

## Appendix G Source Investigation

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### G.1 Source Investigation

The City conducts source investigations when an illicit discharge is detected or suspected, and the source of the illicit discharge is not readily identifiable. The purpose of source investigations is to locate the source of an illicit discharge so that all necessary measures required to eliminate the illicit discharge can be implemented.

#### *Initiation*

Source investigations are initiated when appropriate information suggest a reasonable potential for the existence of an illicit discharge. Such instances may include the following:

- Monitoring field screening produces constituent measurements which meet or exceed action criteria
- Monitoring laboratory analysis produces constituent measurements which meet or exceed action criteria
- Professional judgment of monitoring personnel determines that there is a reasonable potential for an illicit discharge to exist due to observations and measurements
- A public or City staff report indicates the possibility of an illicit discharge with an unknown source
- Results from the Receiving Waters Monitoring programs indicate the possibility of an illicit discharge

In some cases, just the existence of flows in a portion of the MS4 or the noticeable increase in dry weather flows at a certain location may trigger a source investigation. The City's monitoring personnel will use their judgment and experience in making such a decision and other decisions based on site specific observations.

### G.2 Source Investigation Procedures

The Monitoring Program personnel will typically conduct source investigations. In some cases a Code Compliance officer or other on site City personnel may conduct a source investigation. When conducting a source investigation, the personnel should be equipped with the set of equipment listed in the Dry Weather Analytical Monitoring Program Field Manual.

**Step 1 – Location of Observation:** Source investigations begin at the location where the observations were made which initiated the investigation. If someone made the observations other than the person or persons conducting the investigation (the investigators) or if they were made more than several hours prior to the initiation of the source investigation, the source investigation should begin with a thorough visual inspection of the location. If flows exist, samples should be collected for field screening and laboratory analysis as deemed appropriate by the investigators. If the illicit discharge is still occurring and it poses a substantial threat to resources and humans downstream, if feasible, actions should be taken immediately by the City to prevent or retard the discharge from flowing further downstream.

**Step 2 – Source Tracking Determination:** While at the observation location, the investigator should consult various resources such as MS4 and land use maps to determine the characteristics of the

tributary areas and upstream communities. In some circumstances, the investigator may be able to identify probable sources of the illicit discharge based on the expected activities of certain upstream sites or the results of previous investigations. In these circumstances, the investigator may choose to go directly to these potential sources to investigate if they are the source of the illicit discharge.

If visits to potential sources do not reveal the source of the illicit discharge, if potential sources are too numerous, or if potential sources cannot be identified while at the observation location, the investigator should track the discharge upstream.

If the discharge has ceased it may be impossible to track the source. In these circumstances, the investigator should document that the discharge has ceased and cannot be tracked. A brief drive- or walk-through survey of the tributary area should be conducted and documented to verify that there is no obvious source. In some cases, although a discharge has ceased, the sources may still be identified by evidence at the site or further upstream. For example, if a sediment laden discharge was reported, an upstream site may reveal signs of sediment discharge such as deposits along curbs or in inlets, signs of eroded slopes, or exposed soils lacking required BMPs.

**Step 3 – Source Tracking:** If source tracking is determined appropriate, the investigator should use MS4 maps and other resources to aid in the tracking. Any traceable characteristic of the illicit discharge (color, constituents, odor, quantity, etc.) should also be noted, as these will aid the investigator in making decisions during tracking and identifying sources. The City's strategy to source tracking is not necessarily to immediately track the discharge directly to its source, but instead, to track the discharge upstream, thereby reducing the tributary area and potential sources. Once the set of possible sources has been reduced to a manageable set, the investigator may choose to end the source tracking and to continue the investigation by inspecting the various potential sources. However, if none of these potential sources can be identified as the source of the discharge, or if the investigator cannot identify any potential sources, the source tracking may be required to be conducted all the way to the source.

In order to conduct source tracking, the investigator should work his or her way upstream along the main portion of the MS4, ruling out potential drainage areas and narrowing the potential source area. When tributary pipes or inlets are encountered while working upstream along the MS4, the investigator should evaluate each for their potential to be the conveyor of the discharge. If the pipe or inlet is dry, it can automatically be eliminated if the illicit discharge is still occurring. If the pipe or inlet is the source of the flow in the main portion of the MS4, then the tracking should continue along that pipe or inlet. If the main portions of the MS4 and the tributary pipe or inlet both contain flow, more detailed observations must be made.

The investigator may be able to rule out one of the conveyances based on simple visual observations and the characteristics of the illicit discharge. Field screening sampling of the flows from the two conveyances may also be appropriate depending on the constituents of the illicit discharge.

Tracking along underground MS4 conveyances is more difficult because observations can only be made at the locations of manholes, outlets, and inlets. The MS4 map will prove the most useful for these investigations. Tracking upstream along an underground conveyance usually consists of periodic observations along manholes and other access locations along the MS4. If the map indicates the confluence of two MS4 conveyances, or if an unmapped confluence is suspected, if possible, the

investigator should make observations at the point of confluence. Otherwise, the investigator should make observations at the nearest access point upstream along each conveyance. When tracking along underground conveyances, the investigator should be aware that illicit connection or unmapped confluentes might exist between observation points that could be the source of the discharge. The investigator should check surrounding inlets in such an instance is expected.

If the source cannot be located and an illicit connection is suspected, the investigator should check the surrounding area and appropriate City personnel or records for evidence of infrastructure construction or other activities that might have involve the installation of an illicit connection.

In the case of chronic illicit discharges for which a source cannot be identified, the City may choose to conduct dye testing, smoke testing, video monitoring, and/or underground visual inspections.

**Step 4 – Discharge Elimination:** Once the source of a discharge has been identified, if the discharge is still occurring, it must be eliminated. The investigators should contact Code Compliance personnel who will issue a notice of violation to the discharger and an order to make necessary alterations to terminate the discharge and clean up the discharge. In cases where the responsible party is present at the source, or the discharge poses a substantial threat to humans or the environment, the investigator may choose to confront the responsible party before Code Compliance arrives, in order to terminate the discharge as quickly as possible. The actions required of the responsible party to eliminate the illicit discharge will vary depending on type of illicit discharge. Clean up or remediation actions may also be required of the responsible party depending on the type of illicit discharge.

**Step 5 – Damage Assessment:** After the discharge has been terminated, the inspector or Code Compliance personnel should travel downstream from the discharge to assess the impacts that the discharge caused to downstream resources. Additional remediation may be required of the responsible party if downstream impacts are detected and monitoring may also be necessary to ensure recovery of downstream areas. Code Compliance may also want to consider the level of downstream impact caused by the illicit discharge, prior to deciding on which level of enforcement action is appropriate for the case.

**Step 6 – Reporting:** Based on the type of discharge and the damage assessment, the City may be required to report the discharge to the RWQCB.

#### ***Documentation and Sampling***

Thorough documentation of a source investigation is always recommended. Documentation includes photographs, detailed notes on observations, discussions on decisions made, and other information relevant to the investigation. This information could be useful to future investigations, and possible future resolution of illicit discharges for which sources were unidentified. It is also important because this information supports any enforcement actions.

Sampling for field screening or laboratory analysis should be taken when deemed appropriate by the investigator. In many cases, once the source is identified, the make-up of the illicit discharge can be determined by a survey of the source and therefore, analysis may not be necessary. However, in other cases, analysis of samples may be helpful as evidence to support enforcement actions.

All documentation and other information relevant to source investigations should be turned over to Code Compliance once the source is identified. Code Compliance will handle, keep, and track files pertaining to the various illicit discharge cases when a responsible party has been identified. Investigators and/or Code Compliance personnel will keep a file of unresolved illicit discharges.

### **G.3 Follow-up Investigations**

Follow-up investigations will be conducted by the City under the following circumstances:

- The discharge ceased prior to arriving at the point of observation or during a source investigation and without the discharge, source could not be traced.
- Source investigations did not produce enough information to locate the source or provide enough evidence to identify a responsible party.
- The City issued an order for a responsible party and a follow-up investigation is necessary to ensure that the responsible party has complied with the required abatement actions.
- An area is identified as possessing high potential for or occurrence of illicit discharges and, therefore, periodic follow-up visits will ensure that future discharges are rapidly identified and eliminated.

### **G.4 Elimination of Illicit Discharges and Connections**

Depending on the type of illicit discharge detected, the City will immediately eliminate the discharge by means of various procedures.

Illicit discharges that are the City's responsibility will be immediately eliminated by contacting the appropriate supervisor who oversees the activities that are resulting in discharge. Action and communications will be documented through internal memorandums, emails, and work orders.

If the party responsible for the illicit discharge is one other than the City, the Code Compliance personnel will ensure that the discharge is immediately eliminated. The typical process for implementing the necessary actions involves an administrative abatement procedure in the form of a Notice of Violation with Corrective Actions. The City requires the person responsible for the illicit discharge to conduct activities necessary to eliminate the illicit discharge at his or her own expense. The activities necessary will be directed by the enforcing officer and are described on the notice. A deadline for correcting the infraction with the required activities is also provided by the enforcing officer. In the event that the officer determines that the individual responsible for the illicit discharge is incapable of performing such activities by the compliance date or if the individual chooses not to perform the activities, the City may conduct the necessary activities and charge the resulting costs to the individual.

### **G.5 Enforcement**

The enforcement actions for illicit discharges are described in Section 11, Enforcement Response Plan.