**INTRODUCTION**

This guide was created to provide a systematic procedure for recording basic stormwater discharge information collected when Hydraulics reports are prepared so that stormwater discharge information can be entered into Washington State Department of Transportation’s (WSDOT) Stormwater Database. This data is used to comply with stormwater regulations and help WSDOT meet maintenance, as well as future programming, planning and project design needs.

**BACKGROUND AND HISTORY**

In order to meet federal, state, and local regulations related to controlling contaminated stormwater runoff and reducing peak stormwater flows, WSDOT initiated a Stormwater Discharge Inventory and Field Mapping Project starting in approximately 1993. The inventory was designed to meet permitting requirements of the National Pollution Discharge Elimination System (NPDES), and to assist WSDOT in complying with the Puget Sound Highway Runoff Rule [Washington Administrative Code (WAC) 173-270]. This rule requires WSDOT to identify sources of stormwater runoff and develop a program of best management practices (BMPs) to treat or manage stormwater pollution sources.

**OVERVIEW OF DISCHARGE POINT INVENTORY PROCESS**

WSDOT has a complex drainage system composed of ditches, pipes, drainage inlets, stormwater treatment and flow control facilities, and other structures to direct or treat stormwater. These conveyance structures end in discharge points when they discharge stormwater out of the WSDOT right-of-way (ROW) to surface water bodies, connect to municipal stormwater systems, or detain stormwater so it will infiltrate into the ground. Global positioning system (GPS) equipment will be used to obtain precise latitude, longitude, and elevation coordinates for inventoried discharge points. The information from the GPS data logger and the stormwater inventory database is later downloaded to **WSDOT’s Geographic Information** **System GIS Workbench.**

**DISCHARGE POINT IDENTIFICATION**

A **stormwater conveyance element** can be any structure (man-made or natural) that conveys stormwater from WSDOT highways to a discharge point.

A **discharge point** is defined as:

**The location at which concentrated stormwater runoff is transferred from, or to, WSDOT’s right of way or property via a constructed conveyance element. This includes locations within the right of way where stormwater is discharged to surface waters of the state or is infiltrated to the ground.**

*All stormwater conveyance elements (or system of elements) must have a discharge point. All discharge points must have an associated stormwater conveyance element (or system of elements).*

Discharge points can be further characterized under the following Categories:

* Surface water

Land surface

Managed system

Incoming

Subsurface

**Surface Water Discharges**

“Surface water discharges” are concentrated stormwater flow, routed through a constructed WSDOT conveyance, which then enters and mixes with a regulated receiving “water body of the state.” To qualify as a surface water-type discharge, the conveyed flow should be discharged directly into or within 50 feet of a qualifying water body or can be visually confirmed to be conveyed to and enter the water body in concentrated form at a reasonable distance outside of the WSDOT right of way boundary.

***Point Location Notes***

* In cases where the WSDOT conveyance discharges stormwater to a water body within the WSDOT right of way, collect the discharge point at the location where the stormwater conveyance meets the water body boundary.
* In cases where the WSDOT conveyance discharges across the right of way boundary and the flow is visually confirmed to enter a water body of the state in concentrated form in excess of 50 feet from the discharge location, collect a surface water-type discharge point at the right of way boundary.
* In cases where the discharge enters a stormwater conveyance or system managed by a third party prior to entering the water body of the state, collect a “managed system” discharge point.

**Land Surface Discharges**

“Land Surface discharges” are outgoing stormwater flows routed through a constructed conveyance from WSDOT property or right of way that flow over the surface of the land to a field, forest, or landscaped area. To qualify as a land surface-type discharge, the concentrated flow should leave the WSDOT right of way **in excess of 50 feet** from a qualifying “water body of the state” and should not be seen to mix with a water body outside of the right of way. This flow may be conveyed away from the WSDOT right of way by a channel naturally eroded into the land surface or may disperse and infiltrate into the ground outside of the WSDOT right of way.

***Point Location Note***

Document a land surface discharge at the location at which stormwater flow is crossing the implied right of way boundary.

**Managed System Discharge**

A “managed system” discharge is outgoing stormwater flow routed through a constructed conveyance from WSDOT property or right of way that enters and mixes with a managed stormwater drainage network. This network can include both private drainage systems and those managed by a municipality (e.g., MS4, CSS) and should consist of at least one constructed stormwater conveyance element.

Additionally, document managed system discharge points where third-party municipal storm drain systems pass through without surfacing on the WSDOT right of way.

***Point Location Notes***

* In the case of a managed system discharge that is conveyed by a visible open channel or exposed pipe, document the discharge point at the location where the conveyance crosses the implied right of way boundary (and thus transfers responsibility).
* In the case of a managed system discharge that is conveyed by buried pipe or other closed conveyance, document the discharge point at the location of the exposed conveyance inlet or at the outlet where it physically ties to a conveyance or drainage structure that is not owned or operated by WSDOT (rather than the approximate mid-pipe location where the conveyance is projected to cross the right of way boundary).

**Incoming Discharges**

An “incoming” discharge is stormwater (or other flow) routed through a constructed conveyance that enters WSDOT right of way or property from a non-WSDOT-owned or -operated facility or system. This can include a direct connection of a conveyance feature to an element of the WSDOT stormwater network. In addition, incoming discharges can include an indirect connection of a conveyance feature that routes flow to WSDOT property where that flow disperses and infiltrates to the ground. To qualify as an incoming-type discharge, the incoming flow should cross the right of way boundary as concentrated flow.

Additionally, document incoming system discharge points where third-party municipal storm drain systems pass through without surfacing on the WSDOT right of way.

***Point Location Notes***

* The incoming discharge type does not include incoming flow from waters of the state in a natural channel.
* In the case of an incoming discharge that is conveyed by a visible open channel or exposed pipe, document the discharge point at the location at which the conveyance crosses the implied right of way boundary.
* In the case of an incoming discharge that is conveyed by buried pipe, document the discharge point at the location of the exposed conveyance outlet, rather than the approximate location at which the conveyance is projected to cross the right of way boundary.

**Subsurface Discharge**

A subsurface discharge is stormwater flow that is routed through a WSDOT conveyance and terminates within the WSDOT right of way, where the flow is infiltrated to the ground in excess of 50 feet from a qualifying water body of the state. This can include either untreated infiltration via flow dispersion from the end of the conveyance or designed best management practices (BMPs) constructed to infiltrate water.

Subsurface discharges document the location where, upon infiltration, stormwater potentially mixes with “waters of the state” (as defined to include groundwater). The WSDOT NPDES permit defines “groundwater” (i.e., underground water) as meaning “water in a saturated zone or stratum beneath the surface of the land or below a surface water body” (see also [WAC 173-218-030](http://apps.leg.wa.gov/wac/default.aspx?cite=173-218-030)).

The nature of underground waters is innately complex. Considerable technical expertise is required to assess the seasonal elevation of the local groundwater table and the ultimate destination of infiltrated stormwater. Therefore, document subsurface discharges to indicate locations of *possible* stormwater infiltration and *potential* mixing of that fluid with underground waters of the state. Obtain more detailed representations of local and regional soils and groundwater conditions from WSDOT hydraulic and geotechnical reports where available.

***Point Location Notes***

* Do not use the subsurface discharge point subtype for engineered infiltration BMPs that include broad areas designed for dispersed infiltration, such as infiltration ponds or dispersion areas.
* Document subsurface discharges at the termination point of the stormwater conveyance that is conveying flow to that location.

**Through-Going Systems**

Whenever possible, document local jurisdictions’ drainage conveyances passing through the right of way or property without surfacing or connecting to the WSDOT system. This scenario is considered a “though-going system” and is documented using a pair of discharge points.

***Point Location Notes***

* Document an “incoming” (INC) discharge point at the approximate location where the through-going line enters WSDOT right of way.
* Document a “managed system” (MS) discharge point at the approximate location where the conveyance leaves the right of way.

**DATA COLLECTION**

During the inventory effort, information will be collected and recorded onto the Discharge Point Inventory spreadsheet found on the WSDOT Stormwater System Mapping website at:

<http://www.wsdot.wa.gov/Environment/WaterQuality/StormwaterMapping.htm>.

Follow the data collection and naming conventions. Call Cory Simon at 360-570-2589 or Tim Hall at 360-570-2463 if assistance is required in applying the instructions. If anomalous site conditions warrant minor variations from the inventory instructions, note those variations on the Discharge Point Inventory spreadsheet for quality control and information management purposes.

**Discharge Recipient Category:** select the category of the thing that is receiving the discharge-

* Surface water- SW

Land surface- LS

Managed system-MS

Incoming-Inc

Subsurface-Sub

**Discharge Recipient Type:** Describe the immediate recipient of the stormwater discharge. Select the feature Recipient Type, as defined below, that best fits the discharge scenario.

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| --- | --- |
| **Recipient Type for “Incoming”** | |
| WSDOT Property | The structure conveying the incoming flow discharges to ground or other part of WSDOT right of way that is not part of WSDOT’s stormwater system. |
| WSDOT MS4 | The structure conveying incoming flow is physically connected to the local WSDOT stormwater system. |
| **Recipient Type for “Land Surface”** | |
| Pasture, Field, Prairie | The stormwater conveyance discharges to a pasture, field, or prairie (typically indicated by planted or natural grass or small shrub vegetation). |
| Forest | The stormwater conveyance discharges to a forest (typically indicated by trees and large woody undergrowth). |
| Grass, Turf, Lawn | The stormwater system discharges to privately or publicly maintained grass, turf, or lawn. |
| Impervious Surface, Rock | The stormwater system discharges to an impervious surface or rock surface. |
| **Recipient Type for “Managed System”** | |
| Municipality | The WSDOT stormwater system discharges to a stormwater system owned or maintained by a local municipality. |
| Private Party | The WSDOT stormwater system discharges to a stormwater system that is owned or maintained by a private party. |
| **Recipient Type for “Subsurface”** | |
| Engineered | The WSDOT stormwater system discharges to the ground via a constructed stormwater best management practice (BMP) that is designed to facilitate infiltration (e.g., dry well). |
| Passive | The WSDOT stormwater system discharges to the ground via natural infiltration in a local low area or slope that is not a dispersion area BMP. |
| **Recipient Type for “Surface Water”** | |
| River or Stream | The WSDOT stormwater system discharges to a flowing body of fresh water (perennial) or a water course (intermittent, ephemeral). |
| Marine | The WSDOT stormwater system discharges to a saltwater body, such as the Puget Sound or Pacific Ocean or peripheral waters, that is subject to the ebb and flow of the tide. |
| Lake or Non-stormwater Pond | The WSDOT stormwater system discharges to a relatively still, fresh water body, localized in a basin, and surrounded by land. These can include constructed impoundments such as reservoirs, but should not include impoundments for the specific purpose of stormwater treatment. |
| Wetland | The WSDOT stormwater system discharges to an area where local hydrologic conditions are sufficient to support, and under normal circumstances do support, vegetation typically adapted for life in saturated soil conditions, and **has been** **confirmed** through research of existing wetland delineations to be a Wetland area. |
| Irrigation Channel | The WSDOT stormwater system discharges to a body of water flowing in a ditch or channel that is designed and constructed to convey water for the purposes of irrigation. |
| Other Add Note | The WSDOT stormwater system discharges to a body of water that, at the time of documentation, is determined to be of a type not included on this list. |
| Wet Area | The WSDOT stormwater system discharges to an area where local hydrologic conditions are sufficient to support vegetation typically adapted for life in saturated soil conditions, but **has not been** **confirmed** through research of existing wetland delineations to be a Wetland area. |

**Receiving Water body Name:** For surface water discharge points only, enter the name of the water body receiving the discharge if known.

**Geographic Coordinates:** A GPS unit in the field can provide both a latitude and longitude reading for a given location as well as the approximate elevation above mean sea level (MSL) of the discharge. The source of the latitude and longitude coordinates should be recorded on the Inventory spreadsheet. See Appendix A for GPS details.

**Latitude/Longitude**: Be sure and include all the decimal places noted on the GPS unit.

The format of the latitude and longitude should be as follows:

Latitude: XX.XXXXXXXX (e.g., 44.6879864)

Longitude: -XXX.XXXXXX (e.g., -122.6873645)

Elevation: Recorded in feet above MSL.

**Lat/Long source:** Describe whether GPS unit or map was used.

**Date:** Record the discharge point inspection date on the reporting spreadsheet using the mm/dd/yyyy format, for example 09/29/2004.

**Region:** Record the WSDOT region the discharge point is located in. Possible choices include: NW (Northwest Region), SW (Southwest Region), OR (Olympic Region), NC (North Central Region), SC (South Central Region) and ER (Eastern Region).

**Milepost (MP):** Record the milepost location of the discharge point in decimal format to the 1/100th, and the whole value of the MP. For example, MP 42.1 would be recorded as MP

42.10.

**State Route:** Record the state route number in a three-digit format (e.g., 005 for I-5, and 099 for SR 99).

**Hydraulics Report Title:** Record the title of the Hydraulics Report that is being created in association with inventoried discharge points.

**Observers/Inspectors**: Record the name(s) of the field inspector(s) on the reporting spreadsheet.

**Access instructions:** Include all necessary information (parking locations, walking access, safety concerns, etc.) that would allow a different individual to locate the site in the future.

**Associated Feature Type:** This is the final feature in a stormwater conveyance system prior to the discharge point. Select the appropriate feature and type from the list below.

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| --- | --- |
| Ditch Vegetated | A majority of the ditch bottom is vegetated. |
| Ditch Bare Soil | A majority of the ditch bottom is bare soil. |
| Ditch Rock | A majority of the ditch bottom is lined with rock (such as rip rap). |
| Ditch Asphalt | A majority of the ditch bottom is lined with asphalt. |
| Ditch Concrete | A majority of the ditch bottom is lined with concrete. |
| Ditch Other Add Note | A majority of the ditch bottom is composed of material other than what is noted here. Briefly describe the material type in the “Notes” field. |
| Ditch Unknown | The feature type of “Ditch” is confirmed, but the material type is unknown. |
| Pipe Concrete | The pipe is constructed of concrete material. |
| Pipe Plastic | The pipe is constructed of plastic material. |
| Pipe Metal | The pipe is constructed of metal material. |
| Pipe Clay | The pipe is constructed of clay material. |
| Pipe Other Add Note | The pipe is constructed of a material other than what is listed here. Briefly describe in the note field the material type. |
| Pipe Unknown | The feature type of “Pipe” is confirmed, but the material type is unknown. |
| Curb Concrete | The curb is constructed of a concrete material. |
| Curb Asphalt | The curb is constructed of an asphalt material. |
| Curb Unknown | The feature type of “Curb” is confirmed, but the material type is unknown. |
| Infiltration Facility | This is to be used when there is a designed stormwater infiltration facility discharging stormwater to the subsurface. These include facilities such as infiltration trenches, dry wells, infiltration ponds, and infiltration vaults. |
| Maintenance Concern Add Note | Stormwater is being discharged from a system that has maintenance concerns. |
| Unknown | At the time of documentation, it is unclear what the discharge is associated with. |
| Other Add Note | The feature type does not fall under any of the existing categories. Briefly describe in the notes field the feature and material type. |

**Ditch Shape:** If the associated feature type is a ditch, approximate the geometric shape of the ditch or open channel flowing to the discharge point.

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| --- | --- |
| Rectangle | The ditch geometry is defined by a flat bottom and vertical sides. |
| Trapezoidal Equal Sides | The ditch geometry is defined by a flat bottom and sloped sides, with the foreslope and backslope having the *same* “slope” range value as defined in the “Slope” domain of the “ForeSlope” and “BackSlope” fields of the “[Ditch](#DITCH)” feature type defined below. |
| Trapezoidal Unequal Sides | The ditch geometry is defined by a flat bottom and sloped sides, with the foreslope and backslope having a *different* slope range value as defined in the “Slope” domain of the “ForeSlope” and “BackSlope” fields of the “[Ditch](#DITCH)” feature type defined below. |
| Triangle | The ditch geometry is defined by sloped sides and negligible bottom width. |
| U Shaped | The ditch geometry is defined by a pronounced curvature near the bottom and has vertical walls. |
| Other Add Note | The ditch geometry is better characterized by a value that is not included here. |
| NA | Not applicable for the associated feature type selected. |

**Pipe Diameter:** If the associated feature type is a pipe, enter the internal diameter of the pipe with measurement units.

**RECORDING AND SUBMITTING THE DATA**

After entering the collected information into the Excel spreadsheet described above, e-mail those spreadsheets to WSDOT Water Quality staff at either simonc@wsdot.wa.gov or

hallt@wsdot.wa.gov. The spreadsheets will be entered into the Stormwater Database by Water Quality staff.