

APPENDIX A STATEMENT OF WORK AND BUDGET

Update to the 2013 Illicit Connection and Illicit Discharge (IC/ID) Field Screening and Source Tracing Guidance Manual and Hands-On Trainings

This scope of work is to implement a stormwater source control study as part of Stormwater Action Monitoring (SAM). SAM is a collaborative regional municipal stormwater monitoring program administered by Ecology and overseen by the Stormwater Work Group (SWG), a stakeholder group made up of municipal stormwater permittees, tribes, state and federal agencies, business, agriculture and environmental interests.

Introduction

This project will accomplish two objectives supporting the goal of detecting, identifying and tracing sources of stormwater pollution:

1. Update and improve the usefulness of the 2013 Illicit Connection and Illicit Discharge (IC/ID) Field Screening and Source Tracing Guidance Manual (King County, 2013), hereinafter “Manual”;
2. Provide IC/ID screening and source tracing trainings based on the updated Manual; trainings will be provided to municipal staff throughout Western Washington, in eight hands-on sessions. One anticipated outcome of the trainings is an increased number of identified ICs/IDs throughout Western Washington.

The two objectives directly support the longer-timeframe goals of effectively finding and reducing sources of water pollution, including illicit discharges into stormwater conveyance systems, as required of Phase I and Phase II jurisdictions under NPDES Municipal Stormwater Permits. (In the Phase II Permit for Western Washington, this is Section S5.C.3. In the Phase I Permit for Washington, this is Section S5.C.8. Both sections are titled “Illicit Connections and Illicit Discharges Detection and Elimination”, known as “IC/IDDE” or it’s even shorter acronym, “IDDE”.) These objectives also indirectly support the goal of finding and reducing contaminated flows directly into waterways, as regulated under King County Code Title 9.12 (Surface Water Management -Water Quality), as many of the techniques used to identify illicit discharges into stormwater conveyance systems are the same methods used for pollution identification in natural waterways.

Applicable Documents

- Illicit Connection and Illicit Discharge Field Screening and Source Tracing Guidance Manual, King County, 2013.
- References as included.

Task 1 Project Administration

Task 1 is project administration and management performed by King County and a subconsultant who will implement the project. Tasks include project setup and management, conducting regular working meetings for the project team, tracking work flow and budget expenditures, and providing twice-yearly invoices and reports to Ecology according to the contract agreement. Task 1 also includes review of deliverables from Tasks 2, 3 and 4, and transmittal to Ecology’ SAM Coordinator. Consultant tasks

include providing quarterly status reports to King County, attending regular working meetings, and general project planning and coordination. Deliverables will be made ADA accessible following guidance from the SAM coordinator.

Deliverable 1 is subdivided into 1.1 to 1.5 (See table at end for costs and schedule)

Semi-annual reports that include minutes of the project team meetings and description of project status by milestones achieved. Invoices will follow semi-annual reports.

- 1.1 Semi-annual status report – target date: June 2018
- 1.2 Semi-annual status report – target date: January 2019
- 1.3 Semi-annual status report – target date: June 2019
- 1.4 Semi-annual status report – target date: January 2020
- 1.5 Semi-annual status report – target date: June 2020

Task 2 Municipal IC/ID Programs Feedback Workshops and Survey, and Literature and Data Review

Task 2A – Workshops on Municipal Programs and Field Methods

Two feedback workshops will be conducted in Western Washington for municipal field staff involved with IC/ID detection work. The workshops will provide a forum to gather information on permittees' interpretations and approaches for IC/ID programs, survey what IC/ID methods are being used, and identify what data gaps exist for improving and streamlining stormwater pollutant source tracing efforts. King County will leverage its existing regional leadership role as well as its interagency relationships to identify municipal IC/ID field staff throughout Western Washington and encourage them to attend the workshops.

An online survey will also be prepared and sent to municipal field staff from jurisdictions unable to attend the workshops. Questions to be discussed at the workshop and asked in the online survey will include the following:

1. What are your current IC/ID detection methods for field screening and source tracing?
2. What IC/ID detection needs currently are not being met, and why?
3. Which IC/ID manual(s) do you use?
 - a. IC/ID guidance manual
 - b. CWP guidance manual
 - c. Your own manual
 - i. Based on IC/ID 2013
 - ii. Based on CWP 2004
 - iii. Based on both
 - iv. Based on neither/other
4. If you use the IC/ID Manual, which sections of the IC/ID Guidance Manual are useful?
5. If you use the IC/ID Manual, which sections of the IC/ID Guidance Manual need improvement?
6. What additional tools and/or trainings are needed for IC/ID field screening and source tracing?
7. What are convenient locations for IC/ID trainings among the following options?
 - a. North Puget Sound (Mt. Vernon or Bellingham)
 - b. Central Puget Sound (Seattle area)
 - c. South Puget Sound (Olympia or Tacoma)
 - d. Southwest Washington (Vancouver area)
 - e. Western Puget Sound (Bremerton area)

Deliverables

- Deliverable 2. Technical memorandum with bulleted summaries from the feedback workshops and online survey findings.

Task 2B – IDDE Data Review

In conjunction with the feedback received at the workshops and from the survey, additional information about what IC/ID methods are being used by municipal governments will be obtained from the 2014 Western Washington IDDE database (Lakewood 2017a). The 2014 database contains permittee annual report responses and includes rich information on the types and sources of pollutants, time periods for response and resolution, source tracing and indicator testing methods, pollution correction and elimination methods, discharge quantity and frequency, and land use, among others. Queries of the database will be more specific and probe deeper than those done in the Lakewood study. Examples of queries include:

1. What are the most common pollutant sources associated with the most frequent incidents in Western Washington or in the Puget Sound region? What pollutant sources are associated with jurisdictions of varying sizes and among various business types?
2. What pollutants were present in jurisdictions of comparable sizes or programs and what were effective indicator testing and source tracing methods for those pollutants?
3. What are the most commonly used correction methods for selected pollutants and how quickly were pollution incidents eliminated?

Taken together with Task 2A, these two permittee-provided sources of data (feedback workshops and 2014 data evaluation) will form the basis for identifying some of the important updates and improvements needed for the IC/ID Guidance Manual and subsequent trainings (see Task 3).

Deliverables

- Deliverable 3. Technical memorandum of information gathered from queries made of the 2014 IDDE database.

Task 2C - IC/ID Detection Literature Review Update

Task 2C will update the literature search (King County 2012) that was done as a foundation of the 2013 IC/ID Guidance Manual. The 2013 literature review included publications from 1995 through 2012, with most originating in the early 2000s and focused on local and regional manuals from municipalities across the United States. New publications are available and several Puget Sound jurisdictions have updated their source tracing methodology. For this literature review, both municipal manuals along with literature articles (in English) from international sources will be reviewed as available with hyperlinks provided to online documents. Many permittees have reported using other IC/ID field manuals, including ones they have prepared for their own jurisdiction as well as other manuals (e.g., the 2004 guidance manual from the Center for Watershed Protection in Maryland (CWP, 2004)). The multiple sources of IC/ID field guidance in use highlight the need to ensure effective field screening and source tracing methods are used in our region. Emphasis will be placed on identifying and reviewing literature with practical IC/ID field screening and source tracing methodologies.

The literature review will also build on a white paper on stormwater source control (AWC and Ecology, 2013). The white paper was written as a precursor to the source control effectiveness study recently completed by the City of Lakewood and Aspect Consulting (Lakewood 2017b). The white paper focused

on reference articles and manuals related to four source control topics: IDDE methods, business inspections, private stormwater facility source control, and construction source control.

Deliverables

- Deliverable 4. A report synthesizing the findings of the literature review with summaries of the relevant points in each publication grouped by IC/ID detection topic. The report is expected to be up to 30 pages and will include hyperlinks to online documents as available.

Task 2D - Update the IC/ID Guidance Manual

Task 2D will update and improve the IC/ID Guidance Manual to be more relevant and usable. The updates will be based on information gathered from Tasks 2A, 2B, and 2C. Prior to proceeding with updating the Manual, the deliverables from these earlier steps will be presented to the Source Identification Subgroup (a sub-committee of the SWG) to review and comment on the priorities and topics identified for the proposed Manual updates. The Manual will be updated following approval of the topics from the Source Identification Subgroup. The draft updated Manual will be provided for review by the Source Identification Subgroup and SAM Coordinator. The review period is anticipated to be up to four weeks, after which the final manual will be prepared based on comments received. The final version of the manual will be submitted to the SAM Coordinator for approval.

Deliverables

- Deliverable 5. Presentation to the Source Identification Subgroup on the proposed updates to the IC/ID Guidance Manual.
- Deliverable 6. Draft version of the updated Manual (Word).
- Deliverable 7. Final version of the updated Manual (Word and PDF) and posted to King County's Stormwater Services webpage for easy access by permittees.

Task 3A - Disseminate Manual Updates to Permittees and Announce Trainings

The updated IC/ID Guidance Manual will be broadly shared and publicized to increase awareness and usage by municipal stormwater permittees. Marketing will include posting a flyer about the updated manual and upcoming training workshops to King County and Ecology's SAM and MS4 Permit webpages. In addition, the following regional stormwater groups and support entities will be sent the flyer:

- Stormwater Work Group
- Regional Operations and Maintenance Program (ROADMAP)
- Eastern Washington Stormwater Coordinators Group
- North Sound Coordinators Forum
- South Sound Phase II Coordinators Group
- West Sound Stormwater Managers' Coordination Group
- Regional Stormwater Policy Group
- NPDES Permit Coordinators Forum
- Southwest Washington Coordinators Forum
- Association of Washington Cities
- Washington State Association of Counties

- WSU Washington Stormwater Center
- UW Urban Waters Center
- Environmental Coalition of South Seattle (ECOSS).

Deliverables

- Deliverable 8. PDF version of flyer announcing manual updates and upcoming trainings; copies of emails distributing the flyer to the leads/contacts of the groups listed in the task description. Details about the specific details regarding the messaging of the flyer (e.g. content, format) will be forthcoming.

Task 3B Trainings on the Updated IC/ID Guidance Manual

The three training sessions in 2013 on the existing IC/ID Guidance Manual were attended by 135 municipal staff from 52 cities and 11 counties who received hands-on instruction on how to implement IC/ID methodologies. Due to the limited number of trainings offered, participation was limited to three attendees per jurisdiction and many jurisdictions expressed interest in having additional trainings for staff that were unable to attend. An additional training, including hands-on workstations, was offered to a packed house at the Washington Stormwater Center's stormwater conference in November 2014. Recognizing this unmet need and the importance of these trainings for IC/ID program implementation, the project team will provide eight (8) 4-hour trainings throughout Western Washington on the updated IC/ID Guidance Manual. The trainings will use and expand the curriculum from the 2013 training sessions. Training locations are anticipated to include Poulsbo, Vancouver, Bellingham, Olympia, Everett, Snoqualmie, Redmond, and Renton; final locations will be decided based on permittee responses in the feedback workshop and survey in Task 2A. Expenses for facility rental, light refreshments, mileage and supplies as well as accessibility and location will be considered in order to stay within budget. Costs for these items are included in the estimate for this task. The trainings will be primarily for Western Washington municipal stormwater permittees, and permittees from Eastern Washington will be invited if space is available. The trainings will include the following:

- **IC/ID Field Screening and Source Tracing Overview and Refresher (Part 1):** Part 1 of the training will be up to one hour and provide project background, an overview of the IC/ID Guidance Manual, and a summary of the revisions made in the 2018 Manual update.+
- **In-depth IC/ID Field Screening and Source Tracing (Part 2):** Part 2 of the training will be three hours and comprise a refresher course for attendees of previous trainings and an in-depth introduction for new attendees. Part 2 will include:
 - **Field equipment demonstration stations:** Attendees will be split into small groups to learn several different methods of indicator sampling at field equipment demonstration stations. The field equipment demonstration stations will be based on the updated Manual and are likely to include many of the same stations at the 2013 trainings, including ammonia, color, pH, turbidity, chlorine and fluoride, surfactants, hardness, nitrate and nitrite, dye testing, and smoke testing. Demonstration stations will be added to learn the use of new methods, such as newly developed and inexpensive bacterial sampling and incubation techniques.
 - **“Find the Illicit Discharges”:** A team exercise to work through the steps of investigating multiple illicit discharges and illicit connections using field screening, source tracing, and indicator sampling results.

- **Outdoor field exercise:** Attendees will be split into two groups to discuss appropriate sampling techniques in catch basins and manholes.

The trainings will be scheduled to maximize opportunities for municipal staff to participate. It is expected that the trainings will occur in the fall after September 1 to avoid summer vacation schedules and well before the spring to avoid municipal NPDES annual reporting.

Deliverable

- Deliverable 9. List of completed trainings including: locations, dates, agendas, PowerPoint presentations, attendance, and description of field trips/site visits for all municipal staff trainings performed in Western Washington for each training. Copies of receipts for facility rental fees, light refreshments for trainees, mileage for trainers, and supplies will also be included in this deliverable.

Task 4 – Communication of project results and findings

At the completion of this project, the results will be communicated and shared in three ways. The first way is a two-page fact sheet prepared using the SAM fact sheet template. The fact sheet will be provided as a draft to the SAM Coordinator for review and transmittal to a third party (Association of Washington Cities) for formatting. The SAM Coordinator will then provide the formatted factsheet to King County for final review.

The second way the project results will be shared is a presentation to the Source Identification Subgroup. The presentation may also be given at a local conference, such as the Washington State Municipal Stormwater Conference (MuniCon).

The third way the project results will be shared is a collection of edited videos of the training from Task 3B. The first video will be an abridged version (up to one hour) of the overview and refresher from Part 1 of the training. Four to six shorter videos (approximately three to five minutes each) will also be made of screening methodologies demonstrated in Part 2 of the training. The shorter videos will update some of the key IC/ID screening and detection methods or capture new methods not covered in the 2013 trainings or videos currently available on Washington Stormwater Center's website. The videos will be prepared in a similar format as the 2013 training videos and be prepared at a resolution of 720p (1280 by 720 pixels) or greater in MPEG4 format with subtitles for online posting. The videos will be edited with the addition of segment and sub-segment titles, acknowledgements, and credits. The first of the short videos will be provided as a draft to the Source Identification Subgroup for review, and comments on the first video will be carried forward into all videos produced.

- Deliverable 10. Draft factsheet in Word, briefly describing the overall set of manual updates made and recommendations from the project
- Deliverable 11. Review of formatted factsheet as provided by SAM Coordinator.
- Deliverable 12. Electronic copy of PowerPoint presentation on project findings and activities given to the SWG Source ID Subgroup or local conference.
- Deliverable 13. Videos (one long and up to six short videos) of training introduction and selected methodologies, posted on Ecology's and King County's websites.

Budget By Deliverables - Summary

Total project cost is \$174,000. This includes salaries, indirect costs, benefits, travel, and supplies.

Task and Deliverable	Start Date	End Date	Cost by deliverable
Task 1 Project Administration (task total \$22,000)			
Deliverables 1.1, 1.2, 1.3, 1.4 and 1.5. Twice yearly invoices from County to Ecology, including status reports and project team meeting minutes.	June 2018	June 2020	\$22,000
Task 2 Update and Improve the Manual (task total \$79,000)			
Deliverable 2. Technical memo on findings from feedback workshops and online survey.	April 2018	August 2018	\$25,000
Deliverable 3. Technical memo on results from querying 2014 IDDE database.	April 2018	August 2018	\$6,000
Deliverable 4. Technical memo summarizing relevant points from literature review.	April 2018	August 2018	\$14,000
Deliverable 5. Presentation by project team to Source ID Subgroup of proposed Manual updates, discussion, consensus.	July 2018	Sept 2018	\$3,000
Deliverable 6. Updated Manual, draft.	Sept 2018	Nov 2018	\$17,000
Deliverable 7. Updated Manual, final. Manual posting to websites	Dec 2018	March 2019	\$14,000
Task 3 Trainings (task total \$61,000)			
Deliverable 8. Flyer and copies of emails announcing Manual update and trainings schedule		April 2019	\$1,000
Deliverable 9. List of completed trainings (agendas, attendees, locations, and costs).		Feb 2020	\$60,000
Task 4 Communicate Project Results (task total \$12,000)			
Deliverable 10. Draft fact sheet (Word doc) capturing manual updates and project recommendations.		Dec 2019	\$1,700
Deliverable 11. Review of final factsheet for project produced by SAM Coordinator		Feb 2020	\$1,300
Deliverable 12. Final project presentation to SWG Source ID Subgroup or local conference (electronic copy – PowerPoint)		TBD 2020	\$3,000
Deliverable 13. One long and up to six short videos of the trainings.		Feb 2020	\$6,000
Total project cost			\$174,000

References

- AWC and Ecology, 2013. Stormwater Management Program Effectiveness Literature Review: Source Control white paper. Prepared by Cardno TEC consultants, Seattle, WA for Association of Washington Cities and Washington State Department of Ecology. May 2013.
- Center for Watershed Protection (CWP), 2004. Brown, E., D. Caraco, and R. Pitt. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessment. Center for Watershed Protection. October 2004
- Ecology, 2013a. Phase I Municipal Stormwater Permit: National Pollutant Discharge Elimination System and State Waste Discharge General Permit for Discharges from Large and Medium Municipal Separate Storm Sewer Systems, August 1, 2013 to July 31, 2018. [Phase I Municipal Stormwater Permit](#)
- Ecology, 2013b. Western Washington Phase II Municipal Stormwater Permit: National Pollutant Discharge Elimination System and State Waste Discharge General Permit for Discharges from Small Municipal Separate Storm Sewer Systems, August 1, 2013 to July 31, 2018. [Western Washington Phase II Municipal Stormwater Permit](#)
- Ecology, 2014. 2012 Stormwater Management Manual for Western Washington, As Amended in 2014. Publication 14-10-055, Washington State Department of Ecology, December 2014. <https://fortress.wa.gov/ecy/publications/documents/1410055.pdf>.
- Ecology, 2018. Website for the SIDIR subgroup of the SAM. ecology.wa.gov/SAM
- King County, 2012. Survey Results and Literature Review: Illicit Discharge Detection and Elimination Field Screening. Prepared by Herrera Environmental Consultants for King County Department of Natural Resources and Parks and the Washington Stormwater Center. Available on the WSC website <http://www.wastormwatercenter.org/illicit-connection-illicit-discharge>.
- King County, 2013. Illicit Connection and Illicit Discharge Field Screening and Source Tracing Guidance Manual. Prepared by King County, Washington Stormwater Center (WSC), and Herrera Environmental Consultants for Washington State Department of Ecology. Available on the WSC website <http://www.wastormwatercenter.org/illicit-connection-illicit-discharge>.
- Lakewood, 2017a. Illicit Discharge Detection and Elimination (IDDE) Regional Data Evaluation for Western Washington. Prepared by Aspect Consulting for the City of Lakewood and the Washington State Department of Ecology, May 2017. Available at ecology.wa.gov/SAM
- Lakewood, 2017b. Business Inspection Stormwater Source Control Effectiveness Study. Prepared by Aspect Consulting for the City of Lakewood and the Washington State Department of Ecology, September 2017. Available at ecology.wa.gov/SAM