Marin County Stormwater Pollution Prevention Program

Construction Stormwater Management Compliance Workshop

Presenters:
Terri Fashing
Sandy Mathews
Kristine Pillsbury
Aaron Stessman

May 5, 2011, Novato CA

Workshop Agenda

- Welcome
- Module 1. Good Construction Site Management
- Module 2. Overview CGP Requirements
- Break 10:30-10:45
- Module 3. Risk Calculation and Rainfall Erosivity Demonstration
- Lunch and Visit Exhibitors 11:45-1:00

Workshop Agenda

- Module 4. MCSTOPP Construction Stormwater Requirements
- Module 5. Monitoring: Practical Field Tools
- Module 6. Becoming a QSD or QSP
- Module 7. Wrap-up and Open Discussion

Today's Presenters

- Sandy Mathews, CPESC,QSD/P

  Larry Walker Associates
- Kristine Pillsbury, P.E.

  CSW / Stuber-Stroeh Engineering Group, Inc.
- Aaron Stessman, P.E.

  CSS Environmental Services, Inc.
- Terri Fashing

  MCSTOPPP

Construction Stormwater Management Compliance Workshop

MODULE 1. CONSTRUCTION SITE MANAGEMENT FOR WATER QUALITY

Water quality protection starts with planning

- What are you doing?
  Type of Construction
  - Clearing and prep work
  - Materials
  - Activities
- When are you doing it?
  Time of Construction
  - Duration
  - Season
- Where are you doing it?
  Site Conditions
  - Soil
  - Location
  - Slopes
  - Drainage
  - History

Basic premise of stormwater quality protection

- Minimize pollutant exposure
  - Don’t expose potential pollutants to wind and rain
- Protect exposed pollutants
  - Keep pollutants from being washed or blown away
- Best Management Practices – BMPs
  - Procedures to minimize exposure or apply techniques to remove pollutants from runoff
- Good site management to protect water quality combines BMPs to form layers of protection and plans for accidents

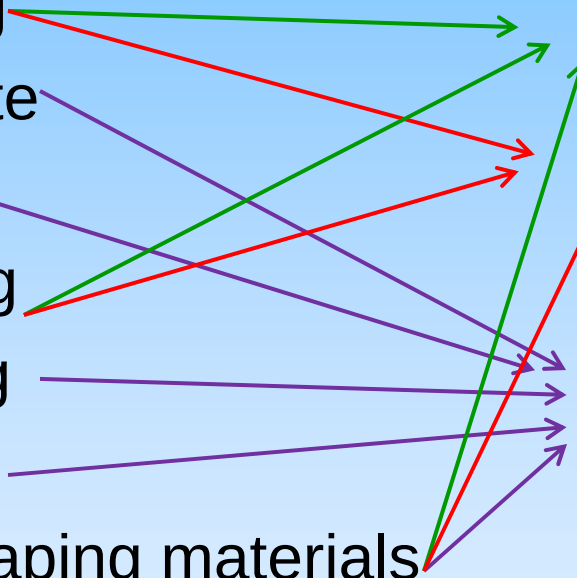
Sorting through the BMPs

- Several basic categories of BMPs, that are subdivided in many ways
  - Erosion Control
    - Wind Erosion Controls
    - Run-on controls
  - Sediment Control
    - Tracking controls
    - Runoff controls
  - Pollution Prevention Practices
    - Non-stormwater management
    - Materials and Waste Management
    - Good Housekeeping

Connecting the dots between construction and water quality

Activity Examples

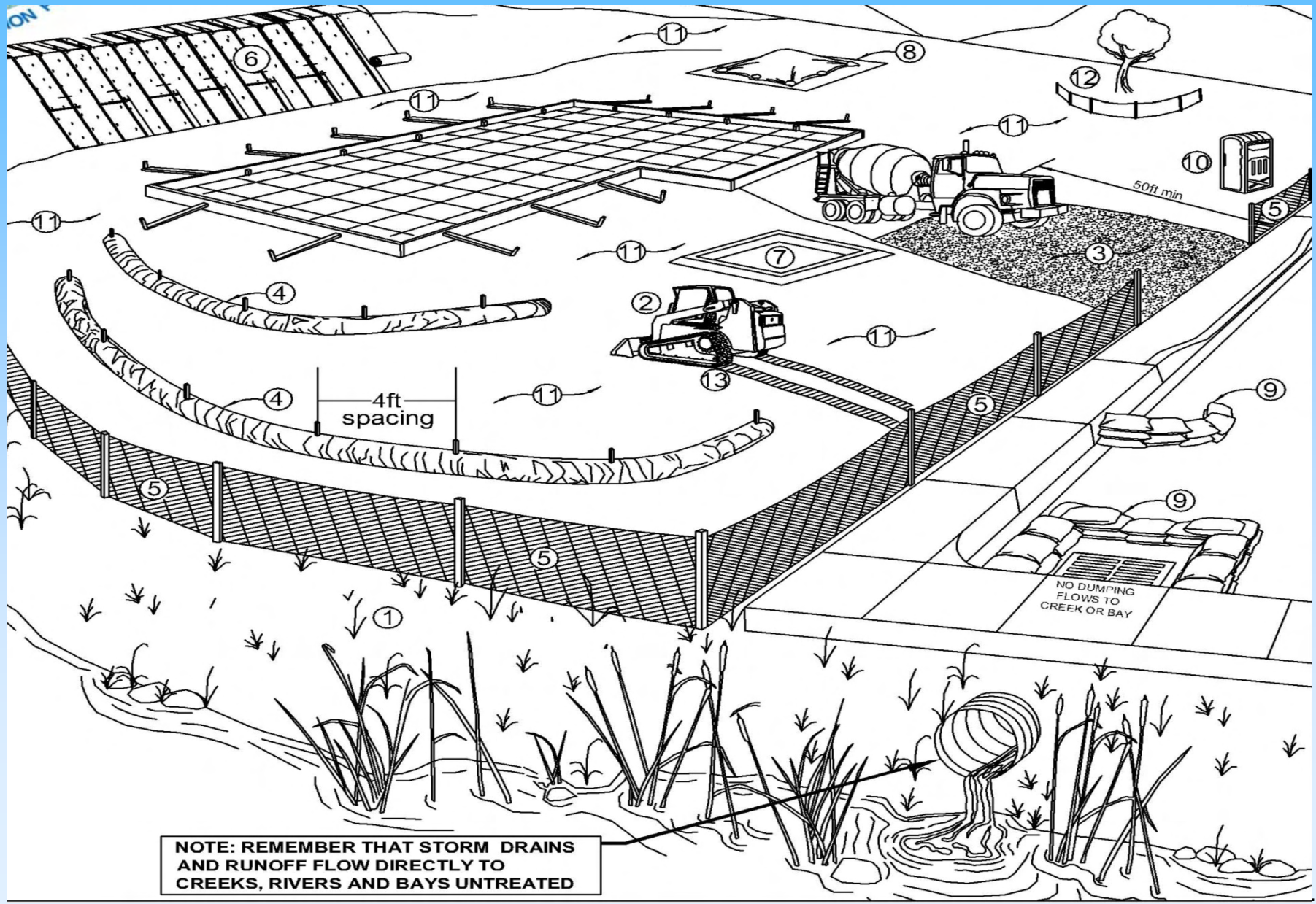
- Grading
- Concrete
- Trash
- Clearing
- Painting
- Fueling
- Landscaping materials



BMP Categories

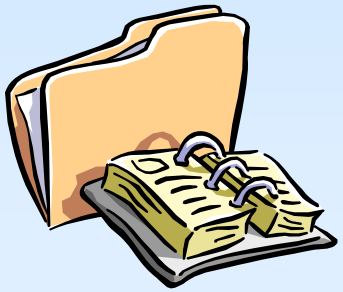
- Erosion Controls
- Sediment Controls
- Pollution Prevention/ Housekeeping

Layers of BMPs



Erosion Control

- Protects soil and prevents soil particles from becoming detached by rainfall, flowing water or wind
- Soil protected as a resource

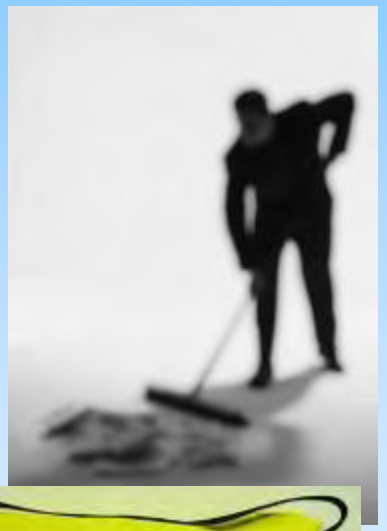


Sediment Control

- Practice that traps soil particles – sediment once they have been detached by rain, flowing water or wind
- Various practices to slow and detain water to allow sediment to settle

Pollution Prevention Practices

- Source control practices that minimize exposure of construction materials and waste to rain and wind



Inspecting and maintaining BMPs and the site

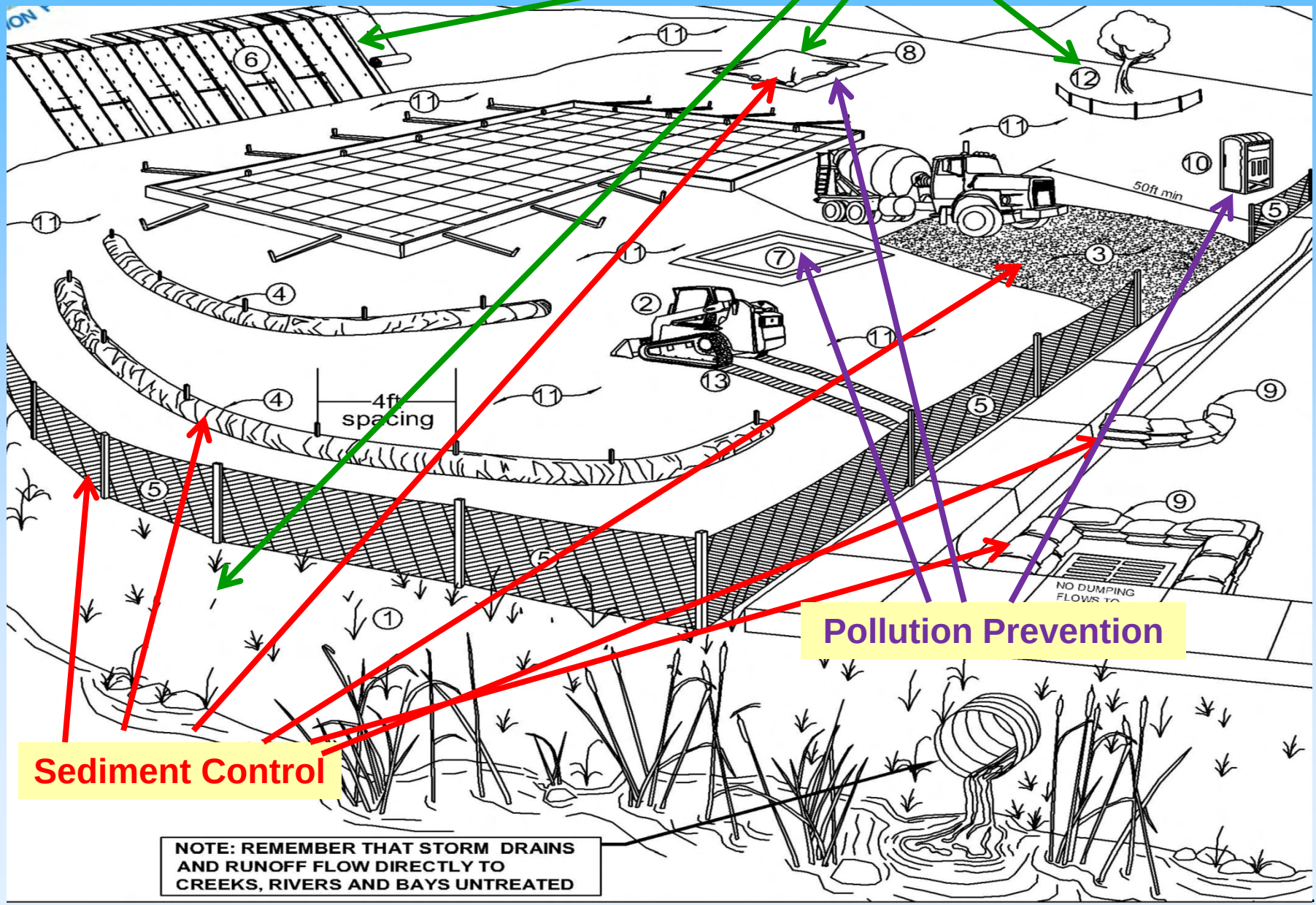
- Maintenance is a key aspect of a BMP
  - Without maintenance a BMP can become a ‘WMP’
- Key areas to inspect
  - Disturbed areas
  - Stormwater containment
  - Washout
  - Storage areas
  - Entrance
  - Trash management areas
  - Any place pollutants may leave the site

Inspection tools and frequency

- BMP cut sheets / fact sheets
  - Guide and tips on inspection and maintenance
- SWPPP or Erosion and Sediment Control Plan
  - Sets frequency based on regulatory requirement or BMP (whichever is more frequent)
- Inspection checklist
  - Site-specific SWPPP check list
  - MCSTOPPP checklist

http://mcstoppp.org/acrobat/MCS_Construction_Inspection_Form.pdf

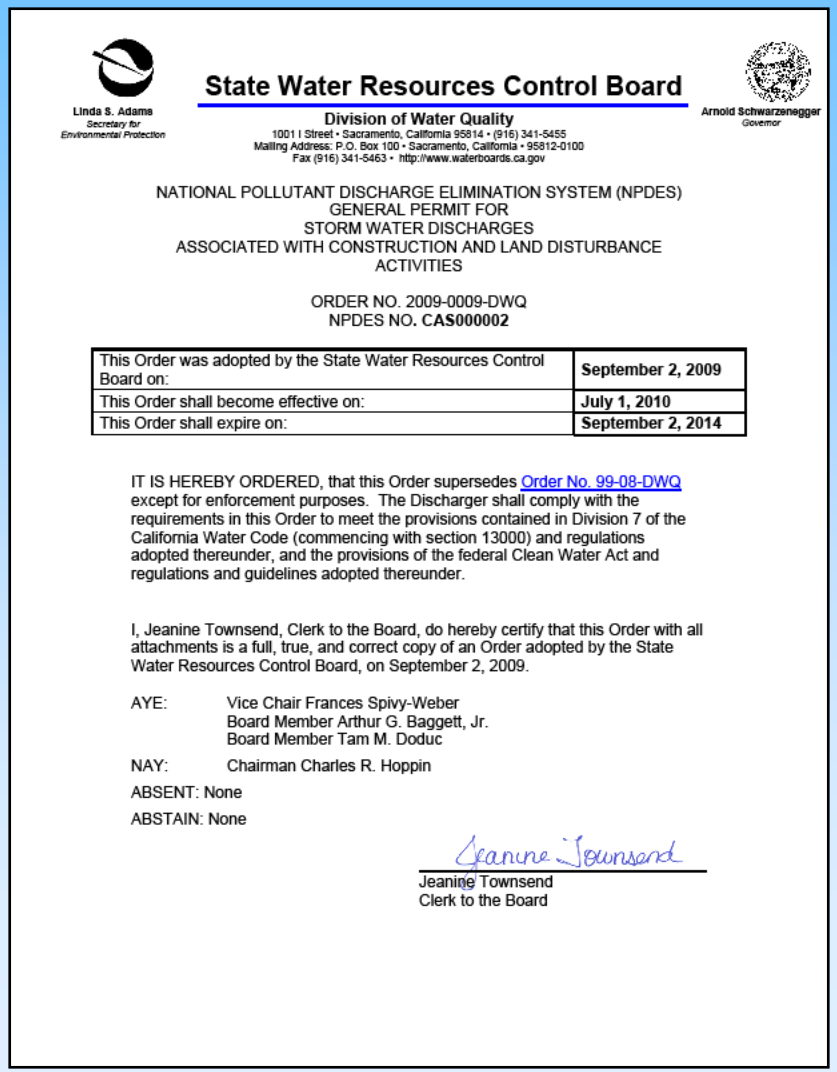
Layers of BMPs



Construction Stormwater Management Compliance Workshop

MODULE 2. OVERVIEW CGP REQUIREMENTS

The new CGP was adopted September 2, 2009



Linda S. Adams
Secretary for
Environmental Protection

State Water Resources Control Board

Division of Water Quality
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Arnold Schwarzenegger
Governor

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR
STORM WATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE
ACTIVITIES

ORDER NO. 2009-0009-DWQ
NPDES NO. **CAS000002**

This Order was adopted by the State Water Resources Control Board on:	**September 2, 2009**
This Order shall become effective on:	**July 1, 2010**
This Order shall expire on:	**September 2, 2014**

IT IS HEREBY ORDERED, that this Order supersedes Order No. 99-08-DWQ except for enforcement purposes. The Discharger shall comply with the requirements in this Order to meet the provisions contained in Division 7 of the California Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act and regulations and guidelines adopted thereunder.

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Resources Control Board, on September 2, 2009.

AYE: Vice Chair Frances Spivy-Weber
Board Member Arthur G. Baggett, Jr.
Board Member Tam M. Doduc

NAY: Chairman Charles R. Hoppin

ABSENT: None

ABSTAIN: None

Jeanine Townsend
Clerk to the Board

- Order 2009-0009-DWQ
- Effective July 1, 2010
- CGP contains several significant new requirements
  - Permit language is subject to interpretation and clarification

CGP = Construction General Permit

“Cafeteria Plan” permit

- Allows dischargers to focus on the applicable sections for each project
  - Factsheet
  - Order
  - Six attachments (part of the Order)
  - Seven appendices (supplemental information)

CGP can be downloaded from:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Key features of the 2009 CGP

1. Traditional and LUPs
2. Projects Covered by the CGP
3. Use of Risk
4. Permit Registration Documents
5. Developing SWPPPs
6. Implementing SWPPPs
7. Minimum BMPs
8. REAPs
9. Numeric Effluent Limits and Action Levels
10. Reporting
11. Post Construction Requirements

Two project categories: traditional and LUPs

1. Traditional projects
   - Residential, commercial, industrial, institutional, street/roadway projects
2. Linear Underground/overhead Projects (LUPs)
   - Utility projects that install pipes or lines for utilities – e.g., water, sewer, cable, electric, gas …
   - Streets, railways are not LUPs

- Most of the CGP addresses traditional projects
  - Attachments C through E
- Attachment A is specific for LUPs

Defining Construction Activity

- Construction Activity is defined to include construction or demolition activity
  - clearing,
  - grading,
  - grubbing,
  - excavation, or
  - any other activity that results in a **land disturbance**

Construction activity covered by the CGP

- **Projects that disturb one acre or more**
  - Commercial, industrial, residential construction on agricultural lands
  - Linear utility construction projects
  - Upland spoils piles from projects subject to an Army Corps of Engineers permit
  - Smaller projects part of common plan of development

Projects that affect one acre or more that are within jurisdiction waters covered by a 404 permit need to contact the Regional Board to determine if the CGP applies

Construction activity not covered by the CGP

- Projects that disturb less than one acre
- Routine maintenance
- Land disturbances solely due to agricultural operations
- Discharges to a Combined Sewer System
- Projects with an R-Factor Waiver
  - Need to file Waiver Certification
- Projects on Tribal lands
  - EPA regulates
- Routine activity at landfills
  - Covered by Industrial Stormwater General Permit
- Discharges in basins not hydrologically connected to water of the U.S.
  - Check with Regional Board, may need permit under state law - Waste Discharge Requirements

What is routine maintenance?

- LUPs
  - Projects associated with O&M conducted on existing lines and facilities and within existing right-of-way
    - Maintain the original purpose of the facility or hydraulic capacity
    - Update existing lines and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity
    - Repairing leaks
- Traditional
  - Maintain the original line and grade, hydraulic capacity, or original purpose of the facility

Use of risk in the CGP

- Considers two risk factors
  - Sediment discharge and receiving water and risk
- Separate processes for traditional and LUPs to determine water quality risk posed by the project
- Both processes result in three levels of risk
  - Traditional Risk Levels 1 – 3
  - LUP Type 1 – 3
- Permit waiver for very low risk projects

Permit requirements are directly tied to Risk Level/Type

Sediment risk factor uses RUSLE

- Revised Universal Soil Loss Equation (RUSLE)

RUSLE

$A = (R)\,(K)\,(LS)\,(C)\,(P)$

- A = soil loss from sheet and rill erosion
- R = rainfall-runoff erosivity factor
- K = soil erodibility factor
- LS = length-slope factor
- C = cover factor
- P = practice factor management/support practices

Risk factor: sediment discharge

- CGP requires an estimate of the bare ground soil loss using factors from RUSLE
  - Derived from the R, K, LS factors of RUSLE
  - C and P factors are not used (worst case)
- CGP tool calculates a High, Medium or Low risk based on the estimated sediment loss (tons/acre)
  - Low sediment risk= <15 tons/acre
  - Medium ≥15 and <75 tons/acre
  - High ≥75 tons/acre

R will be the primary driver for sediment risk

Risk factor: receiving water

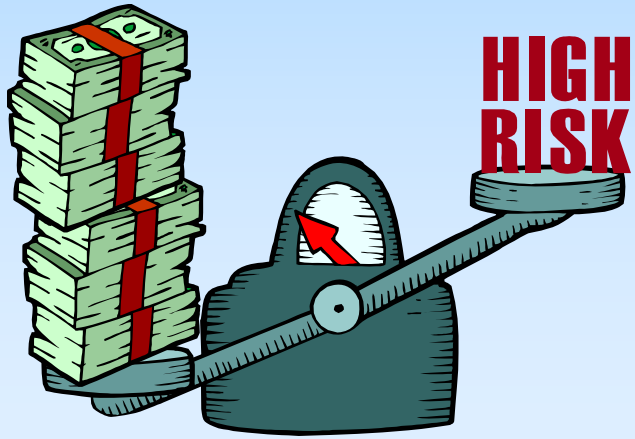
- Risk based on two conditions indicating the water body is sediment sensitive
  1. Receiving water is listed on the most recent 303(d) list as being impaired for a sediment-related pollutant (e.g., TSS, turbidity)
  2. Receiving water has all three of the following the beneficial uses:
     - SPWN – Spawning, Reproduction, and/or Early Development
     - MIGR – Migration of Aquatic Organisms
     - COLD – Cold Freshwater Habitat
- Knowing your watershed and receiving water is a key part of determining your risk

What about existing projects

- Existing projects have been brought into the 2009 CGP as Risk Level 1 or LUP Type 1
  - Exemption from full risk determination until September 2, 2011
- Regional Board may require recalculation of risk level
  1. Discharger has a demonstrated history of non-compliance with the current permit
  2. Discharger poses a significant risk of causing or contributing to an exceedance of water quality standards

Permit requirements are tied to the project risk

- Permit requirements increase moving from Risk Level/Type 1 through Risk Level/Type 3
  - Minimum BMPs
  - Compliance assessment
  - Water quality monitoring
  - Reporting



Submit PRDs prior to start of construction

- Permit Registration Documents (PRDs) include
  - NOI; Risk Determination; Site Map(s); SWPPP; Fee
  - Other documents if applicable
- Legally Responsible Person must submit PRDs
- PRDs are electronically filed into Stormwater Multi-Application and Reporting System (SMARTS)

Note: SWPPPs must be submitted with the PRDs

QSDs develop SWPPPs

- SWPPPs must be developed by a Qualified SWPPP Developer (QSD)
  - QSDs must have pre-requisite qualifications as of July 1, 2010, and by September 2, 2011, must complete State-sponsored or approved training
- Only a QSD is authorized to make SWPPP revisions and amendments
  - Need to have a QSD assigned or available throughout term of project

QSPs implement SWPPPs

- Each project must assign a Qualified SWPPP Practitioner (QSP)
  - From July 1, 2010, until September 1, 2011, any appropriately qualified individual may serve as a QSP
  - By September 2, 2011, QSPs must have the pre-requisite qualifications and have completed State-sponsored or approved training

QSP Is the person assigned responsibility to ensure compliance with the permit and implementation of SWPPP

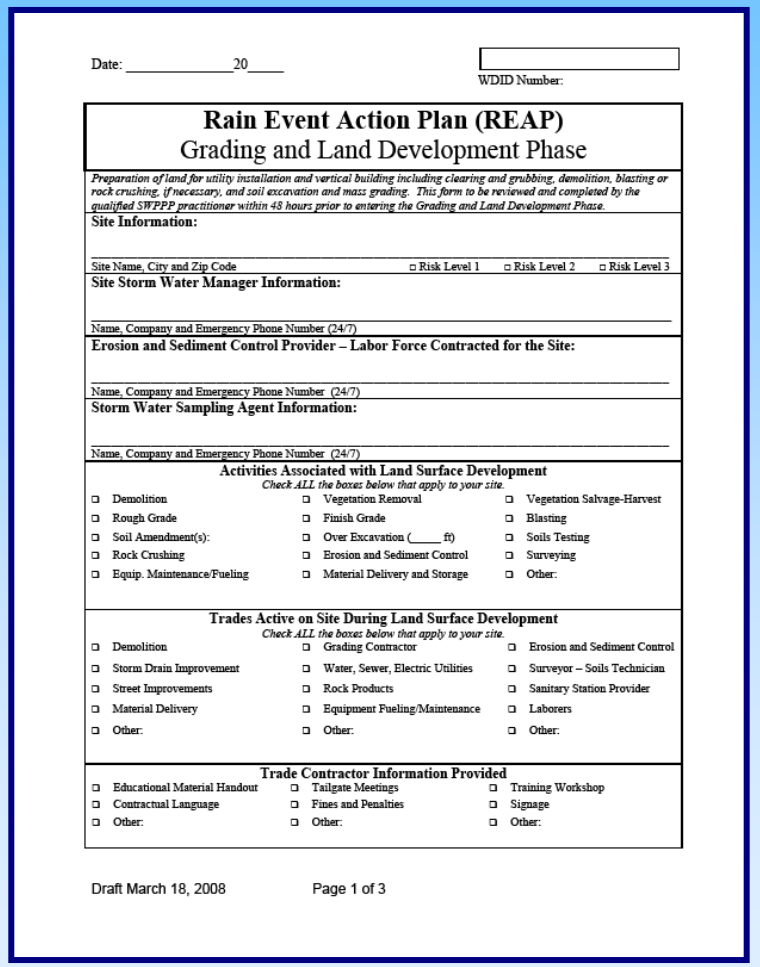
Minimum BMPs are specified in five categories

1. Good Site Management "Housekeeping"
2. Non-stormwater Management
3. Erosion Control
4. Sediment Controls
5. Run-on and Runoff Controls

- Each category has several required BMPs
- Review the details , e.g. "shalls" of all minimum BMPs carefully

Rain Event Action Plans

- Living document - Developed 48 hours prior to forecast event
- Must be on-site 24 hours prior to event
- REAP is specific to each phase of the project and each storm event
- QSP responsible for developing and implementing REAP



Date: _____20____

WDID Number:

Rain Event Action Plan (REAP)
Grading and Land Development Phase

Preparation of land for utility installation and vertical building including clearing and grubbing, demolition, blasting or rock crushing, if necessary, and soil excavation and mass grading. This form to be reviewed and completed by the qualified SWPPP practitioner within 48 hours prior to entering the Grading and Land Development Phase.

Site Information:

Site Name, City and Zip Code ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3

Site Storm Water Manager Information:

Name, Company and Emergency Phone Number (24/7)

Erosion and Sediment Control Provider – Labor Force Contracted for the Site:

Name, Company and Emergency Phone Number (24/7)

Storm Water Sampling Agent Information:

Name, Company and Emergency Phone Number (24/7)

Activities Associated with Land Surface Development
Check ALL the boxes below that apply to your site.

☐ Demolition	☐ Vegetation Removal	☐ Vegetation Salvage-Harvest
☐ Rough Grade	☐ Finish Grade	☐ Blasting
☐ Soil Amendment(s):	☐ Over Excavation (_____ ft)	☐ Soils Testing
☐ Rock Crushing	☐ Erosion and Sediment Control	☐ Surveying
☐ Equip. Maintenance/Fueling	☐ Material Delivery and Storage	☐ Other:

Trades Active on Site During Land Surface Development
Check ALL the boxes below that apply to your site.

☐ Demolition	☐ Grading Contractor	☐ Erosion and Sediment Control
☐ Storm Drain Improvement	☐ Water, Sewer, Electric Utilities	☐ Surveyor – Soils Technician
☐ Street Improvements	☐ Rock Products	☐ Sanitary Station Provider
☐ Material Delivery	☐ Equipment Fueling/Maintenance	☐ Laborers
☐ Other:	☐ Other:	☐ Other:

Trade Contractor Information Provided

☐ Educational Material Handout	☐ Tailgate Meetings	☐ Training Workshop
☐ Contractual Language	☐ Fines and Penalties	☐ Signage
☐ Other:	☐ Other:	☐ Other:

Draft March 18, 2008 Page 1 of 3

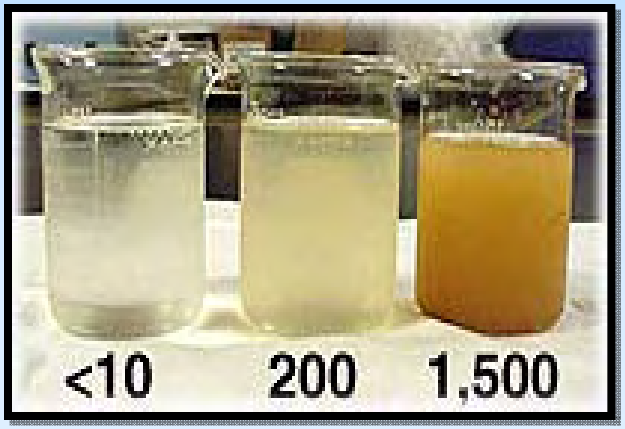
REAP Trigger

- 50% or greater probability of rain in project area
- 48 hours in advance
- Only NOAA/NWS forecasts are acceptable

  http://www.noaa.gov/
- Print out and keep daily forecasts

Two types of numeric limits assess runoff quality

- Numeric Action Levels - **Risk/Type 2 & 3 sites**
  - Assess BMP/SWPPP performance
  - Based on daily average
    - Turbidity 250 NTU
    - pH 6.5-8.5 pH units
- Numeric Effluent Limitations - **Risk/Type 3 sites**
  - Compliance numbers
  - Exceedance = permit violation
  - Based on daily average
    - Turbidity 500 NTU
    - pH 6.0-9.0 pH units



When don’t the numbers apply

- The pH NEL and NAL only apply when there is a “high risk of pH discharge”
  - Utilities phase
  - Vertical build phase
  - Any other phase when materials are applied to the land that could alter pH of discharge
- NEL exemptions
  - Storms above designated compliance event, 5-year 24-hour event
  - Run-on influenced by disaster (e.g., fire)

Two key post construction requirements

1. Source Control BMPs
   - Applies to all projects; similar to previous permit
     - Implement BMPs to reduce pollutants for the life of the project
     - Expect to submit maintenance program for BMPs with the project NOT
2. Runoff Reduction BMPs
   - Applies to projects outside of the jurisdiction of Phase I or Phase II Municipal Stormwater Programs
     - Projects within the jurisdiction of MCSTOPPP comply with the new development requirements of MCSTOPPP

Runoff reduction

- Replicate pre-project water balance up to the 85th percentile rainfall event using non-structural practices (match pre-development runoff volume)
  - Use tools in CGP Appendix 2 or on SMARTS
- Sites greater than two acres of disturbed area, discharger
  - Preserve the pre-construction drainage density (miles of stream length per mile of drainage area) and replicate pre-project time of concentration

Reporting data

- All Projects
  - Annual Report due September 1
    - Annual Report is due when you submit your NOT
- Risk Level/Type 2 & 3
  - When NAL is exceeded, submit sample results within 10 days of storm event conclusion
  - Submit NAL report, if requested by RWQCB

Reporting data

- Risk Level/Type 3 Only
  - All field sample results within 5 days of rain event conclusion
  - When NEL is exceeded, submit NEL Violation Report within 24 hours of identification of the exceedance
- All Level LUPs
  - Photographs before, during, and after storm event
  - Submit into SMARTS every three rain events

Construction Stormwater Management Compliance Workshop

BREAK – BE BACK IN 15 MINUTES

Construction Stormwater Management Compliance Workshop

MODULE 3. RISK DETERMINATION AND RAINFALL EROSIVITY WAIVERS

Traditional Construction

What ‘Risk Level’ is it?

Linear Underground/Overhead Utility

What ‘Type’ is it?

Risk/Type is determined by the combination of:

1. Sediment Risk

2. Receiving Water Risk

Traditional Construction Projects

Two Methods for Risk Level Determination

1.The GIS Map Method

2.The Individual Method

The GIS Map Method

1. Sediment Risk
   - EPA Rainfall Erosivity Calculator
   - GIS Maps of K and LS

2. Receiving Water Risk
   - 303(d)-listed waterbody impaired by sediment?
   - beneficial uses of SPAWN & COLD & MIGRATORY?

Example Project Sausalito Park Rehab	Parking Lot Remodel, Grading, Construction of Small Recreational Facilities, Landscaping
Project Location	Sausalito, CA
Latitude / Longitude	37.8645 / -122.5020
Project Size	1.3 acres
Construction Timeframe	October 1, 2011 to December 1, 2011
Receiving Water Body	Richardson Bay (via City Storm Drain)

Microsoft Excel - wqp_2009_0009_app_3 [Compatibility Mode]

	A	B	C	D
1	**Sediment Risk Factor Worksheet**		**Entry**	
2	**A) R Factor**			
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.			
4	http://cfpub.epa.gov/npdes/stormwater/LEWllewCalculator.cfm			
5		**R Factor Value**	0	
6	**B) K Factor (weighted average, by area, for all site soils)**			
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.			
8	Site-specific K factor guidance			
9		**K Factor Value**	0	
10	**C) LS Factor (weighted average, by area, for all slopes)**			
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.			
12	LS Table			
13		**LS Factor Value**	0	
14				
15		**Watershed Erosion Estimate (=RxKxLS) in tons/acre**	0	
16		**Site Sediment Risk Factor**	**Low**	
17		Low Sediment Risk: < 15 tons/acre		
18		Medium Sediment Risk: >=15 and <75 tons/acre		
19		High Sediment Risk: >= 75 tons/acre		
20				
21				

GIS Map Method

← EPA Rainfall Erosivity Calculator

← RUSLE K-Factor Map

← RUSLE LS-Factor Map

Favorites | Suggested Sites | Web Slice Gallery

US EPA EPA NPDES - Welcome to the Lower Erosivity Ind...

National Pollutant Discharge Elimination System (NPDES)

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- Basic Information
- eNOI
- Municipal MS4s
- Construction Activities
- Industrial Activities
- Road-Related MS4s
- Menu of BMPs
- Green Infrastructure
- Urban BMP Tool
- Stormwater Home

NPDES Topics | Alphabetical Index | Glossary

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: Sausalito Park Rehab
Start Date: 10/01/2011
End Date: 12/01/2011
Latitude: 37.8645
Longitutde: -122.5020

Erosivity Index Calculator Results

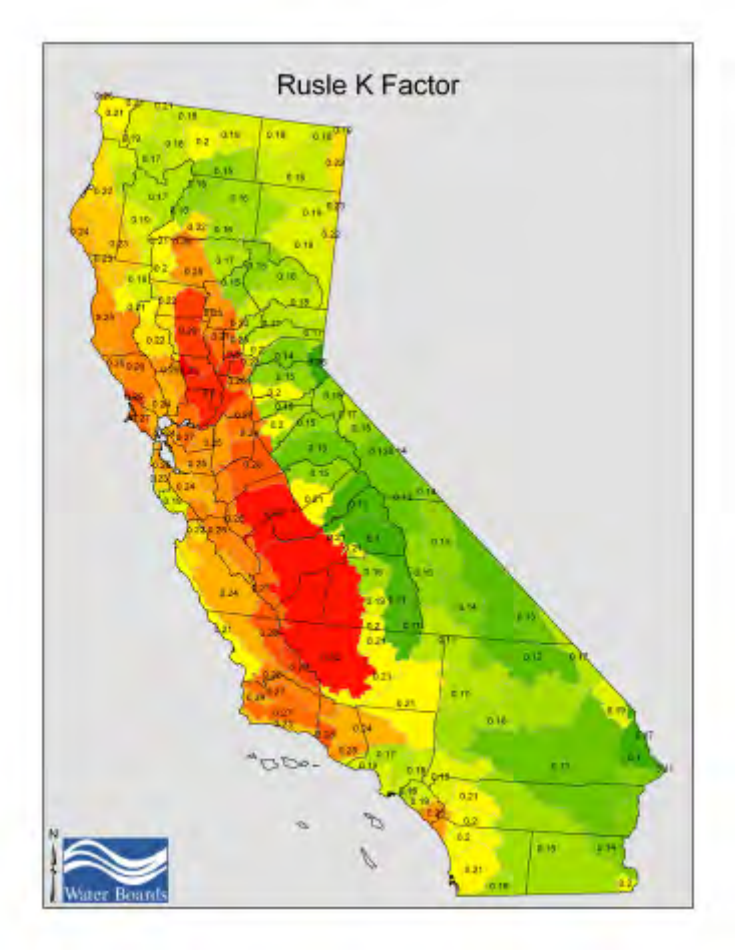
R = 5.82

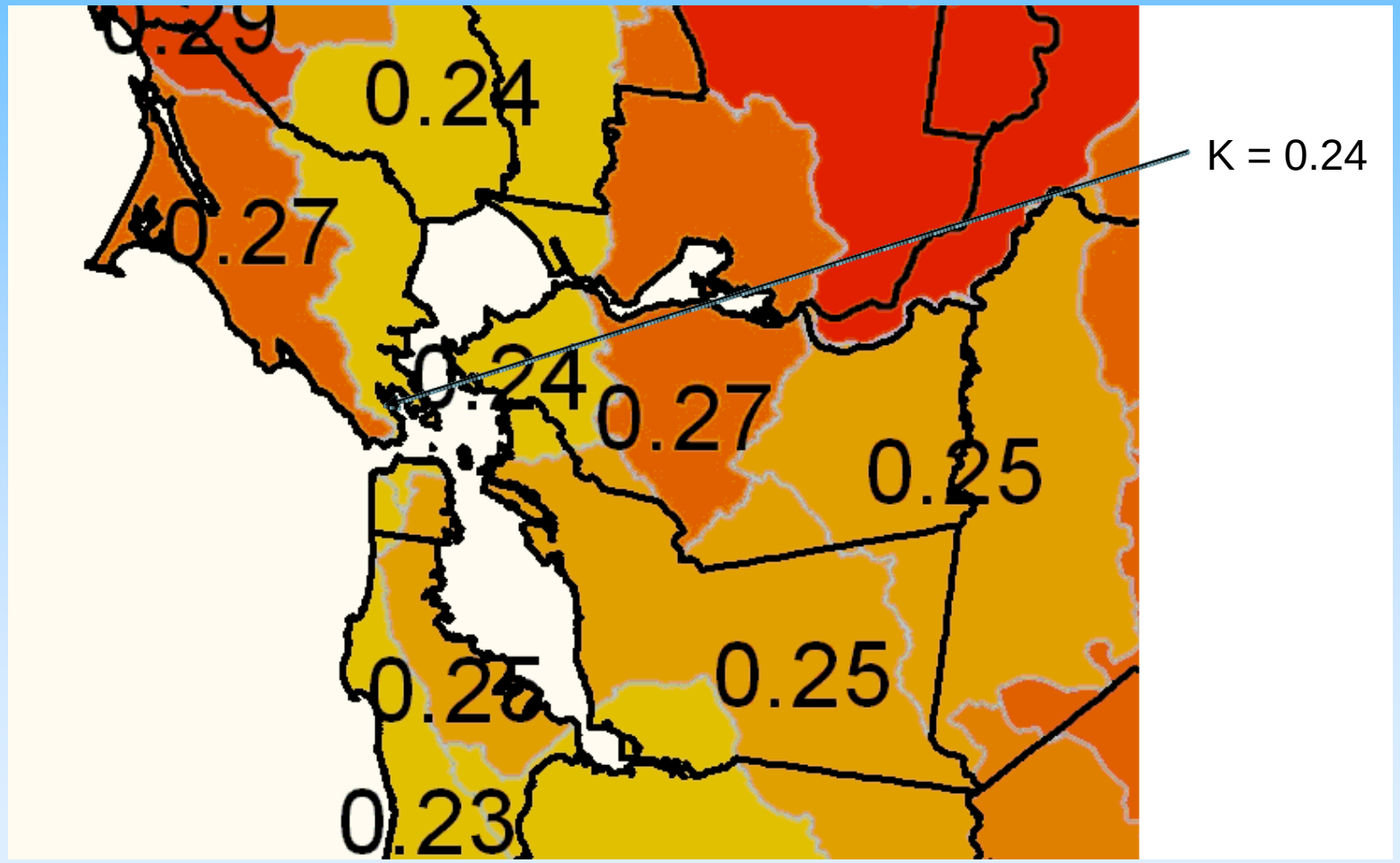
AN EROSIVITY INDEX VALUE OF 5.82 HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **10/01/2011 - 12/01/2011**.

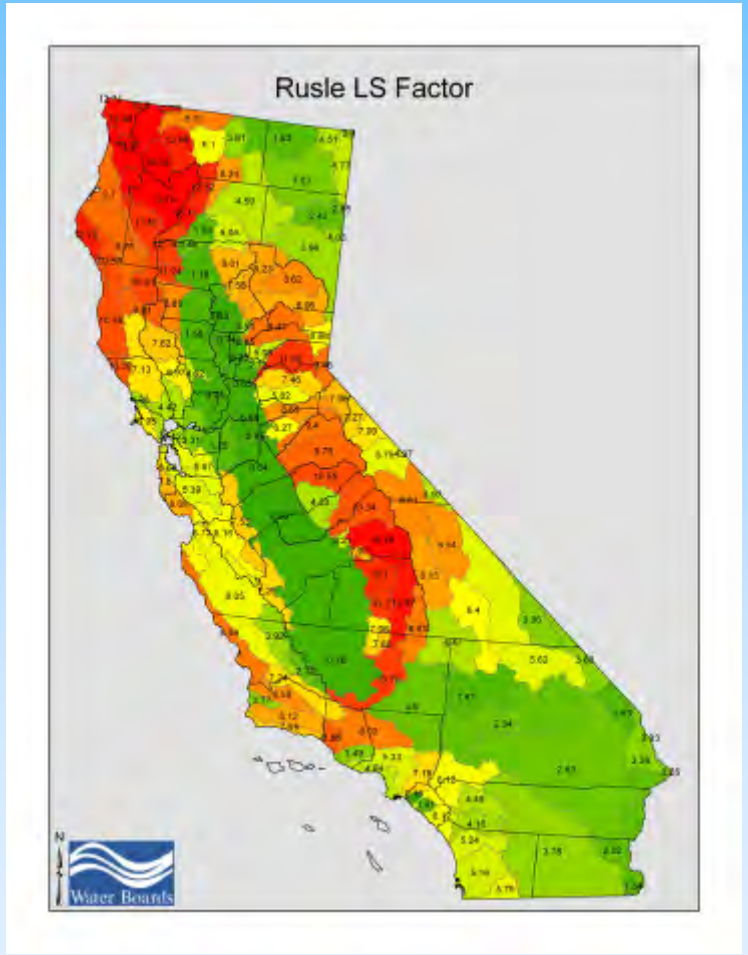
A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction.
You do not qualify for a waiver from NPDES permitting requirements.

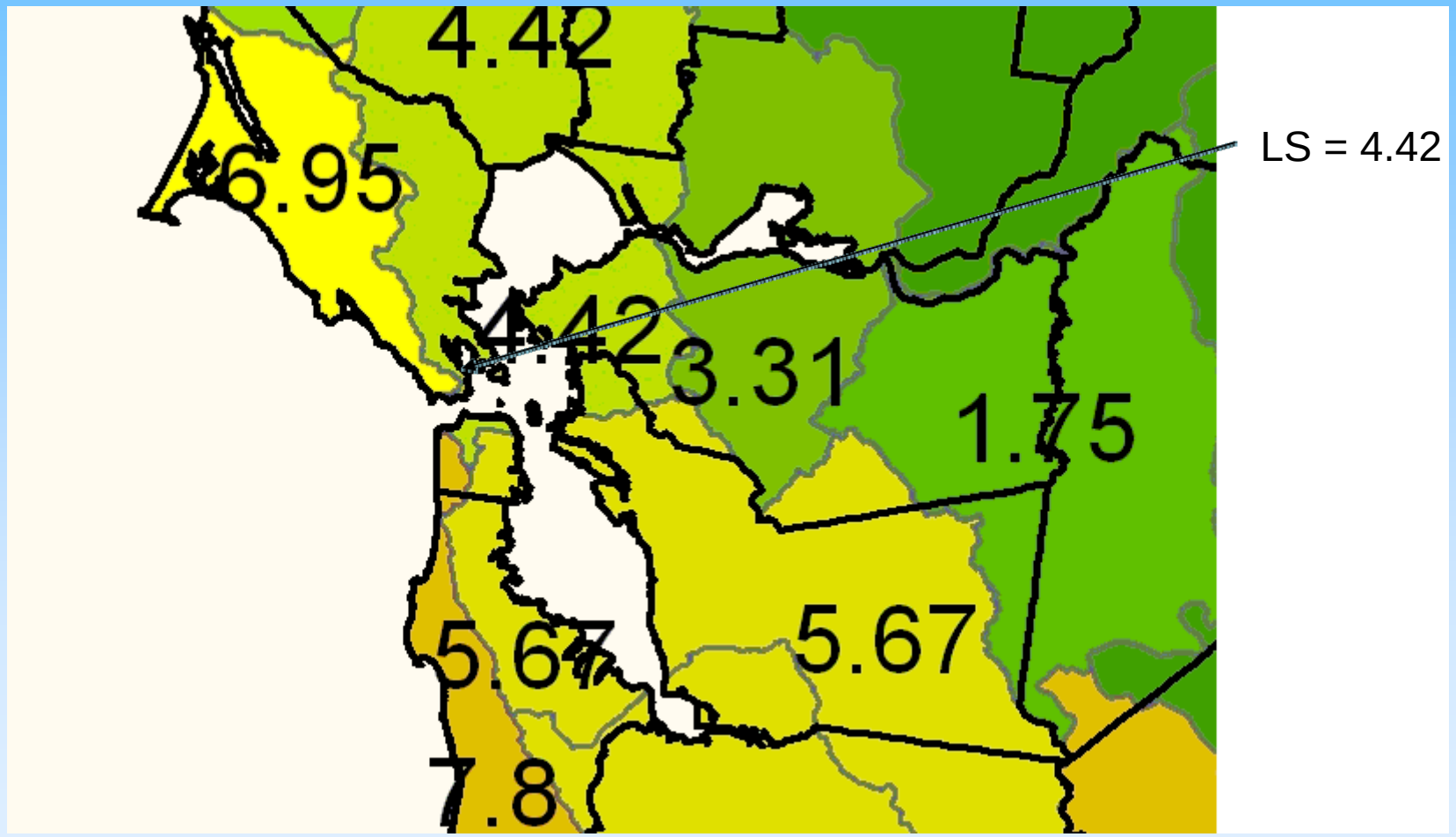
Start Over

Done


Rusle K Factor
Water Boards


0.24
0.27
0.24
0.27
0.25
0.25
0.25
0.23
K = 0.24


Rusle LS Factor
Water Boards


4.42
6.95
4.42
3.31
1.75
5.67
5.67
7.8
LS = 4.42

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5		**R Factor Value**	5.82
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9		**K Factor Value**	0.24
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13		**LS Factor Value**	4.42
14			
15		**Watershed Erosion Estimate (=RxKxLS) in tons/acre**	6.173856
16		**Site Sediment Risk Factor**	**Low**
17		Low Sediment Risk: < 15 tons/acre	
18		Medium Sediment Risk: >=15 and <75 tons/acre	
19		High Sediment Risk: >= 75 tons/acre	
20			
21			

5.82, R Factor

0.24, K Factor

4.42, LS Factor

6.17

Low Site Sediment Risk Factor

A1 | Receiving Water (RW) Risk Factor Worksheet

	A	B	C	D
1	**Receiving Water (RW) Risk Factor Worksheet**	**Entry**	**Score**	
2				
3	**A. Watershed Characteristics**	**yes/no**		
4	A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please check the attached worksheet or visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?:	**No**	**Low**	
5	2006 Approved Sediment-impared WBs Worksheet			
6	http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml			
7	**OR**			
8	A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY?			
9	http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp			
10				
11				

A1 'WBID

	A	B	C	D	E	F	G	H	I	J	K	L	M	
226	CAR114311		North Coast	R	Rivers/Streams	Russian River HU, Upper Russian River HA, Ukiah HSA	11431000	460	M	Miles	1100	Sedimentation/Siltatior	7800	Drainage/Filling O
227	CAR114311		North Coast	R	Rivers/Streams	Russian River HU, Upper Russian River HA, Ukiah HSA	11431000	460	M	Miles	1100	Sedimentation/Siltatior	7810	Channel Erosion
228	CAR114311		North Coast	R	Rivers/Streams	Russian River HU, Upper Russian River HA, Ukiah HSA	11431000	460	M	Miles	1100	Sedimentation/Siltatior	7820	Erosion/Siltation
229	CAR114311		North Coast	R	Rivers/Streams	Russian River HU, Upper Russian River HA, Ukiah HSA	11431000	460	M	Miles	1100	Sedimentation/Siltatior	8300	Highway Maintena
230	CAR114311		North Coast	R	Rivers/Streams	Russian River HU, Upper Russian River HA, Ukiah HSA	11431000	460	M	Miles	1100	Sedimentation/Siltatior	8600	Natural Sources
231	CAB2011<	2	San Francisco Bay	B	Bays and Harbors	Tomales Bay	20114033	8545.46	A	Acres	1100	Sedimentation/Siltatior	1000	Agriculture
232	CAB2011<	2	San Francisco Bay	B	Bays and Harbors	Tomales Bay	20114033	8545.46	A	Acres	1100	Sedimentation/Siltatior	7350	Upstream Impoun
233	CAR2024	2	San Francisco Bay	R	Rivers/Streams	Butano Creek	20240031	3.62774	M	Miles	1100	Sedimentation/Siltatior	9100	Nonpoint Source
234	CAR2011:	2	San Francisco Bay	R	Rivers/Streams	Lagunitas Creek	20113020	16.75	M	Miles	1100	Sedimentation/Siltatior	1000	Agriculture
235	CAR2011:	2	San Francisco Bay	R	Rivers/Streams	Lagunitas Creek	20113020	16.75	M	Miles	1100	Sedimentation/Siltatior	4000	Urban Runoff/Sto
236	CAR2065	2	San Francisco Bay	R	Rivers/Streams	Napa River	20650010	65.33	M	Miles	1100	Sedimentation/Siltatior	1000	Agriculture
237	CAR2065	2	San Francisco Bay	R	Rivers/Streams	Napa River	20650010	65.33	M	Miles	1100	Sedimentation/Siltatior	3000	Construction/Lan
238	CAR2065	2	San Francisco Bay	R	Rivers/Streams	Napa River	20650010	65.33	M	Miles	1100	Sedimentation/Siltatior	3200	Land Developmer
239	CAR2065	2	San Francisco Bay	R	Rivers/Streams	Napa River	20650010	65.33	M	Miles	1100	Sedimentation/Siltatior	4000	Urban Runoff/Sto
240	CAR2024	2	San Francisco Bay	R	Rivers/Streams	Pescadero Creek	20240013	26.03	M	Miles	1100	Sedimentation/Siltatior	9100	Nonpoint Source
241	CAR2063	2	San Francisco Bay	R	Rivers/Streams	Petaluma River	20630020	21.566	M	Miles	1100	Sedimentation/Siltatior	1000	Agriculture
242	CAR2063	2	San Francisco Bay	R	Rivers/Streams	Petaluma River	20630020	21.566	M	Miles	1100	Sedimentation/Siltatior	3000	Construction/Lan
243	CAR2063	2	San Francisco Bay	R	Rivers/Streams	Petaluma River	20630020	21.566	M	Miles	1100	Sedimentation/Siltatior	4000	Urban Runoff/Sto
244	CAR2055	2	San Francisco Bay	R	Rivers/Streams	San Francisquito Creek	20550040	12.05	M	Miles	1100	Sedimentation/Siltatior	9100	Nonpoint Source
245	CAR2023	2	San Francisco Bay	R	Rivers/Streams	San Gregorio Creek	20230014	11.14	M	Miles	1100	Sedimentation/Siltatior	9100	Nonpoint Source
246	CAR2064	2	San Francisco Bay	R	Rivers/Streams	Sonoma Creek	20640050	30.23	M	Miles	1100	Sedimentation/Siltatior	1000	Agriculture
247	CAR2064	2	San Francisco Bay	R	Rivers/Streams	Sonoma Creek	20640050	30.23	M	Miles	1100	Sedimentation/Siltatior	3000	Construction/Lan
248	CAR2064	2	San Francisco Bay	R	Rivers/Streams	Sonoma Creek	20640050	30.23	M	Miles	1100	Sedimentation/Siltatior	3200	Land Developmer
249	CAR2064	2	San Francisco Bay	R	Rivers/Streams	Sonoma Creek	20640050	30.23	M	Miles	1100	Sedimentation/Siltatior	4000	Urban Runoff/Sto
250	CAR2011:	2	San Francisco Bay	R	Rivers/Streams	Walker Creek	20112013	15.8352	M	Miles	1100	Sedimentation/Siltatior	1000	Agriculture
251	CAB3060	3	Central Coast	B	Bays and Harbors	Moss Landing Harbor	30600014	79.2726	A	Acres	1100	Sedimentation/Siltatior	1000	Agriculture
252	CAB3060	3	Central Coast	B	Bays and Harbors	Moss Landing Harbor	30600014	79.2726	A	Acres	1100	Sedimentation/Siltatior	1200	Irrigated Crop Pro
253	CAB3060	3	Central Coast	B	Bays and Harbors	Moss Landing Harbor	30600014	79.2726	A	Acres	1100	Sedimentation/Siltatior	1315	Agriculture-storm
254	CAB3060	3	Central Coast	B	Bays and Harbors	Moss Landing Harbor	30600014	79.2726	A	Acres	1100	Sedimentation/Siltatior	7000	Hydromodificatior
255	CAB3060	3	Central Coast	B	Bays and Harbors	Moss Landing Harbor	30600014	79.2726	A	Acres	1100	Sedimentation/Siltatior	7200	Dredging
256	CAB3060	3	Central Coast	B	Bays and Harbors	Moss Landing Harbor	30600014	79.2726	A	Acres	1100	Sedimentation/Siltatior	7810	Channel Erosion
257	CAB3060	3	Central Coast	B	Bays and Harbors	Moss Landing Harbor	30600014	79.2726	A	Acres	1100	Sedimentation/Siltatior	7820	Erosion/Siltation

Richardson Bay is not on 303d list for impairment by sediment

Richardson Bay

Beneficial Uses

Spawn + Migratory

Beneficial Use	Fully Supporting	Threatened, but Supporting	Partially Supporting	Not Supporting	Not Assessed
Aquaculture	0	0	0	0	2438.87
AQUATIC LIFE SUPPORT	0	0	2438.87	0	0
Commercial and Sport Fishing (CA)	0	0	0	0	2438.87
Estuarine Habitat	0	0	0	0	2438.87
FISH CONSUMPTION	0	0	2438.87	0	0
Fish Migration	0	0	2438.87	0	0
Fish Spawning	0	0	2438.87	0	0
Industrial Process Supply	0	0	0	0	2438.87
Industrial Service Supply	0	0	2438.87	0	0
Navigation	0	0	2438.87	0	0
Non-Contact Recreation	0	0	2438.87	0	0
OVERALL USE SUPPORT	0	0	2438.87	0	0
Rare & Endangered Species	0	0	2438.87	0	0
SECONDARY CONTACT REC	0	0	2438.87	0	0
Shellfish Harvesting	0	0	2438.87	0	0
SHELLFISHING	0	0	2438.87	0	0

Tomales Bay

Beneficial Uses Cold + Spawn + Migratory

Beneficial Use	Fully Supporting	Threatened, but Supporting	Partially Supporting	Not Supporting	Not Assessed
Agricultural Supply	0	0	0	0	8545.46
AGRICULTURE	0	0	0	0	8545.46
Aquaculture	0	0	0	0	8545.46
AQUATIC LIFE SUPPORT	0	0	8545.46	0	0
Cold Freshwater Habitat	0	0	8545.46	0	0
Commercial and Sport Fishing (CA)	0	0	0	0	8545.46
DRINKING WATER SUPPLY	0	0	0	0	8545.46
Estuarine Habitat	0	0	0	0	8545.46
FISH CONSUMPTION	0	0	8545.46	0	0
Fish Migration	0	0	8545.46	0	0
Fish Spawning	0	0	8545.46	0	0
Freshwater Replenishment	0	0	0	0	8545.46
Groundwater Recharge	0	0	0	0	8545.46
Hydroelectric Power Generation	0	0	0	0	8545.46
Industrial Process Supply	0	0	0	0	8545.46

Marin County:

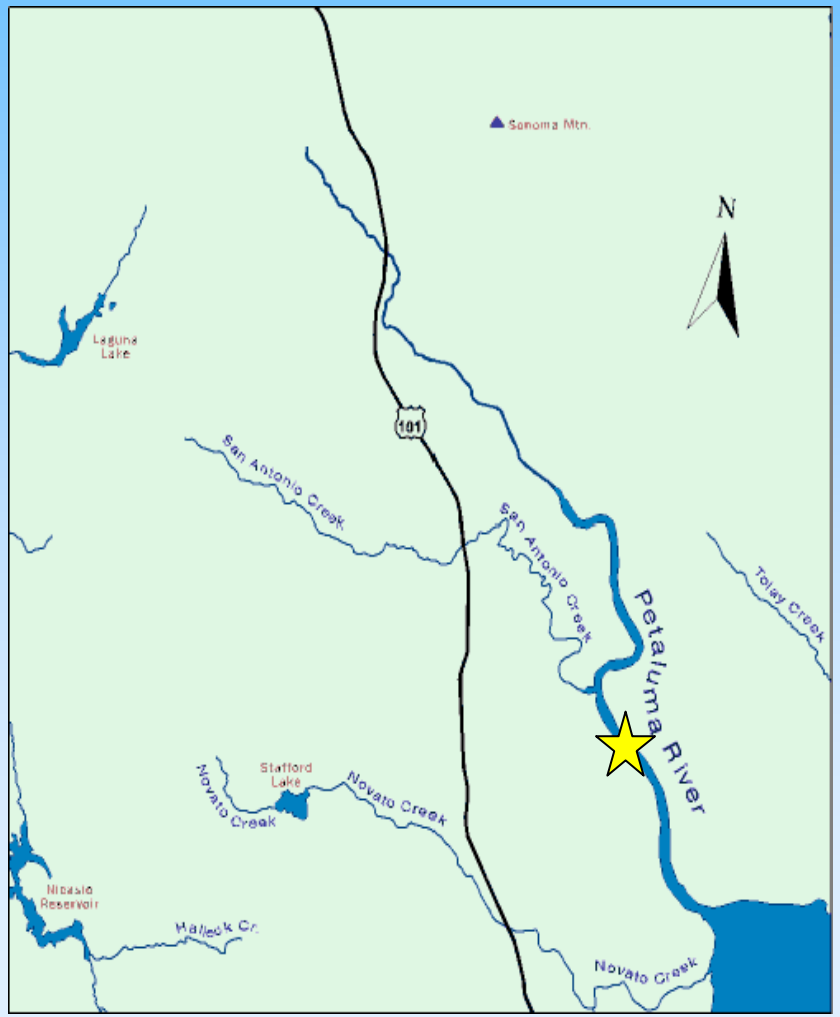
State 303d Sediment Impaired Waterbodies:

Tomales Bay, Lagunitas Creek, Petaluma River, and Walker Creek.

Designated Beneficial Uses of Cold + Spawn + Migratory:

Pine Gulch Creek, Walker Creek, Lagunitas Creek, Olema Creek, Nicasio Creek.


SONOMA CO
MARIN CO
Dillon Beach
Tomales
TOMALES BAY WEST SHORE
TOMALES BAY EAST SHORE
WALKER CREEK
Three Peaks 1161 ft
Inverness
INVERNESS
Pt Reyes Station
LAGUNITAS
Big Rock 1887 ft
Mt Wittenberg 1407 ft
Olema
Barnabe Mountain 1466 ft
Lagunitas
SAN GERONIMO CREEK
Woodacre
Pine Mountain 1762 ft
Mt Tamalpais 2571 ft
PACIFIC OCEAN
County line
Watershed Boundary
Road
Parks & Open Space
County Open Space
Water District
State Park
National Park
0
2.5
5
Miles
N


Sonoma Mtn.
N
Laguna Lake
101
San Antonio Creek
San Antonio Creek
Petaluma River
Tolay Creek
Stafford Lake
Novato Creek
Novato Creek
Nicasio Reservoir
Halleck Cr.
Novato Creek

A1 | Receiving Water (RW) Risk Factor Worksheet

	A	B	C	D
1	**Receiving Water (RW) Risk Factor Worksheet**	**Entry**	**Score**	
2				
3	**A. Watershed Characteristics**	**yes/no**		
4	A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please check the attached worksheet or visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?:	**No**	**Low**	
5	2006 Approved Sediment-impared WBs Worksheet			
6	http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml			
7	**OR**			
8	A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY?			
9	http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp			
10				
11				

D9 | ='2. Receiving Water Risk'!C4

	A	B	C	D	E	F
1		**Combined Risk Level Matrix**				
2						
3				Sediment Risk		
4			Low	Medium	High	
5	Receiving Water Risk	Low	Level 1	Level 2		
6		High	Level 2		Level 3	
7						
8		Project Sediment Risk:		Low		
9		Project RW Risk:		Low		
10		Project Combined Risk:		Level 1		

But, wait…

Example Project Sausalito Park Rehab	Parking Lot Remodel, Grading, Construction of Small Recreational Facilities, Landscaping
Project Location	Sausalito, CA
Latitude / Longitude	37.8645 / -122.5020
Project Size	1.3 acres
Construction Timeframe	October 1, 2011 to December 1, 2011
Receiving Water Body	Richardson Bay (via City Storm Drain)

Example Project Sausalito Park Rehab	Parking Lot Remodel, Grading, Construction of Small Recreational Facilities, Landscaping
Project Location	Sausalito, CA
Latitude / Longitude	37.8645 / -122.5020
Project Size	1.3 acres
Construction Timeframe	April 15, 2012 to June 15, 2012
Receiving Water Body	Richardson Bay (via City Storm Drain)

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Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: Sausalito Park Rehab
Start Date: 10/01/2011
End Date: 12/01/2011
Latitude: 37.8645
Longitutde: -122.5020

Erosivity Index Calculator Results

R was 5.82 for 10/01/2011-12/01/2011

AN EROSIVITY INDEX VALUE OF 5.82 HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **10/01/2011 - 12/01/2011**.

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction.
You do not qualify for a waiver from NPDES permitting requirements.

Start Over

Done

http://www.waterboards.c... | US EPA NPDES - Welcome ...

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Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: Sausalito Park Rehab
Start Date: 04/15/2012
End Date: 06/15/2012
Latitude: 37.8645
Longitutde: -122.5020

04/15/2012 to 06/15/2012
This project may be eligible for a Rainfall Erosivity Waiver.

Erosivity Index Calculator Results

AN EROSIVITY INDEX VALUE OF 2.02 HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **04/15/2012 - 06/15/2012**.

$R = 2.02 < 5.00$

A rainfall erosivity factor of less than 5.0 has been calculated for your site and period of construction. Contact your permitting authority to determine if you are eligible for a waiver from NPDES permitting requirements. If you are covered under EPA's construction general permit then you can use eNOI to submit your low erosivity waiver certification.

If your construction activity extends past the project completion date you specified above, you must recalculate the R factor using the original start date and a new project completion date. If the recalculated R factor is still less than 5.0, a new waiver certification form must be submitted before the end of the original construction period. If the new R factor is 5.0 or greater, the operator must submit a Notice of Intent to be covered by the Construction General Permit before the original project completion date.

Done

Rainfall Erosivity Waiver

- Project area between 1 and 5 acres
- Rainfall Erosivity (R) < 5
- Complete Notice of Intent (NOI) and Sediment Risk form through SMARTS system
- Submit Fee
  (Attachment B, CGP, $200 + applicable surcharge)

Rainfall Erosivity Waiver

- If granted, the project is exempt from the requirements of the Construction General Permit.

- However, the project must still meet the requirements of the local, governing jurisdictions.

If Project continues beyond the projected completion date on the waiver certification:

•Recalculate the rainfall erosivity factor for the new project timeline and submit into the SMARTS system

•If new R factor is 5 or more, the LRP is required to apply for coverage under the Construction General Permit.

The Individual Method

1. Sediment Risk
   - EPA Rainfall Erosivity Calculator
   - Site Specific Calculations for K and LS

2. Receiving Water Risk
   - 303(d)-listed waterbody impaired by sediment?
   - beneficial uses of SPAWN & COLD & MIGRATORY?

Soil Erodibility Factor (K)

- Determine using the Nomograph Method (Erickson Triangular Nomograph – see Appendix 1 of the Construction General Permit)

- Requires that a particle size analysis in accordance with ASTM D-422 be done for soils within the site.

- Sieve Analysis and a Hydrometer Test

Example:

Sieve Analysis and Hydrometer Analysis Results:

37.2% Sand

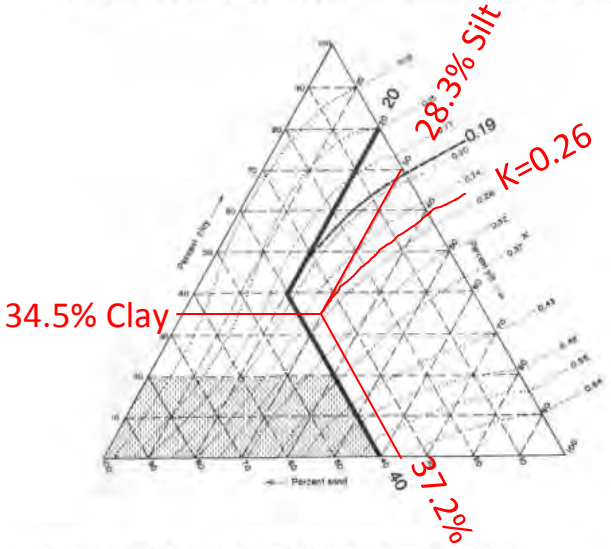
28.3% Silt

34.5% Clay

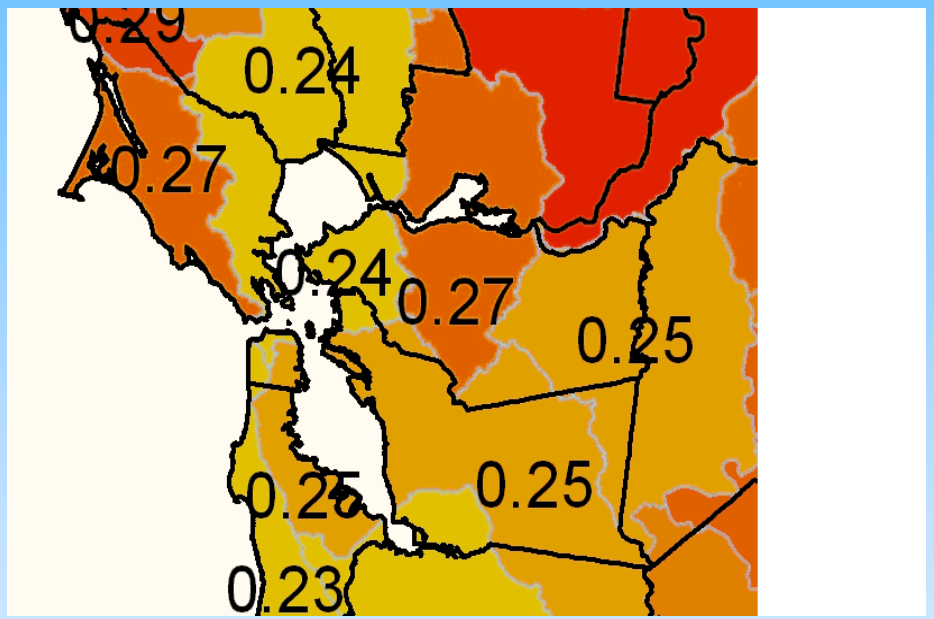
Appendix 1

Soil Erodibility Factor (K)

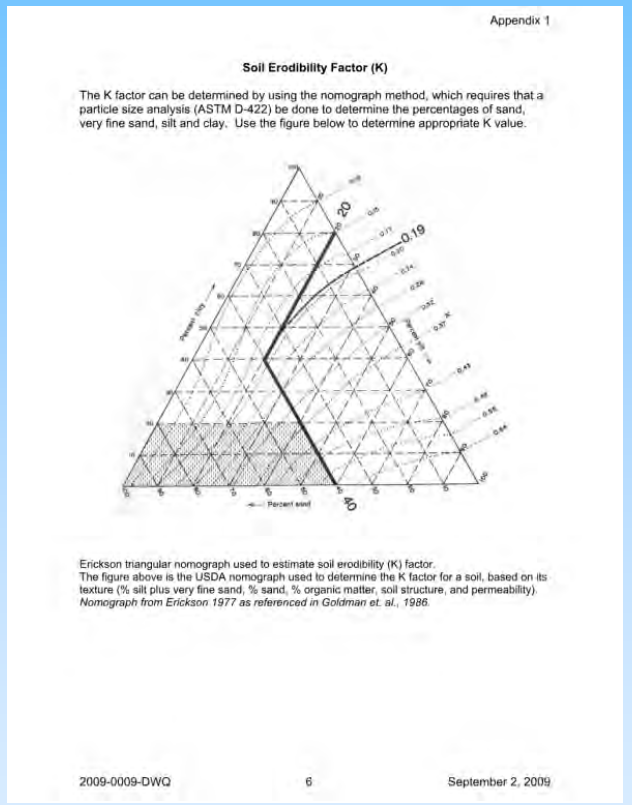
The K factor can be determined by using the nomograph method, which requires that a particle size analysis (ASTM D-422) be done to determine the percentages of sand, very fine sand, silt and clay. Use the figure below to determine appropriate K value.



Erickson triangular nomograph used to estimate soil erodibility (K) factor.
The figure above is the USDA nomograph used to determine the K factor for a soil, based on its texture (% silt plus very fine sand, % sand, % organic matter, soil structure, and permeability).
Nomograph from Erickson 1977 as referenced in Goldman et. al., 1986.



GIS Map Method



Appendix 1

Soil Erodibility Factor (K)

The K factor can be determined by using the nomograph method, which requires that a particle size analysis (ASTM D-422) be done to determine the percentages of sand, very fine sand, silt and clay. Use the figure below to determine appropriate K value.

Erickson triangular nomograph used to estimate soil erodibility (K) factor.
The figure above is the USDA nomograph used to determine the K factor for a soil, based on its texture (% silt plus very fine sand, % sand, % organic matter, soil structure, and permeability).
Nomograph from Erickson 1977 as referenced in Goldman et. al., 1986.

Individual Method

Soil Erodibility, K Factor

Length-Slope Factor (LS)

- Determine using the Table, “LS Factors for Construction Sites” in Appendix 1 of Construction General Permit

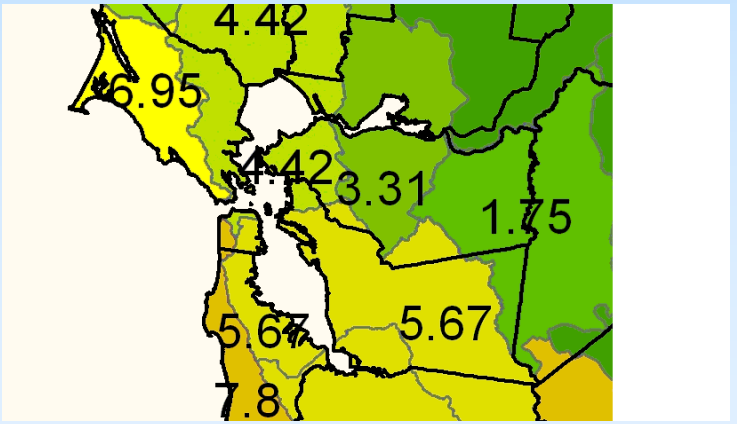
- Topographic Data from Site Plans

Sheet Flow Length (ft)	Average Watershed Slope (%)													
	0.2	0.5	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0
<3	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.35	0.36	0.38	0.39	0.41
6	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.37	0.41	0.45	0.49	0.56
9	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.38	0.45	0.51	0.56	0.67
12	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.39	0.47	0.55	0.62	0.76
15	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.40	0.49	0.58	0.67	0.84
25	0.05	0.07	0.10	0.16	0.21	0.26	0.31	0.36	0.45	0.57	0.71	0.85	0.98	1.24
50	0.05	0.08	0.13	0.21	0.30	0.38	0.46	0.54	0.70	0.91	1.15	1.40	1.64	2.10
75	0.05	0.08	0.14	0.25	0.36	0.47	0.58	0.69	0.91	1.20	1.54	1.87	2.21	2.86
100	0.05	0.09	0.15	0.28	0.41	0.55	0.68	0.82	1.10	1.46	1.88	2.31	2.73	3.57
150	0.05	0.09	0.17	0.33	0.50	0.68	0.86	1.05	1.43	1.92	2.51	3.09	3.68	4.85
200	0.06	0.10	0.18	0.37	0.57	0.79	1.02	1.25	1.72	2.34	3.07	3.81	4.56	6.04
250	0.06	0.10	0.19	0.40	0.64	0.89	1.16	1.43	1.99	2.72	3.60	4.48	5.37	7.16
300	0.06	0.10	0.20	0.43	0.69	0.98	1.28	1.60	2.24	3.09	4.09	5.11	6.15	8.23
400	0.06	0.11	0.22	0.48	0.80	1.14	1.51	1.90	2.70	3.75	5.01	6.30	7.60	10.24
600	0.06	0.12	0.24	0.56	0.96	1.42	1.91	2.43	3.52	4.95	6.67	8.45	10.26	13.94
800	0.06	0.12	0.26	0.63	1.10	1.65	2.25	2.89	4.24	6.03	8.17	10.40	12.69	17.35
1000	0.06	0.13	0.27	0.69	1.23	1.86	2.55	3.30	4.91	7.02	9.57	12.23	14.96	20.57

LS Factors for Construction Sites. *Table from Renard et. al., 1997.*

Sheet Flow Length (ft)	Average Watershed Slope (%)													
	0.2	0.5	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0
<3	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.35	0.36	0.38	0.39	0.41
6	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.37	0.41	0.45	0.49	0.56
9	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.38	0.45	0.51	0.56	0.67
12	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.39	0.47	0.55	0.62	0.76
15	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.40	0.49	0.58	0.67	0.84
25	0.05	0.07	0.10	0.16	0.21	0.26	0.31	0.36	0.45	0.57	0.71	0.85	0.98	1.24
50	0.05	0.08	0.13	0.21	0.30	0.38	0.46	0.54	0.70	0.91	1.15	1.40	1.64	2.10
75	0.05	0.08	0.14	0.25	0.36	0.47	0.58	0.69	0.91	1.20	1.54	1.87	2.21	2.86
100	0.05	0.09	0.15	0.28	0.41	0.55	0.68	0.82	1.10	1.46	1.88	2.31	2.73	3.57
150	0.05	0.09	0.17	0.33	0.50	0.68	0.86	1.05	1.43	1.92	2.51	3.09	3.68	4.85
200	0.06	0.10	0.18	0.37	0.57	0.79	1.02	1.25	1.72	2.34	3.07	3.81	4.56	6.04
250	0.06	0.10	0.19	0.40	0.64	0.89	1.16	1.43	1.99	2.72	3.60	4.48	5.37	7.16
300	0.06	0.10	0.20	0.43	0.69	0.98	1.28	1.60	2.24	3.09	4.09	5.11	6.15	8.23
400	0.06	0.11	0.22	0.48	0.80	1.14	1.51	1.90	2.70	3.75	5.01	6.30	7.60	10.24
600	0.06	0.12	0.24	0.56	0.96	1.42	1.91	2.43	3.52	4.95	6.67	8.45	10.26	13.94
800	0.06	0.12	0.26	0.63	1.10	1.65	2.25	2.89	4.24	6.03	8.17	10.40	12.69	17.35
1000	0.06	0.13	0.27	0.69	1.23	1.86	2.55	3.30	4.91	7.02	9.57	12.23	14.96	20.57

LS Factors for Construction Sites. *Table from Renard et. al., 1997.*



Linear Underground/Overhead Projects (LUP'S)

Type Determination

LUP's: Steps in Type Determination

1. Determine Receiving Water Risk

Use Flowchart in Attachment A.1 of CGP

2. Determine Project Sediment Risk

GIS Map Method or Individual Method

Is the project in a:

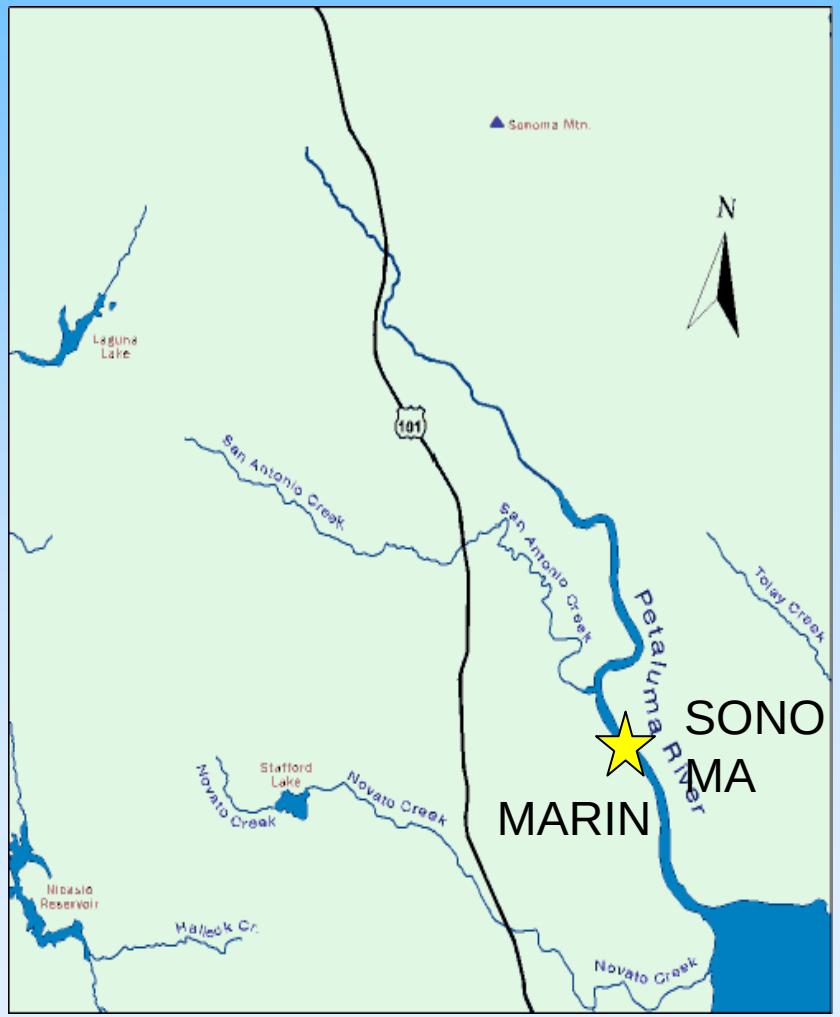
Sediment Sensitive Watershed?

•Watershed draining into a Receiving Water Body listed on 303d List for sediment/siltation, turbidity or has beneficial uses of Cold + Spawn + Migratory

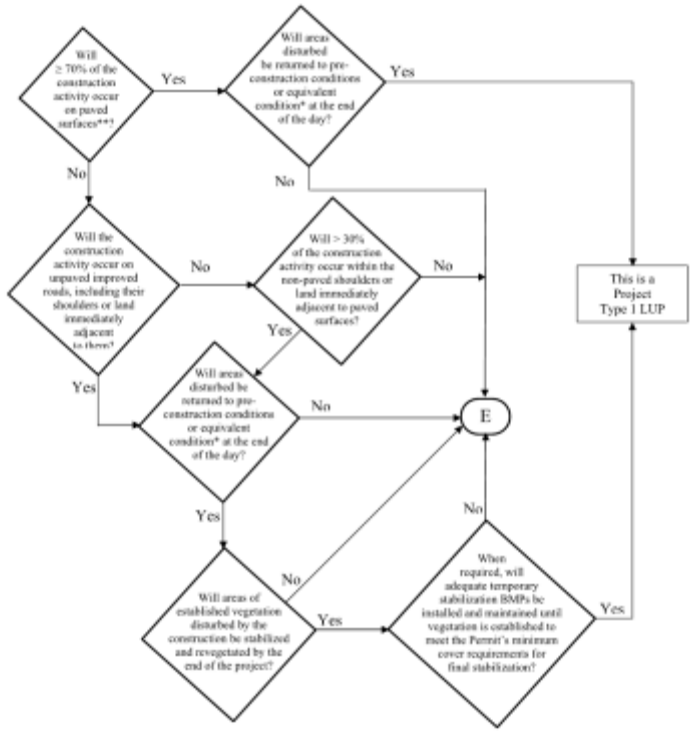
Floodplain or Flood Prone Area of a Sensitive Receiving Water Body?

•Receiving Water Body listed on 303d List for sediment/siltation, turbidity or has beneficial uses of Cold + Spawn + Migratory


SONOMA CO
MARIN CO
Dillon Beach
Tomales
TOMALES BAY WEST SHORE
TOMALES BAY EAST SHORE
WALKER CREEK
Three Peaks 1161 ft
Inverness
INVERNESS
Pt Reyes Station
LAGUNITAS
Big Rock 1887 ft
Mt Wittenberg 1407 ft
Olema
Barnabe Mountain 1466 ft
Lagunitas
SAN GERONIMO CREEK
Woodacre
Pine Mountain 1762 ft
PACIFIC OCEAN
Mt Tamalpais 2571 ft
County line
Watershed Boundary
Road
Parks & Open Space
County Open Space
Water District
State Park
National Park
0
2.5
5
Miles


Sonoma Mtn.
N
Laguna Lake
101
San Antonio Creek
San Antonio Creek
Petaluma River
Tolay Creek
SONOMA
MARIN
Stafford Lake
Novato Creek
Novato Creek
Nicasio Reservoir
Halleck Cr.
Novato Creek

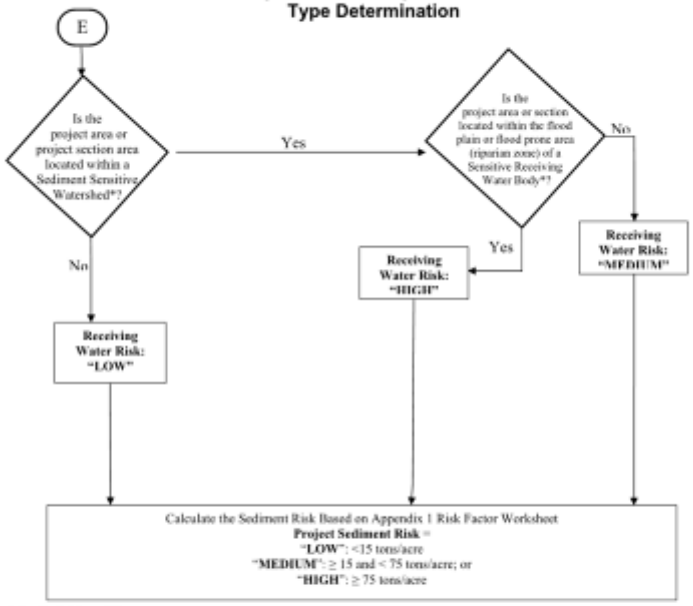
ATTACHMENT A.1
LUP Project Area or Project Section Area Type Determination



*See Definition of Terms
** Or: "Will < 30% of the soil disturbance occur on unpaved surfaces?

ATTACHMENT A.1

ATTACHMENT A.1
LUP Project Area or Project Section Area Type Determination



* See Definition of Terms

PROJECT SEDIMENT RISK

RECEIVING WATER RISK	LOW	MEDIUM	HIGH
LOW	Type 1	Type 1	Type 2
MEDIUM	Type 1	Type 2	Type 3
HIGH	Type 2	Type 3	Type 3

References and Resources

- Construction General Permit Order No. 2009-009-DWQ
- US EPA Rainfall Erosivity Calculator for Small Construction Sites
  - http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm
- UC Davis Information Center for the Environment: Geo Waterbody System Beneficial Uses
  - http://www.ice.ucdavis.edu/geowbs/asp/wbguse.asp
- Marin County Parks and Open Space/MCSTOPPP for Watershed Maps
- Thank you to Miller Pacific Engineering Group for assistance with the preparation of Module 3.

Construction Stormwater Management Compliance Workshop

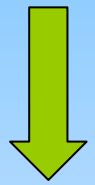
LUNCH AND VISIT WITH EXHIBITORS – BE BACK AT 1 P.M.

Construction Stormwater Management Compliance Workshop

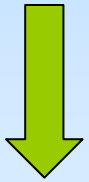
MODULE 4. MCSTOPPP CONSTRUCTION STORMWATER REQUIREMENTS

MCSTOPPP communities regulate construction sites

- Phase II permit requires control of construction site discharges



- MCSTOPPP's Stormwater Pollution Prevention Plan identifies construction site controls



- MCSTOPPP communities adopted ordinances to regulate construction projects

MCSTOPPP Construction Highlights

- Require developers to control stormwater quality
  - Prepare and implement and erosion and sediment control plan
    - Projects with potential for significant erosion
    - Projects with wet season construction
    - Projects issued grading permits
  - Maintain an erosion and sediment control program that includes minimum BMPs
  - Inspection construction sites after each major storm event
    - Check material and waste storage
    - Check erosion and sediment controls

http://mcstoppp.org/storm.htm

Stormwater Ordinances

All cities, towns, and unincorporated areas fall under local stormwater ordinances. For copies of ordinances pertaining to a specific jurisdiction, call your local stormwater contact or review the links below.

City of Belvedere
Title 8 HEALTH AND SAFETY-Chapter 8.36 URBAN RUNOFF POLLUTION PREVENTION

Town of Corte Madera
Title 9 PEACE, SAFETY AND MORALS-Chapter 9.33 URBAN RUNOFF POLLUTION PREVENTION

Town of Fairfax
Title 8 HEALTH AND SAFETY-Chapters 8.28 WATERCOURSES and 8.32 URBAN RUNOFF POLLUTION PREVENTION

City of Larkspur
Title 9 PUBLIC PEACE, SAFETY AND MORALS-Chapter 9.12 WATERCOURSES
Title 15 BUILDING REGULATIONS-Chapter 15.48 URBAN RUNOFF POLLUTION PREVENTION

County of Marin, Unincorporated
Title 23 NATURAL RESOURCES-Chapter 23.18 URBAN RUNOFF POLLUTION PREVENTION
Title 11 HARBORS AND WATERWAYS-Chapter 11.08 WATERCOURSE DIVISION OR OBSTRUCTION

City of Mill Valley
Title 17 SEWERS-Chapter 17.06 URBAN RUNOFF POLLUTION PREVENTION

City of Novato
Title 7 HEALTH-Chapter 7.4 URBAN RUNOFF POLLUTION PREVENTION

Town of Ross
Title 12 STREETS AND SIDEWALKS-Chapter 12.28 URBAN RUNOFF POLLUTION PREVENTION
Title 13 WATER AND SEWERS-Chapter 13.16 OBSTRUCTION OF WATERCOURSES

Town of San Anselmo
Title 5 SANITATION AND HEALTH-Chapter 8 URBAN RUNOFF POLLUTION PREVENTION
Title 7 PUBLIC WORKS-Chapter 12 WATERCOURSES

City of San Rafael
Title 9 HEALTH AND SANITATION-Chapter 9.3 URBAN RUNOFF POLLUTION PREVENTION
Title 11 PUBLIC WORKS-Chapter 11.30 WATERCOURSES
Title 17 WATERS AND WATERWAYS-Chapter 17.10 DUMPING, DREDGING, AND CONSTRUCTION WITHIN TIDAL WATERWAYS

City of Sausalito
Title 8 BUILDINGS AND CONSTRUCTION-Chapter 8.48 FLOODPLAIN MANAGEMENT
Title 11 ENVIRONMENTAL PROTECTION-Chapter 11.17 URBAN RUNOFF POLLUTION PREVENTION

Town of Tiburon
Title 6 PUBLIC HEALTH, SAFETY AND WELFARE-Chapter 20A URBAN RUNOFF POLLUTION PREVENTION

Construction Activity Regulation Matrix

Project Type/Size	Regulated by MCSTOPPP	Regulated by State CGP?
Projects <1 acre	Yes	Only if part of a common plan of development ≥1 acre
Projects ≥ 1 acre with CGP waiver	Yes	File Waiver Certification
Projects ≥ 1 acre	Yes	Yes

Unincorporated County BMP requirements

Erosion Control	Sediment Control	Pollution Prevention
Scheduling and timing of grading activities	Detention basins	Designated washout areas
Timely revegetation of graded slopes	Dams	Control of trash and recycled materials
Hydroseed and hydraulic mulches	Filters	Tarping of materials stored
Erosion control blankets	Construction entrances to prevent tracking	Proper location of and maintenance of worker sanitary facilities
The combination of BMPs used, and their execution in the field, must be customized to the site using up-to-date standards and practices.		

http://library.municode.com/HTML/16476/level3/TIT24DEST_CH24.04IM_VIIIGR.html#TIT24DEST_CH24.04IM_VIIIGR_24.04.627SURUPOCOPL

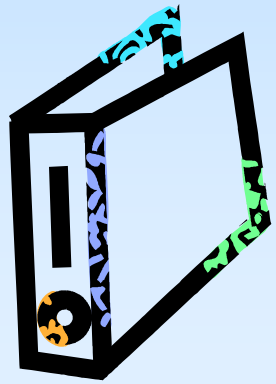
Big SWPPPs and Little SWPPPs

Big SWPPP

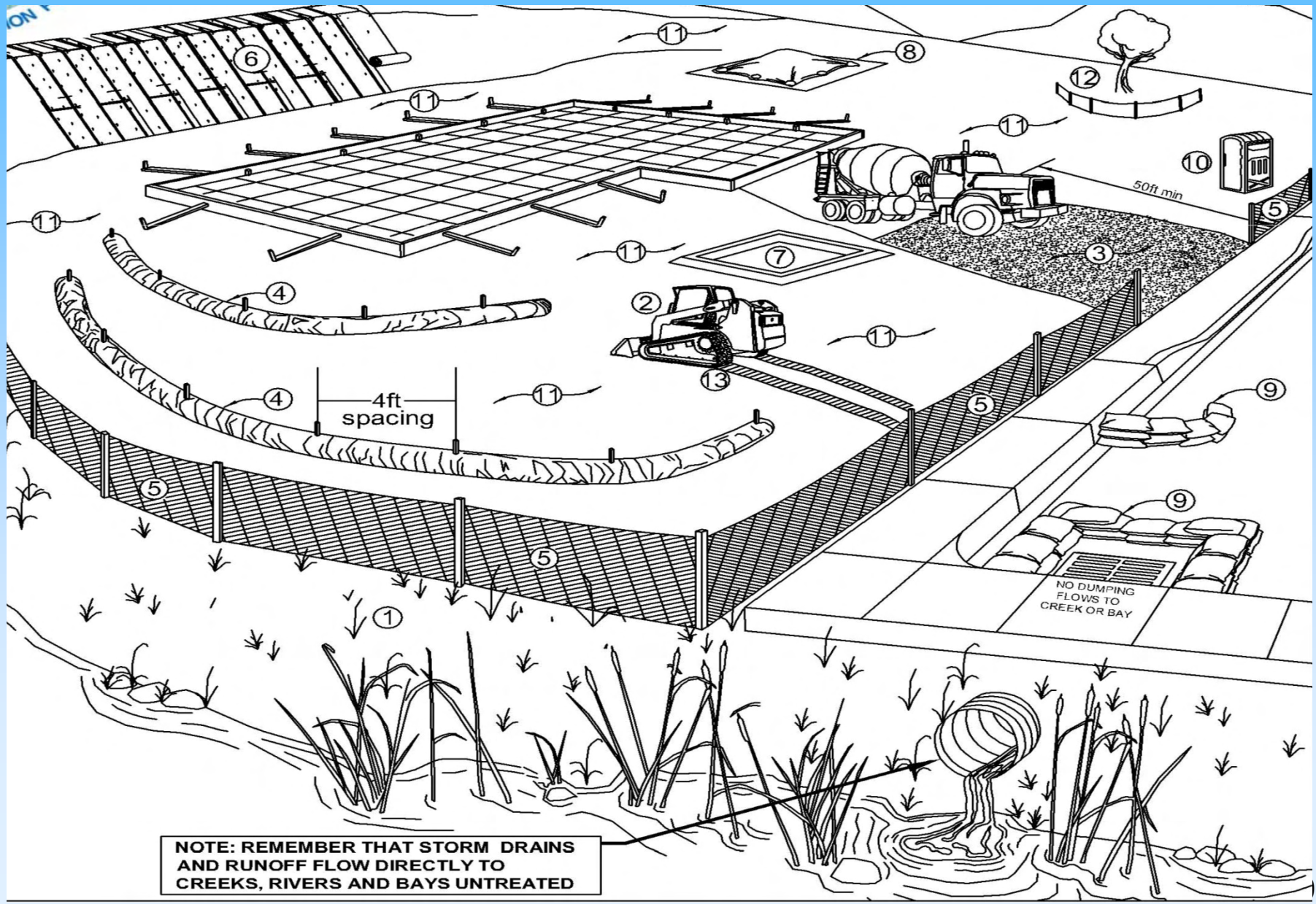
- Projects ≥ 1 acre covered by the State CGP and Local ordinance
  - SWPPP addresses CGP and local requirements

Little SWPPP

- Projects < 1 acre covered by Local ordinance
- Projects ≥ 1 acre subject to CGP waiver
  - SWPPP or Erosion and Sediment Control Plan addresses local requirements



Layers of BMPs



Construction Stormwater Management Compliance Workshop

MODULE 5. CONSTRUCTION SITE MONITORING PRACTICAL FIELD TOOLS

Get to know this website

http://www.wrh.noaa.gov/mtr/

- Forecast of rain = ACTION
- *Likely Rain Events*: 50% or greater probability of precipitation.
- *Qualifying Rain Events:* ½-inch of rain

Detailed Forecast for a Qualifying Rain Event

What is a storm anyway?

- How many Qualifying Rain Events in February?
- How many Storm Water Monitoring Days?

February, 2011

Day of Month	Day of Year	Wind Ave. V. mph	Wind Dir. Deg	Wind Max. mph	Air Temperature Mean Deg. Fahrenheit	Air Temperature Max Deg. Fahrenheit	Air Temperature Min Deg. Fahrenheit	Humidity Mean Percent	Humidity Max Percent	Humidity Min Percent	Dew Point Deg. Fahrenheit	Wet Bulb Deg. Fahrenheit	Baro. Press. in HG	Total Precip. inches
1	32	6.4	20		53	62	46	66	93	37	41	47		0.00
2	33	8.7	93		54	62	49	38	59	18	28	42		0.00
3	34	3.0	338		50	59	42	65	86	36	38	44		0.00
4	35	3.5	332		51	62	44	74	86	50	43	46		0.00
5	36	7.2	322		59	72	46	63	83	40	45	50		0.00
6	37	8.9	343	20.7	64	72	56	50	72	37	44	52		0.00
7	38	9.4	305	32.2	55	63	50	70	83	52	45	49		0.00
8	39	17.0	334	36.8	55	59	51	39	63	28	30	43		0.00
9	40	6.2			53	59	43	48	66	33	33	43		0.00
10	41	3.7	327		51	63	41	53	80	29	33	42		0.00
11	42	1.8	360		53	63	42	62	83	37	39	45		0.00
12	43	5.3	342		52	64	44	72	86	30	43	47		0.00
13	44	6.7		21.9	49	55	44	78	93	59	42	45		0.00
14	45	13.6	166	34.5	54	57	50	81	90	61	48	50		0.11
15	46	18.9	165	43.7	56	60	52	69	90	51	45	50		0.44
16	47	14.7	233	32.2	50	54	44	70	97	50	40	45		0.76
17	48	12.4	157	26.5	47	50	45	80	90	68	41	44		0.80
18	49	10.3		29.9	43	46	40	85	93	79	39	41		0.89
19	50	6.4	350		43	45	41	83	89	79	38	40		0.83
20	51	7.4	287		46	53	37	73	93	57	38	42		0.00
21	52	5.7	76		47	51	41	70	82	56	37	42		0.00
22	53	8.6	295	18.4	49	55	40	68	82	51	39	43		0.00
23	54	9.0	311	28.8	47	53	42	72	85	54	39	43		0.00
24	55	7.6	194		48	51	46	77	86	71	42	45		0.31
25	56	17.4	261	38.0	47	53	40	69	90	51	37	42		0.65
26	57	7.0	322		42	48	36	64	79	46	31	37		0.00
27	58	6.1	296	23.0	46	54	37	71	86	52	37	41		0.00
28	59			17.3		56	40		86	45				

To monitor or not to monitor?

- *ALL* risk levels require *visual* monitoring/inspections:
  - 2 days (48 hours) prior to Qualifying Rain Event
  - Daily during storm
  - 2 days after a Qualifying Rain Events
  - During the discharge of stored or contained storm water derived from a Qualifying Rain Event
  - Quarterly for non-storm water discharges and their sources

To monitor or not to monitor?

- Monitoring (Inspections/Sampling) are not required
  - Outside of scheduled site business hours
  - During dangerous weather conditions e.g. flooding, electrical storms

Sampling Requirements

- The Construction Site Monitoring Program (CSMP, part of the SWPPP) identifies locations for inspection and sampling
- Sample *ALL* non-visible pollutant discharges
- Sample storm water discharges during qualifying rain events
  - Risk Level 2 and 3 only
  - pH and Turbidity
  - any additional parameters required by RWQCB

Risk Level 1 Monitoring

Visual Inspections					Sample Collection	
Quarterly non-storm discharge	Pre-Storm Event		Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water
	Baseline	REAP				
√	√		√	√		

Visual Monitoring/Inspections

- Performed by, or under supervision of a QSP
- BMPs weekly and daily during all storm events
- Baseline - 48 hours prior to a Qualifying Rain Event
  - drainage areas for pollutant sources
  - BMPs
  - storm water storage and containment areas
- Storm water discharges - 48 hours after a Qualifying Rain Event
- Discharge of stored or contained stormwater
- Quarterly for non-storm water discharge
- Record inspections on State Water Board checklist

Sample Collection for Risk Level 1

- WooHoo! No routine sampling requirement for storm water
- Oops! Sample for non-visible pollutants as needed
  - During any breach, malfunction, leakage or spill of a pollutant not visually detectable in storm water
  - At discharge location(s) and upgradient of spill
  - During the first 2 hours of discharge

Risk Level 2 Monitoring

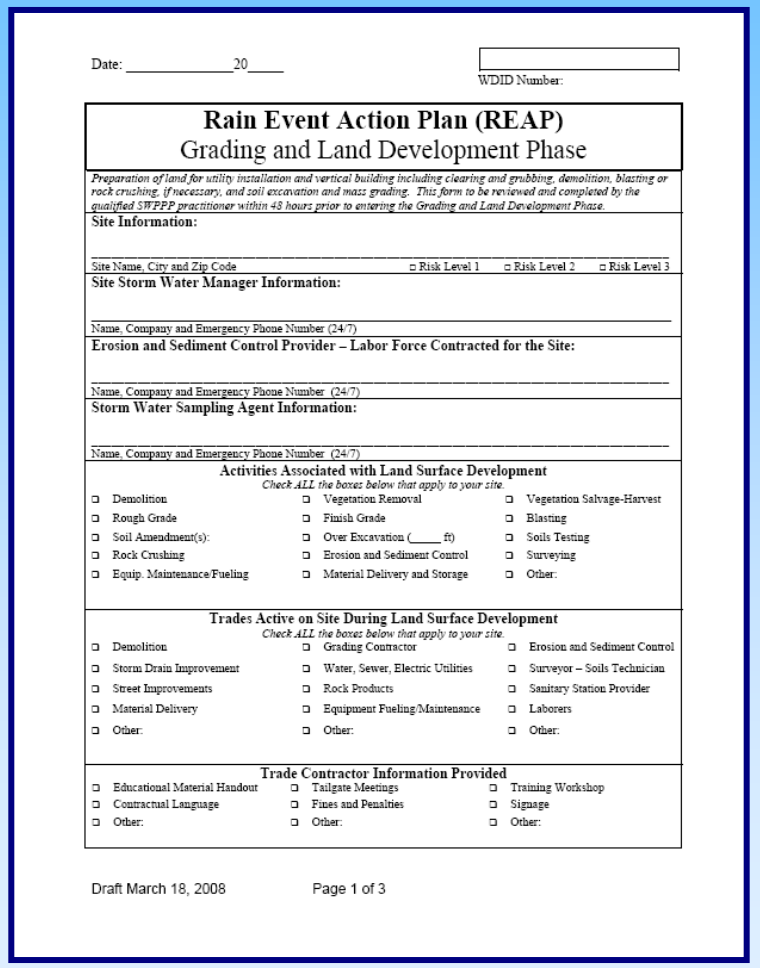
Visual Inspections					Sample Collection	
Quarterly non-storm discharge	Pre-Storm Event		Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water
	Baseline	REAP				
√	√	√	√	√	√	

Visual Monitoring/Inspections – Basic requirements are the same for ALL risk levels

- Performed by, or under supervision of a QSP
- Inspect BMPs weekly and daily during all storm events
- Baseline inspection within 48 hour prior to a Qualifying Rain Event
  - all drainage areas for pollutant sources
  - all BMPs
  - any storm water storage and containment areas
- All storm water discharges within 48 hours after a Qualifying Rain Event
- During discharge of stored or contained stormwater
- Quarterly for non-storm water discharges

Rain Event Action Plan (REAP)

- QSP must prepare 48-hours prior to a likely precipitation event forecast to have 50% or greater probability of producing precipitation.
- Identify:
  - Site Storm Water Manager
  - Erosion/Sediment Control Provider
  - Sampling Agent
- Describe phase of construction, active trades and suggested actions
- Have on-site 24-hours in advance of storm



Date: _____20____

WDID Number:

Rain Event Action Plan (REAP)
Grading and Land Development Phase

Preparation of land for utility installation and vertical building including clearing and grubbing, demolition, blasting or rock crushing, if necessary, and soil excavation and mass grading. This form to be reviewed and completed by the qualified SWPPP practitioner within 48 hours prior to entering the Grading and Land Development Phase.

Site Information:

Site Name, City and Zip Code ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3

Site Storm Water Manager Information:

Name, Company and Emergency Phone Number (24/7)

Erosion and Sediment Control Provider – Labor Force Contracted for the Site:

Name, Company and Emergency Phone Number (24/7)

Storm Water Sampling Agent Information:

Name, Company and Emergency Phone Number (24/7)

Activities Associated with Land Surface Development
Check ALL the boxes below that apply to your site.

☐ Demolition	☐ Vegetation Removal	☐ Vegetation Salvage-Harvest
☐ Rough Grade	☐ Finish Grade	☐ Blasting
☐ Soil Amendment(s):	☐ Over Excavation (_____ ft)	☐ Soils Testing
☐ Rock Crushing	☐ Erosion and Sediment Control	☐ Surveying
☐ Equip. Maintenance/Fueling	☐ Material Delivery and Storage	☐ Other:

Trades Active on Site During Land Surface Development
Check ALL the boxes below that apply to your site.

☐ Demolition	☐ Grading Contractor	☐ Erosion and Sediment Control
☐ Storm Drain Improvement	☐ Water, Sewer, Electric Utilities	☐ Surveyor – Soils Technician
☐ Street Improvements	☐ Rock Products	☐ Sanitary Station Provider
☐ Material Delivery	☐ Equipment Fueling/Maintenance	☐ Laborers
☐ Other:	☐ Other:	☐ Other:

Trade Contractor Information Provided

☐ Educational Material Handout	☐ Tailgate Meetings	☐ Training Workshop
☐ Contractual Language	☐ Fines and Penalties	☐ Signage
☐ Other:	☐ Other:	☐ Other:

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Sample Collection for Risk Level 2

- Unlike Risk Level 1, water quality sampling and analysis is required for qualifying rain events
- Sample locations shown on maps in Construction Site Monitoring Program portion of SWPPP
- Sample to characterize discharges from the entire project disturbed area
- Sample where discharges leave site
- Representative discharges from each drainage area
- Sample run-on if it may contribute to exceedance of NALs:

  6.5 > pH > 8.5 or Turb > 250 NTU

Risk Level 2 Monitoring Parameters

- Analyze samples for pH and Turbidity
- Collect at least 3 samples minimum per day of event
- Report results to State Water Board within 10 days

Parameter	Test Method	Min. Detection Limit	Numeric Action Level
pH	Field test with calibrated portable instrument	0.2 pH	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	Lab or Field test with calibrated portable instrument	1 NTU	250 NTU

Non-visible pollutant monitoring

Sample for non-visible pollutants as needed

- During any breach, malfunction, leakage or spill of a pollutant not visually detectable in storm water
- Collect at discharge location(s) and upgradient of spill
- Collect samples during the first 2 hours of discharge

- Applies to ALL risk levels

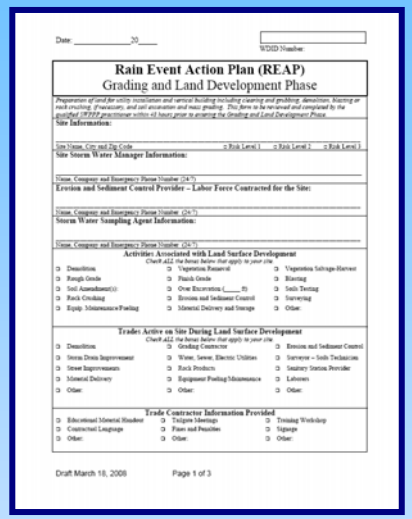
Risk Level 3 Monitoring

Visual Inspections					Sample Collection	
Quarterly non-storm discharge	Pre-Storm Event		Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water
	Baseline	REAP				
√	√	√	√	√	√	√ [1]

- [1] When NEL is exceeded (6.0 > pH > 9.0 or Turbidity > 500 NTU)

Risk Level 3 Monitoring/Inspection

- Perform visual monitoring/inspection as with risk levels 1 or 2
- Prepare REAP 48-hrs prior to likely rain events (same as with risk level 2)
- Collect and analyze samples for pH and Turbidity (same as risk level 2)
- May need to sample for additional parameters



Date: _____ 20____ WDID Number:

Rain Event Action Plan (REAP)
Grading and Land Development Phase

Preparation of land for utility installation and service building including clearing and grubbing, demolition, blasting or rock crushing, if necessary, and soil excavation and mass grading. This form to be reviewed and completed by the qualified (QSP/D) practitioner within 48 hours prior to entering the Grading and Land Development Phase.

Site Information:

Site Name, City and Zip Code ☐ Risk Level 1 ☐ Risk Level 2 ☐ Risk Level 3

Site Storm Water Manager Information:

Name, Company and Emergency Phone Number (24/7)

Erosion and Sediment Control Provider – Labor Force Contracted for the Site:

Name, Company and Emergency Phone Number (24/7)

Storm Water Sampling Agent Information:

Name, Company and Emergency Phone Number (24/7)

Activities Associated with Land Surface Development
Check all the boxes below that apply to your site

☐ Demolition	☐ Vegetation Removal	☐ Vegetation Salvage-Harvest
☐ Rough Grade	☐ Finish Grade	☐ Blasting
☐ Soil Amendment(s):	☐ Over Excavation (____ ft)	☐ Soils Testing
☐ Rock Crushing	☐ Erosion and Sediment Control	☐ Surveying
☐ Equip. Maintenance/Fueling	☐ Material Delivery and Storage	☐ Other:

Trades Active on Site During Land Surface Development
Check all the boxes below that apply to your site

☐ Demolition	☐ Grading Contractor	☐ Erosion and Sediment Control
☐ Storm Drain Improvement	☐ Water, Sewer, Electric Utilities	☐ Surveyor – Soils Technician
☐ Street Improvements	☐ Rock Products	☐ Sanitary Station Provider
☐ Material Delivery	☐ Equipment Fueling/Maintenance	☐ Laborers
☐ Other:	☐ Other:	☐ Other:

Trade Contractor Information Provided

☐ Educational Material Handout	☐ Tailgate Meetings	☐ Training Workshop
☐ Constructed Language	☐ Fines and Penalties	☐ Signage
☐ Other:	☐ Other:	☐ Other:

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Unique Requirements for Risk Level 3

- Projects 30 acres or larger require Bioassessment
- NAL (6.5 > pH > 8.5 or Turbidity > 250 NTU) *and* NEL (6.0 > pH > 9.0 or Turbidity > 500 NTU)
- If the NEL is exceeded:
  - Sample receiving waters upgradient/downgradient
  - Sample for SSC (ASTM D3977-97)
  - Submit NEL violation report

Exceptions to the NEL rule

- Storm greater than a *Compliance Storm Event*:
  - 5-year 24 hr storm
  - wrcc.dri.edu/pcpnfreq/nca5y24.gif
  - On site rain gauge
  - Nearby gov. rain gauge

- Run on from
  - Forest fire
  - Other Natural Disaster

More on Non-Visible Pollutants

- Examples of non-visible pollutants:
  - Acids
  - Fertilizers
  - Herbicides/Pesticides
  - Paint thinners/solvents
  - Lead - e.g. contaminated soil
  - Leaks from batteries
  - Cement curing compounds
- Essential supplies for non-visible pollutant sampling
  - Cooler
  - Powder free nitrile gloves
  - Bottles for likely non-visible pollutants on your site common ones are:
    - VOAs
    - Plastic bottles
    - Amber glass bottles

A word on visible pollutants

- Examples of visible pollutants:
  - Fuels, Oils, Lubricants
  - Portland Cement
  - Paint
  - Portable toilet waste
- "The discharger shall ensure that…discharges will not contain pollutants in quantities that threaten to cause pollution or a public nuisance"

Pollutant Testing Guidance Table

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Cleaning Products	Acids	No	**pH** Acidity Anions (acetic acid, phosphoric acid, sulfuric acid, nitric acid, hydrogen chloride)	pH Meter Acidity Test Kit	EPA 150.1 (pH) SM 2310B (Acidity) EPA 300.0 (Anion)
	Bleaches	No	**Residual Chlorine**	Chlorine	SM 4500-CL G (Res. Chlorine)
	Detergents	Yes – Foam	Visually Observable – No Testing Required		
	TSP	No	**Phosphate**	Phosphate	EPA 365.3 (Phosphate)
	Solvents	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)
Portland Concrete Cement & Masonry Products	Portland Cement (PCC)	Yes – Milky Liquid	Visually Observable – No Testing Required		
	Masonry Products	No	**pH**	pH Meter	EPA 150.1 (pH)
			Alkalinity	Alkalinity or Acidity Test Kit	SM 2320 (Alkalinity)
	Sealant (Methyl Methacrylate – MMA)	No	**Methyl Methacrylate**	None	EPA 625 (SVOC)
			Cobalt Zinc		EPA 200.8 (Metal)
	Incinerator Bottom Ash Bottom Ash Steel Slag Foundry Sand Fly Ash Municipal Solid Waste	No	**Aluminum** **Calcium** **Vanadium** **Zinc**	Calcium Test	EPA 200.8 (Metal) EPA 200.7 (Calcium)
	Mortar	Yes – Milky Liquid	Visually Observable – No Testing Required		
	Concrete Rinse Water	Yes – Milky Liquid	Visually Observable – No Testing Required		
	Non – Pigmented Curing Compounds	No	Acidity Alkalinity	pH Meter Alkalinity or Acidity Test Kit	SM 2310B (Acidity) SM 2320 (Alkalinity)
			pH		EPA 150.1 (pH)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Landscaping and Other Products	Aluminum Sulfate	No	Aluminum	TDS Meter	EPA 200.8 (Metal)
			TDS	Sulfate	EPA 160.1 (TDS)
			Sulfate		EPA 300.0 (Sulfate)
	Sulfur-Elemental	No	**Sulfate**	Sulfate	EPA 300.0 (Sulfate)
	Fertilizers – Inorganic [4]	No	**Nitrate**	Nitrate	EPA 300.0 (Nitrate)
			Phosphate	Phosphate	EPA 365.3 (Phosphate)
			Organic Nitrogen	None	EPA 351.3 (TKN)
	Fertilizers – Organic	No	Potassium	None	EPA 200.8 (Metal)
			TOC		EPA 415.1 (TOC)
			Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Organic Nitrogen		EPA 351.3 (TKN)
			COD		EPA 410.4 (COD)
	Natural Earth (Sand, Gravel, and Topsoil)	Yes – Cloudiness and turbidity	Visually Observable – No Testing Required		
	Herbicide Pesticide	No	**Herbicide Pesticide**	None	Check lab for specific herbicide or pesticide
	Lime		Alkalinity	pH Meter	SM 2320 (Alkalinity)
			pH	Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
Painting Products	Paint	Yes	Visually Observable – No Testing Required		
	Paint Strippers	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Resins	No	**COD**	None	EPA 410.4 (COD)
			SVOC		EPA 625 (SVOC)
	Sealants	No	**COD**	None	EPA 410.4 (COD)
	Solvents		**COD**		EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Lacquers, Varnish, Enamels, and Turpentine	No	**COD**	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Thinners		**COD**		EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
Portable Toilet Waste Products	Portable Toilet Waste	Yes	Visually Observable – No Testing Required		

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Contaminated Soil [5]	Aerially Deposited Lead[4]	No	**Lead**	None	EPA 200.8 (Metal)
	Petroleum	Yes – Rainbow Surface Sheen and Odor	Visually Observable – No Testing Required		
Line Flushing Products	Chlorinated Water	No	**Total chlorine**	Chlorine	SM 4500-CL G (Res. Chlorine)
Adhesives	Adhesives	No	COD	None	EPA 410.4 (COD)
			Phenols	Phenol	EPA 420.1 (Phenol)
			SVOC	None	EPA 625 (SVOC)
Dust Palliative Products	Salts (Magnesium, Chloride, Calcium Chloride, and Natural Brines)	No	Chloride	Chloride	EPA 300.0 (Chloride)
			TDS	TDS Meter	EPA 160.1 (TDS)
			Cations (Sodium, Magnesium, Calcium)	None	EPA 200.7 (Cations)
Vehicle	Antifreeze and Other Vehicle Fluids	Yes – Colored Liquid	Visually Observable – No Testing Required		
	Batteries	No	Sulfuric Acid	None	EPA 300.0 (Sulfate)
			Lead		EPA 200.8 (Metal)
			pH	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
	Fuels, Oils, Lubricants	Yes – Rainbow Surface Sheen and Odor	Visually Observable – No Testing Required		
Treated Wood Products (Section 58, 80-3.01B(2), and Special Provisions)	Ammoniacal Copper Zinc Arsenate (ACZA), Copper-Chromium-Arsenic (CCA), Ammoniacal-Copper-Arsenate (ACA), Copper Naphthenate	No	Arsenic	Total Chromium	EPA 200.8 (Metal)
			Total Chromium		
			Copper		
			Zinc		
	Creosote	Yes – Rainbow Surface or Brown Suspension	Visually Observable – No Testing Required		

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Soil Amendment/ Stabilization Products	Polymer/ Copolymer [5, 7]	No	Organic Nitrogen	None	EPA 351.3 (TKN)
			BOD		EPA 405.1 (BOD)
			COD		EPA 410.4 (COD)
			DOC		EPA 415.1 (DOC)
			Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Sulfate	Sulfate	EPA 300.0 (Sulfate)
			Nickel	None	EPA 200.8 (Metal)
	Lignin Sulfonate	No	Alkalinity	Alkalinity	SM 2320 (Alkalinity)
			TDS	TDS Meter	EPA 160.1 (TDS)
	Psyllium	No	COD	None	EPA 410.4 (COD)
			TOC		EPA 415.1 (TOC)
	Guar/Plant Gums	No	COD	None	EPA 410.4 (COD)
			TOC		EPA 415.1 (TOC)
			Nickel		EPA 200.8 (Metal)
	Gypsum	No	pH	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
			Calcium	Calcium	EPA 200.7 (Calcium)
			Sulfate	Sulfate	EPA 300.0 (Sulfate)
			Aluminum	None	EPA 200.8 (Metal)
			Barium		
			Manganese		
			Vanadium		

Acronyms:

BOD – Biochemical Oxygen Demand
DOC – Dissolved Organic Carbon
HACH – Worldwide company that provides advanced analytical systems and technical support for water quality testing.
SVOC – Semi-Volatile Organic Compounds
TKN – Total Kjeldahl Nitrogen
TSP – Tri-Sodium Phosphate
COD – Chemical Oxygen Demand
EPA – Environmental Protection Agency
SM – Standard Method
TDS – Total Dissolved Solids
TOC – Total Organic Carbon
VOC – Volatile Organic Compounds

SunStar Laboratories, Inc.

Bottle Kit Guide(Water)

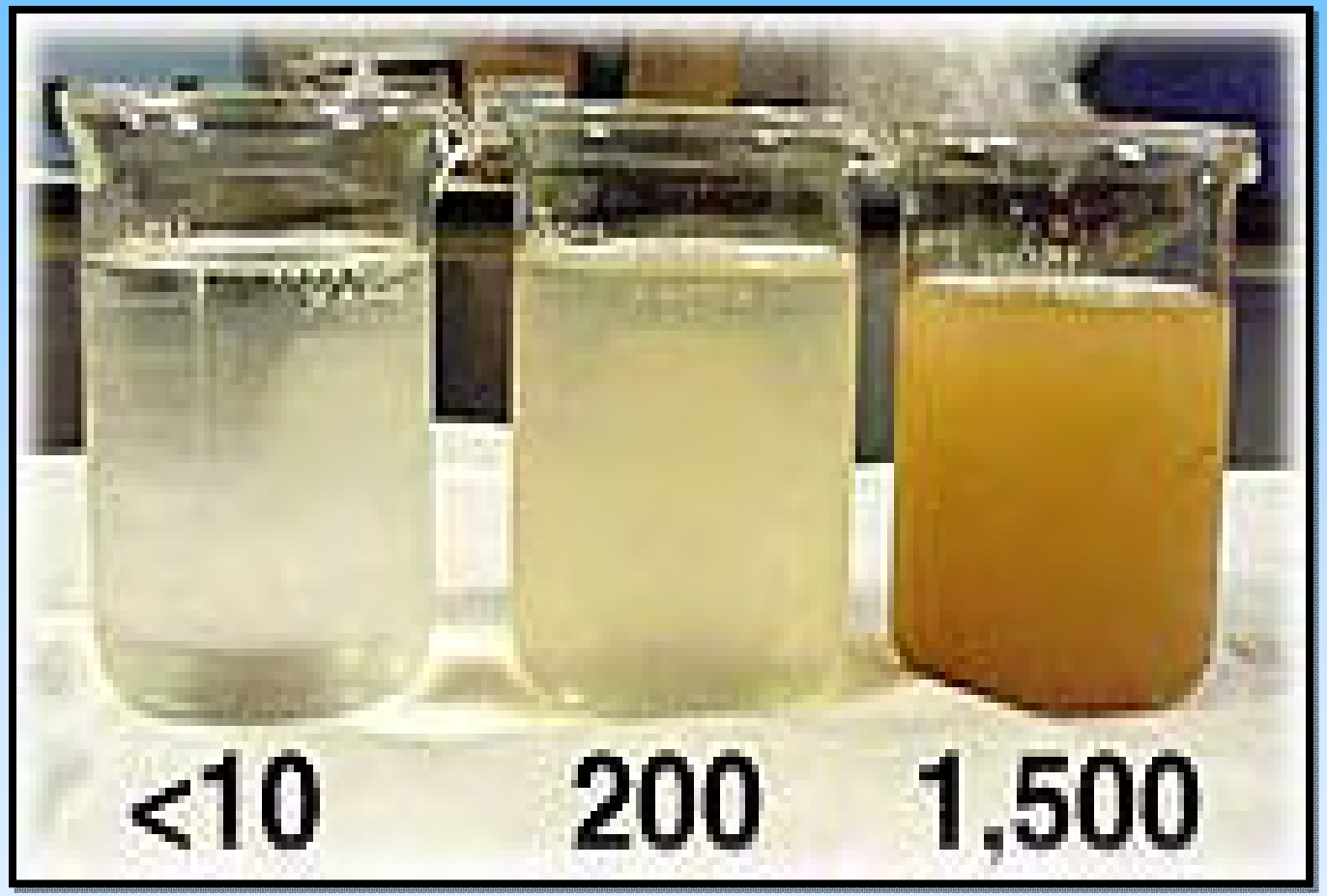
Sample Containers and Preservation

Method	Description	Bottle Type	# of Bottles	Preservative	Hold Time
8260	Volatile Organic Compounds	40 ml VOA	3	HCL	14 days**
8015	TPH -- Gasoline	40 ml VOA	3	HCL	14 days**
8015	TPH -- Diesel	40 ml VOA	3	unpreserved	7 days
8015	TPH -- Carbon Chain	40 ml VOA	3	unpreserved	7 days
8021	BTEX	40 ml VOA	3	HCL	14 days**
418.1	TRPH	40 ml VOA	2	unpreserved	28 Days
8260SIM	1,4 Dioxane	40 ml VOA	2	HCL	28 Days
8270	SVOC	1 liter amber	1	unpreserved	7 days
8081	Chlorinated Pesticides	1 liter amber	1	unpreserved	7 days
8082	PCB's	1 liter amber	1	unpreserved	7 days
8141	Organo Phosphate Pesticides	1 liter amber	1	unpreserved	7 days
8151	Herbicides	1 liter amber	1	unpreserved	7 days
SM 4500	Cyanide	500 ml poly/glass	1	NaOH	14 days
6010	Metals and Mercury, Total	250 ml poly	1	HNO3	6 months
6010	Metals and Mercury, Dissolved	250 ml poly	1	unpreserved	6 months
6020	Metals by ICP-MS	250 ml poly	1	HNO3	6 months
5035	5035 Kits	40 ml VOA	2	Sodium Bisulfate	14 days
		40 ml VOA	1	Methanol	14 days
		Syringe	1	clean	14 days
9040/9045	pH	250 ml poly	1	unpreserved	Immediately
310.1	Alkalinity	250 ml poly	1	unpreserved	14 days
300	IC: NO3, NO4, SO4, Cl, F, PO4, Br	250 ml poly	1	unpreserved	28 days
7199/7196	Cr VI, Hexavalent Chromium	250 ml poly	1	unpreserved	24 hours
2540C	TDS, Total Dissolved Solids	250 ml poly	1	unpreserved	7 days
160.2	TSS, Total Suspended Solids	250 ml poly	1	unpreserved	7 days
2540F	SS, Settleable Solids	1 liter poly	1	unpreserved	48 hours
2510B	Conductivity	250 ml poly	1	unpreserved	28 days
6010	Ferrous Iron	250 ml poly	1	unpreserved	6 months
RSK 175	Dissolved Gases Methane, Ethane, Ethene	40 ml VOA	2	unpreserved	28 days
376.2	Sulfide	250 ml poly	1	unpreserved	Immediately***
415.1	TOC, Total Organic Carbon	40 ml VOA	4	unpreserved	28 days
SM 5310	TIC, Total Inorganic Carbon	40 ml VOA	4	unpreserved	28 days
1664	Oil and Grease	500 ml poly	1	unpreserved	28 days
350.3	Ammonia, Total	500 ml poly	1	H2SO4	28 days
180.1	Turbidity	250 ml poly	1	unpreserved	48 hours

Notes:

** 7 days without HCL (HS) Head Space
*** Separate and preserve immediately to extend hold time to 7 days
Methods subject to change

Demonstration of Field Meters



Construction Stormwater Management Compliance Workshop

MODULE 6. BECOMING A QSD OR QSP

Who can be a QSD?

1. Must have educational or professional training ("pre-requisite training") identified in the CGP
   - **Became effective July 1, 2010**
2. Must complete a QSD training course offered or sponsored by the State Board and pass exam
   - **Becomes effective September 2, 2011**

Who can be a QSP?

1. Must have educational or professional training (“pre-requisite training”) identified in the CGP
2. Must complete a QSP training course offered or sponsored by the State Board and pass exam

- **Both requirements become effective September 2, 2011**

Pre-requisites for QSD and QSP

QSD

- Registered CA Professional Engineer - Civil
- Registered CA Professional Geologist or Engineering Geologist
- Registered CA Landscape Architect
- Registered Professional Hydrologist (AIH)
- Certified Professional
  - Erosion & Sediment Control (CPESC), (NICET)
  - Storm Water Quality (CPSWQ)

QSP

- Qualified as a QSD
- Certified Inspection of Sediment and Erosion Control (CISEC)
- Certified Erosion, Sediment, Storm Water Inspector (CESSWI)

Professional certifications QSD pre-requisite requirements

CPESC/CPSWQ

- Minimum High School diploma/GED
- Education and experience combination
- Four references
- Complete application
- Pay application/exam fee
- Pass exam
- Annual renewal fee
- 60 PDUs / 3 years

NICET

- Minimum High School diploma/GED
- Experience driven
- 4 levels of certifications
- Supervisor verification and 1 recommendation
- Exam fee
- Pass open book exam
- Annual renewal fee

Professional certifications QSP pre-requisite requirements

CISEC

- Two years ESC inspection experience
- Three references
- Current in field
- Complete application
- Pay Application/Exam – Training Fee
- Pass exam
- Annual renewal fee
- Continuing Development 12 hours

CESSWI

- High School diploma or GED
- Experience
- Four references
- Complete application
- Pay Application fee
- Pass exam
- Annual renewal fee
- 10 Professional Development Units

State approved CASQA training program

- Collaboration of stakeholders and regulators
  - Developed training curricula
    - 5 modules required for QSP
    - 3 additional modules required for QSD
- CASQA approves Trainers of Record (ToRs)
  - ToRs schedule training, set locations, price
  - ToRs train per curricula but have ability to enhance modules
- Exams are **only** proctored by the State or Regional Board staff

Training curricula

QSP & QSD Modules	QSD Only Modules
1. Training Overview and Regulations (1.5 hr)	6. Project Planning and Site Assessment (4hr)
2. Erosion Processes and Sediment Control (2 hr)	7. SWPPP Development and PRDs (2 hr)
3. SWPPP Implementation (4 hr)	8. Project Closeout (1 hr)
4. Monitoring (4 hr)	
5. Reporting (3 hr)	

QSD check list

- ☑ Obtain pre-requisite certification or license
  - Check timeframes e.g., CPESC 3 weeks for application review
- ☑ Complete QSD course
  - Cannot take exam without proof of course completion
- ☑ Register for QSD exam
  - Numerous exam options, but many are full
- ☑ Pass QSD exam
  - 6-8 weeks for exams to be scored
- ☑ Register with CASQA
  - Submit proof of pre-requisite and pay fee
  - Receive QSD certificate within 7-10 business days

Plan ahead

Each step in the process can take several weeks to months

Where to look for more info

- EnviroCert, Inc. (CPESC, CPSWQ, CESSWI)

envirocert.org

- CISEC, Inc

cisecinc.org

- National Institute for Certification in Engineering Technologies

nicet.org/candidates/programs/erosion

- California Stormwater Quality Association

casqa.org

- State Water Board Training Academy

swrcb.ca.gov/water_issues/programs/stormwater/training.shtml

Construction Stormwater Management Compliance Workshop

MODULE 7. WRAP-UP AND OPEN DISCUSSION

Test your CGP acronym savvy

- SMARTS
- QSD
- REAP
- CISEC
- ATS
- NOAA
- LUP
- CPESC
- SSC
- BMP
- PRD
- NAL
- CESSWI
- RUSLE
- NICET
- LRP

Questions

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PLEASE COMPLETE YOUR POST WORKSHOP SURVEYS