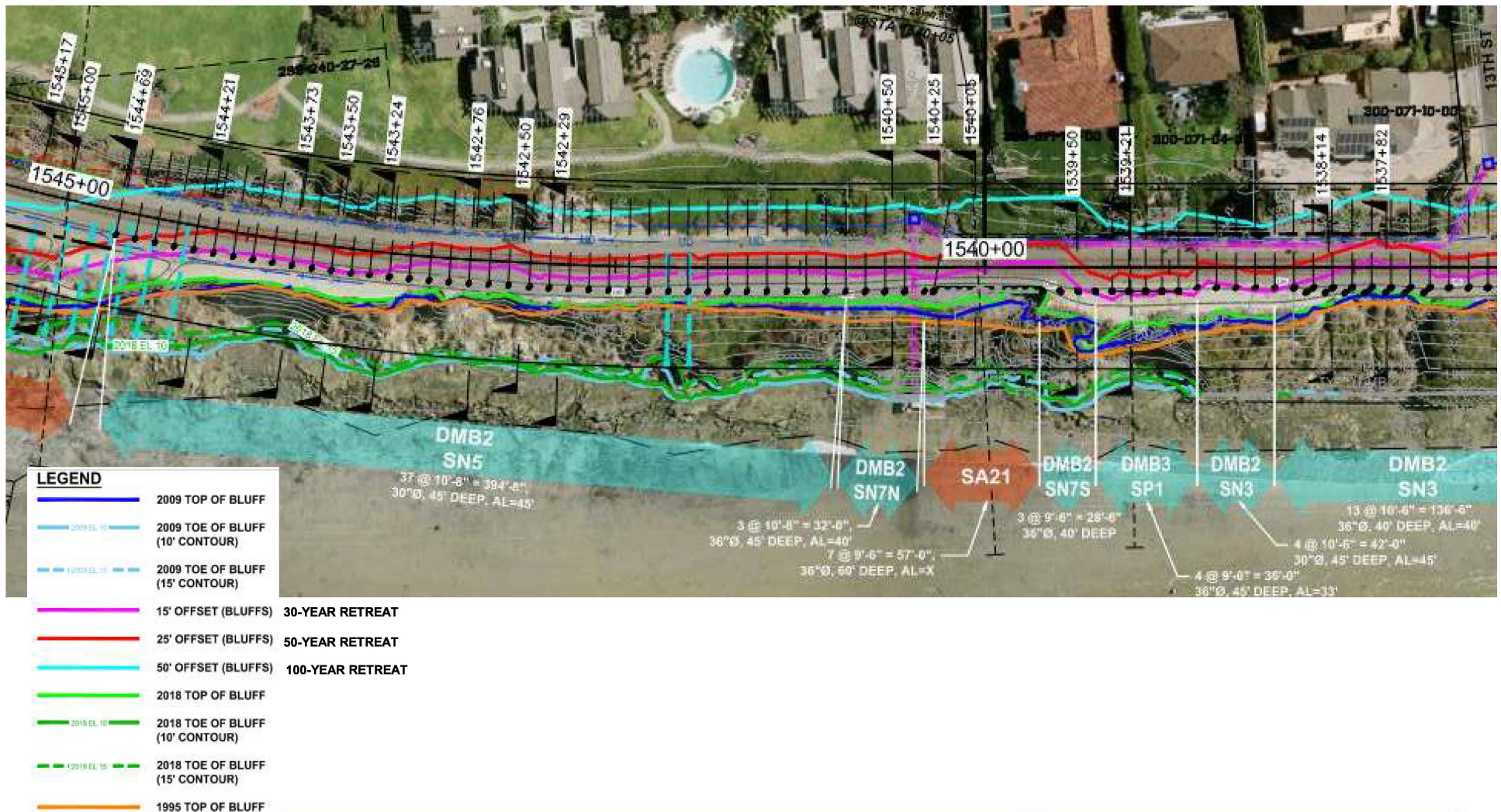
Agenda



- **Geotechnical Evaluation**
 - Bluff Top Retreat
 - Design Life: 30 Years and 50 Years
 - New Stabilization Areas
 - Retrofit Areas
- **Results & Recommendations**
 - Overview of new stabilization and retrofit areas
 - Sample cross-sections of most significant areas
 - Proposed improvements and overall Prioritization
- **Cost Alternatives**

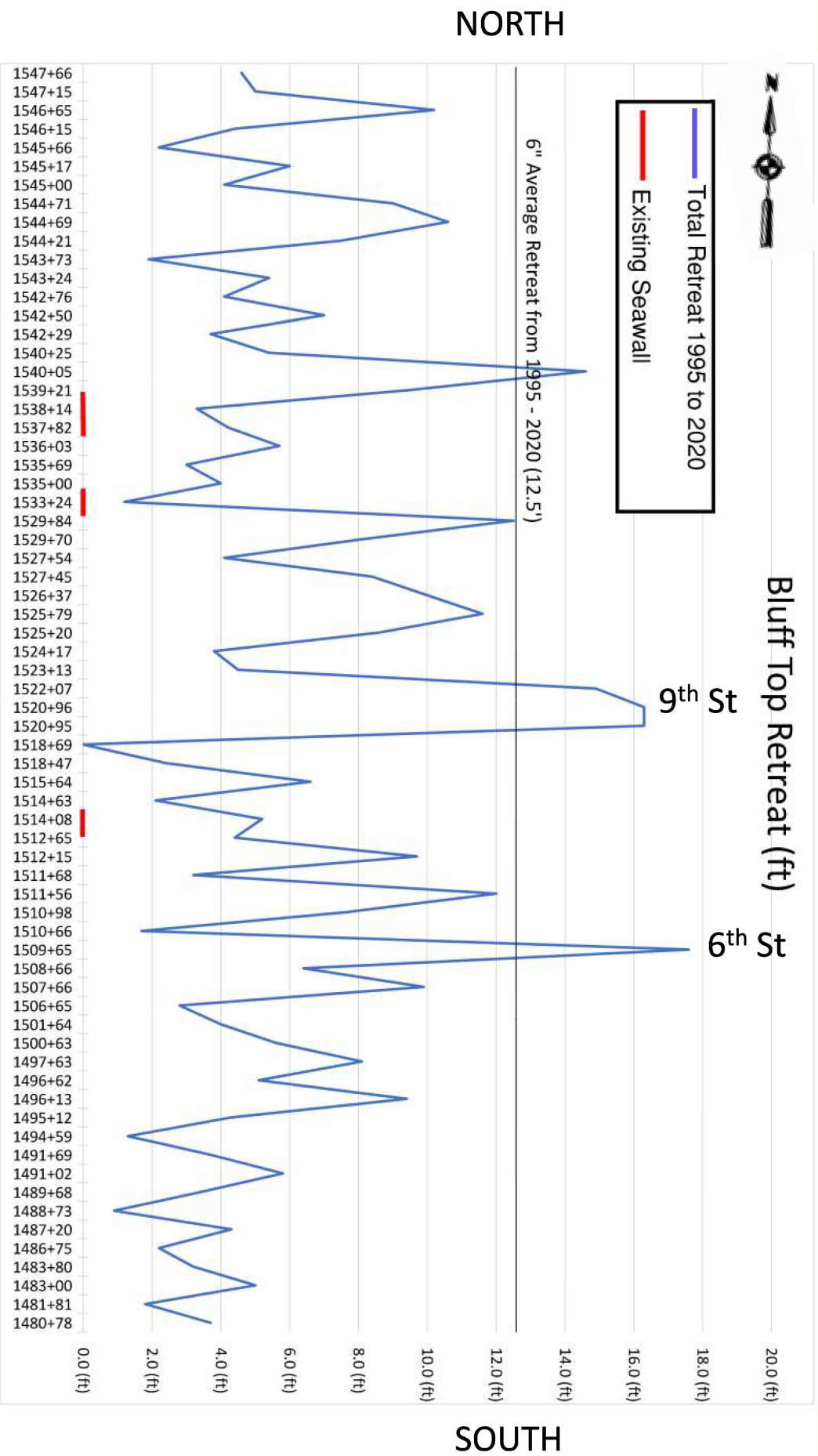
Del Mar Bluffs 5

Bluff Top Retreat



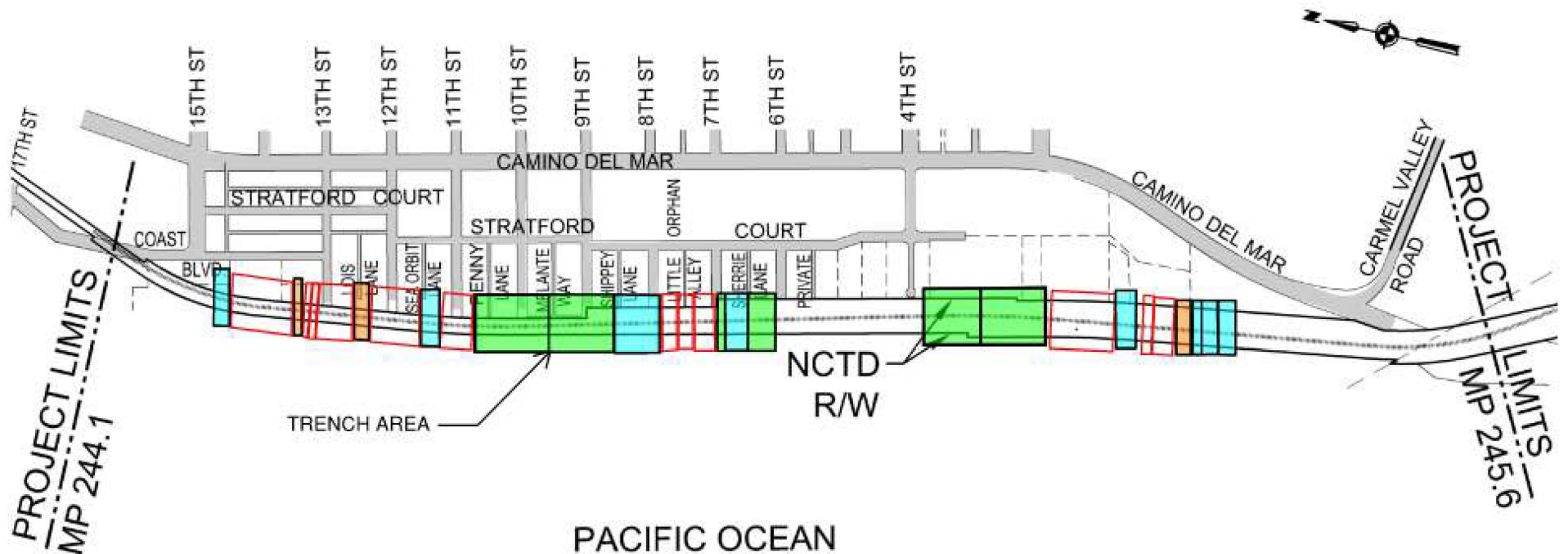
Del Mar Bluffs 5

Bluff Top Retreat



Del Mar Bluffs 5

Proposed Stabilization Areas



NEW AREAS LEGEND

- NO LAGGING OR TIEBACKS NEEDED
- UP TO 5' OF LAGGING & POTENTIAL UPPER TIEBACK
- UP TO 15' OF LAGGING & TWO TIEBACKS
- EXISTING STABILIZED AREAS

Del Mar Bluffs 5

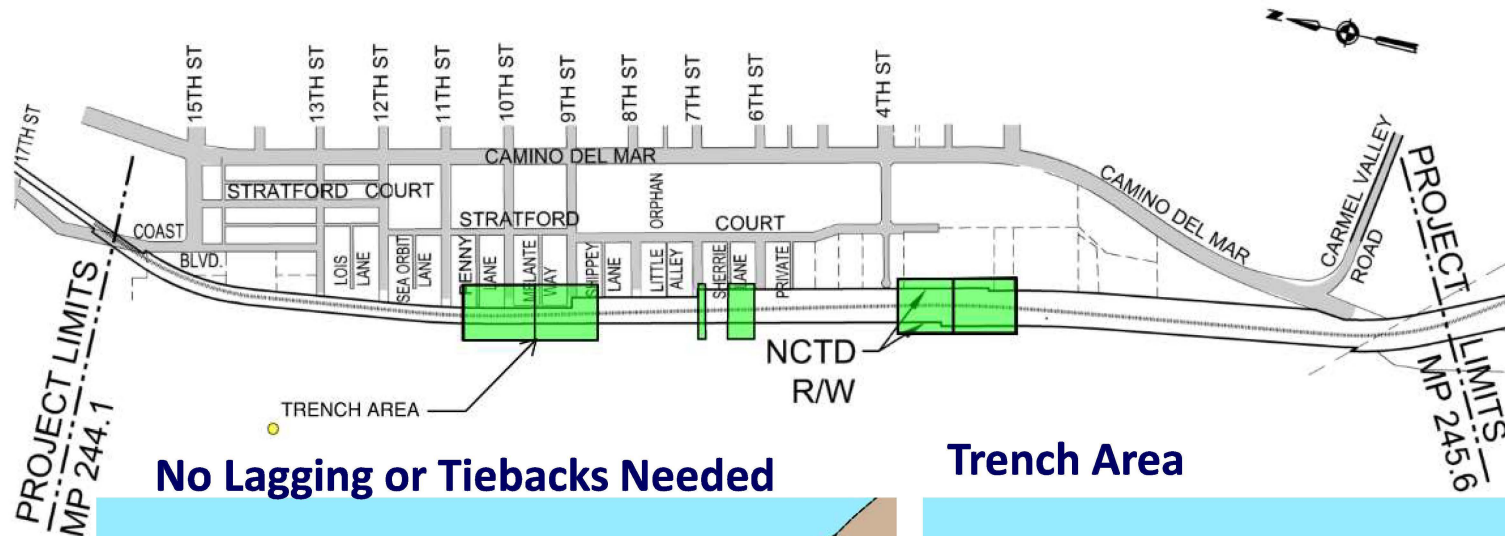
Proposed Stabilization Area Analysis



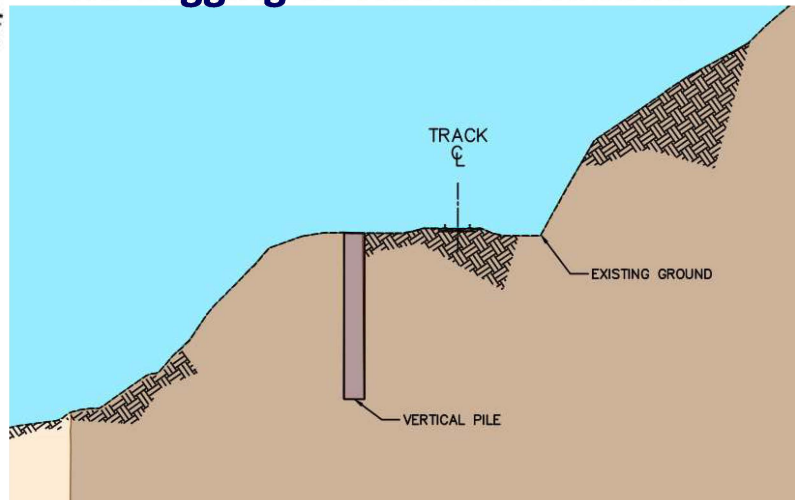
		Initial Phase		30-Year Design Life		50-Year Design Life	
Stabilization Area	Number of Piles	Total # of Tiebacks	Total Depth of Lagging	Total # of Tiebacks	Total Depth of Lagging	Total # of Tiebacks	Total Depth of Lagging
SA 10	15	0	0'	0	5'	1	17'
SA9	17	0	5'	0	8'	1	17'
SA11	10	1	5'	1	11'	1	22'
SA8	17	1	12'	1	12'	2	14'
SA12	17	1	5'	1	8'	1	19'
SA6N	35	0	0'	0	0'	0	5'
SA13	50	0	0'	0	0'	0	0'
SA14	15	0	0'	0	0'	0	0'
SA5	18	1	0'	1	5'	1	12'
SA15	6	0	0'	0	0'	0	5'
SA3	25	0	5'	0	5'	0	5'
SA23	4	1	0'	1	7'	1	10'
SA20	9	2	15'	2	21'	3	34'
SA21	5	2	15'	2	17'	2	27'
SA16	15	1	0'	1	5'	2	13'

Del Mar Bluffs 5

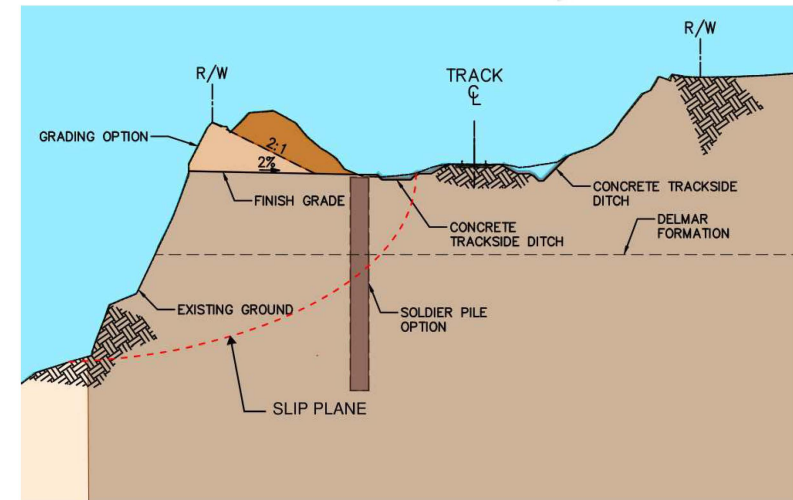
Proposed Stabilization Areas



No Lagging or Tiebacks Needed



Trench Area

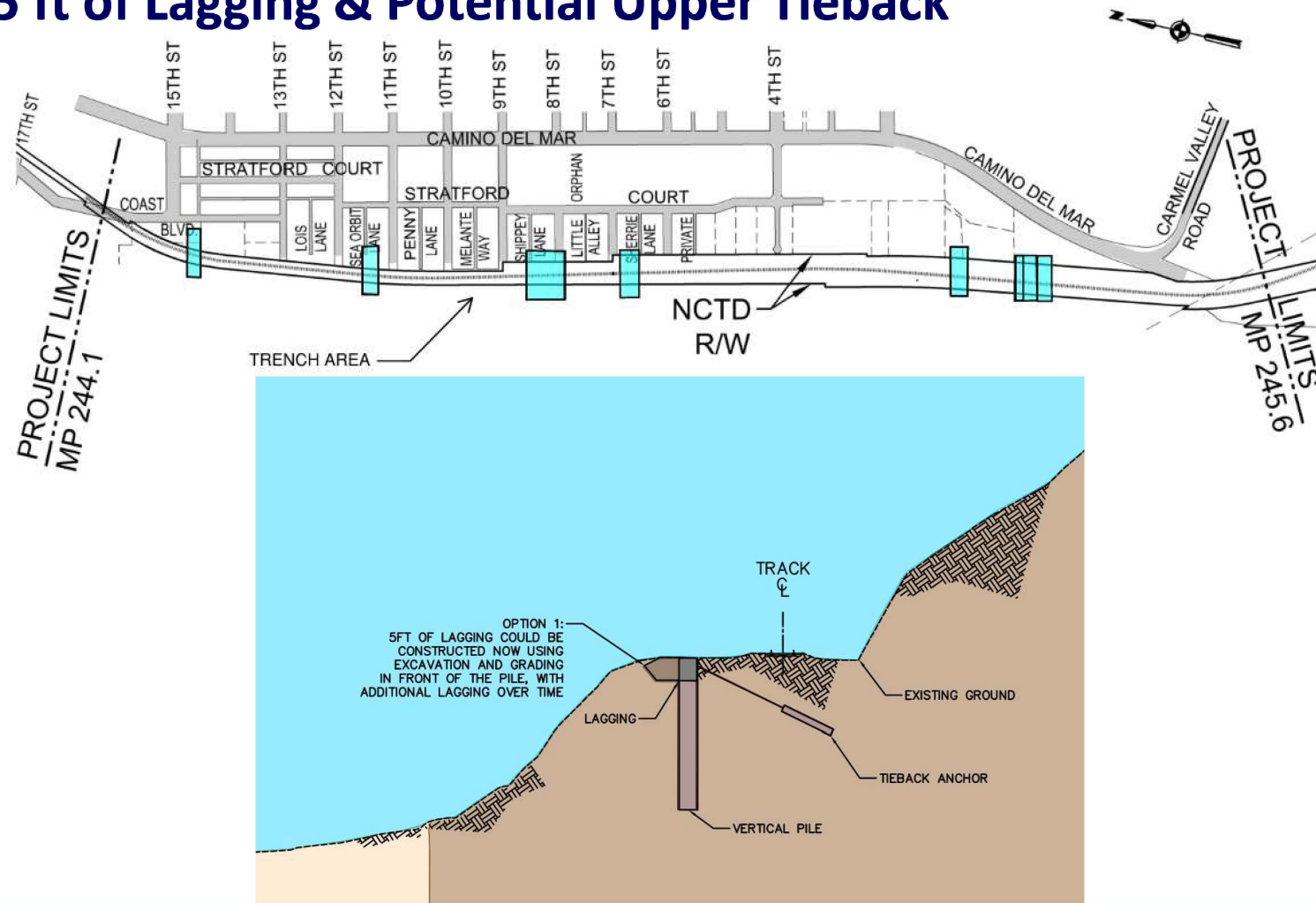


Del Mar Bluffs 5

Proposed Stabilization Areas



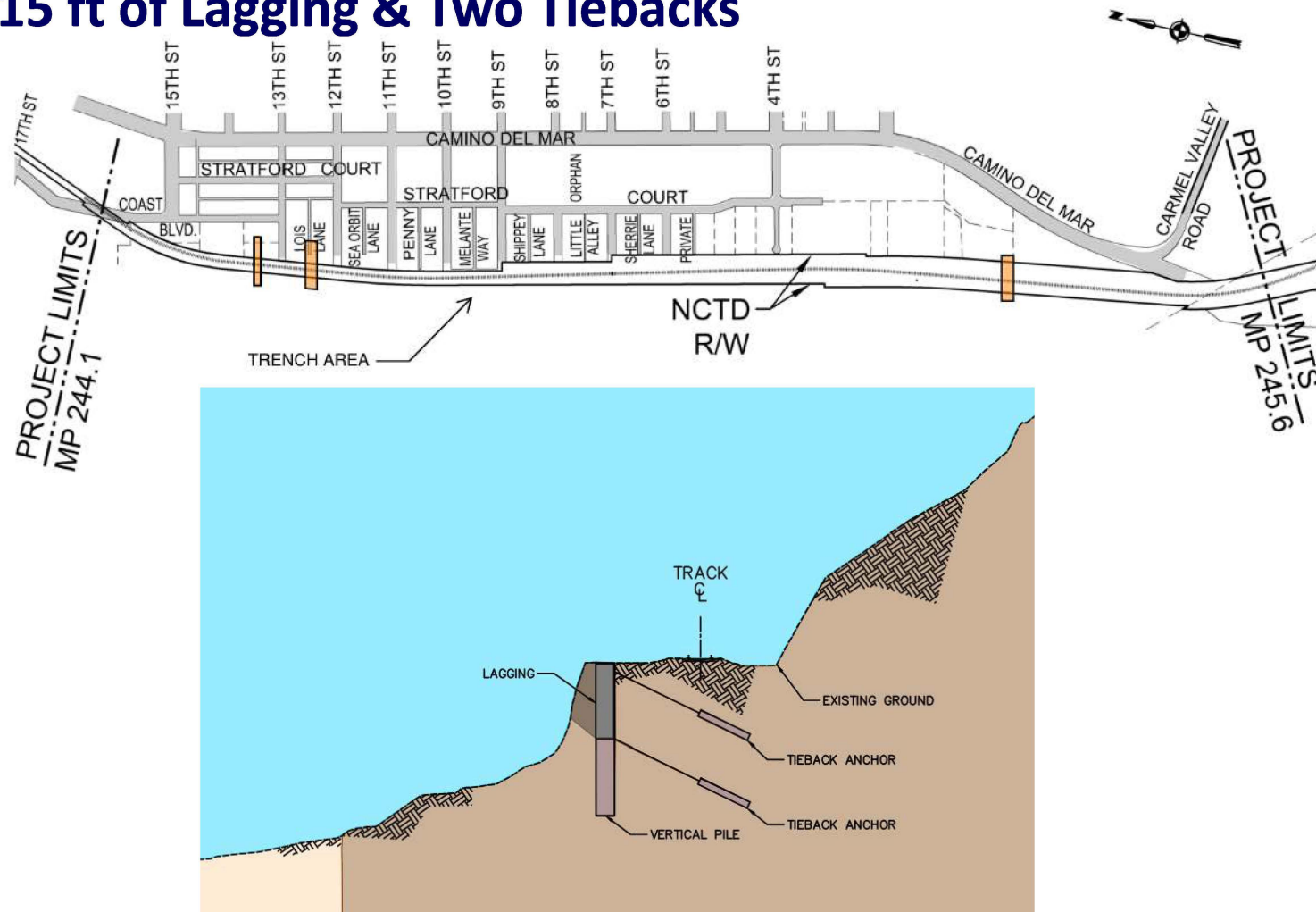
Up to 5 ft of Lagging & Potential Upper Tieback



Del Mar Bluffs 5

Proposed Stabilization Areas

Up to 15 ft of Lagging & Two Tiebacks



Del Mar Bluffs 5

Overall Prioritization



New Stabilization Areas

Stabilization Area	Station	Priority Level Ranking
SA10	1478+74	Low
SA9	1480+78	High
SA11 Alternative	1481+81	High
SA8	1482+97	High
SA12	1487+20	Medium
SA6N	1494+59	Medium
SA13	1496+62	Medium
SA14	1510+66	Low
SA5	1511+56	High
SA15	1512+65	High
SA3	1518+72	Low
SA22 trench area	1520+95	Low
SA24 trench area	1524+17	Low
SA23	1531+10	Medium
SA20	1536+03	High
SA21	1540+05	High
SA16	1545+00	Low

Retrofit Areas

Stabilization Area	Station	Priority Level Ranking
DMB2 (SN8)	1483+80	Medium
DMB3 (SP4)	1485+00	Low
DMB3 (SP7)	1488+73	High
DMB3 (SP6) Pile 1 to 6	1489+25	High
DMB3 (SP6) Pile 7 to 14	1490+00	Medium
DMB3 (SP5)	1491+02	Medium
DMB3 (SP3)	1513+40	Low
2001 Emergency Repair	1514+63	Very High
DMB2 (SN6) Pile 1 to 6	1516+00	High
DMB2 (SN6) Pile 7 to 10	1516+25	Low
DMB3 (SP2) Pile 6 to 16	1529+70	Low
DMB3 (SP2) Pile 17 to 23	1530+50	High
DMB2 (SN2)	1532+25	High
DMB2 (SN1S)	1533+24	High
DMB2 (SN1N)	1536+75	High
DMB2 (SN3) Pile 1 to 14	1537+82	Very High
DMB3 (SP1)	1539+21	Medium
DMB2 (SN7S)	1539+50	Low
DMB2 (SN7N)	1540+50	Medium
DMB2 (SN5) Pile 1 to 32	1542+50	Very High
DMB2 (SN5) Pile 33 to 38	1544+69	Low

Del Mar Bluffs 5

Overall Prioritization



New Stabilization and Retrofit Areas – Combined Ranking

Stabilization Area	Station	Priority Level Ranking
SA10	1478+74	Low
SA9	1480+78	High
SA11	1481+81	High
SA8	1482+97	High
DMB2 (SN8) Pile 1 to 11	1483+80	Medium
DMB2 (SN8) Pile 12 to 13	1484+75	Low
DMB3 (SP4) Pile 1 to 2	1485+00	Low
DMB3 (SP4) Pile 3 to 5	1485+15	Low
DMB3 (SP4) Pile 6 to 10	1485+50	Low
SA12	1487+20	Medium
DMB3 (SP7)	1488+73	High
DMB3 (SP6) Pile 1 to 6	1489+25	High
DMB3 (SP6) Pile 7 to 14	1490+00	Medium
DMB3 (SP5)	1491+02	Medium
SA6N	1494+59	Medium
SA13	1496+62	Medium
SA14	1510+66	Low
SA5	1511+56	High
SA15	1512+65	High
DMB3 (SP3) Pile 1 to 4	1513+40	Low
DMB3 (SP3) Pile 5 to 12	1514+08	Low
DMB3 (SP3) Pile 13	1514+25	Low
2001 Emergency Repair	1514+63	Very High
DMB2 (SN6) Pile 1 to 6	1516+00	High
DMB2 (SN6) Pile 7 to 10	1516+25	Low

Stabilization Area	Station	Priority Level Ranking
SA3	1518+72	Low
SA22 trench area	1520+95	Low
SA24 trench area	1524+17	Low
DMB3 (SP2) Pile 1 to 5	1528+79	Low
DMB3 (SP2) Pile 6 to 16	1529+70	Low
DMB3 (SP2) Pile 6 to 16-2	1529+84	Low
DMB3 (SP2) Pile 17 to 23	1530+50	High
SA23	1531+10	Medium
DMB2 (SN2)	1532+25	High
DMB2 (SN1S) Pile 1 to 5	1532+75	High
DMB2 (SN1S) Pile 6 to 13	1533+24	High
DMB2 (SN1S) Pile 14 to 29	1535+00	Medium
SA20	1536+03	High
DMB2 (SN1N)	1536+75	High
DMB2 (SN3) Pile 1 to 14	1537+82	Very High
DMB2 (SN3) Pile 15 to 19	1538+14	High
DMB3 (SP1)	1539+21	Medium
DMB2 (SN7S)	1539+50	Low
SA21	1540+05	High
DMB2 (SN7N)	1540+50	Medium
DMB2 (SN5) Pile 1 to 23	1542+50	Very High
DMB2 (SN5) Pile 24 to 32	1543+50	High
DMB2 (SN5) Pile 33 to 38	1544+69	Low
SA16	1545+00	Low

Del Mar Bluffs 5

Overall Prioritization



New Stabilization and Retrofit Areas – Combined Ranking

Stabilization Area	Station	Priority Level Ranking
SA10	1478+74	Low
SA9	1480+78	High
SA11	1481+81	High
SA8	1482+97	High
DMB2 (SN8) Pile 1 to 11	1483+80	Medium
DMB2 (SN8) Pile 12 to 13	1484+75	Low
DMB3 (SP4) Pile 1 to 2	1485+00	Low
DMB3 (SP4) Pile 3 to 5	1485+15	Low
DMB3 (SP4) Pile 6 to 10	1485+50	Low
SA12	1487+20	Medium
DMB3 (SP7)	1488+73	High
DMB3 (SP6) Pile 1 to 6	1489+25	High
DMB3 (SP6) Pile 7 to 14	1490+00	Medium
DMB3 (SP5)	1491+02	Medium
SA6N	1494+59	Medium
SA13	1496+62	Medium
SA14	1510+66	Low
SA5	1511+56	High
SA15	1512+65	High
DMB3 (SP3) Pile 1 to 4	1513+40	Low
DMB3 (SP3) Pile 5 to 12	1514+08	Low
DMB3 (SP3) Pile 13	1514+25	Low
2001 Emergency Repair	1514+63	Very High
DMB2 (SN6) Pile 1 to 6	1516+00	High
DMB2 (SN6) Pile 7 to 10	1516+25	Low

Stabilization Area	Station	Priority Level Ranking
SA3	1518+72	Low
SA22 trench area	1520+95	Low
SA24 trench area	1524+17	Low
DMB3 (SP2) Pile 1 to 5	1528+79	Low
DMB3 (SP2) Pile 6 to 16	1529+70	Low
DMB3 (SP2) Pile 6 to 16-2	1529+84	Low
DMB3 (SP2) Pile 17 to 23	1530+50	High
SA23	1531+10	Medium
DMB2 (SN2)	1532+25	High
DMB2 (SN1S) Pile 1 to 5	1532+75	High
DMB2 (SN1S) Pile 6 to 13	1533+24	High
DMB2 (SN1S) Pile 14 to 29	1535+00	Medium
SA20	1536+03	High
DMB2 (SN1N)	1536+75	High
DMB2 (SN3) Pile 1 to 14	1537+82	Very High
DMB2 (SN3) Pile 15 to 19	1538+14	High
DMB3 (SP1)	1539+21	Medium
DMB2 (SN7S)	1539+50	Low
SA21	1540+05	High
DMB2 (SN7N)	1540+50	Medium
DMB2 (SN5) Pile 1 to 23	1542+50	Very High
DMB2 (SN5) Pile 24 to 32	1543+50	High
DMB2 (SN5) Pile 33 to 38	1544+69	Low
SA16	1545+00	Low

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Cost Alternatives



30-year service life in the initial phase of construction

Stabilization Area	Cost of Piles	Cost of Tiebacks	Cost of Lagging	Cost of Grading	Total Cost of 30-year service life in the initial phase of construction
New Stabilization Areas	\$ 16,140,000	\$ 920,000	\$ 230,000	\$ 330,000	\$ 17,620,000
Retrofit Areas	\$ 7,440,000*	\$ 2,570,000	\$ 700,000	\$ 760,000	\$ 11,470,000
TOTAL	\$ 23,580,000	\$ 3,490,000	\$ 930,000	\$ 1,090,000	\$ 29,090,000

* Cannot achieve 50-year design life with lagging and tiebacks. Construct inline piles instead.

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Cost Alternatives



50-year service life in the initial phase of construction

Stabilization Area	Cost of Piles	Cost of Tiebacks	Cost of Lagging	Cost of Grading	Total Cost of 50-year service life in the initial phase of construction
New Stabilization Areas	\$ 16,170,000	\$ 1,780,000	\$ 480,000	\$ 820,000	\$ 19,240,000
Retrofit Areas	\$ 7,440,000*	\$ 5,720,000	\$ 1,170,000	\$ 1,530,000	\$ 15,860,000
TOTAL	\$ 23,610,000	\$ 7,500,000	\$ 1,650,000	\$ 2,350,000	\$ 35,100,000

* Cannot achieve 50-year design life with lagging and tiebacks. Construct inline piles instead.

Del Mar Bluffs 5

Cost Alternatives



Phased approach to 30 year and 50 year service life

Stabilization Area	Phased Approach – Initial Phase	Phased Approach – Second Phase	Phased Approach – Third Phase	Phased Approach - Total	Total Cost of 50-year service life in the initial phase of construction
New Stabilization Areas	\$ 17,070,000	\$ 500,000	\$ 1,940,000	\$ 19,510,000	\$ 19,240,000
Retrofit Areas	\$ 10,410,000	\$ 950,000	\$ 6,340,000	\$ 17,700,000	\$ 15,860,000
TOTAL	\$ 27,480,000	\$ 1,450,000	\$ 8,280,000	\$ 37,210,000	\$ 35,100,000

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Cost Alternatives



Phased approach – High and Medium Priority Areas

Stabilization Area	Phased Approach – Initial Phase	30-year service life in the initial phase of construction	50-year service life in the initial phase of construction
New Stabilization Areas	\$14,440,000	\$14,950,000	\$16,320,000
Retrofit Areas	\$9,760,000	\$10,740,000	\$13,050,000
TOTAL	\$24,200,000	\$25,690,000	\$29,370,000



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Del Mar Bluffs Stabilization Project 5 – Workshop 2, Day 2

October 8, 2020

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Del Mar Bluffs 5

Agenda



- **Proposed Improvements**
 - Summary of Alternatives
 - Alternatives costs
- **Future Sea Walls**
 - Del Mar Bluffs 6 – Understanding Benefits
 - Grading behind existing seawalls
- **Phasing Options**
 - Phasing of improvements based on costs
 - Phasing of improvements with future seawalls
- **Evaluation of Phasing Alternatives**
 - Cost savings, timing needs, potential risks

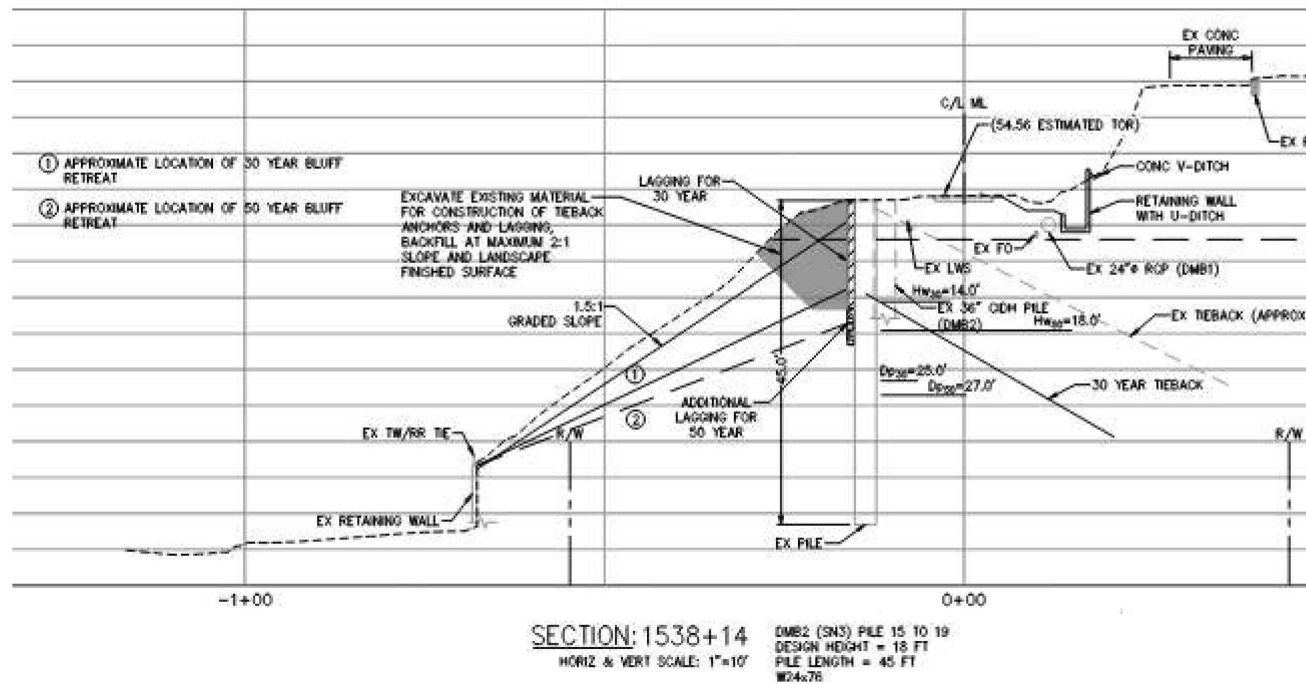
Del Mar Bluffs 5

Future Sea Walls



- **Timing**
 - Sea Walls to be evaluated in DMB 6
 - DMB5 does not include sea walls
 - All solutions considered in DMB5 are within right-of-way
 - Recommend maintaining this approach for initial submittal to Coastal Commission
 - Potential approval of sea walls could take 10+ years

Grading behind existing sea walls

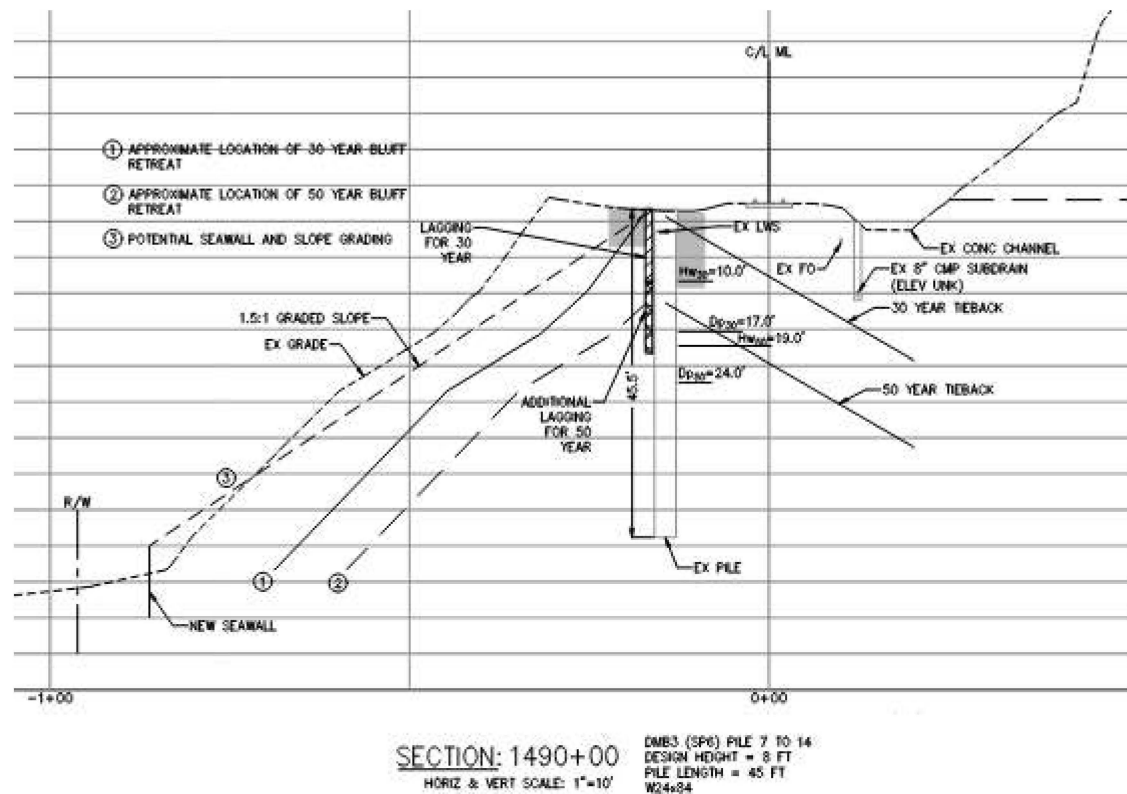


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Benefit of Future Sea Walls



New sea walls



Del Mar Bluffs 5

Benefit of Future Sea Walls



Stabilization Area	Station	Ranking	# of Existing Tiebacks	Without sea walls				W/ seawalls	
				Additional Tiebacks for 30 year life	Additional Tiebacks for 50 year life (including 30 year tiebacks)	Depth of lagging 30 years	Depth of lagging 50 years	Additional Tiebacks for 30 year life	Depth of lagging 30 years
DMB2 (SN8) Pile 1 to 11	1483+80	Medium	0	1	3	15	25	1	5
DMB2 (SN8) Pile 12 to 13	1484+75	Low	0	0	1	0	15	0	0
DMB3 (SP4) Pile 1 to 2	1485+00	Low	0	0	2	0	15	0	0
DMB3 (SP4) Pile 3 to 5	1485+15	Low	0	0	2	0	15	0	0
DMB3 (SP4) Pile 6 to 10	1485+50	Low	0	0	2	0	15	0	0
DMB3 (SP7)	1488+73	High	0	1	3	15	25	1	5
DMB3 (SP6) Pile 1 to 6	1489+25	High	0	2	2	20	25	2	15
DMB3 (SP6) Pile 7 to 14	1490+00	Medium	0	1	2	10	20	1	5
DMB3 (SP5)	1491+02	Medium	0	2	2	20	25	1	5
DMB3 (SP3) Pile 1 to 4	1513+40	Low	1	0	0	5	15	0	5
DMB3 (SP3) Pile 5 to 12	1514+08	Low	1	0	0	10	20	0	5
DMB3 (SP3) Pile 13	1514+25	Low	1	0	0	10	15	0	5
2001 Emergency Repair	1514+63	Very High	1	1	2	20	30	1	15
DMB2 (SN6) Pile 1 to 6	1516+00	High	0	0	0	*	*	2	15
DMB2 (SN6) Pile 7 to 10	1516+25	Low	0	0	2	0	10	0	0
DMB3 (SP2) Pile 1 to 5	1528+79	Low	0	1	1	0	0	1	0

No additional tie-backs and lagging needed for 50 year service life, assuming ongoing maintenance of slope

* Cannot achieve 50-year design life with lagging and tiebacks. Construct inline piles instead.

Del Mar Bluffs 5

Benefit of Future Sea Walls



Stabilization Area	Station	Ranking	# of Existing Tiebacks	Without sea walls				w/ sea walls	
				Additional Tiebacks for 30 year life	Additional Tiebacks for 50 year life (including 30 year tiebacks)	Depth of lagging 30 years	Depth of lagging 50 years	Additional Tiebacks for 30 year life	Depth of lagging 30 years
DMB3 (SP2) Pile 6 to 16	1529+70	Low	0	1	3	10	25	1	5
DMB3 (SP2) Pile 6 to 16-2	1529+84	Low	0	1	3	10	25	1	5
DMB3 (SP2) Pile 17 to 23	1530+50	High	0	1	1	15	15	1	5
DMB2 (SN2)	1532+25	High	1	1	1	20	25	1	15
DMB2 (SN1S) Pile 1 to 5	1532+75	High	1	1	1	15	20	1	15
DMB2 (SN1S) Pile 6 to 13	1533+24	High	1	2	2	15	20	1	15
DMB2 (SN1S) Pile 14 to 29	1535+00	Medium	1	0	0	*	*	1	10
DMB2 (SN1N)	1536+75	High	1	1	3	25	35	1	15
DMB2 (SN3) Pile 1 to 14	1537+82	Very High	1	1	1	15	20	1	15
DMB2 (SN3) Pile 15 to 19	1538+14	High	1	1	1	15	20	1	15
DMB3 (SP1)	1539+21	Medium	1	0	0	*	*	1	10
DMB2 (SN7S)	1539+50	Low	0	1	1	*	*	1	0
DMB2 (SN7N)	1540+50	Medium	1	2	2	15	20	2	15
DMB2 (SN5) Pile 1 to 23	1542+50	Very High	1	0	0	*	*	1	10
DMB2 (SN5) Pile 24 to 32	1543+50	High	1	0	0	*	*	1	10
DMB2 (SN5) Pile 33 to 38	1544+69	Low	1	0	2	0	15	0	0

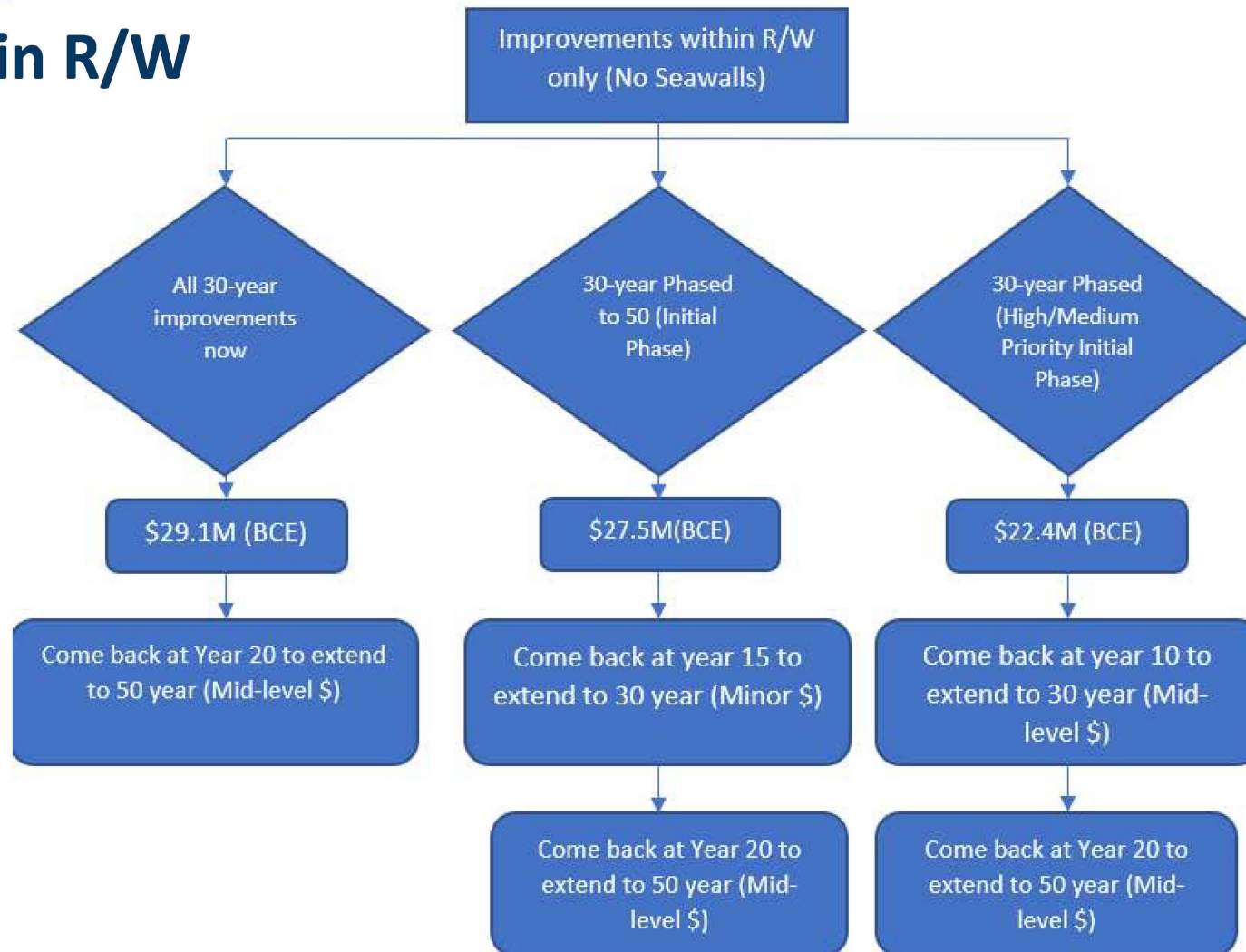
No additional tie-backs and lagging needed for 50 year service life, assuming ongoing maintenance of slope

* Cannot achieve 50-year design life with lagging and tiebacks. Construct inline piles instead.

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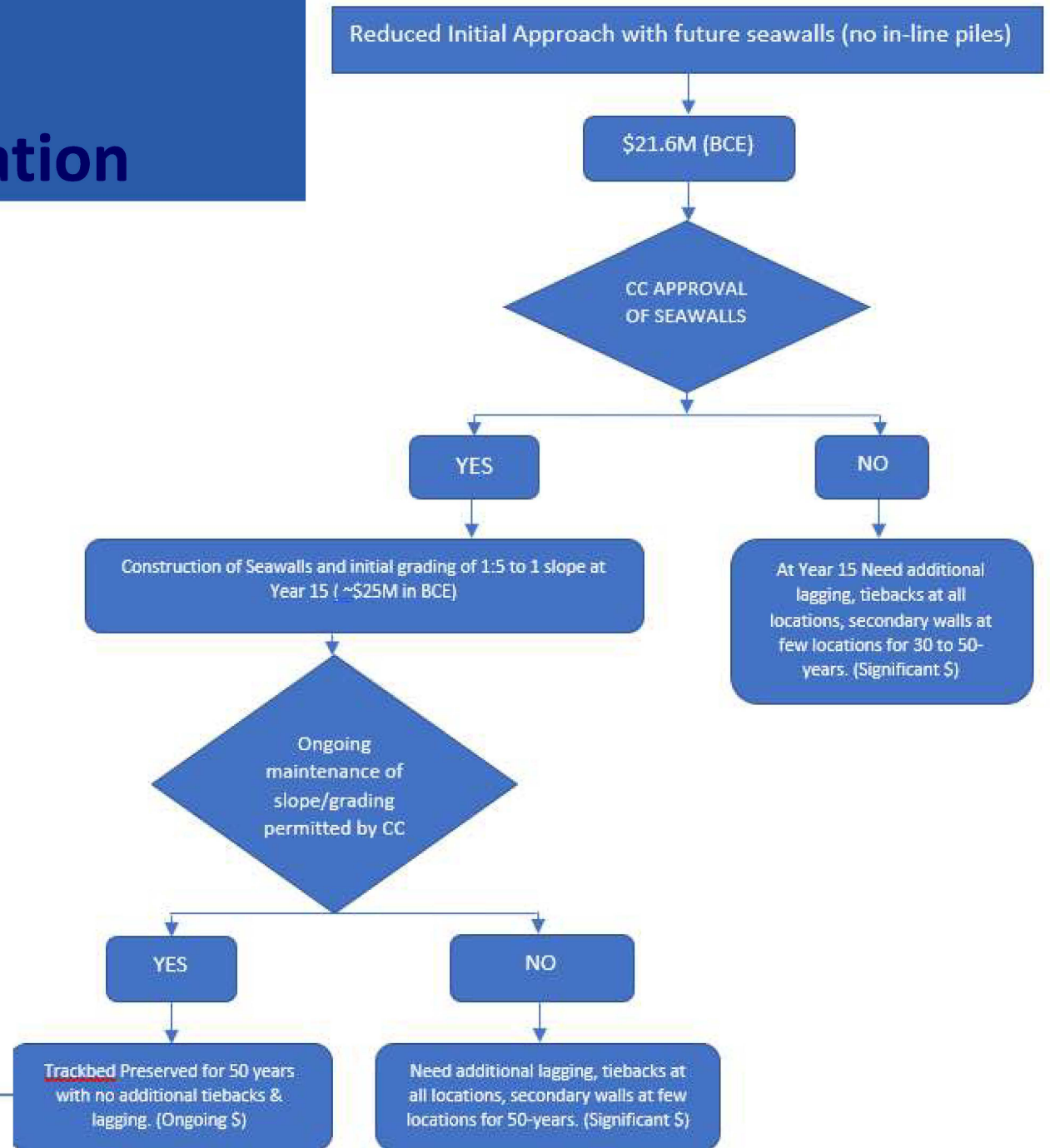
Alternative Evaluation

Within R/W



Del Mar Bluffs 5 Alternative Evaluation

Including Seawalls





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Del Mar Bluffs Stabilization Project 5 – Workshop 2, Day 3

October 9, 2020

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Del Mar Bluffs 5

Agenda



Overview of Underdrains (Interceptor Trench Drains)

- **Proposed Underdrain Improvements**
- **Underdrain Alternatives for Trench Area**
- **Underdrain Priorities and Costs**

Hydrology and Hydraulics

- **Overview of Drainage Conditions**
- **Existing RR Drainage Conditions**
- **Proposed Drainage Improvements and Alternatives**
- **Drainage Priorities and Costs**

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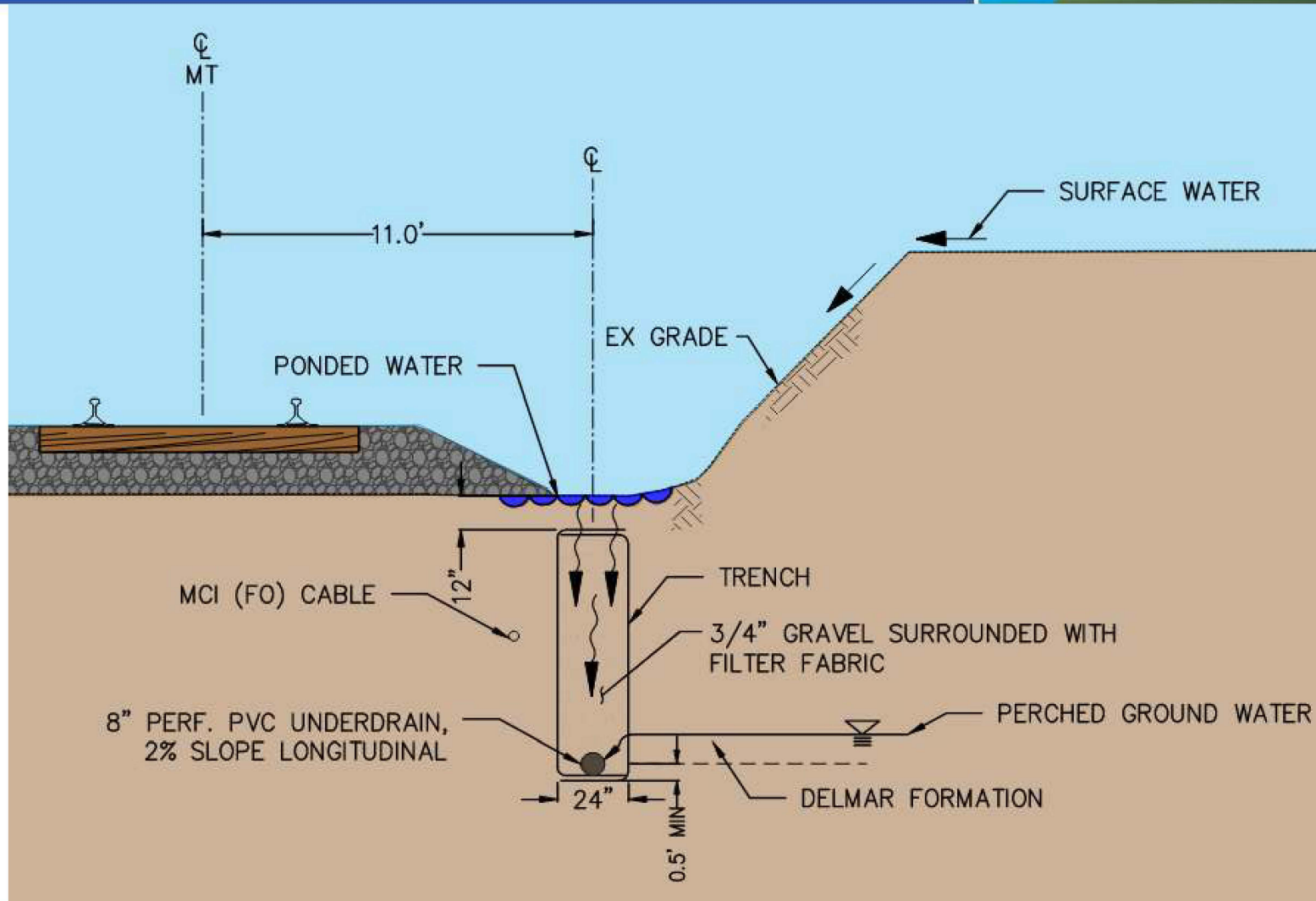
Proposed Underdrain Improvements



MP	Begin Station	End Station	Limits	Potential Underdrains
244.12	1544+00	1548+50	South of Coast Boulevard	450 Feet of New Underdrain
244.35	1534+00	1537+00	13 TH Street to Lois Lane	300 Feet of New Underdrain
244.45	1518+00	1531+00	Sea Orbit Lane to South of Shippey Ln	1,300 Feet of New Underdrain
245.39	1469+50	1481+50	South of Anderson Canyon	1,200 Feet of New Underdrain

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Proposed Underdrain Improvements



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Underdrain Priorities and Costs



Begin Station	End Station	Pipe Diameter	Depth	Outlet	Priority	Cost*
1544+00	1548+50	8-inch PVC	7 feet	Existing Storm Drain	High - Trackbed	\$66,433
1534+00	1537+00	8-inch PVC	15 feet	Existing Storm Drain	Medium - Bluff	\$56,767
1518+00	1531+00	8-inch PVC	20 feet	Existing Storm Drain	Low - Bluff	\$1,315,500
1469+50	1481+50	8-inch PVC	4 feet	New Surface Energy Dissipator	High - Trackbed	\$195,282

*Costs shown do not include potential MCI relocation.

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Drainage Patterns: Coast Blvd to Lois Lane



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Drainage Patterns: 12th St to 10th St



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Drainage Patterns: 9th St to Sherrie Ln



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Drainage Patterns: 7th St to Del Mar Heights Rd



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Drainage – Existing Conditions



13th Street Drainage System Improvements



Improve Water Catchment at Street End



Improve Trackside Drainage Ditches

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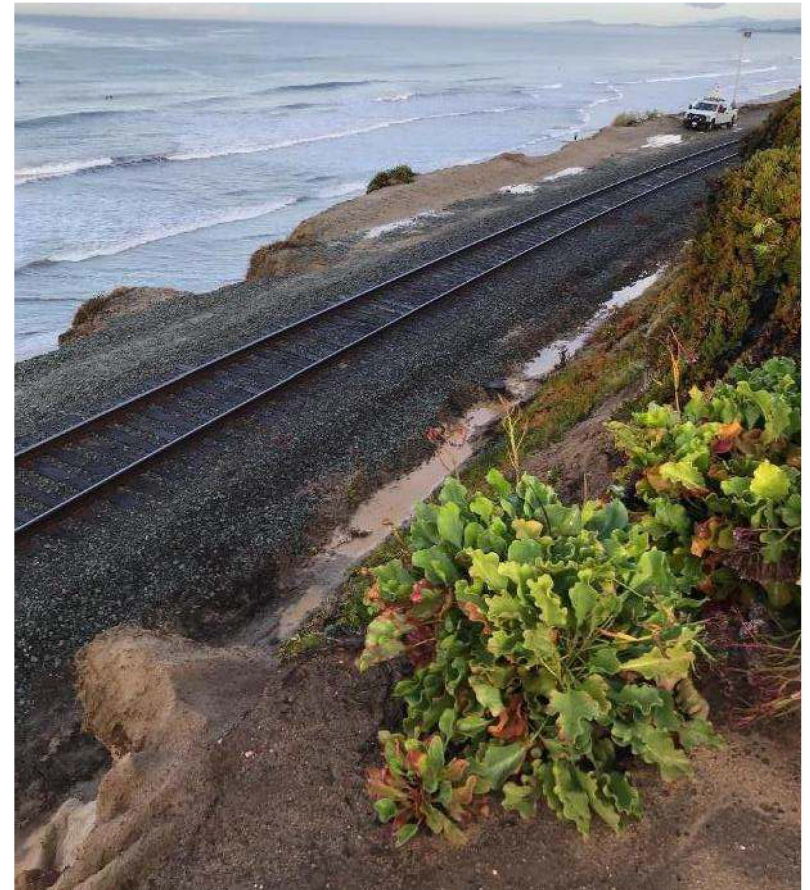
Drainage – Existing Conditions



Need for Improved Trackside Drainage



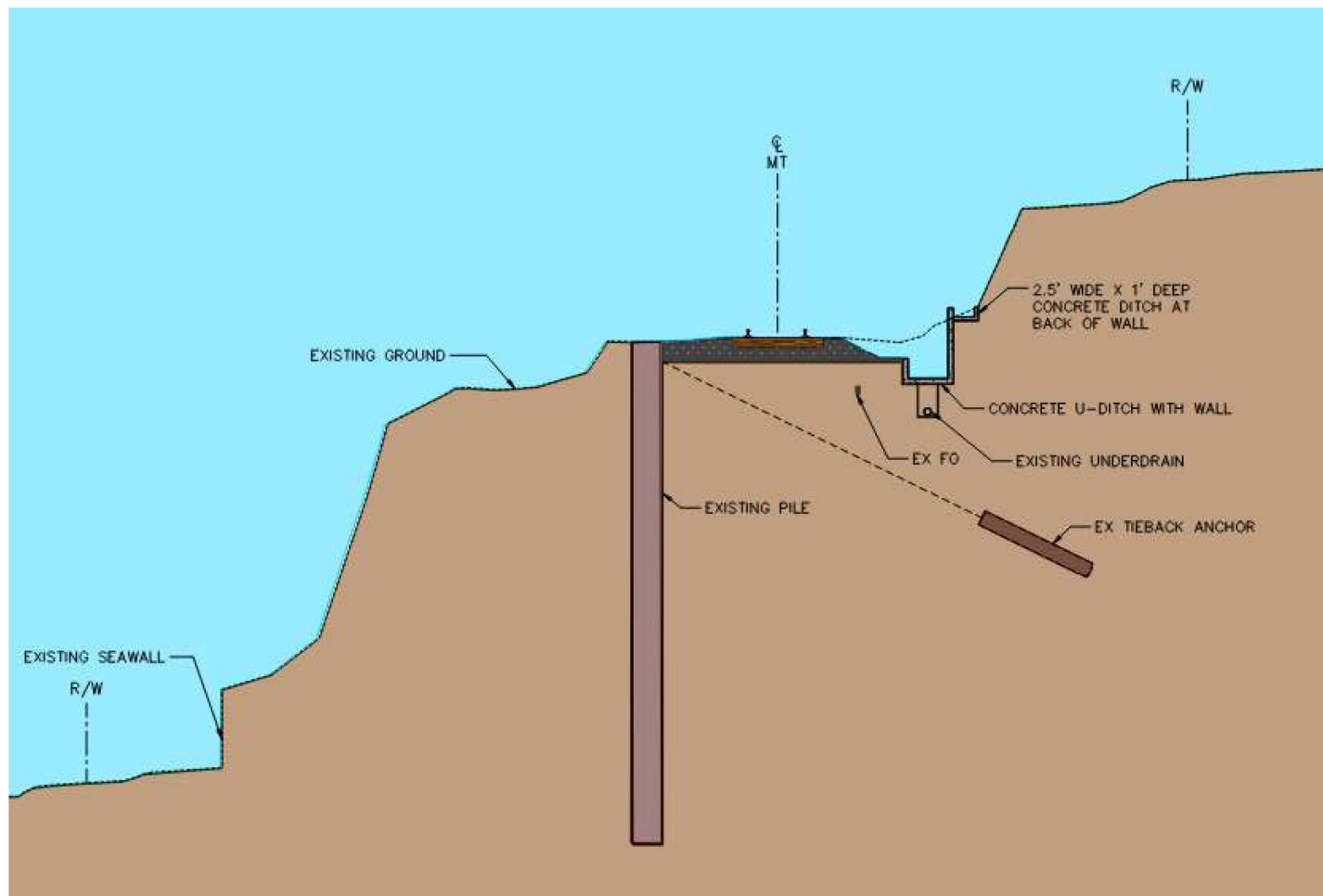
Drainage ponding along side of track



Erosion/excess flow from Seagrove Park

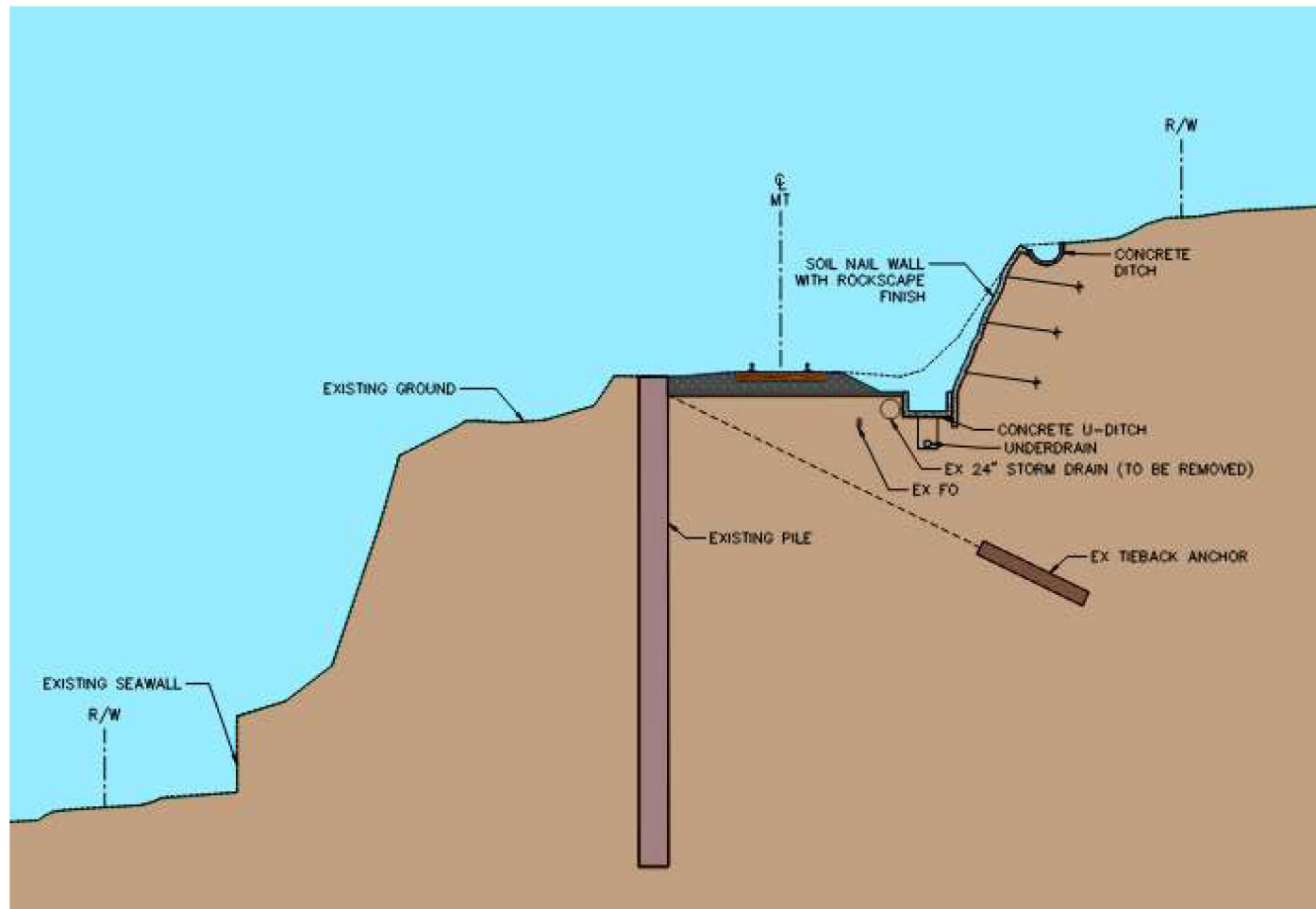
Del Mar Bluffs 5 Drainage –

Proposed Drainage Improvements Near 15th St



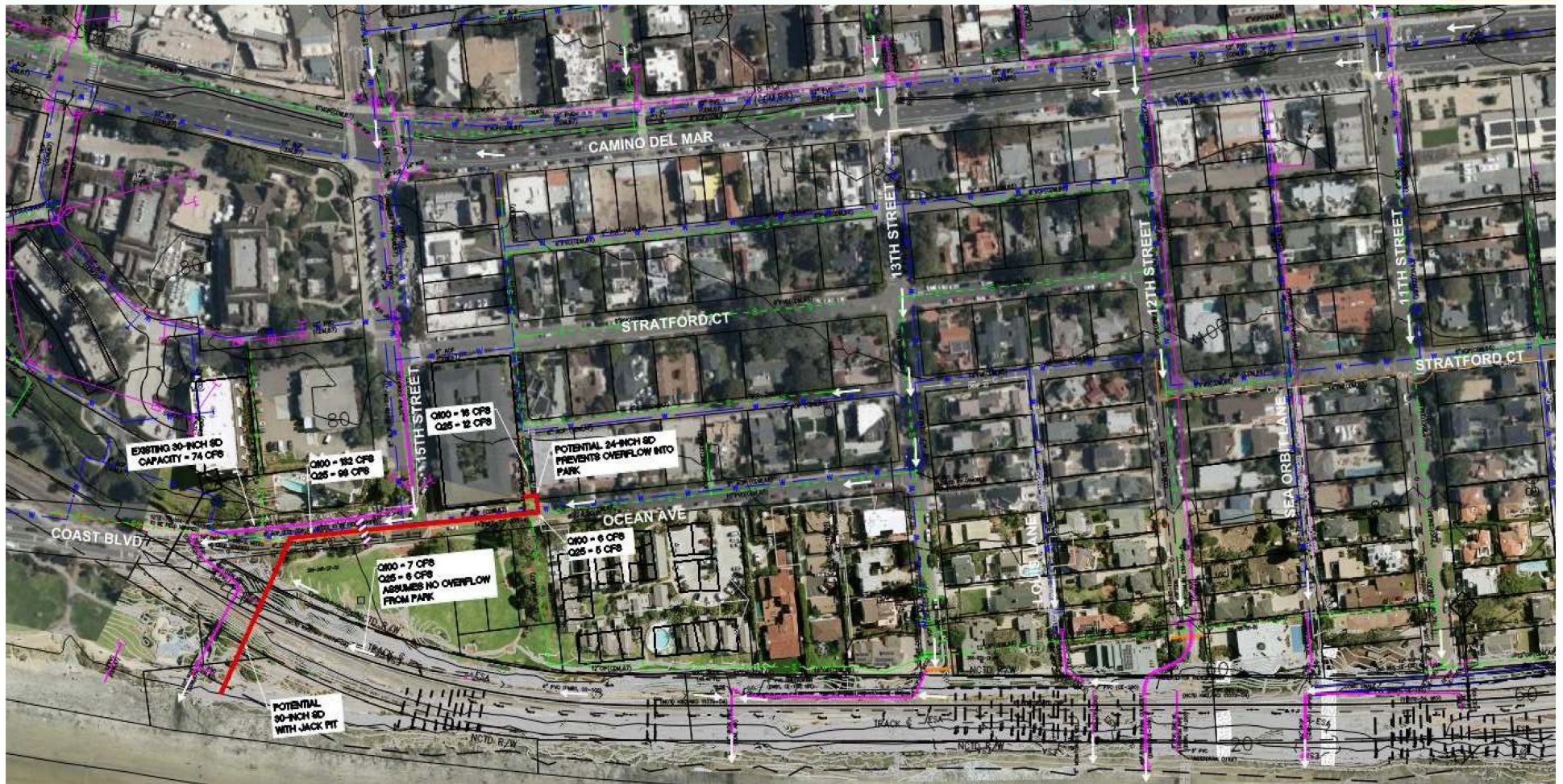
Del Mar Bluffs 5 Drainage –

Proposed Drainage Improvements Near 13th St



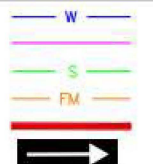
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SD Alternatives.pdf



LEGEND

EXISTING WATER
EXISTING STORM DRAIN
EXISTING SEWER
EXISTING FORCE MAIN SEWER
STORM DRAIN ALTERNATIVE
FLOW ARROW



Del Mar Bluffs 5

Drainage Priorities and Costs



Location	Priority	Cost of Proposed Improvements*
Drainage Area 1 – Coast Boulevard, MP244.16 – MP 244.22, West of Tracks	High	\$421,816
Drainage Area 2 - Coast Boulevard, MP244.16 – MP 244.3, East of Tracks	High	\$172,800
Drainage Area 3 – MP 244.3 – MP 244.4	High	\$1,940,800
Drainage Area 4 – MP 244.4 – MP 244.45	High	\$658,992
Drainage Area 5- MP 244.45– MP 244.8	High	\$1,155,200
Drainage Area 6 – MP 244.48– MP 244.71	High	\$233,880
Drainage Area 7– MP 244.64– MP 244.71	Medium	\$56,400
Drainage Area 8– MP 244.7	Medium	\$125,600
Drainage Area 9 - MP 244.8– MP 245.14	High	\$738,833
Drainage Area 10 - MP 244.83– MP 245.02	Medium	\$90,000
Drainage Area 11- MP 244.9	Low	\$20,000
Drainage Area 12 - MP 245.1– MP 245.06	High	\$206,500
Drainage Area 13 - MP 245.05	Low	\$20,000
Drainage Area 14 – MP 245.39-245.62	Medium	\$899,100
Drainage Area 15 – MP 245.06-245.22	High	\$332,500

***Costs shown are preliminary construction costs only, and do not include items such as mobilization, construction and site management, etc.**



B

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Oceanside, CA 92054
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September 28, 2020

Mr. Hasan Ikhata
Executive Director
San Diego Association of Governments
401 B Street, Suite 800
San Diego, CA 92101
Via electronic mail at: hasan.ikhata@sandag.org

Re: North County Transit District Projects: Federal Consistency Determination

Dear Mr. ~~Ikhata~~ ^{Hasan}:

This letter is in response to the email provided by the San Diego Association of Governments ("SANDAG") on September 17, 2020 regarding the meeting between SANDAG, the City of Del Mar ("City") and the California Coastal Commission ("CCC"), held in early September regarding the ongoing state of good repair project within the City ("Del Mar Bluffs 5" or "DMB5"); specifically the discussion and presentation of "mitigation alternative" options (attached). NCTD was never apprised regarding such a proposal in writing and the only comments actually provided on a draft of the "options" was that any such access-related mitigation would require a physical barrier to trespassing (fence) and/or a transfer of liability to the local agency, similar to the projects in the City of Encinitas.

As you are aware, NCTD (and SANDAG on its behalf) have encountered numerous proposed "conditions" and "mitigation" measures by the CCC on various project reviews including federal consistency determinations. Additionally, the City and its residents have been very vocal regarding the "right" to trespass across NCTD right-of-way in order to access the beach and City-maintained (or promoted) walking paths. NCTD has repeatedly taken the position that mitigation which exceeds a reasonable nexus and proportionality to the underlying projects are an improper use of project funds and prohibited under California law; and in fact many such impositions as a condition of approval (or any permitting process altogether) may in fact be entirely prohibited by federal law (see STB Finance Docket No. 34111, 2002).

SANDAG implements and carries out projects for NCTD under Addendum No. 18 to the Master Memorandum of Understanding ("Master MOU"), pursuant to Senate Bill 1703. SANDAG, as the lead agency as defined therein, is not acting on its own behalf without consideration or input from NCTD. In fact, NCTD has the sole and absolute discretion over transferred projects with respect to any elements impacting NCTD ownership interests or preservation of right-of-way for future use, as well as safety, operations and maintenance aspects (collectively, "NCTD's Control") (Addendum No. 18, Section D). Any unresolved matters related to NCTD's Control comments require SANDAG to obtain approval from NCTD's Executive Director and to confirm comment status before making any decisions on proceeding with bidding the design for construction. NCTD has codified this approval process in NCTD Administrative Policy GM-0023 which has been provided to and remains available to SANDAG.

SANDAG has repeatedly moved forward with "preliminary", "tentative" and "conditional" designs and project options with regulatory agencies, local jurisdictions and other stakeholders without obtaining written approval of such elements from NCTD pursuant to Addendum No. 18, and as provided in NCTD Administrative Policy GM-0023. Once such proposals are in the public arena, they are very difficult, if not impossible, to materially alter. Additionally, SANDAG relies on Addendum No. 18, Section B.4¹, to shift the burden and cost of compliance with these "preliminary" design options and alternatives to NCTD.

Recently, NCTD has filed a request for declaratory relief with the Surface Transportation Board (STB) to settle an open question arising from its 2002 decision regarding the state and local approval process and specifically the permitted scope of review of the CCC. Historically, SANDAG has worked with the CCC to implement minor conditions of approval related to a project in an effort to collaborate with local staff in good faith without the detailed legal analysis of the permissibility of such conditions under federal law. NCTD has concurred with many of these determinations in an effort to complete projects timely and in a cost-effective matter. Any prior consent was in the spirit of cooperation and not due to any legal obligation and was *de minimis* in the context of project costs. However, past concurrence in an effort to see a project to timely completion cannot be considered a waiver of NCTD's rights and obligations under the Master MOU, Addendum No. 18 and applicable state and federal law.

By this letter, NCTD is requesting SANDAG to adhere to the requirements set forth in Addendum No. 18 and Administrative Policy GM-0023. Additionally, NCTD is providing notice to SANDAG that any conditions, preliminary design or publicly proposed mitigation not previously approved in writing by NCTD for any transferred project under Addendum No. 18 shall be the sole financial burden of

¹ Addendum 18, Section B.4: Ongoing maintenance, security and liability for mitigation property after compliance with and acceptance of a mitigation site by the permitting agency shall be the responsibility of the agency maintaining ownership or control of the property.

SANDAG, without contribution from NCTD, for implementation, construction and continued maintenance.

Should you have any questions or concerns, please reach out to me at (760) 967-2869 or via email at mtucker@nctd.org.

Sincerely,



Matthew O. Tucker
Executive Director

Enclosure: Presentation – Del Mar Bluffs Mitigation Opportunities

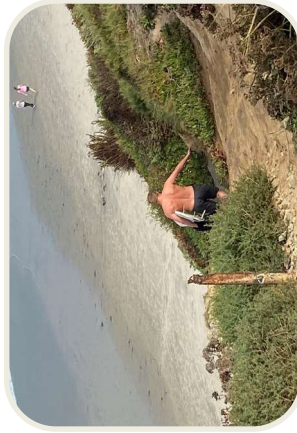
cc: Jim Linthicum, Chief Capital Programs and Regional Services Officer,
SANDAG
John Haggerty, Director of Engineering and Construction, SANDAG
Tracey Foster, Chief Development Officer, NCTD

Del Mar Bluffs Mitigation Opportunities



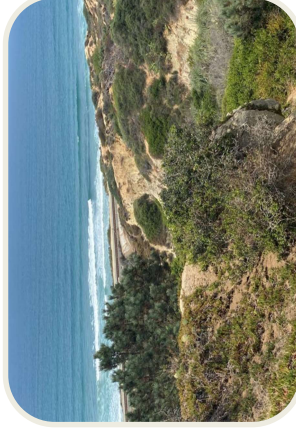
Types of Coastal Mitigation

Public Access/ Recreation



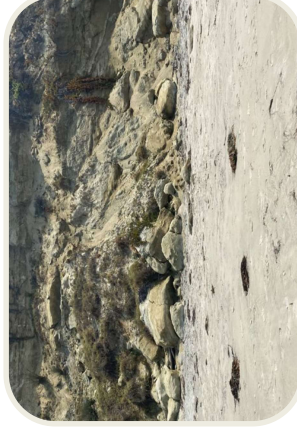
*Formalizing existing access
or providing new access to
the beach where feasible*

Public Views



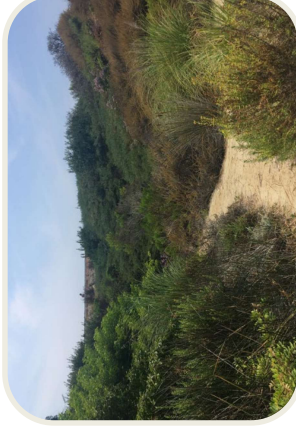
*Minimizing adverse effects
to scenic views through
landscaping and texturizing
structures*

Coastal Resources



*Protecting coastal resources
with projects like sand
distribution maintenance and
water quality improvements*

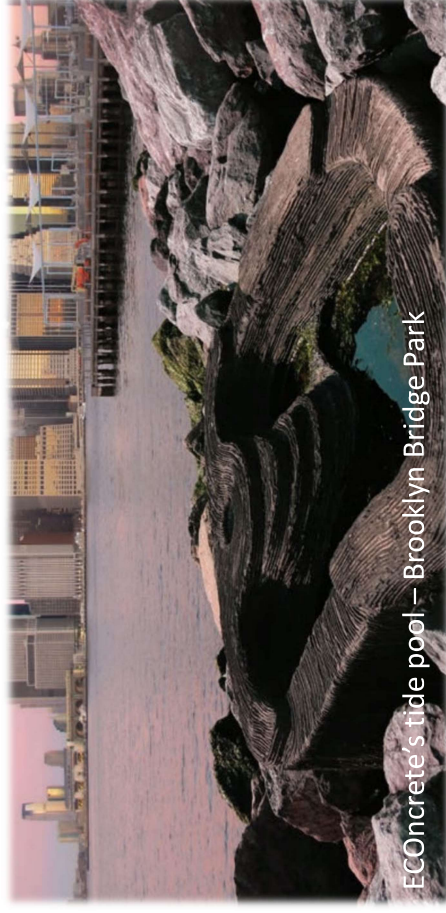
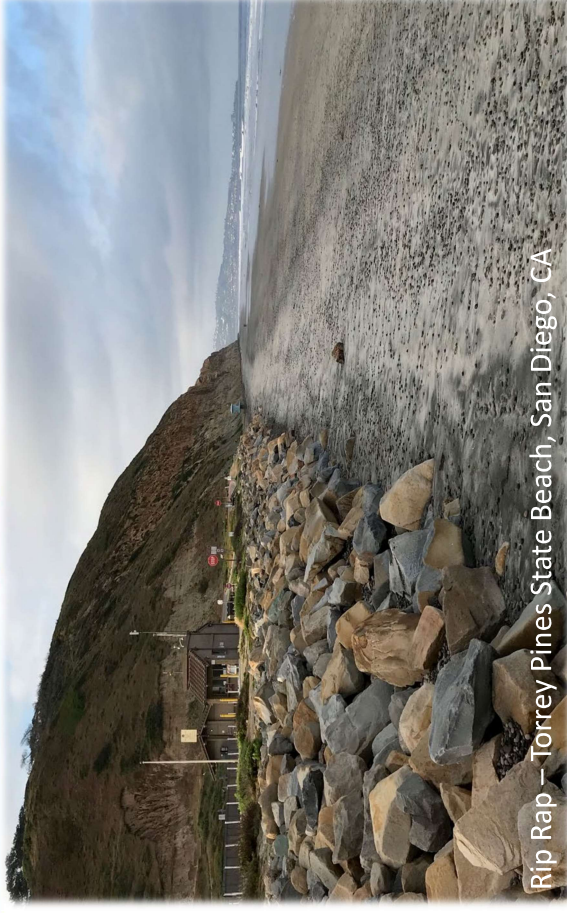
Biological Resources



*Restoring, enhancing, and
preserving native habitat*

Public Views Potential Mitigation

- Rockscaping/Colorization and Texturization
- Annual reporting to CCC Executive Director
- Bury soldier piles
- Bury/Remove drainage structures
- Integration of native materials and rocks (i.e. erodible concrete)
- Replaceable toe protection with visually compatible material types

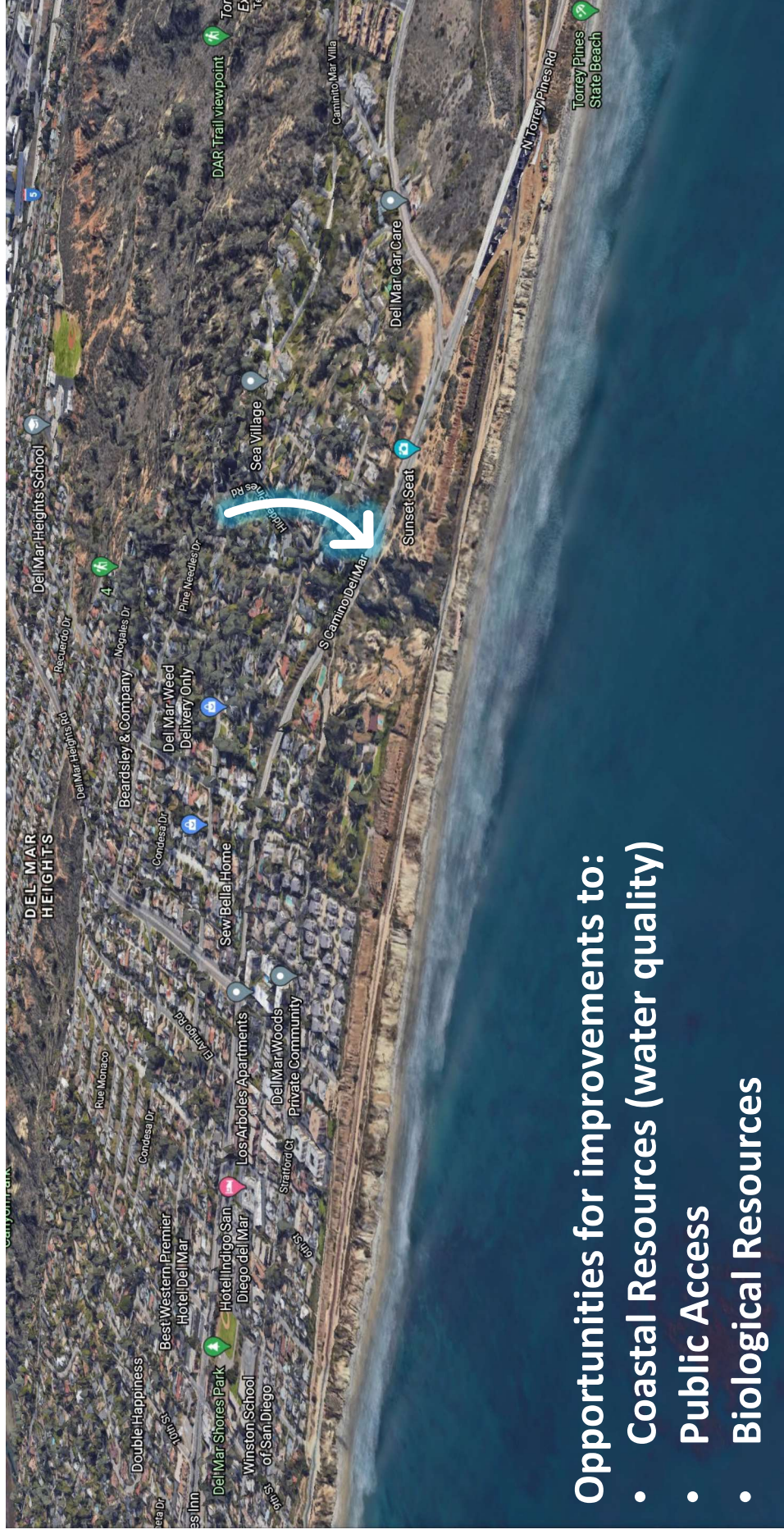


Public Access/Recreation Potential Mitigation

- Powerhouse Park/Walkway Lighting
- Eroded Gully near Carmel Valley Road and Hwy 101 Intersection
- In-lieu Mitigation Fee (recreation)
- Improve Coastal Access
 - **Short Term:** Collaborate with City of Del Mar
 - **Mid Term:** Partner with State Parks
 - **Long Term:** Implement Linda Culp's Access Study
- Improve Coastal Access through fill and slope restoration in areas previously subjected to failure or erosion
- Slope failure near Anderson Canyon
- Endowment fund for wintertime beach scour at staircases



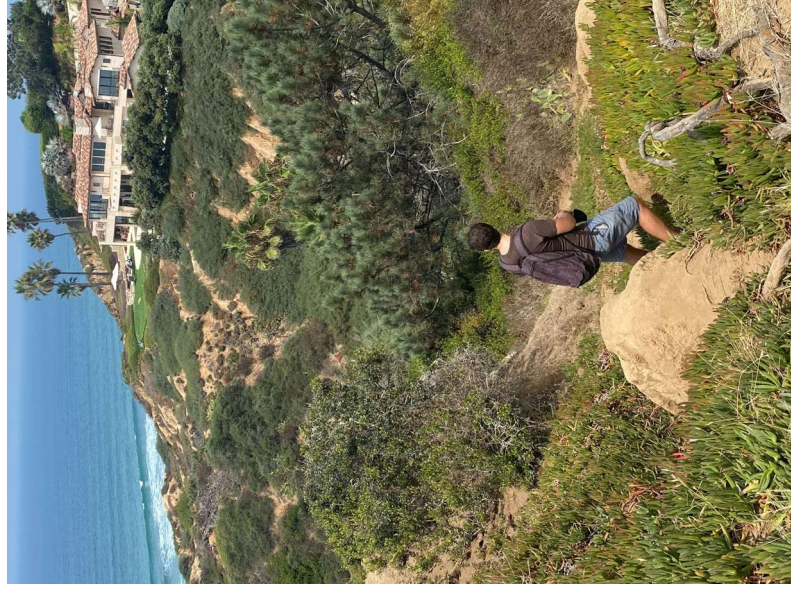
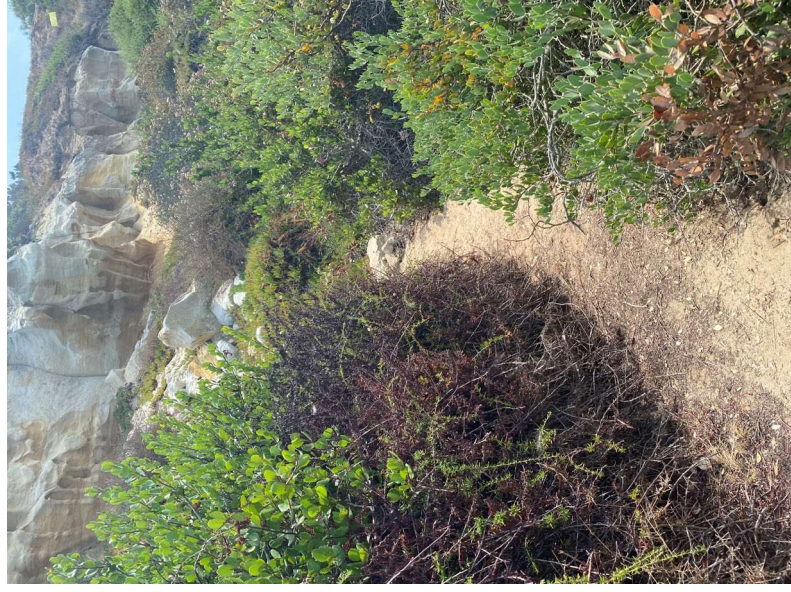
Anderson Canyon Restoration Project



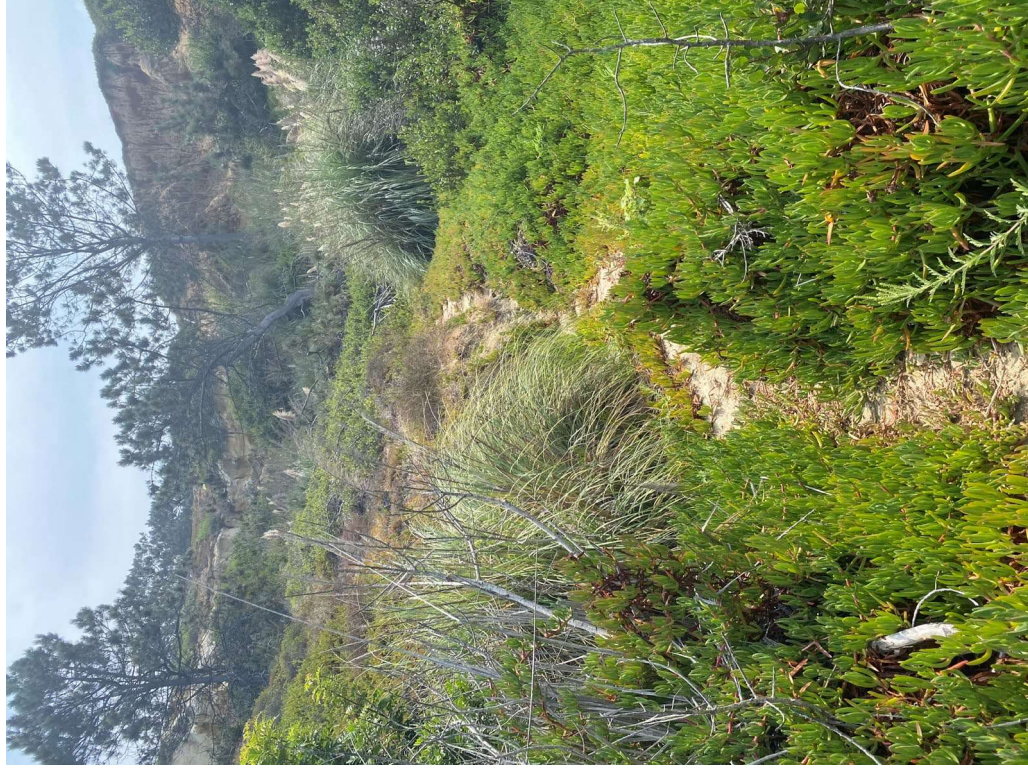
Anderson Canyon Restoration: Improve water quality



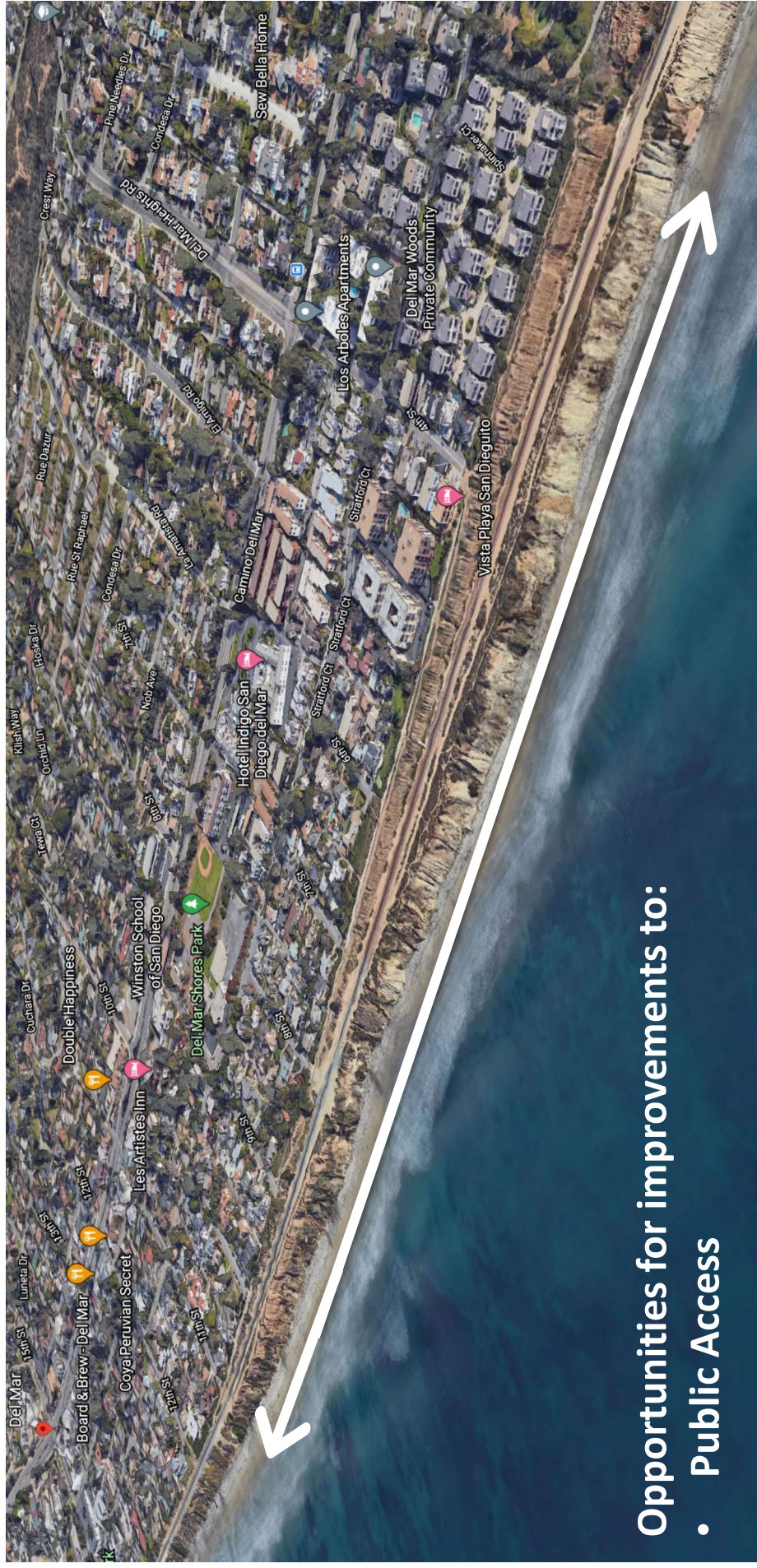
Anderson Canyon Restoration: Formalize beach access trail



Anderson Canyon Restoration: Restore native habitat



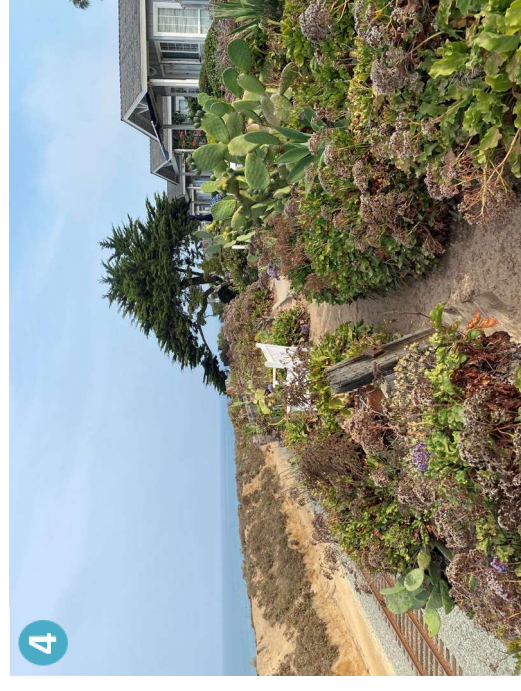
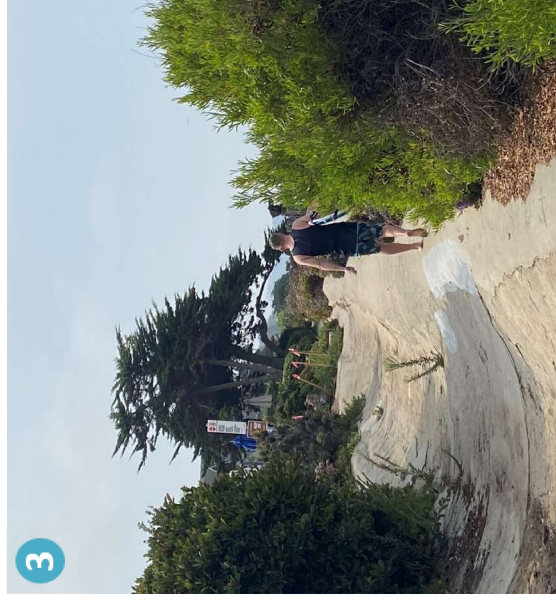
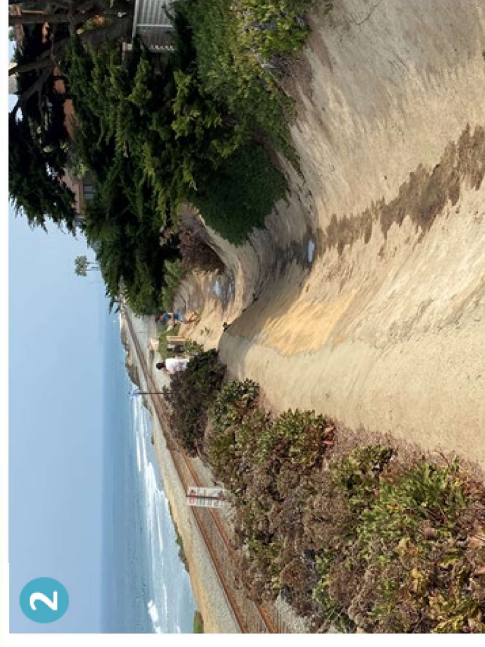
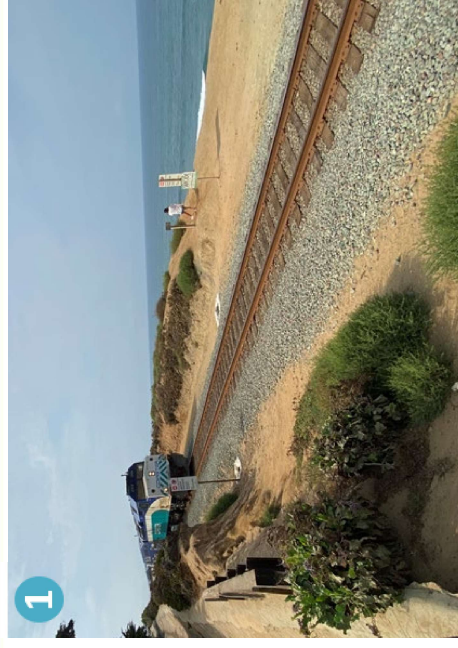
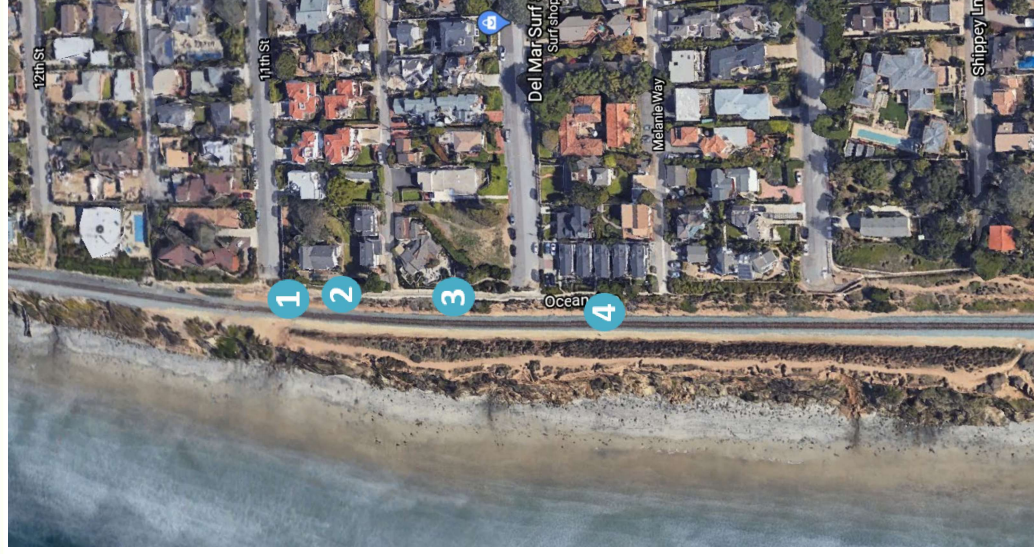
Upper Bluff Lateral Access



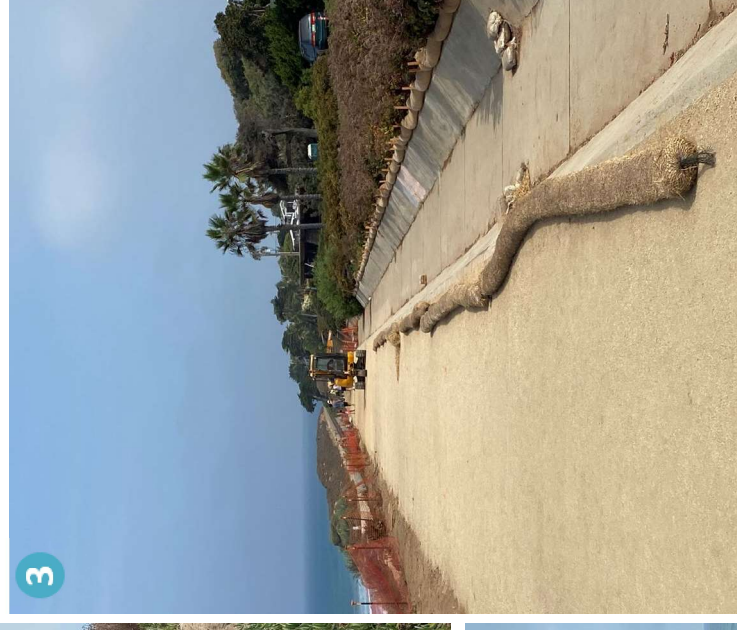
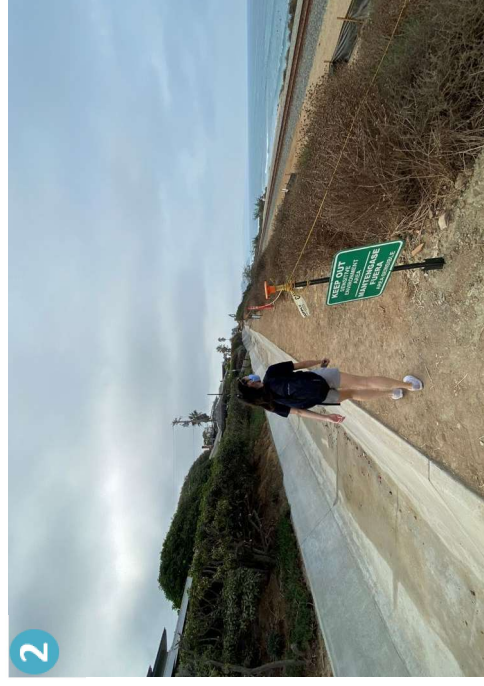
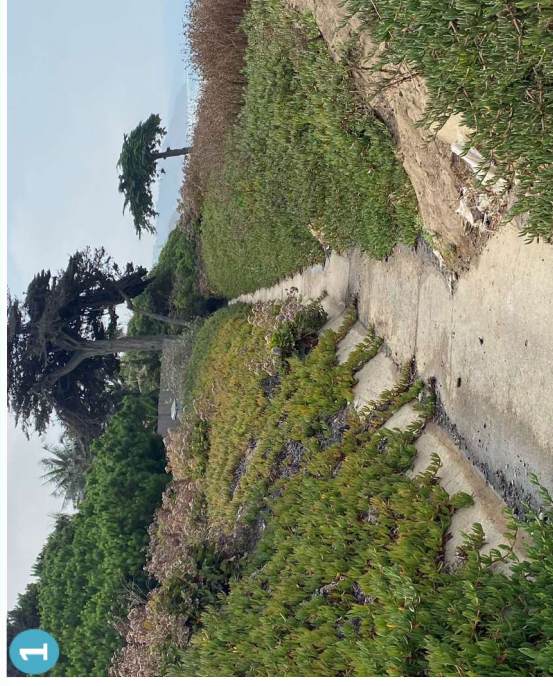
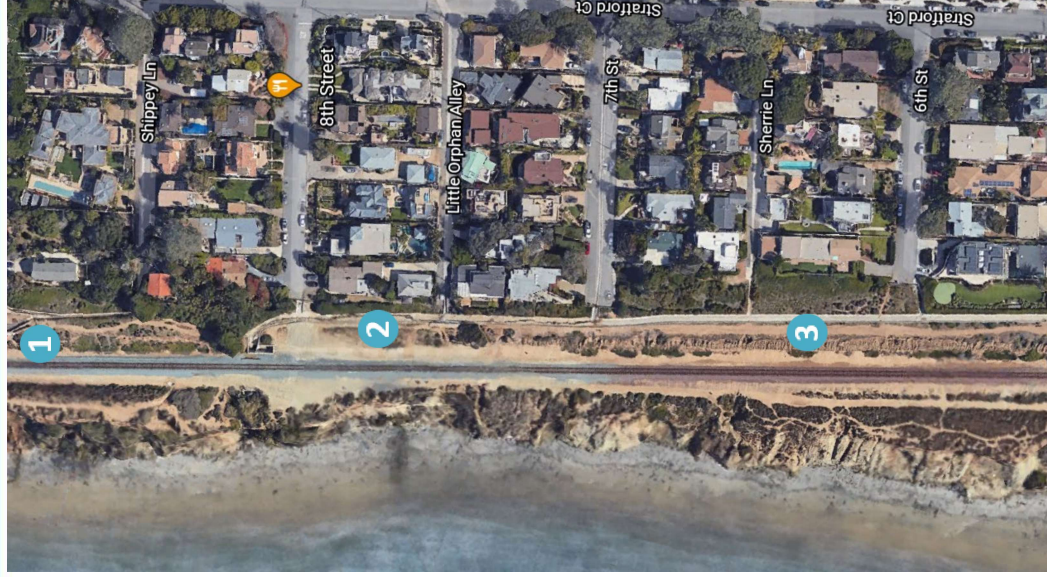
Opportunities for improvements to:

- Public Access

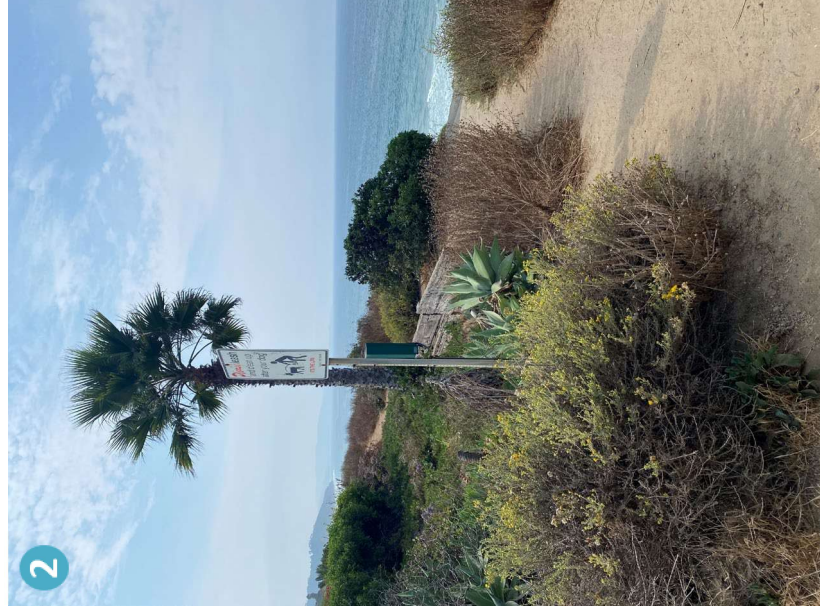
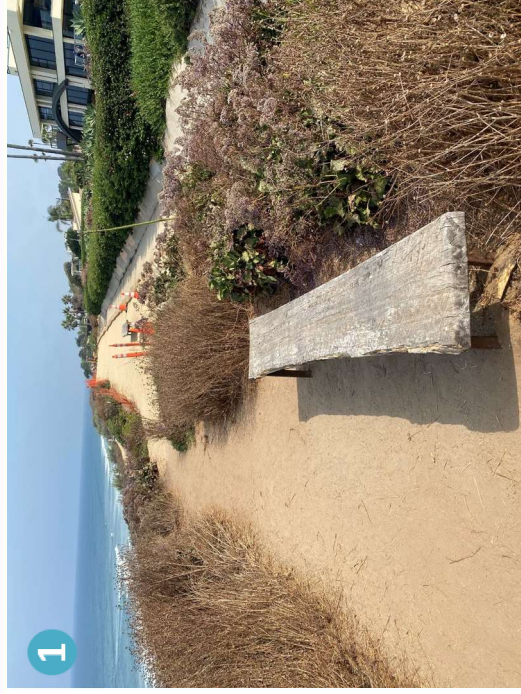
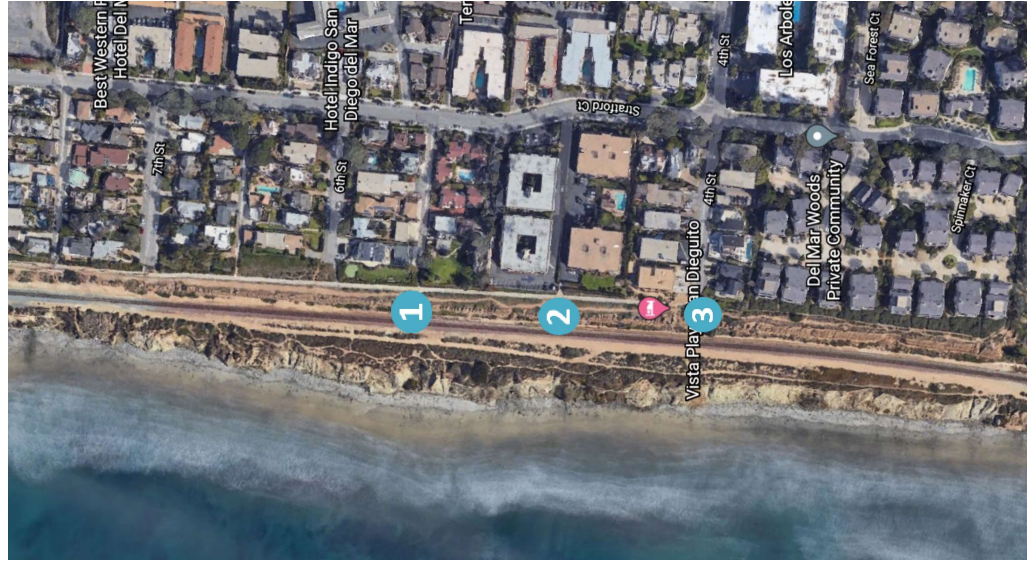
Upper Bluff Lateral Access: Formalize existing trail



Upper Bluff Lateral Access: Formalize existing trail

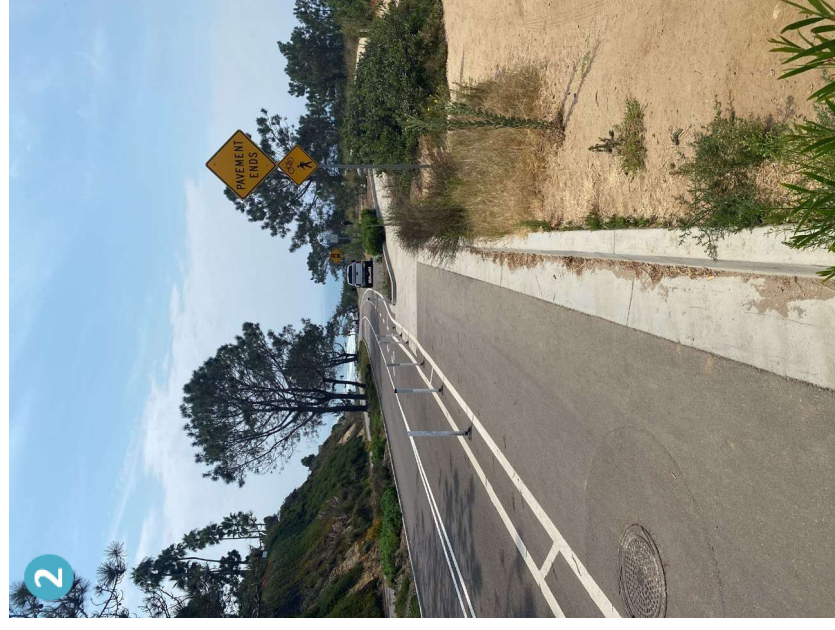
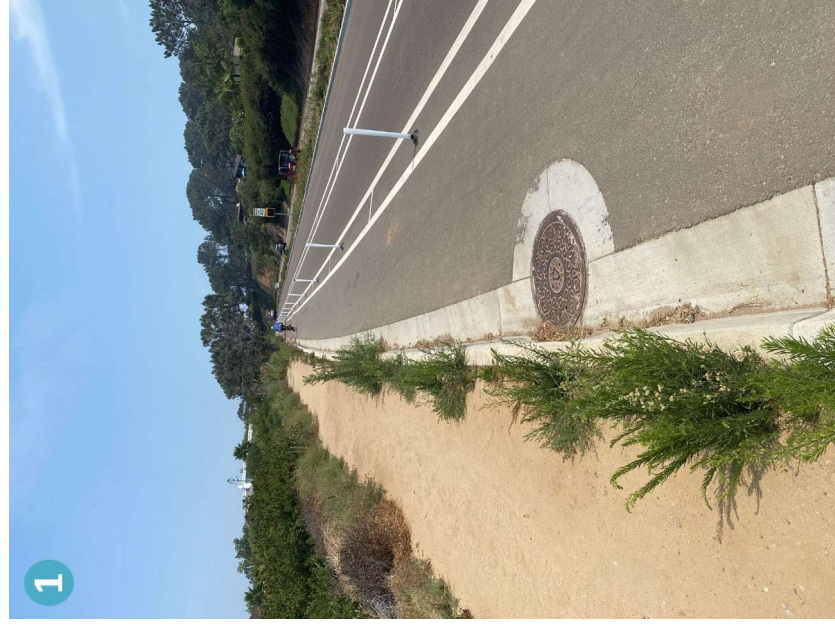
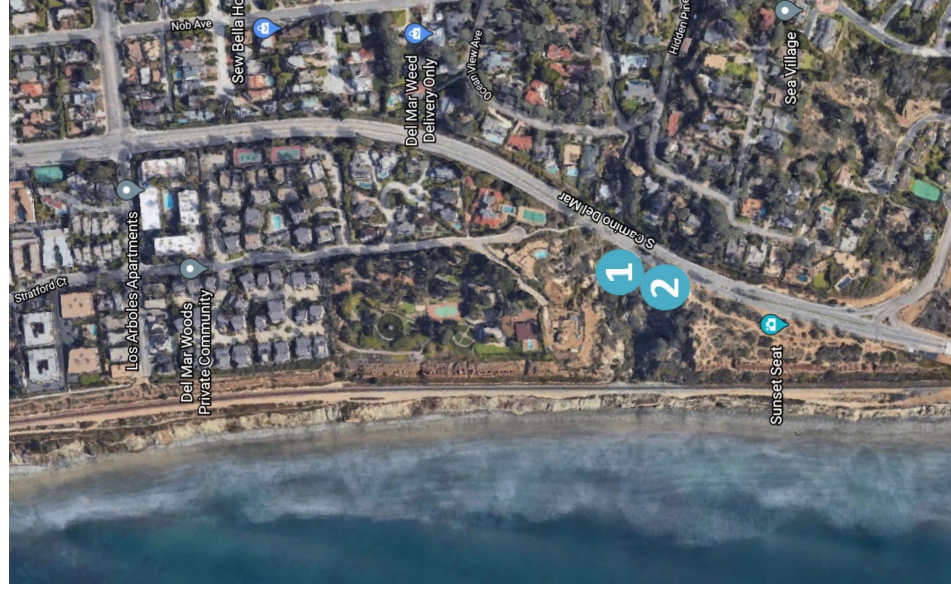


Upper Bluff Lateral Access: Formalize existing trail



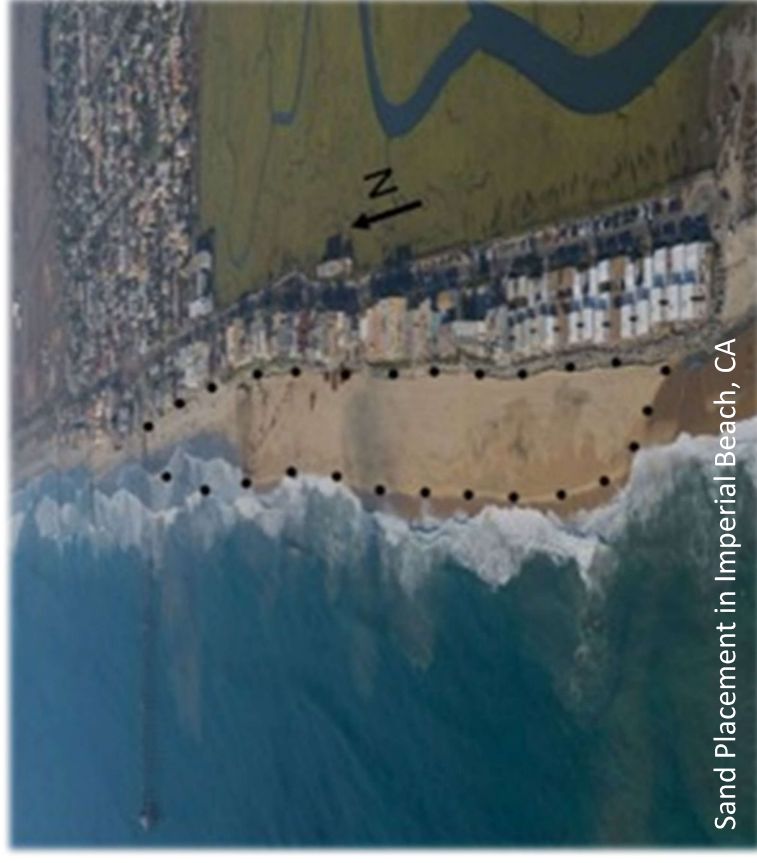


Additional Opportunity: Increase parking on Camino Del Mar



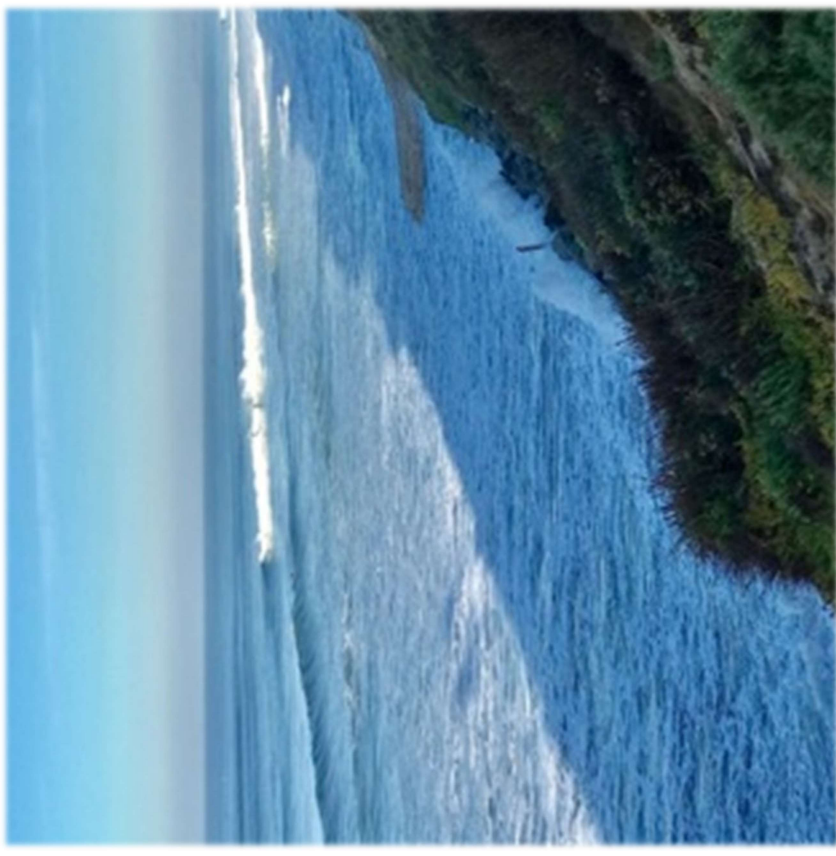
Coastal Resources Potential Mitigation

- In-lieu Mitigation Fee (sand)
- Long-term Public Access Improvement Plan
- Sea Level Rise Vulnerability Assessment
- Beach Nourishment Projects
- Other?



Biological Resources Potential Mitigation

- Restoration of temporary impacts
- Avoidance of ESHA during construction
- Implementation of North Coast Corridor REMP
- Collaboration with Los Peñasquitos Lagoon Foundation to implement Lagoon Enhancement Plan
- Collaboration with State Parks
 - Least terns and snowy plover issue
 - Habitat restoration
- Collaboration with San Dieguito Lagoon Foundation



Open Discussion Notes

- Coordinate with NCTD
- Continue conversation with City of Del Mar group + organize field walk
- Additional ideas:
 1. Wintertime endowment fund for beach scouring at staircases leading down to the beach
 2. DMB 5 design: potential for water quality improvements (putting filter in drainage basins at the end of streets to prevent from draining into beach)
 3. Anderson Canyon Restoration can be part of DMB 6 *Restoration Vision* (include water quality improvements, operational improvements like lifeguard towers etc.)