

Memorandum

*Making Conservation
a California Way of Life.*

To: Amanda Lee
Environmental Coordinator
Caltrans District 1 Eureka

Date: June 8, 2022

File: 01-0B220
EFIS 0112000110
MEN 01 59.8/62.1

From: Amanda Haas
Water Quality
NR Office of Environmental Engineering - Eureka

**Subject: UPDATE TO WATER QUALITY ASSESSMENT MEMORANDUM FOR FORT BRAGG
ADA PROJECT**

Project Description

The project would upgrade a section of State SR (SR) 1 to current Americans with Disabilities Act (ADA) standards from post miles (PM) 59.80 to 62.10 in the city of Fort Bragg, Mendocino County, California. This project is included in the ADA Compliance Program of the State Highway Operation and Protection Program (SHOPP). The project limits would begin at the intersection of SR 20 north to Elm Street, with a gap in work along the Noyo River Bridge. This project is needed to address ADA deficiencies. This segment of SR 1 is within the city of Fort Bragg and was identified as a priority location for ADA upgrades due to its urban nature, traffic volumes, and pedestrian traffic.

There is currently one alternative for the proposed project. To bring this location of SR 1 to current ADA standards, the scope of work would entail reconstructing approximately 1,900 linear feet of sidewalk, installing approximately 2,300 linear feet of new sidewalk, constructing 36 curb ramps, installing two new retaining walls, performing associated drainage inlet and culvert work, and placing pavement markings at specified locations.

The proposed retaining wall #1 from the intersection of SR 20 and SR 1 (PM 59.8) to Boatyard Drive (PM 60.0) ranges from 3'-4" to 6' max at its highest point near SR 20 and would reduce in height moving north. The retaining wall would be approximately 780 linear feet long, 1 foot wide with a concrete footing that would be 7 feet wide and 2 feet deep. The maximum depth of excavation is estimated to be 3 feet from the finished grade. Proposed retaining wall #2 is located intersection of SR 1 and Spruce Street, from PM 61.9 to PM 62.0. The proposed wall is 128 linear feet long, 4 feet high and 1 foot wide with a concrete footing that would be

4 feet wide and 2 feet deep. The maximum depth of excavation is estimated to be 3 feet from the finished grade. Cable railing would be installed on top of the retaining walls, and the face of the walls would be smooth to allow for future art installations.

This project would require Temporary Construction Easements (TCEs) for 30 properties. As of March 2022, Caltrans has obtained all 30 TCEs. Installation of new sidewalks, driveways, and retaining walls would involve minor clearing and grubbing of soil and vegetation. No trees would be removed for this project. Staging is anticipated to utilize existing paved shoulders and developed gravel turnouts. Temporary traffic control would be used, as required for safety, and consist of portable delineators and traffic signs for a single lane closure for all phases of the project.

The following equipment would be utilized to perform the various construction activities: bulldozer, excavator, saw cutter, slip form paving machine, concrete mixer, and support trucks.

Regulatory Setting

The proposed project is subject to policies and regulations that are currently in place to protect surface water quality. These stormwater and non-stormwater discharge requirements require Caltrans to implement operational controls for proper runoff management and adequate water quality treatment. The project is required to comply with the following federal and state water quality regulations;

- Clean Water Act sections 303, 401, 402, and 404;
- Water Quality Control Plan for the North Coast Region (Basin Plan) (North Coast Regional Water Quality Control Board [NCRWQCB 2011]);
- California Department of Transportation (Caltrans) Statewide NPDES Storm Water Permit (Caltrans NPDES Permit) Order 2012-0011-DWQ (State Water Resources Control Board [SWRCB 2012]);
- General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit (CGP)) Order 2009-0009-DWQ (as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ) (SWRCB 2014).

Clean Water Act Section 401 regulations allow the Executive Officer of the Regional Boards wide discretion in implementing Basin Plan requirements and water quality objectives (WQOs), including Section 303(d) of the Clean Water Act. The proposed project is within State Water Board (SWB) Region 1. Water quality regulations within Region 1 are administered by the North Coast Regional Water Quality Control Board (NCRWQCB) which regulates stormwater and non-stormwater discharges through the 401 Certification program. The NCRWQCB requires that all projects subject to 401 Certification evaluate the implementation of post-construction stormwater treatment BMPs to treat stormwater discharged from the Caltrans right-of-way. Post-construction treatment BMPs are required for any increase in impervious surface area; or modification to the location, rate, or volume of existing stormwater discharges. Any required control measures will be addressed in the NCRWQCB 401 Certification Application (North Coast RWQCB 2012; Section 5, A and B).

Under CWA Section 404, a permit program administered by the United States Army Corps of Engineers (USACE) regulates the discharge of dredge and fill materials into waters of the U.S., including traditional navigable waters, interstate waters, and impoundments of jurisdictional waters which are jurisdictional by rule.

Depending on the chosen alternative, the project may or may not be subject to CWA Section 404 regulations and permitting. The proposed project is within the USACE San Francisco District regulatory consultation boundary.

The Water Quality Control Plan for the North Coast Region (Basin Plan) sets forth water quality standards and water quality objectives (WQOs) for surface water and groundwater of the Klamath River and North Coastal basins (NCRWQCB 2011). The plan designates beneficial uses for water bodies and establishes WQOs, waste discharge prohibitions, and other implementation measures to protect those beneficial uses. State water quality standards also include an *Anti-degradation Policy* for the protection of beneficial uses. Water quality control measures include total maximum daily loads (TMDLs), which are often, but not always, adopted as Basin Plan amendments. Stormwater discharges from Caltrans Right-of-Way are required to meet water quality criteria established in the North Coast RWQCB Basin Plan, in accordance with Caltrans NPDES Permit.

The SWRCB issued a statewide National Pollution Discharge Elimination System (NPDES) permit to Caltrans (Order 2012-0011-DWQ) to regulate stormwater and some non-stormwater discharges from the Caltrans right-of-way. The Caltrans NPDES Permit also requires post-construction treatment BMPs for increases in impervious surface area of one acre or more and any alterations to existing flow patterns (e.g., hydromodification). The permit also requires that

Caltrans construction projects disturbing one or more acres of soil obtain coverage under the Statewide Construction General Permit (CGP).

Every applicant for a federal permit or license for any activity that may result in a discharge of dredge or fill material to waters of the U.S. must obtain a CWA Section 401 Water Quality Certification. However, if a proposed project does not require a federal permit but does involve dredge or fill activities that *may* result in a discharge to "Waters of the State", the Regional Board has the option to regulate the project under state authority (Porter-Cologne) in the form of *Waste Discharge Requirements* (WDRs) or *Waiver of Waste Discharge Requirements*. The proposed project is within North Coast RWQCB jurisdiction.

Since the project is located within and adjacent to "Waters of the State", it may impact those waters, and will be required to apply for a Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill Projects). The regulations apply to all "Waters of the State", including isolated wetlands and stream channels that may be dry during much of the year, or have been modified in the past, look like a depression or drainage ditch, or have no riparian corridor (NCRWQCB 2016). As currently proposed, the project is anticipated to have no water quality permits, as confirmed with project coordinator Amanda Lee on June 8, 2022.

Hydrology

The project location lies within the Mendocino Coast hydrologic unit and Noyo River hydrologic area (Table 1). The Mendocino Coast incorporates nine hydrologic areas (California Water Boards 2017). The unit can be described as an area of coastal streams in Mendocino and northern Sonoma Counties which drain into the Pacific Ocean. Drainage systems include the Usal Creek drainage in the north and the Russian Gulch drainage in the south (California Regional Water Quality Control Board 2001). Among the various watersheds located within the unit, TMDLs have been developed for the Ten Mile River, Noyo River, Navarro River, and Garcia River (California Water Boards 2017).

Table 1: Hydrologic Information

Route	Post Mile	Hydrologic Unit	Hydrologic Area	Hydrologic Sub-Area	Watershed	TMDL*	Beneficial Uses
-------	-----------	-----------------	-----------------	---------------------	-----------	-------	-----------------

Update: Water Quality Assessment Memorandum

June 8, 2022

01-0B220, Fort Bragg ADA

01	59.8 - 62.1	Mendocino Coast	Noyo River	113.20	Pudding Creek-Frontal Pacific Ocean	Sedimentation /Siltation	MUN, AGR, IND, PRO**, GWR, FRSH, NAV, POW, REC1, REC2, COMM, COLD, WILD, RARE, MIGR, SPWN, EST, AQUA
01	60.2 - 60.5	Mendocino Coast	Noyo River	113.20	Noyo River	Sedimentation /Siltation	MUN, AGR, IND, PRO**, GWR, FRSH, NAV, POW, REC1, REC2, COMM, COLD, WILD, RARE, MIGR, SPWN, EST, AQUA

* 303(d) listing

** Potential Beneficial Use

Beneficial Uses

MUN Municipal and Domestic Supply
 AGR Agricultural Supply
 IND Industrial Service Supply
 PRO Industrial Process Supply
 GWR Groundwater Recharge
 FRSH Freshwater Replenishment
 NAV Navigation
 POW Hydropower Generation
 REC-1 Water Contact Recreation
 REC-2 Non-Contact Water Recreation
 COMM Commercial and Sport Fishing
 WARM Warm Freshwater Habitat
 COLD Cold Freshwater Habitat
 ASBS Preservation of Areas of Special Biological Significance

SAL Inland Saline Water Habitat
 WILD Wildlife Habitat
 RARE Rare, Threatened, or Endangered Species
 MAR Marine Habitat
 MIGR Migration of Aquatic Organisms
 SPWN Spawning, Reproduction, and/or Early Development
 SHELL Shellfish Harvesting
 EST Estuarine Habitat
 AQUA Aquaculture
 CUL Native American Culture
 FLD Flood Peak Attenuation/ Flood Water Storage
 WET Wetland Habitat
 WQE Water Quality Enhancement
 FISH Subsistence Fishing

Table 2: Water Quality Objectives

Beneficial use	Dissolved Oxygen	Temperature	Turbidity	Total Dissolved Solids (mg/L) Requirement	Specific Conductance (micromhos) @ 77°F Requirement	pH
----------------	------------------	-------------	-----------	---	---	----

	Daily Minimum Objective (ml/L)	7-Day Moving Average Objective (mg/L)	°F	NTU	90% Upper Limit ³	50% Upper Limit ⁴	90% Upper Limit ³	50% Upper Limit ⁴	Max	Min
COLD ¹	6	8	No more than 5°F above natural receiving water temp							
SPWN ²	9	11								
All				No more than 20 percent above naturally occurring background levels.	120 ⁵	105 ⁵	185 ⁵	150 ⁵	8.5	6.5

¹ Water quality objectives designed to protect COLD-designated waters are based on the aquatic life-based requirements of salmonids but apply to all waters designated in the Basin Plan as COLD regardless of the presence or absence of salmonids.

² Water quality objectives designed to protect SPWN-designated waters apply to all fresh waters designated in Table 2-1 of the Basin Plan as SPWN in those reaches and during those periods of time when spawning, egg incubation, and larval development are occurring or have historically occurred. The period of spawning, egg incubation, and emergence generally occur in the North Coast Region between the dates of September 15 and June 4.

³ 90% upper and lower limits represent the 90 percentile values for a calendar year. 90% or more of the values must be less than or equal to an upper limit and greater than or equal to a lower limit

⁴ 50% upper and lower limits represent the 50 percentile values of the monthly means for a calendar year. 50% or more of the monthly means must be less than or equal to an upper limit and greater than or equal to a lower limit

⁵ Does not apply to estuarine areas

The Noyo River watershed, a 106,256-acre coastal tributary which contains approximately 200 miles of habitat for fish and 300 miles of habitat for amphibians, drains into the Pacific Ocean at Fort Bragg, CA via the Noyo River (Gledhill and Gaffney 2007). Principal land use of the watershed consists of timber production, and the watershed also provides an environment for cold freshwater and estuarine habitats. Due to water quality impairments related to sedimentation which have impacted the cold-water fishery, the watershed is listed on the US EPA 303d List (US EPA 1999).

The Noyo river is approximately 34 miles in length and provides much of the drinking water for the city of Fort Bragg. Other than surface water used for drinking purposes, the river also provides recreation, timber resources, and an anadromous fish population which are threatened under the federal Endangered Species Act (California Water Boards n.d.). The Noyo River was declared a Critical Coastal Area by the California State Water Quality Control Board (CSWQB) in 1995 and a TMDL for sediment was developed in 1999 (Gledhill, Gaffney 2007).

The *Caltrans NPDES Permit No. CAS000003, Attachment IV* describes specific source controls for Sediment and Turbidity TMDLs. Specific control measures identified in the Caltrans NPDES Permit include;

- Protecting and stabilizing hillsides
- Intercepting and filtering stormwater runoff
- Avoiding concentrating flows in natural channels and constructed drainages
- Avoid and minimize the modification of natural runoff flow patterns (i.e., hydromodification)

Geology/Soils

According to a geological map created by Jayko et. al (1989), the geology within the project area is within the Coastal Franciscan Belt and is underlain with coastal terrane formed during the Eocene to Upper Cretaceous periods. The Coastal Franciscan Belt is the westernmost part of the Franciscan Complex and covers an area of approximately 135,908 acres. Coastal terrane is a broken formation comprised of sandstone, argillite, conglomerate, chert, limestone, and greenstone. The terrane can be characterized as having zones of brittle shears, tight folding, faulting, and zones of moderately coherent bedded sections (Jayko et. al 1989). Comparatively, a map developed at a larger scale by Jennings and Strand (1960) describes the area as containing Pleistocene marine and marine terrace deposits.

The soil map unit between the beginning of the project (PM 59.8) and just before the Noyo River (PM 60.2) is designated as Heeser sandy loam, 2 to 15 percent slopes. This map unit consists of mainly Heeser soil and is within the Hydrologic Soil Group (HSG) type B (Caltrans 2012). This soil group generally has moderate infiltration rates when wet and generally consists of clay and sand (NRCS 2007). Furthermore, the soil has moderately rapid permeability and produces slow to medium surface runoff (NRCS 2006).

Just before the Noyo River (PM 60.2) to the end of the project (PM 62.1), apart from the Noyo River which crosses the project path, is largely comprised of urban land (Caltrans 2012). Urban land is considered as developed, populated areas with a mostly impervious surface. Impervious surfaces have high runoff potential and low infiltration rates.

The soil-erodibility factor (K), which defines the susceptibility to erosion, transportability of the sediment, and the amount/rate of runoff given a rainfall input, is given as 0.37. A K value of 0.37 implies a medium-textured soil which are moderately susceptible to particle detachment and produce moderate runoff rates. An annual erosivity value (R factor), a surrogate measurement of the impact of rainfall on erosion, is estimated at a value of 80. The LS factors, which represent the effect of slope length on erosion, are documented for each area within the project limits in Table 2 (Caltrans 2012).

Table 3: LS Factors

Approximate PM	LS Factor
59.8-60.38	2.9
60.38-62.10	2.25

Disturbed Soil Area

The amount of disturbed soil area (DSA) during construction is currently estimated at 1.92 acres. Projects disturbing more than one acre of soil require coverage under the *California State Water Resources Control Board, Construction General Permit (CGP), Order No. 2010-0014-DWQ*. The CGP requires that the construction contractor prepare a project specific Storm Water Pollution Prevention Plan (SWPPP) which identifies temporary construction site BMPs to prevent both stormwater and non-stormwater discharges during construction. Based on site specific conditions such as soil type, rainfall intensity and volume, and proximity to high risk receiving waters the project has been determined to be a CGP Risk Level 3 project (from Project Stormwater Data Report). Specific monitoring and reporting measures will need to be incorporated into the approved project SWPPP to comply with CGP Risk Level 2 requirements.

Caltrans construction staff must apply for coverage under the CGP through the Stormwater Multiple Application and Report Tracking System (SMARTS). The following project registration documents must be uploaded into SMARTS prior to the commencement of construction;

- Notice of Intent (NOI)
- Risk Level Assessment
- Post-construction Stormwater Run-off calculation
- Project Specific SWPPP

Impervious Surface Area and Hydromodification

Post-construction stormwater treatment BMPs under *Caltrans NPDES Permit No. CAS000003* will not be required since the new impervious surface is less than one acre. The increase in rate and volume of stormwater flow associated with this increase NIS is not anticipated to result in any adverse modification.

Table 4: Impervious Surface Calculations

Existing Impervious Area (acres)	Post Impervious Area (acres)	Net New Impervious Area (NNI)	Replaced Impervious area (RIS)	Excluded impervious area (EIA) ⁴	New Impervious Surface (NIS) ²	ATA ³ #1 (acres)	ATA ³ #2 (acres)	PCTA ¹ (acres)
1.35	1.69	0.34	1.14	0.76	0.72	0	0	0

¹ Post Construction Treatment Area = PCTA = NIS + ATA #1 + ATA #2

² NIS = NNI + RIS - EIA

³ ATA = Additional Treated Area

⁴ EIA= Sidewalk, Pedestrians, Separate bikeways Areas, and areas over paved areas (any area of a bridge that goes over a road needs to be excluded)

Per Section 4.3, Step 7 of the PPDG, July 2017, Post Construction Treatment Area (PCTA) is required for New Impervious Surface (NIS) that equals or exceeds one acre or more or 5,000 sqft. on non-highway projects. The PCTA for this project is under the threshold requirement, and therefore PCTA is 0 acres.

Currently, this project is not expected to require a Water Quality Permit therefore the threshold for treatment remains 1 acre of new/replaced impervious surface. Should this change and a Water Quality Permit is required, the threshold will drop to 5,000sqft of new/replaced impervious surface and post-construction stormwater treatment would be required.

Standard Water Quality Measures

Temporary Impacts to Water Quality

Temporary impacts to water quality could occur during the construction phase of the project. Soil disturbing work within and adjacent to drainage systems could result in the transport of sediment and other pollutants to adjacent wetland and riparian areas.

The following BMPs from the *Caltrans Construction Site BMP Manual* (Caltrans 2017a) are anticipated to be incorporated into the approved project SWPPP:

1. Development of a schedule that includes sequencing of construction activities with implementation of construction site BMPs (SS-1)
2. Existing vegetation will be removed to the minimum extent necessary to facilitate the proposed work (SS-2).
3. Temporary access road entrances and exits will be stabilized and maintained to prevent sediment erosion and transport from the work area (TC-1).
4. Temporary drainage inlet protection methods such as gravel bags will be deployed to prevent sediment and other pollutants from entering drainage systems (SC-10).
5. Perimeter control devices such as fiber rolls, compost socks, gravel bags, and silt fences will be utilized to prevent sediment transport from the project site (SC-1, SC-5, SC-6, SC-11).
6. Concrete washout facilities, re-fueling areas, as well as equipment and storage areas should be covered and located away from drainage inlets and waterways to prevent both stormwater and non-stormwater discharges (WM-3, WM-8, NS-9).
7. Use of construction methods which uses water in a manner that avoids causing runoff, erosion, and/or discharge of pollutants to receiving waters (NS-1).
8. Paving, and sealing operations will be conducted to avoid and minimize the discharge of pollutants to receiving waters (NS-3).
9. Utilization of proper procedures to minimize any potential for runoff during concrete curing and finishing (NS-12, NS-14).
10. Proper procedures and practices for handling, storage, and use of construction materials that minimizes discharge to receiving waters or drainage system (WM-1, WM-2).
11. Spill prevention and control practices (WM-4).
12. Proper utilization of procedures to minimize or eliminate discharge of construction site sanitary and septic waste materials into receiving waters or drainage systems (WM-9).

Additional BMPs will also likely be incorporated in the approved project SWPPP during the construction phase of the project to address BMPs specific items of work.

Permanent Impacts to Water Quality and Potential Treatment Areas

Permanent impacts to water quality will be prevented by the incorporation of Design Pollution Prevention (DPP) BMP strategies found in Appendix A of the Stormwater Quality Handbooks: Project Planning and Design Guide (PPDG) (Caltrans 2017b). The following DPP BMP strategies are anticipated:

1. Prevention of downstream erosion
2. Stabilization of disturbed soil areas
3. Preservation of existing vegetation

Update: Water Quality Assessment Memorandum
June 8, 2022
01-0B220, Fort Bragg ADA

It is anticipated that the inclusion of appropriate temporary and permanent BMPs mentioned above will avoid potential impacts to water quality and meet the requirements of the Caltrans NPDES Permit, CGP, and North Coast Basin Plan.

Amanda Haas

Amanda Haas
Water Quality
NR Office of Environmental Engineering

References:

California Department of Transportation.

2012 (Water Quality Planning Tool). <http://sv03tmcstormdat.ct.dot.ca.gov/wqpt/wqpt.aspx>

2014 (June). Field Guide to Construction Site Dewatering, CTSW-OT-314.08.1
<http://www.dot.ca.gov/hq/construc/stormwater/field-guide-to-construction-site-dewatering.pdf>

2015. Standard Specifications. State of California Transportation Agency.
http://ppmoe.dot.ca.gov/hq/esc/oe/construction_contract_standards/std_specs/2015_StdSpecs/2015_StdSpecs.pdf

2016 (September). Division of Design, Storm Water Data Report (Long Form)
<http://www.dot.ca.gov/design/hsd/swdr/index.html>

2016 (July). Division of Environmental Analysis. Statewide Stormwater Management Plan. CTSW-RT-161316.05.1.
https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/caltrans/swmp/swmp_approved.pdf

2017a (May). Stormwater Quality Handbooks: Construction Site Best Management Practices (BMPs) Manual. CTSW-RT-17-314.18.1.
<http://www.dot.ca.gov/hq/construc/stormwater/CSBMP-May-2017-Final.pdf>

2017b (July). Stormwater Quality Handbooks, Project Planning and Design Guide, CTSW-RT-314.24.1
http://www.dot.ca.gov/design/hsd/ppdg/PPDG-Final_2017-07.pdf

California Water Boards 2017 (October). Mendocino Coast Unit – Hydrologic Unit 113.
https://www.waterboards.ca.gov/northcoast/water_issues/programs/watershed_info/mendocino_coast/

California Water Boards n.d. Noyo River Watershed.
https://www.waterboards.ca.gov/northcoast/water_issues/programs/wpc/11noyosec2.pdf

California Regional Water Quality Control Board 2001 (September). Assessment of Aquatic Conditions in the Mendocino Coast Hydrologic Unit.
http://www.krisweb.com/biblio/ncc_crwqcb_ncregion_2001_assessmentmhu.pdf

Gledhill K., Gaffney K. 2007 (August). Noyo River Watershed Enhancement Plan.
http://www.westcoastwatershed.com/docManager/1000000040/NoyoWEP_final_0807_text.pdf

Jayko, A. et al. 1989. Reconnaissance geologic map of the Covelo 30- x 60-minute quadrangle, northern California. https://ngmdb.usgs.gov/ngm-bin/pdp/zui_viewer.pl?id=163

Jennings C.W., Strand R.G. 1960. Geologic map of California : Ukiah sheet. https://ngmdb.usgs.gov/ngm-bin/pdp/zui_viewer.pl?id=7650

NCRWQCB 2011 (May). Water Quality Control Plan for the North Coast Region (Basin Plan).
https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/basin_plan_documents/

NRCS 2007 (May). Hydrologic Soil Groups.
<https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>

NRCS 2006. Soil Survey of Mendocino County, California, Western Part.
https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/california/CA694/0/MendocinoWP_CA.pdf

SWRCB 2012. National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit Waste Discharge Requirements (WDRS) for the State of California Department of Transportation.
https://www.waterboards.ca.gov/water_issues/programs_stormwater/docs/caltrans/conformed_order_2012-0011-dwq_unofficial_draft.pdf

SWRCB 2014. National Pollutant Discharge Elimination System (NPDES) Waste Discharge Requirements (WDRS) for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities.
https://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

USEPA

2015. Clean Water Rule: Definition of “Water of the United States.”
80 Fed. Reg 124 (June 29, 2015). Federal Register: The Daily Journal of the United States. Web. 27 Feb 2019.
<https://www.federalregister.gov/documents/2018/07/12/2018-14679/definition-of-waters-of-the-united-states-recodification-of-preexisting-rule>

1999 (December). Noyo River Total Maximum Daily Load for Sediment.
https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/noyo_river/pdf/noyo.pdf