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Caltrans Monitoring and Water Quality Research Program

2002-2003

Litter

Data Reporting Protocols

CTSW-RT-02-068

Prepared for:

California Department of Transportation
Environmental Program

GENERAL INSTRUCTIONS

Please read and be familiar with these general instructions. Litter data can only be accurately and expediently incorporated into the Caltrans Statewide Storm Water Database if these instructions are carefully followed. Adhering to these instructions will facilitate the processing of data and eliminate the need for time-consuming “record-by-record” data validation at year’s end.

- **Get Monitoring Site IDs from Caltrans at the beginning of each monitoring season.**

Caltrans will assign the “Monitoring Site ID” for all monitoring sites. All Caltrans data reporters are required to contact the Caltrans database manager (Mike Troughon – Larry Walker Associates) at the **beginning** of each sampling season to receive Monitoring Site IDs for each new site they will sample. Note that BMP sites having multiple points of collection (e.g., inlet, within, outlet) will be assigned a unique Monitoring Site ID for each point of collection. Data reporters shall provide the database manager with the names of each site and the Caltrans district in which each site resides.

- **Enter data appropriately.**

To facilitate the accurate entry of litter data into Excel worksheets or Access data tables by Caltrans data reporters, and the subsequent transfer of this data into the Caltrans Statewide Storm Water Database, each data field described in this data-reporting protocol document possesses the following attributes: Field Name, Field Type, Field Size, Example, Definition, Notes (where applicable), Standard List (where applicable) and Alternate Value (where applicable). These eight data field attributes are defined below.

Field Name	Name of data field as it appears in the Excel worksheet or Access data table used for data reporting.
Field Type	Specifies the type of data, text or numeric that can be stored in a field. Note: text fields can store both text and numbers.
Field Size	Specifies the number of characters that can be stored in a text field or the number of decimal places required of a number entered into a numeric field.
Example	Provides an example of the data type and possible value that is appropriate for a specific data field.
Definition	Provides a definition of the data type and possible value that is appropriate for a specific data field.
Notes	Provides further information that may be helpful in appropriately and accurately populating a specific data field.
Standard List	Provides a list of standard values appropriate for populating a specific data field.
Alternate Value	Specifies if the use of “N/A” (not applicable) or “None” is an appropriate value for a specific data field.

GENERAL INSTRUCTIONS (CONTINUED)

Additionally, the following rules should be abided by when entering litter data into either Excel worksheets or Access data tables.

- **Select and enter text values only from the “Standard List”** of values provided for each data field. Standardized values must be entered exactly as specified. Standard lists are included with the description of each data field where appropriate. If a standardized value provided for a particular data field does not accurately describe the data to be entered into that field, please contact the Caltrans database manager to discuss the creation of an additional value for a particular data field.
- **Use “Constituent” names exactly as they appear in the standardized constituent list, and report data in the appropriate Result Type and Units as specified in these protocols.**
- **Enter numeric data values according to the definition provided for the particular numeric data field.** Text must not be entered into numeric data fields. Text-based comments regarding a numeric value should be placed in the “Notes” data field.
- **“Mobilization ID” follows the format YYYY-Some combination of text and/or numbers** (“Year monitoring season begins-Unique string of text and/or numbers that signify to the data provider a specific storm or litter sampling event that occurred at a particular monitoring site”). Mobilization IDs for the 2002-2003 Caltrans monitoring season would all begin with “2002”.
- **Use the correct system for date entries when using Microsoft Excel.** Dates must be entered using the Excel “1900 Date System” typical for Windows (the “1900 Date System” is the default date system used by Microsoft Excel installed on computers running a Windows operating system). The “Macintosh 1904 Date System” should be switched off in Excel preferences (located in the following nested menus: Tools >> Options >> Calculation). Data providers managing their data exclusively in Microsoft Access need not address this issue.
- **Values contained in data fields that link records from one Excel worksheet or Access table to another, such as Monitoring Site ID and Mobilization ID, must match exactly** for the correct relationship to exist between records once the data is imported into the Caltrans Statewide Storm Water Database (Version 2.0 built using Microsoft Access 2000). No match can be made between a Monitoring Site ID of “7 -144” (note an extra space between the 7 and the hyphen) found in the Litter Site Descriptions worksheet or data table and a Monitoring Site ID of “7-144” found in the Litter Sample Descriptions worksheet or data table. In general, wherever data field entries are hyphenated, do not include spaces.

GENERAL INSTRUCTIONS (CONTINUED)

- **If any cell in a data field is left blank* (i.e., the data cell is null), a brief note explaining why the data cell was left blank must accompany the particular record.** The brief note shall be placed in the “Notes” data field associated with the particular record containing one or more blank data cells.

*Exception – The following data field can contain null values without an associated note entered in the “Notes” data field of the relevant worksheet or data table:

<u>Excel Worksheet or Access Table</u>	<u>Data Field</u>
Litter Sample Descriptions	Overall Qualifier

- **The use of “N/A” as a value entered into a text data field is acceptable for some fields** where the data field definition does not apply to the particular data record being entered. For example, the data field “Litter Type” (found in the Litter Sample Descriptions worksheet) applies only to “special project” Caltrans litter monitoring studies that categorized the different types of litter collected (e.g., plastic, wood, paper, metal, etc.). This data field is “not applicable” to routine litter monitoring that does not categorize the litter collected. Data fields where the use of “N/A” is acceptable have this data value option specified in the Alternate Value attribute. “N/A” cannot be entered into a numeric data field. *Additionally, the use of the value “Other” is no longer acceptable for any data field.*
- **Make sure that all required data records for a particular sampling event exist in the Litter Sample Descriptions, Litter Sampling Event Descriptions and Litter Site Descriptions worksheets or data tables according to the following rules used to maintain referential integrity among all related records:**
 - A Monitoring Site ID value (e.g., 7-144) contained in the Litter Sample Descriptions worksheet or data table must be represented by a single record for the same Monitoring Site ID in the Litter Site Descriptions worksheet or data table.
 - A Monitoring Site ID value (e.g., 7-144) contained in the Litter Site Descriptions worksheet or data table must be represented by at least one record in the Litter Sample Descriptions worksheet or data table.
 - A unique combination of Monitoring Site ID (e.g., 7-144) and Mobilization ID (e.g., 2002-01) contained in the Litter Sample Descriptions worksheet or data table must be represented by a single record for the same unique Monitoring Site ID/Mobilization ID pair in the Litter Sampling Event Descriptions worksheet or data table. Do not forget to create an Event Descriptions record for “non-storm” monitoring events (such as dry season or mid-season litter sampling) even though these events may not include the collection of precipitation and runoff data (the data fields Mobilization ID, Site ID, Event Type, Sample Collector, Organization and Event Notes can be populated for these non-storm event records).
 - A unique combination of Monitoring Site ID (e.g., 7-144) and Mobilization ID (e.g., 2002-01) found in the Litter Sample Event Descriptions worksheet or data table must be represented by at least one record in the Litter Sample Descriptions worksheet or data table having the same Monitoring Site ID/Mobilization ID pair.

GENERAL INSTRUCTIONS (CONTINUED)

- **Do not report analytical results for field duplicates. Report only values from environmental samples that have been QA/QC'ed.**
- **Submit Caltrans data exactly in the format specified by these data-reporting protocols.**

All Caltrans "Electronic Data Deliverables" (EDD) must be submitted in the format described in this document. All Excel worksheets or Access data tables submitted by data providers must be formatted according to the requirements of the data fields contained within them as described in this data-reporting protocols document. All data field headings should remain as they are described in this document. Before submitting EDD to the database manager, please confirm that all data entered in either a column (for Excel worksheets) or data field (for Access data tables) are appropriate for that particular field.

- **If a sample is analyzed and subsequently deemed not to be representative of the monitoring event from which it was collected, then the data should not be included as part of the data reporter's EDD.**
- **Label all elements of each Electronic Data Deliverable (EDD) clearly**
 - The Excel workbook file or Access database file containing Litter Sample Descriptions, Litter Sampling Event Descriptions and Litter Site Descriptions data should be labeled with the name of the data reporter (consultant or university), the title of the Caltrans activity under which the data was collected, and the monitoring season (e.g., 2002-2003 or 02-03) during which the data was collected.

File naming convention for litter data:

Litter data file	URS LIDS Litter Data_2002-2003 UCLA FFCS Litter Data_2002-2003
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- The submittal of supporting data and documents, such as time series data, maps and photographs, should be labeled with the Caltrans Monitoring Site ID and monitoring season to which they correspond. Time series data collected during storm events at a monitoring site can be submitted as multiple worksheets (one worksheet for each storm event monitored) in a single Excel workbook that represents all time series data collected at that site during an entire monitoring season.

File naming conventions for supporting data:

Time Series file	Site 7-144 Time Series_2002-2003.xls
Map file	Site 7-144 Map_2002-2003.pdf
Photograph file	Site 7-144 Photo_2002-2003.jpeg

- When submitting an EDD to the Caltrans database manager, please compile all files (litter data, including sample, event and site descriptions, time series data (if collected), maps and photographs) onto one or more recordable compact discs (CD-R) labeled with the data reporter's name and date of data submittal. Mail CD(s) to the database manager at the address provided below.

GENERAL INSTRUCTIONS (CONTINUED)

- Please notify Caltrans of any errors or inconsistencies found in this document, or any changes you might recommend.

Definition of a Precipitation Event

Storm event criteria to be met for the mobilization and subsequent collection of litter monitoring data will be included in future drafts of this document. Consultants are advised to follow mobilization and sampling protocols described in the sampling plans associated with the litter monitoring studies they manage.

Contact Information

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1. LITTER SAMPLE DESCRIPTIONS

1.1. Monitoring Site ID

Field Type: Text

Field Size: 8 characters

Example: 7-144

Definition: A unique identification number assigned to the monitoring site by Caltrans.

Notes: The first part of the Monitoring Site ID corresponds to the Caltrans district in which the site is located. Monitoring sites in a given Caltrans District numbered between 1 and 9 must be reported with a 0 (zero) in their Monitoring Site IDs (e.g., 7-09, as opposed to 7-9).

1.2. Outfall ID

Field Type: Text

Field Size: 30 characters

Example: 6-20F

Definition: A unique name or number assigned to the litter monitoring site by the consultant.

Notes: Each Monitoring Site ID must correspond to only one Outfall ID and vice versa. Since Outfall ID is an internal identification label used by a consultant, and is typically not used by the database manager and Caltrans when referring to litter monitoring sites, consultants are reminded to make sure that all litter records include a reference to an official Caltrans Monitoring Site ID.

1.3. Mobilization ID

Field Type: Text

Field Size: 20 characters

Example: 2002-01

Definition: A unique, site-specific identification code assigned to the mobilization effort for a particular sampling event that occurred at a particular monitoring site.

Notes: Mobilization ID follows the format YYYY-Some combination of text and/or numbers ("Year monitoring season begins-Unique string of text and/or numbers that signify to the data provider a specific storm or litter sampling event that occurred at a particular monitoring site"). Even if a site isn't monitored until the latter half of the monitoring season (e.g., Site X is monitored during Feb. - Apr. 2003 - the latter half of the 2002-2003 monitoring season), its Mobilization IDs include the year in which the general Caltrans monitoring season began (i.e., Mobilization IDs for samples collected at Site X would all begin with "2002").

1.4. Sample Date

Field Type: Date

Field Size: N/A

Example: 11/05/2002

Definition: Date on which litter sample was collected (i.e., date as recorded on chain of custody or sample label).

Notes: Formatted as mm/dd/yyyy.

1.5. Sample Time

Field Type: Time

Field Size: N/A

Example: 15:24

Definition: Time at which litter sample was collected (i.e., time as recorded on chain of custody or sample label).

Notes: Formatted for 24-hour clock (hh:mm).

1.6. Activity

Field Type: Text

Field Size: 50

Example: pre-event collection

Definition: Describes the type of monitoring activity performed by the consultant while visiting the monitoring site. The Activity value assigned to a sample record also describes the point during an individual event or an entire monitoring season at which the litter sample was collected.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- Pre-event collection
- Mid-event collection
- Post-event collection
- Pre-season collection
- Mid-season collection
- End-of-season collection
- Dry season storm monitoring
- Cleanout (extra collection)
- Final cage cleanout
- Final inlet cleanout
- Final outfall cleanout

1.7. Event Representation

Field Type: Text

Field Size: 20 characters

Example: FF

Definition: Describes the part of the event represented by the sample.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- Pre-Storm - Sample collected prior to storm event
- FF - Sample collected during event first flush
- Peak - Sample collected during event peak flow
- Whole - Sample collected at the end of a storm event
- Discrete - Sample collected during an event that cannot be described as representing the first flush, peak or whole storm portion of the event.
- Partial Season - Sample collected at some point during the monitoring season
- Whole Season - Sample collected at the end of the monitoring season

1.8. Wet Dry

Field Type: Text

Field Size: 1 character

Example: W

Definition: Describes litter sample as being either wet or air-dried at the time it was analyzed.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- W - Litter sample was wet when analyzed
- D - Litter sample was air-dried when analyzed

1.9. Constituent

Field Type: Text

Field Size: 10 characters

Example: GS

Definition: Describes the general type of litter analyzed.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- GS - Gross Solids
- Veg - Vegetation
- Lit - Litter
- Bio Lit - Biodegradable Litter
- Nonbio Lit - Non-biodegradable Litter
- NF Lit - Non-floatable Litter

1.10. Litter Type

Field Type: Text

Field Size: 25 characters

Example: Paper

Definition: Describes the category of litter to which individual litter sample constituents belong.

Notes: Standardized Entry. Select value from standard list or contact database manager. This data field is used to describe the individual litter constituents found in a litter sample collected as part of a Caltrans litter monitoring study (i.e., “special project studies”) that categorizes the different types of litter contained in a sample. “Litter” data records having **Constituent values equal to Lit, Bio Lit, Nonbio Lit, and NF Lit** from routine litter sampling studies where individual litter constituents within a sample are not further characterized by Litter Type will have this data field populated with the alternate value, “Total”. Additionally, “litter” data records having **Constituent values of GS and Veg** will have the Litter Type data field populated with the alternate value, “N/A”.

Standard List

- Cardboard/Chipboard
- Cigarette Butts
- Cloth
- Glass
- Metal (Foil and Molded)
- Other
- Paper
- Plastic-Film
- Plastic-Moldable
- Styrofoam
- Wood

Alternate Values: - Total (see Notes above).
- N/A (see Notes above).

1.11. Numerical Qualifier

Field Type: Text

Field Size: 1 character

Example: <

Definition: An indication of what the Reported Value for an analyzed sample represents (i.e., a minimum, maximum or “exact” value).

Notes: Standardized Entry. Select value from standard list or contact database manager. Please refer to Overall Qualifier (see data field 1.13 below) for additional guidance on the appropriate qualification of litter results.

Standard List

- < - Actual value of analyzed sample is less than reported value. This symbol must be used for all “non-detect” samples.
- = - Value of analyzed sample is as reported.
- > - Actual value of analyzed sample is greater than reported value.

1.12. Reported Value

Field Type: Numeric

Field Size: N/A

Example: 0.25

Definition: Reported laboratory result of analyzed sample.

Notes: Precision of Reported Values - As described in the Caltrans Litter Monitoring Guidance Manual, weight and volume measurements must be reported according to the following directives:

Report weight to the nearest 1 g.

Report volume according to the sample size, as follows:

- Samples from 10 mL ≤ 1 L report to the nearest 10 mL (example: 760 mL)
- Samples from 1 L ≤ 10 L report to the nearest 100 mL (example: 9700 mL)
- Samples greater than 10 L report to the nearest 1 L (example: 15000 mL)

1.13. Overall Qualifier

Field Type: Text

Field Size: 1 character

Example: J

Definition: An overall data validation qualifier based on lab results and associated quality assurance/quality control (QAQC) analyses.

Notes: Standardized Entry. Select value from standard list or contact database manager. The qualifiers and definitions presented below represent a compilation of data qualifiers used by specific EPA programs as noted in: (1) *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA, 1994); and (2) *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (EPA, 1999).

Standard List

- J - The associated value is approximate (i.e., an estimated quantity).
- R - The sample result is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria.

1.14. Result Type

Field Type: Text

Field Size: 15 characters

Example: volume

Definition: Describes the type of measurement (sum, volume, weight) associated with the Reported Value.

Notes: Standardized Entry. Select value from standard list or contact database manager. Only data records from Caltrans litter monitoring studies that categorize the different types of litter collected will possess Result Type values equal to "% total count", "% total volume", and "% total weight".

Standard List

- sum - Result type associated with the unit "count"
- volume - Result type associated with the unit "mL"
- weight - Result type associated with the unit "g"
- % total count - Result type associated with the unit "percent"
- % total volume - Result type associated with the unit "percent"
- % total weight - Result type associated with the unit "percent"

1.15. Units

Field Type: Text

Field Size: 8 characters

Example: mL

Definition: Describes the unit of measure associated with the Reported Value.

Notes: Standardized Entry. Select value from standard list or contact database manager. Use capital "L" for liter abbreviation.

Standard List

- count
- g
- mL
- percent

1.16. Method Reference

Field Type: Text

Field Size: 12 characters

Example: EPA

Definition: Provides the reference for the analytical method used to evaluate the sample.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- Caltrans - Caltrans-defined analytical method
- LMPS Method - Method developed specifically for the Caltrans Litter Management Pilot Study

1.17. Method Number

Field Type: Text

Field Size: 10 characters

Example: 1998A

Definition: Reference number for the analytical method used to evaluate the sample. This number typically references the year the method was developed for the study.

Notes: By convention, method numbers that contain a text suffix do not include a space between the number and the text suffix (e.g., 1998A).

1.18. Project Name

Field Type: Text

Field Size: 6 characters

Example: LMPS

Definition: Name of Caltrans stormwater monitoring study under which litter sample was collected.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- DICE - Drain Inlet Cleaning Efficiency Study
- FFCS - First Flush Characterization Study
- GSRD - Gross Solids Removal Device Study
- LIDS - Litter Inlet Deflector Study
- LMPS - Litter Management Pilot Study
- PELMS - Public Education Litter Monitoring Study

1.19. Consultant

Field Type: Text

Field Size: 8

Example: URS

Definition: Name of consultant that collected litter sample (same name as appears on chain of custody form).

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- URS
- CDM
- UCLA
- BMC

1.20. Lab Name

Field Type: Text

Field Size: 10 characters

Example: APPL

Definition: Name of laboratory that analyzed litter sample.

Notes: Standardized Entry. Select value from standard list or contact database manager. If the name of a laboratory used to analyze samples does not appear in the list below, simply report the name of the laboratory in this data field. The database manager will notice the new laboratory name during routine data validation and will add it to the Standard List below in a subsequent version of this document.

Standard List

- SNA - Santa Ana
- FSO - Fresno
- DV - Dellevalle

1.21. Litter Photo ID

Field Type: Text

Field Size: 50 characters

Example: PA300006

Definition: Identification number of photograph associated with air-dried litter sample collected from a particular litter-monitoring outfall on a particular date.

Notes: This data field can contain any combination of text and numeric characters. However, it might prove useful for consultant to include the Monitoring Site ID (e.g., 10-201) or Outfall ID (e.g., I5-PE9) and the Sample Date (e.g., 12/14/02) associated with the photograph as part of the string of characters that comprise the Litter Photo ID (alternate example: I5-PE9_121402_LitPhoto02).

1.22. Contract Number

Field Type: Text

Field Size: 12 characters

Example: 43A005

Definition: Caltrans contract number under which sample was collected.

Notes: This data field can contain any combination of text and numeric characters.

1.23. Task Order Number

Field Type: Text

Field Size: 6 characters

Example: 11

Definition: Caltrans task order number under which sample was collected.

Notes: This data field can contain any combination of text and numeric characters.

1.24. Litter Sample Notes

Field Type:	Text
Field Size:	255 characters
Example:	Sample Time missing due to time being omitted from field data sheet.
Definition:	This data field contains any notes or remarks about the sample or various data fields used to describe the sample.
Notes:	Data reporter should provide a note for any data field left blank (with the exception of Overall Qualifier). It is not appropriate to provide a note in a particular cell of a data field other than Litter Sample Notes. Considering the example above, it is not appropriate to place the note, "Sample Time missing due to time being omitted from field data sheet", in the Sample Time data field. The note must be entered into the Litter Sample Notes data field.

2. LITTER SAMPLING EVENT DESCRIPTIONS

2.1. Mobilization ID

Field Type: Text
Field Size: 20 characters
Example: 2002-01
Definition: A unique, site-specific identification code assigned to the mobilization effort for a particular sampling event that occurred at a particular monitoring site.
Notes: Mobilization ID follows the format YYYY-Some combination of text and/or numbers (“Year monitoring season begins-Unique string of text and/or numbers that signify to the data provider a specific storm or litter sampling event that occurred at a particular monitoring site”). Even if a site isn’t monitored until the latter half of the monitoring season (e.g., Site X is monitored during Feb. – Apr. 2003 – the latter half of the 2002-2003 monitoring season), its Mobilization IDs include the year in which the general Caltrans monitoring season began (i.e., Mobilization IDs for samples collected at Site X would all begin with “2002”).

2.2. Monitoring Site ID

Field Type: Text
Field Size: 8 characters
Example: 7-144
Definition: A unique identification number assigned to the monitoring site by Caltrans.
Notes: The first part of the Monitoring Site ID corresponds to the Caltrans district in which the site is located. Monitoring sites in a given Caltrans District numbered between 1 and 0 must be reported with a 0 (zero) in their Monitoring Site IDs (e.g., 7-09, as opposed to 7-9).

2.3. Event Type

Field Type: Text
Field Size: 10 characters
Example: Non-storm
Definition: Describes if sampling event is associated with a storm event or a non-storm event.
Notes: Standardized Entry. Select value from standard list or contact database manager. This data field quickly describes whether an event record includes precipitation and flow data (i.e., event is a storm event) or does not necessarily include such precipitation and flow data (i.e., event is a non-storm event, such as a dry weather or groundwater sampling event; note: flow data could be provided for a dry weather event). Storm event records that are missing various precipitation and flow data due to malfunctioning equipment must be described with Event Type equal to “Storm” and include remarks in their Event Notes data field as to why certain data are missing.

Standard List

- Storm
- Non-storm

2.4. Rain Start Date

Field Type: Date
Field Size: N/A
Example: 11/05/2002
Definition: Date on which precipitation event begins. See specific litter study sampling plan to determine criteria that define a precipitation event for a particular study.
Notes: Formatted as mm/dd/yyyy.

2.5. Rain Start Time

Field Type: Time
Field Size: N/A
Example: 15:24
Definition: Time at which precipitation event begins. See specific litter study sampling plan to determine criteria that define a precipitation event for a particular study.
Notes: Formatted for 24-hour clock (hh:mm).

2.6. Rain End Date

Field Type: Date
Field Size: N/A
Example: 11/05/2002
Definition: Date on which precipitation event ends. See specific litter study sampling plan to determine criteria that define a precipitation event for a particular study.
Notes: Formatted as mm/dd/yyyy.

2.7. Rain End Time

Field Type: Time
Field Size: N/A
Example: 15:24
Definition: Time at which precipitation event ends. See specific litter study sampling plan to determine criteria that define a precipitation event for a particular study.
Notes: Formatted for 24-hour clock (hh:mm).

2.8. Event Rain (mm)

Field Type: Numeric
Field Size: Provide number only to two (2) decimal places.
Example: 15.99
Definition: Total rain at site for an event in millimeters (mm).
Notes: The Site Descriptions data field named Rain Record Source identifies the source of the Event Rain data for a particular monitoring site. See specific litter study sampling plan to determine criteria that define a precipitation event for a particular study.

2.9. Max Intensity (mm/hr)

Field Type: Numeric
Field Size: Provide number only to two (2) decimal places.
Example: 12.18
Definition: Peak 5-minute intensity of a storm event in millimeters/hour (mm/hr).
Notes: Maximum Intensity is calculated as twelve times (12 x) the maximum rainfall recorded in any 5-minute period.

2.10. Antecedent Dry (days)

Field Type: Numeric
Field Size: Provide number only to one (1) decimal place.
Example: 12.0
Definition: Days since the end of the most recent prior Caltrans-defined precipitation event (whether monitored or not). If datum exists, irrespective of whether the prior event was monitored, data reporter should include Antecedent Dry datum as part of the Event Record for the current event.
Notes: See specific litter study sampling plan to determine criteria that define a precipitation event for a particular study.

2.11. Antecedent Event Rain (mm)

Field Type: Numeric
Field Size: Provide number only to two (2) decimal places.
Example: 24.37
Definition: Total rain at site for the most recent antecedent precipitation event in millimeters (mm). The antecedent precipitation event used for this data field should be the same antecedent precipitation event referenced in the Antecedent Dry data field. The quantification of Antecedent Event Rain does not include "inter-event" precipitation.
Notes: Using the examples provided above for Antecedent Dry and Antecedent Event Rain, the antecedent or prior precipitation event for Site X occurred 12.0 days ago, and delivered 24.37 mm of rainfall. The antecedent precipitation event must meet Caltrans' criteria for a precipitation event. See specific litter study sampling plan to determine criteria that define a precipitation event for a particular study.

2.12. Peak Capture

Field Type: Text
Field Size: 1 character
Example: Y
Definition: Indication of whether peak flow was captured during sampling event.
Notes: Standardized Entry. Select value from standard list or contact database manager.
Standard List

- Y - Yes, peak flow was captured.
- N - No, peak flow was not captured.

2.13. Runoff Start Date

Field Type: Date
Field Size: N/A
Example: 11/05/2002
Definition: Date on which first runoff begins.
Notes: Formatted as mm/dd/yyyy.

2.14. Runoff Start Time

Field Type: Time
Field Size: N/A
Example: 15:24
Definition: Time at which first runoff begins.
Notes: Formatted for 24-hour clock (hh:mm).

2.15. Runoff End Date

Field Type: Date
Field Size: N/A
Example: 11/05/2002
Definition: Date on which last runoff ceases.
Notes: Formatted as mm/dd/yyyy.

2.16. Runoff End Time

Field Type: Time
Field Size: N/A
Example: 15:24
Definition: Time at which last runoff ceases.
Notes: Formatted for 24-hour clock (hh:mm)

2.17. Total Flow Volume (L)

Field Type: Numeric
Field Size: Provide number as an integer with zero (0) decimal places.
Example: 38686
Definition: Total measured flow volume in liters (L) at a monitoring site for an event.

2.18. Peak Flow (L/s)

Field Type: Numeric
Field Size: Provide number only to two (2) decimal places.
Example: 3.40
Definition: Estimated peak flow of runoff in liters per second (L/s) at a monitoring site for an event.

2.19. Estimated Percent Capture

Field Type: Numeric

Field Size: Provide number as an integer with zero (0) decimal places.

Example: 99

Definition: Estimated percentage of total event flow volume during which monitoring was performed (i.e., while the sampler was activated and flow-proportioned sample collection was successfully occurring). Report datum only if estimate is based on actual runoff and sample collection data measured by an instrument located at the monitoring site in question.

Notes: Periods of sampler malfunction or failure to collect sample must be excluded from the “captured flow”.

2.20. Cumulative Precipitation (mm)

Field Type: Numeric

Field Size: Provide number only to two (2) decimal places.

Example: 100.76

Definition: Estimated cumulative precipitation in millimeters (mm) at monitoring site since the beginning of the water year (October 1), up to the Rain Start Date/Time for the monitored event. All precipitation that has fallen to date at a site, including “inter-event” precipitation, should be included in the Cumulative Precipitation value reported for that site for a particular event.

2.21. Sample Collector

Field Type: Text

Field Size: 25 characters

Example: Peggie Sampson

Definition: Name of the individual who collected the sample.

2.22. Organization

Field Type: Text

Field Size: 30 characters

Example: Acme Environmental

Definition: Organization to which the sample collector is associated.

2.23. Event Notes

Field Type: Text

Field Size: 255 characters

Example: Runoff End Time missing due to malfunctioning flow meter.

Definition: This data field contains any notes or remarks about the sampling event or various data fields used to describe the sampling event.

Notes: Data reporter should provide a note for any data field left blank. It is not appropriate to provide a note in a particular cell of a data field other than Event Notes. Considering the example above, it is not appropriate to place the note, “Runoff End Time missing due to malfunctioning flow meter”, in the Runoff End Time data field. The note must be entered into the Event Notes data field.

3. LITTER SITE DESCRIPTIONS

3.1. Monitoring Site ID

Field Type: Text
Field Size: 8 characters
Example: 7-144
Definition: A unique identification number assigned to the monitoring site by Caltrans.
Notes: The first part of the Monitoring Site ID corresponds to the Caltrans district in which the site is located. Monitoring sites in a given Caltrans District numbered between 1 and 9 must be reported with a 0 (zero) in their Monitoring Site IDs (e.g., 7-09, as opposed to 7-9).

3.2. Monitoring Year

Field Type: Numeric
Field Size: Provide number as an integer with zero (0) decimal places.
Example: 2002
Definition: Identifies the monitoring season a site is monitored by populating the data field with the year the current monitoring season begins.
Notes: In regard to the 2002-2003 monitoring season, the Monitoring Year value for each site monitored would be "2002" – the year the current monitoring season began. The term Monitoring Year refers to only a single calendar year, while the term Monitoring Season necessarily refers to two calendar years, such as 2002-2003.

3.3. Site Name

Field Type: Text
Field Size: 100 characters
Example: 6-20F
Definition: A unique name or number assigned to the litter monitoring site by the consultant. For all practical purposes, the **Site Name is synonymous with Outfall ID** for litter monitoring sites.
Notes: Site Name is meant to be a shorthand designation for the monitoring site, and the "common name" by which the sampling crew and data reporter refer to the site.

3.4. Site Description

Field Type: Text
Field Size: 255 characters
Example: East of Ocean View Avenue Onramp to EB 210 Fwy; a low-density residential site within foothills.
Definition: Describes monitoring site in some detail, including observations related to site's location and physical characteristics.
Notes: In addition to the above definition, this field can be used to describe changes observed at the site since the prior monitoring season.

3.5. Caltrans District

Field Type: Numeric
Field Size: Provide number as an integer with zero (0) decimal places.
Example: 7
Definition: Caltrans district in which monitoring site is located.

3.6. Hydrologic Sub-Area

Field Type: Numeric
Field Size: Provide 5-digit number in the format XXX.XX
Example: 405.32
Definition: State Water Resources Control Board (SWRCB) Hydrologic Unit Sub-Area in which monitoring site is located.
Notes: SWRCB Hydrologic codes are 6-byte strings composed of numbers and a decimal point. The meaning associated with each byte position is shown below.

<u>Byte(s)</u>	<u>Meaning</u>
1	Hydrologic Region
2,3	Hydrologic Unit
4	Decimal point
5	Hydrologic Area
6	Hydrologic Sub-Area

Hydrologic sub-areas are typically identified in Basin Plans. They may also be found at the Water Quality Standards Inventory Database web site:
<http://endeavor.des.ucdavis.edu/wqsid/region.asp>

3.7. County

Field Type: Text
Field Size: 25 characters
Example: Los Angeles
Definition: County in which monitoring site is located.
Notes: It is not necessary to include the word "County" along with the actual name of the county in which the monitoring site is located.

3.8. RWQCB

Field Type: Numeric
Field Size: Provide number as an integer with zero (0) decimal places.
Example: 4
Definition: Regional Water Quality Control Board (RWQCB) region in which monitoring site is located.

3.9. Runoff Characterization

Field Type: Text

Field Size: 20 characters

Example: Hwy

Definition: Type of runoff characterized by samples collected from monitoring site.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- Hwy - Highway or Freeway
- Maintenance - Maintenance facility
- Parking - Parking lot (e.g., Park & Ride facility)
- Rest Area - Rest area
- Acceleration - Acceleration area
- Deceleration - Deceleration area
- Construction - Construction
- BMP - Site designed for storm water treatment
- Border Check-point - Border Check-point
- Bridge - Bridge
- CVIF - Commercial Vehicle Inspection Facility
- Receiving - Receiving water (described further in "Receiving Water Type")
- Toll Plaza - Toll Plaza
- Watershed - Urban or rural watershed (described further in "Land Use")

3.10. Surface Type

Field Type: Text

Field Size: 25 characters

Example: Pavement

Definition: Describes the predominant surface type associated with a Caltrans facility.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- Landscape - Landscaping
- Pavement - Pavement only
- Right-of-Way - Right-of-Way (includes landscape and pavement)
- Construction Site - Graded construction site

3.11. Land Use

Field Type: Text

Field Size: 4 characters

Example: R

Definition: Predominant land use of the tributary catchment area. This field describes the predominant land use of the area from which sampled runoff originates.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- R - Residential
- C - Commercial
- I - Industrial
- A - Agricultural
- F - Forest
- O - Open
- T - Transportation Facility (e.g., bridge, county road, highway, etc.)
- M - Mixed (no predominant land use can be discerned)

3.12. Catchment Area (ha)

Field Type: Numeric

Field Size: Provide number only to two (2) decimal places.

Example: 2.91

Definition: Total surface area in hectares (ha) draining to the point of collection of the storm water runoff sample.

3.13. Impervious Fraction

Field Type: Numeric

Field Size: Provide number only to two (2) decimal places.

Example: 0.67

Definition: Estimated fraction of the catchment area that is effectively impervious.

3.14. BMP Type

Field Type: Text

Field Size: 50 characters

Example: EDB

Definition: Describes the type of BMP represented by the monitoring site. This data field to be populated only for monitoring sites designed to treat storm water runoff. All non-BMP sites should have this data field value reported as "N/A".

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- Retention - Retention Pond
- Swale - Biofiltration Swale
- EDB - Extended Detention Basin
- Wet Pond - Wet Detention Pond
- Dry Pond - Extended Dry Detention Pond
- Compost - Compost Media Filter
- Zeolite - Zeolite Media Filter
- SF - Sand Media Filter
- IB - Infiltration Basin
- IT - Infiltration Trench
- TCB - Trapping Catch Basin
- Insert - Drain Inlet Insert
- Strip - Biofiltration Strip
- Strip-Trench - Filtration Strip and Infiltration Trench Treatment Train
- OWS - Oil/Water or Debris Separator
- MCTT - Mult-chambered Treatment Train
- CDS - Continuous Deflector Separator
- DBST - Double-Barrel Sand Trap
- DISump - Drain Inlet with Sump
- Wetland - Natural or man-made wetland
- DIC - Drain Inlet Cleaning
- Pickup - Litter Pickup (litter studies)
- Sweep - Street Sweeping (litter studies)
- ModifyIn - Modified Inlet (litter studies)
- Grate - Bicycle Grate/LID (litter studies)
- ModGrate - Modified Bicycle Grate (litter studies)
- Baffle Box - Baffle Box (litter studies)
- IBS - Inclined Bar Screen (litter studies)
- LRD - Linear Radial Device (litter studies)

Alternate Value: - N/A (see Definition above).

3.15. Point of Collection

Field Type: Text

Field Size: 20 characters

Example: Discharge

Definition: Describes the point of sample collection at the monitoring site.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- Discharge - Outfall to receiving water or outlet to conveyance system
- Inlet - Inlet to BMP
- Outlet - Outlet to BMP
- Within - Somewhere within BMP
- Bypass
- Overflow
- Overland - Overland flow
- Receiving - Location(s) in receiving water (stream, lake, etc.)

3.16. Control Site

Field Type: Text

Field Size: 25 characters

Example: 7-147

Definition: The Caltrans Monitoring Site ID for the control or BMP "inlet" site associated with the BMP "outlet" or BMP "within" site in question. All non-BMP sites and BMP "inlet" sites should have this data field value reported as "N/A".

Notes: A small number of BMP sites do not possess a control or reference site. These sites should have this data field populated with the value "No Control for BMP".

Alternate Values: - N/A (see Definition above).
- No Control for BMP (see Notes above).

3.17. Cut-Fill

Field Type: Text

Field Size: 15 characters

Example: Cut

Definition: Identifies the roadway or facility as a cut, fill, grade or hybrid type (e.g., Grade/Fill) site.

Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- Cut - Sample collected from a cut area.
- Fill - Sample collected from a fill area.
- Grade - Sample collected from a grade area.
- Cut/Fill - Sample collected from a roadway or facility with both cut and fill areas.
- Grade/Cut - Sample collected from a roadway or facility with both grade and cut areas.
- Grade/Fill - Sample collected from a roadway or facility with both grade and fill areas.

3.18. Roadway Post Mile

Field Type: Text

Field Size: 18 characters

Example: SR-60-WB-15.29

Definition: A four-part descriptor that describes the roadway type, roadway number, traffic direction, and post mile of the Caltrans highway facility nearest to the monitoring site. If no such Post Mile exists for a site, the data field value should be reported as "N/A".

Notes: The Roadway Post Mile value is a compilation of the following four pieces of information: **Roadway Type-Roadway Number-Traffic Direction-Post Mile**. Standardized entries exist for roadway type and traffic direction. Select values from standard lists or contact database manager.

Standard Lists

Roadway Type

- I - Interstate
- SR - State Route
- CR - County Road

Traffic Direction

- EB - Eastbound
- WB - Westbound
- NB - Northbound
- SB - Southbound

Alternate Value: - N/A (see Definition above).

3.19. Latitude

Field Type: Numeric

Field Size: Provide number to five (5) decimal places.

Example: 34.00970

Definition: Latitude of monitoring site in decimal degrees to five (5) decimal places.

Notes: Data should be collected using a differential GPS instrument with sufficient accuracy to report degrees to five decimal places.

3.20. Longitude

Field Type: Numeric

Field Size: Provide number to five (5) decimal places.

Example: 117.97470

Definition: Longitude of monitoring site in decimal degrees to five (5) decimal places.

Notes: Data should be collected using a differential GPS instrument with sufficient accuracy to report degrees to five decimal places

3.21. Datum

Field Type: Text

Field Size: 20 characters

Example: NAD 83

Definition: Datum by which latitude and longitude reported.

3.22. Rain Record Source

Field Type: Text
Field Size: 50 characters
Example: NOAA
Definition: Source of precipitation record used in precipitation estimates.
Notes: Report "Onsite" if rain gauge is located at the monitoring site, or report the name/location of the nearest rain gauge. Actual precipitation event record (i.e., rainfall data from rain gauge) should be included in a Time Series worksheet for the event (see Time Series data field description in this section).

3.23. Receiving Water Type

Field Type: Text
Field Size: 20 characters
Example: Intermittent
Definition: Type of receiving water sampled or into which storm water runoff is discharged.
Notes: Standardized Entry. Select value from standard list or contact database manager.

Standard List

- Intermittent - Intermittent or seasonal stream or channel
- Wetlands - Seasonal or perennial wetlands
- River - Perennial freshwater river
- Stream - Perennial freshwater stream
- Lake - Freshwater lake or impoundment
- Pond - Freshwater pond
- Bay - Salt or brackish water bay
- Estuary - Salt or brackish water estuary
- Groundwater - Runoff percolates into soil profile surrounding monitoring site and ostensibly enters groundwater

- Ocean

3.24. AADT

Field Type: Numeric
Field Size: N/A
Example: 216600
Definition: Average annual daily traffic (AADT) flow at or near monitoring site.
Notes: If site is a maintenance yard, parking lot, or rest area, report the estimated number of vehicles entering and leaving the facility each day.

3.25. AADT Source

Field Type: Text
Field Size: 100 characters
Example: <http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2002all.htm>
Definition: Source or reference for reported AADT value.
Notes: A searchable AADT database is available at the Caltrans Traffic and Vehicle Data Systems Unit web page:

<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/>

3.26. Adjacent Lanes

Field Type: Numeric
Field Size: Provide number as an integer with zero (0) decimal places.
Example: 2
Definition: The number of traffic lanes adjacent to the monitoring site that contribute storm water runoff that is sampled at the monitoring site's point of collection.
Notes: In many cases, the numeric value populating this data field will be a summation of the number of lanes of traffic moving in one direction only next to the monitoring site.

3.27. Total Lanes

Field Type: Numeric
Field Size: Provide number as an integer with zero (0) decimal places.
Example: 4
Definition: The total number of traffic lanes (traffic moving in both directions) neighboring the monitoring site.
Notes: This data field should specify all lanes of traffic near the monitoring site that may impact storm water runoff through the deposition of airborne pollutants.

3.28. Time Series

Field Type: Text
Field Size: 50 characters
Example: Site 7-144 Time Series_2002-2003.xls
Definition: The name of the Excel worksheet in which time series data (flow, precipitation, etc.) collected at a monitoring site is submitted.
Notes: Times series data collected during storm events at a monitoring site can be submitted as multiple worksheets (one worksheet for each storm event) in a single workbook that represents all times series data collected at that site during an entire monitoring season. The Excel workbook file should be labeled with the Caltrans Monitoring Site ID and monitoring season (e.g., 2002-2003 or 02-03) to which it corresponds.

3.29. Map

Field Type: Text
Field Size: 50 characters
Example: Site 7-144 Map_2002-2003.pdf
Definition: The name of the electronic document containing a map that shows the location of the monitoring site.
Notes: The actual electronic document containing a map of the monitoring site should be submitted along with the rest of the data collected for the site, including water quality data, time series data, and one or more photographs. The map should contain the clearly marked location of the monitoring site, latitude and longitude markers, and the watershed contributing flows to the site. The electronic map document should be labeled with the Caltrans Monitoring Site ID and monitoring season (e.g., 2002-2003 or 02-03) to which it corresponds.

3.30. Photograph

Field Type: Text

Field Size: 75 characters

Example: Site 7-144 Photo_2002-2003.jpeg

Definition: The name of the electronic document containing photograph(s) of the monitoring site. If no photograph was taken of a particular litter sample, it is acceptable to report this data field value as the Alternate Value of "None".

Notes: The actual electronic document containing photograph(s) of the monitoring site should be submitted along with the rest of the data collected for the site, including water quality data, time series data, and a map. The electronic photograph document should be labeled with the Caltrans Monitoring Site ID and monitoring season (e.g., 2002-2003 or 02-03) to which it corresponds.

Alternate Value: - None (see Definition above).

3.31. Site Notes

Field Type: Text

Field Size: 255 characters

Example: No AADT value provided for this site. Site is located along a county road for which no AADT data are available.

Definition: This data field contains any notes or remarks about the monitoring site or various data fields used to describe the monitoring site.

Notes: Data reporter should provide a note for any data field left blank. It is not appropriate to provide a note in a particular cell of a data field other than Site Notes. Considering the example above, it is not appropriate to place the note, "No AADT value provided for this site. Site is located along a county road for which no AADT data are available", in the AADT data field. The note must be entered into the Site Notes data field.

4. MEASURING UNITS CONVERSION TABLES

4.1. Length Conversions

Metric	Converting to >	Imperial
1 millimeter (mm)		0.0394 in
1 centimeter (cm)	10 mm	0.3937 in
1 meter (m)	100 cm	3.2808 ft
1 meter (m)	100 cm	1.0936 yd
1 kilometer (km)	1,000 m	0.6214 mile

Imperial	Converting to >	Metric
1 inch (in)		25.40 mm
1 inch (in)		2.54 cm
1 foot (ft)	12 in	0.3048 m
1 yard (yd)	3 ft	0.9144 m
1 mile	1,760 yd	1.6093 km

4.2. Area Conversions

Metric	Converting to >	Imperial
1 square cm (cm ²)	100 mm ²	0.1550 in ²
1 square m (m ²)	10,000 cm ²	1.1960 yd ²
1 hectare (ha)	10,000 m ²	2.4711 acres
1 square km (km ²)	100 ha	0.3861 mile ²

Imperial	Converting to >	Metric
1 square inch (in ²)		6.4519 cm ²
1 square foot (ft ²)	144 in ²	0.0929 m ²
1 square yard (yd ²)	9 ft ²	0.8361 m ²
1 acre	4840 yd ²	4046.9 m ²
1 acre	4840 yd ²	0.4047 ha
1 square mile (mile ²)	640 acres	2.59 km ²

4.3. Volume/Capacity Conversions

Metric	Converting to >	Imperial
1 cubic cm (cm ³)		0.0610 in ³
1 cubic decimeter (dm ³)	1,000 cm ³	0.0353 ft ³
1 cubic meter (m ³)	1,000 dm ³	1.3080 yd ³
1 liter (L)	1 dm ³	1.76 pt
1 hectoliter (hL)	100 L	21.997 gal

Imperial	Converting to >	Metric
1 cubic inch (in ³)		16.387 cm ³
1 cubic foot (ft ³)	1,728 in ³	0.0283 m ³
1 fluid ounce (fl oz)		29.5735 mL
1 pint (pt)	16 fl oz	0.4732 L
1 gallon (gal)	8 pt	3.785 L

4.4. Mass Conversions

Metric	Converting to >	Imperial
1 milligram (mg)		0.0154 grain
1 gram (g)	1,000 mg	0.0353 oz
1 kilogram (kg)	1,000 g	2.2046 lb
1 metric ton (t)	1,000 kg	2,204.6 lb

Imperial	Converting to >	Metric
1 ounce (oz)	437.5 grain	28.35 g
1 pound (lb)	16 oz	0.4536 kg
1 short ton (US)	2,000 lb	0.907 t

4.5. Temperature Conversions

Converting Degrees Fahrenheit to Degrees Celsius
Degrees Fahrenheit (°F) - 32 x 5/9 = Degrees Celsius (°C)

Converting Degrees Celsius to Degrees Fahrenheit
Degrees Celsius (°C) x 9/5 + 32 = Degrees Fahrenheit (°F)