Headwater Drainage Feature Assessment 6150 Thunder Road, Ottawa

April 26, 2021

Submitted To:

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KILGOUR & ASSOCIATES LTD.

www.kilgourassociates.com Project Number: AVE1118.1



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1.0 INTRODUCTION

This report is a Headwater Drainage Feature Assessment written by Kilgour & Associates Ltd. (KAL) on behalf of Avenue 31 in support of potential future development at 6150 Thunder Road in Ottawa, Ontario (the "Site"). The report provides a detailed description of the headwater drainage features (HDFs) the Site following the field methodologies identified with the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (CVC & TCRA, 2013) (the "HDF Guidelines").

2.0 HEADWATER DRAINAGE FEATURES

2.1 Overview

This study identifies and describes six HDFs (R1 through R6) located on the Site (Figure 1). These features all drain to a permanent water course identified within this report as channel R7. The features were studied during the spring and summer of 2018 as part of a due-diligence review of the site prior to the commencement of planning for the site, though the formal HDFA report was not completed at the time. The site was briefly revisited on October 8, 2020 to note where portions of the Site landcover had been cleared. Landcover descriptions adjacent to reaches have been updated within this report accordingly.

2.2 Assessment Methodology

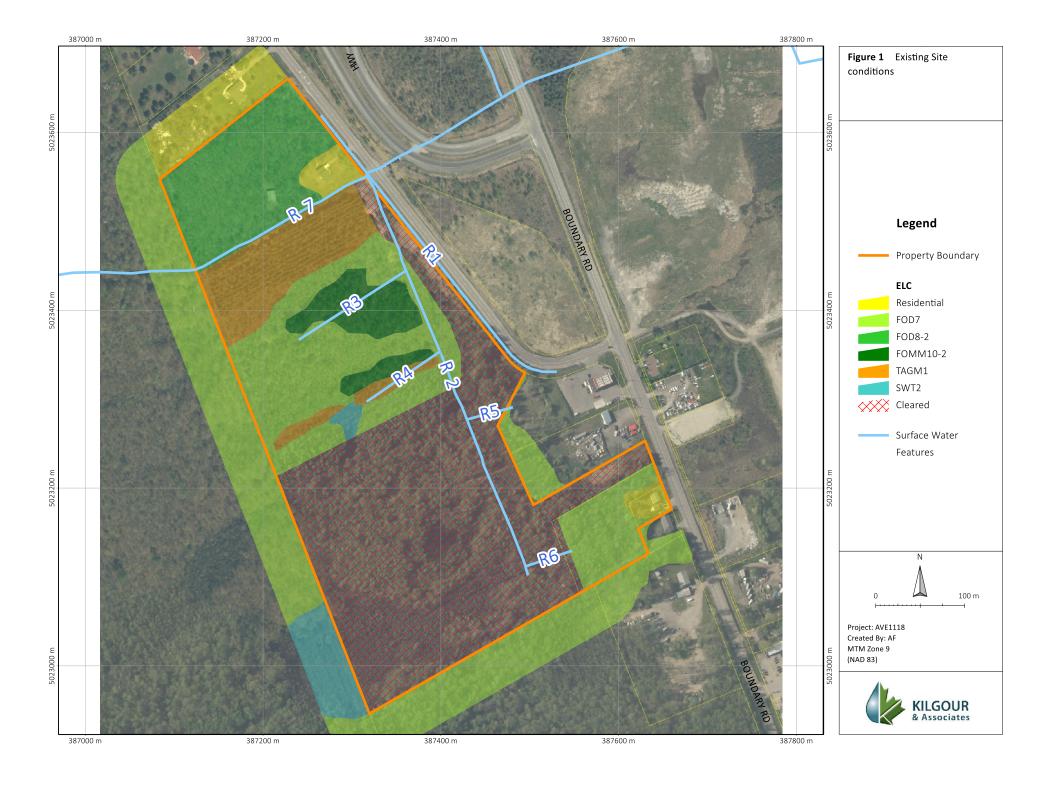
The Standard level of assessment follows Ontario Stream Assessment Protocol (OSAP) methodologies for descriptions of flow conditions, riparian vegetation and site features that are important components of habitat (headwater sampling protocol OSAP S4.M10), and includes an electrofishing survey to describe fish and fish habitat (OSAP S4.M10). Additionally, an ecological land classification (ELC) was applied to the riparian zone of each channel as a means of documenting community type. Amphibian breeding is assessed following the Marsh Monitoring Protocol (MMP).

2.2.1 Channel Form and Fish

Headwater channels on the Site were investigated three times in 2018 following *Evaluation, Classification* and *Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014) to document their hydrological and riparian and terrestrial habitat. On April 12, 2018 (i.e. during the spring freshet), KAL biologists Liza Hamilton and Tyler Peat identified and described seven channelized features on the Site (reaches R1 through R7; Figure 2), noting the channel dimensions, substrate, form, and riparian vegetation.

On June 21, 2018, KAL biologists Rob Hallett and Tyler Peat conducted an electrofishing survey of R1, R3, R4, and a portion of R2 north of R4. These channels were deemed at the time to be sufficiently wet to potentially support fish, whereas R2, R5, and R6 were dry at the time of electrofishing surveys and therefore not able to support fish. R7, a permanent stream, was not fished as the project does not propose to alter or build within 30 m of that feature. As a permanently flowing channel connected to larger creeks downstream, R7 is considered to directly support fish regardless.





Several beaver dams were removed from R7 just west of the Site in late June 2018. The affect on Site water levels was observed on July 5, 2018 by KAL biologist Terry Hams while completing bird surveys, with flows R7 noted as being greatly reduced and all other channels having dried.

2.2.2 Vegetation

KAL Biologist, Terry Hams, completed an initial tree inventory and an ecological land classification (ELC) of the Site on June 20, 2018. Vegetation cover on the Site was described following standard ELC methods, including the collection of soil samples (Lee *et al.*, 1998).

As the south half of the Site was cleared and partially regraded in 2019, the ELC for the Site and the tree information for the remaining stands were updated by Ed Malindzak (October 15, 2020) and Anthony Francis (on October 18, 2020). The updated tree survey identified the size and species distributions of trees within forested areas of the Site.

2.2.3 Anurans

Site amphibian (anuran) surveys were conducted and lead by KAL biologists, Rob Hallett and Liza Hamilton, following protocols set forth by the Marsh Monitoring Program (Bird Studies Canada *et al.*, 2008). Three surveys are completed to identify early, mid, and, late-season breeding amphibian species generally in April, May, and June, respectfully, though survey dates are temperature dependent. Surveys are completed on nights of calm weather with temperatures above 5 degrees Celsius (°C), 10°C, and 17°C for each of the three respective survey periods. Surveys begin a half-hour after sunset and are finished by midnight with a five-minute recording period at each survey station. Amphibian species are recorded at each point along with the estimated distance from observers, calling code, an estimate of the number of individuals, and estimated directions of calling anurans.

Amphibian surveys were performed on April 23, May 30, and June 21, 2018 (Table 2). Three stations were surveyed in wetland and aquatic habitats (F1 through F3; Figure 2). Station F3 was located at the north end of the Site with the observers facing south. Stations F1 and F2 were the same point located near the southwestern corner of the Site, but with one observer facing south (F1) and one facing north (F2).

Table 1 Summary of frog survey times and weather conditions

Survey Date	Temperature (°C)	Weather conditions	Wind speed (km/hour)
23-Apr-18	10*	Clear	4
30-May-18	21*	Mostly Cloudy	11-14
21-Jun-18	17**	Clear	7 - 10

^{*} Temperatures on these nights were warmer than the preceding nights, with evening temperatures just above 5°C and 10°C, respectively, within a few days of the surveys. Frogs for the period would still be expected to be calling regardless.

2.3 General Reach Descriptions

Channel R1 is the roadside ditch along Thunder Road. This feature is unlikely to altered (realigned) in any meaningful way under future development plans. All other channels on site had been (i.e. in 2018) located



^{**} Temperatures on this night just reached the minimum required temperature but had been were warmer the preceding nights, with evening temperatures above 17°C. Frogs for the period would still be expected to be calling regardless.

within young, early successional wooded areas and coniferous plantation covering former agricultural fields. A single small wetland pocket was observed at the upstream end of the Channel R4. Natural landcover along Channels R6, R5 and most of R2 was completely removed in 2019.

Channel 7, the permanent watercourse crossing the north end of the Site is highly linearized, U-shaped drainage channel, though it does not have status as a municipal or ward drain. All other channels are small, shallow, linear, U-shaped agricultural ditches that ultimately connect to Channel 7.

Channels 3 and 4, and north half of Channel 2 were all wet until mid-summer in 2017, but only so because of the presence of beaver dams along Channel 7, which prevented the site from draining normally. With the dams having been removed, Channels other than 7, can be expected to run dry shortly after the spring freshet. Channels 5, 6 and the upper half of Channel 2 are ephemeral and ran dry very quickly after the freshet, even when beaver dams were present. Small numbers of fish were observed in all areas below Channel 5 in 2017. However, with the beaver dams having been removed, only Channel 7 is considered as a potential fish habitat.

2.4 Component Classifications

The following tables summarize the functions provided by the Site channels.



Table 2. Hydrology Classification, 2018

			Hydrolo	gy Classification		
Drainage	Assessment	Flow Conditions	1	Flow		Hydrological
Feature	Period	Description	(OSAP Code)	Classification	Modifiers	Function
R1	April 12 June 21 July 5	Standing water Standing water Dry	4	Ephemeral	Road sided ditch. Water remained in this reach for a longer period of time than usual due to beaver dams in R7.	Contributing Functions
R2	April 12 June 21 July 5	Standing water Upper channel: Dry Lower channel: standing water Dry	3	Intermittent (lower half) Ephemeral (upper half)	Water remained in lower portion of this reach for a longer period of time than usual due to beaver dams in R7.	Valued Functions (lower half) Contributing Functions (upper half)
R3	April 12 June 21 July 5	Standing water Standing water Dry	4	Intermittent	Water remained in this reach for a longer period of time than usual due to beaver dams in R7.	Valued Functions
R4	April 12 June 21 July 5	Standing water Standing water Dry	4	Intermittent	Water remained in this reach for a longer period of time than usual due to beaver dams in R7.	Valued Functions
R5	April 12 June 21 July 5	Standing water Standing Dry Dry	1	Ephemeral		Contributing Functions
R6	April 12 June 21 July 5	Standing water Standing Dry Dry	3	Ephemeral		Contributing Functions
R7	April 12 June 21 July 5	Surface flow Surface flow Surface flow	1	Perennial	Conducts flows from the east across the Site and on to neighbouring properties to the west. As a permanent perennial feature, this channel is not considered an HDF.	Important Functions



Table 3. Riparian Classification (Updated 2020)

		Riparian Class	ification	
Drainage Feature	OSAP Descriptions	OSAP Riparian Codes	ELC Codes	Riparian Conditions
R1	RUB – Cleared LUB – Road shoulder	RUB – 1 LUB – 1	-	Limited Functions
R2	RUB – Cleared/Forest LUB – Cleared	RUB – 2 LUB – 4	-	Limited Functions (Upper half) Important Functions (Lower half)
R3	RUB – Forest LUB – Forest	RUB – 6/2 LUB – 6/2	CUF CUF	Important Functions
R4	RUB – Forest LUB – Forest	RUB – 6/2 LUB – 6/2	CUW CUW	Important Functions
R5	RUB – Cleared LUB – Cleared	RUB – 6 LUB – 6	-	Limited Functions
R6	RUB - Cleared LUB - Cleared	RUB – 2 LUB – 6	-	Limited Functions
R7	RUB - Forest LUB – Meadow	RUB – 6 LUB – 4/6	CUW FOD	Important Functions*

RUB – right upstream bank LUB – left upstream bank



^{* &}quot;Important Function" level is discussed further in Section 3.1

Table 4. Fish and Fish Habitat Classification, June 21, 2018

		Rip	arian Classification
Drainage Feature	Fish Observation • Fishing effort	Fish & Fish Habitat Designation*	Modifiers/Notes
R1 Incidental fish present, no SAR present. • 630 SS = ~5.3s/m² Incidental fish present, no SAR Contributing Functions Contributing Functions Stickleback, and 3 N common and highly water into to this feremoved. Shallow for		20 fish (13 Central Mudminnows, 3 Brassy Minnows, 1 Brook Stickleback, and 3 Northern Redbelly Dace. These species are very common and highly tolerant. Only present as beaver dam backed up water into to this feature. Feature dried as soon as the dam was removed. Shallow feature is considered unlikely to support fish without the dams being present.	
R2	Fish present lower half only, no SAR present. • 721 SS = 2.7 s/m2	oresent. Contributing Chub). These species are very common and highly tole present as heaver dam backed up water into to this feature.	
R3	Incidental fish, no SAR present. • 339 SS = 4.8 s/m2	Contributing Functions	130 fish (73 Central Mudminnows, 52 Brook Stickleback, and 3 Fathead Minnows, and 2 Pumpkinseeds). These species are very common and highly tolerant. Only present as beaver dam backed up water into to this feature. Feature dried as soon as the dam was removed. Shallow feature is considered unlikely to support fish without the dams being present.
R4	Incidental fish, no SAR present. • 327 SS = 2.7 s/m²	Contributing Functions	32 Brook Stickleback were observed. This species is very common and highly tolerant. Only present as beaver dam backed up water into to this feature. Feature dried as soon as the dam was removed. Shallow feature is considered unlikely to support fish without the dams being present.
R5	No fish present, no SAR present. • Dry	Contributing Functions	
R6	No fish present, no SAR present. • Dry	Contributing Functions	
R7	Fish assumed present.	Valued Functions	Permanent channel assumed to have fish at all times of the year.

^{*}Fish and Fish Habitat Designation is constrained by the HDF Guidelines definitions. "Modifiers" provides significant caveats to those designations.

SS = shocking seconds



Table 5. Terrestrial Habitat Classification (Updated 2020)

Drainage Feature	Description	Amphibians	Terrestrial Classification
R1	Roadside ditch.	No frogs were observed in the feature.	Limited Functions
R2	Lower half includes some portions within plantation forest. Upper half was located within moist forest/plantation (no adjacent wetland evident during sruveys), but surrounding area has now been fully cleared.	No frogs were observed in the feature.	Contributing Functions (lower half) Limited Functions (upper half)
R3	Flows through plantation forest.	No frogs were observed in the feature.	Contributing Functions
R4	Upstream end is a small wetland pocket. Flows through plantation forest very near the clearing edge.	No frogs were observed in the feature.	Valued Functions
R5	All surrounding vegetation has been cleared.	No frogs were observed in the feature.	Limited Functions
R6	All surrounding vegetation has been cleared.	No frogs were observed in the feature.	Limited Functions
R7	Permanent stream within a forested area.	No frogs were observed in the feature.	Valued Functions



2.5 Reach Summary

Dimensions of the HDF reaches are summarized in Table 5.

Table 6. Reach Dimensions During Spring Freshet (April 12, 2018)

Drainage Feature	Length (m)	Mean Bankfull Width (m)	Mean Wetted Width (m)	Mean Depth (m)
R1	401 (along the Site edge)	4.0	1.6	0.19
R2	485	3.0	90	0.90
R3	144	2.0	2.0	0.18
R4	100	3.0	3.0	-
R5	54	2.0	1.4	0.26
R6	55	2.5	1.2	0.32
R7	218 (on the Site)	5.1	3.2	-



3.0 MANAGEMENT RECOMMENDATIONS

The classification categories identified in Section 2 provide the basis of the management recommendations provided here. The following flow chart (Figure 2) combines and translates the classification results to management recommendations.

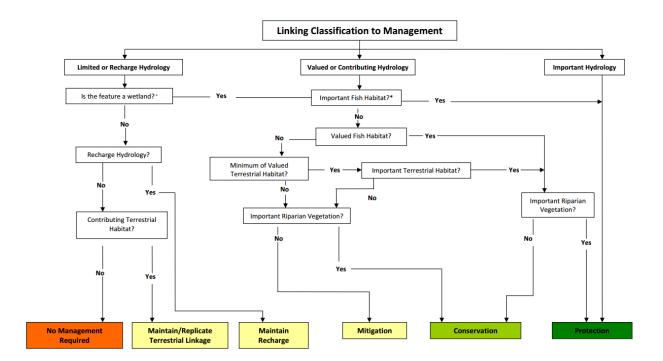


Figure 2. Headwater Drainage Feature Assessment (HDFA) flow chart providing direction on management options

3.1 Management Recommendations for Reaches

Channels R1, R5, R6 and the upper half of R2

These features are fully within the cleared area. They are ephemeral channels that do not provide fish habitat. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), these reaches:

- 1. Provide Contributing Hydrology.
- 2. Do not provide Important Fish Habitat;
- 3. Do not provide Valued Fish Habitat;
- 4. Do not provide Valued Terrestrial Habitat;
- 5. Do not provide Important Riparian Vegetation.



This chain of classification descriptors leads to a management directive of **Mitigation**. These features are not required to be maintained per se, but their functionality must be replicated or enhanced through lot level conveyance measures as part of the site stormwater management system. As the features convey runoff to more ecologically important reaches, replacement features/systems, should be vegetated to mimic online wet vegetation pockets to the extent possible, and should convey water to the same final receiver (i.e. R7), though natural channel design is not required.

Channels R3 and R4

These reaches are small, ephemeral to intermittent drainage features located entirely within a treed area. While some fish were observed when beaver dams backed up water into them, they are not considered valued fish habitat. The HDFA Guide flow chart linking component classification to management directives (Figure 2) progresses as follows:

- 1. Provides Contributing/Valued Hydrology;
- 2. Does not provide Important Fish Habitat;
- 3. Does provide Valued Fish Habitat;
- 4. Does not provide Valued Terrestrial Habitat; and
- 4. Provides Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Conservation** for this reach. The feature may be maintained or, if necessary relocated, using natural channel design techniques to maintain or enhance the overall productivity of the reach. If realigned, the features may be relocated on or off the Site. In any case, the riparian corridors must be maintained or enhanced. If catchment drainage will be removed due to diversion of stormwater flows, lost functions should be restored through enhanced lot level controls (e.g. restore original catchment using clean roof drainage).

Channels R2 (lower half)

This reach, with its direct connection to R7 likely retains some water well into summer providing some potential fish habitat for tolerant forage fish. The HDFA Guide flow chart linking component classification to management directives (Figure 2) progresses as follows:

- Provides Contributing/Valued Hydrology;
- 2. Does not provide Important Fish Habitat;
- 3. Provides Valued Fish Habitat;
- 4. Provides Important Riparian Vegetation.

This chain of classification descriptors would typically lead to a management directive of **Protection** for this reach, based in part on the assessment of "Important Riparian Vegetation". Under a management directive of **Protection**, the feature should not generally be relocated. For this feature, however, the assessment of "Important Riparian Vegetation" comes from only the west side. The east side of the channel has limited vegetation and is generally located within <30 m of the Thunder Road (it connects with R7 within 3 m of the roadway), thus preventing options for an undisturbed, naturalized buffer on that side. The management recommendation for this feature is thus **Conservation** to allow its relocation.



The feature should be realigned westward to allow for an improved, naturalized setback with an enhancement of the riparian corridors. Drainage must still be conveyed to R7 and stormwater management systems on the site must be designed to avoid impacts (i.e. sediment, temperature) to this headwater channel.

Channel R7

This perennial channel conveys off-site flows across the property. As a permanent stream, it does not qualify as headwater feature. As feature with important hydrology, it automatically receives a management directive of **Protection**. As such, this reach may be maintained and/or enhanced, but should not generally be relocated. Improvements, however, could be possible to its overall channel form and thus some minor realignment may be considered within that context. The riparian zone should be protected and enhanced where feasible. The hydro-period must be maintained. Use natural channel design techniques or wetland design to restore and enhance existing habitat features if and where needed. Stormwater management systems must be designed to avoid impacts (i.e. sediment, temperature) to this headwater channel.

4.0 CLOSURE

This report provides detailed descriptions of the HDFs on the Thunder Road site, as well as management recommendations to direct future development near those features. Points of clarification can be addressed to the undersigned.

Anthony Francis, PhD

KILGOUR & ASSOCIATES LTD.



5.0 REFERENCES

- Bird Studies Canada, United States Environmental Protection Agency, and Environment Canada. 2008.

 Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Revised).

 Available online at: https://www.birdscanada.org/bird-science/marsh-monitoring-program/
- Credit Valley Conservation and Toronto Region Conservation Authority. 20147. Evaluation, Classification and Management of Headwater Drainage Features.
- Lee, H.R., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, North Bay.



Appendix A: Site Photos

Note: Reach numbers located within the comment lines directly on photos indicate the order in which they were originally photographed and do not necessarily reflect the final assigned reach numbers used throughout this report.



Upstream view



Downstream view







Upstream view Downstream view







Downstream view







Upstream view

Downstream view







Upstream view Downstream view







Upstream view Downstream view







Upstream view Downstream view



Kilgour & Associates Ltd. A-7

Appendix B: Field Notes





Daily Work Plan for Field Work

Client/Project #: SIMP 773

Date: 2018/04 / 12

Personnel Data: CHTP

Anticipated Worst Outcome/ Catastrophic Failure (describe):

Date of Birth YYYY/MM/DD	Emergency contact and number	Staff hazard review initials@
1983/05/08	M. Vegiard 613-993-5683	Det.
1988/07/19	Mirable Miller 613-138-6611	TP
Tell Control of the C		
	\983/05/09	1983/05/00 M. Vegiard 613-993-5683

If there are more than four crew, use a second sheet; *indicates person responsible for check in / check out; *e initial if staff has had the opportunity to review the hazard assessment and mitigations for this project, is aware of risks, and agrees the work can be done safely.

Vehicle (circle those that apply)	Owner	Licence
KAL Truck (Chev Silverado), Grey	Bruce Kilgour	685 7JZ (Ontario)
QUAD	Bruce Kilgour	2CK47 (Ontario)
QUAD Trailer	2317833 Ontario	M7807M (Ontario)
Tracker	2317833 Ontario	C23182ON (Transport Canada)
Tracker Trailer	2317833 Ontario	J3161S (Ontario)
Red Inflatable	2317833 Ontario	C23183ON (Transport Canada)
Inflatable Trailer	Bruce Kilgour	J7553K (Ontario)
White inflatable	Kilgour & Associates Ltd.	unmarked
LIZA'S HONDA FIT	L. HAMILTON.	NEd HSM

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7

He CH hasn't heard from us in over 4 his he Emergency Response Procedure (describe):
Calls born. If no one answers he calls all

Home Base:	Field Location:	
Time leaving 8:30	Time arriving 8-80	
Time returning 11:15.	Time Leaving 1/200	

Person	Pre-Field Condition	Post-Field Condition
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TYLER	GOOD.	GOED
Vehicle	Pre-Field Condition	Post-Field Condition
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Rules of thumb (when to flag your result):

- DO (mg/L): < 5 mg/L, check that YSI is calibrated to 100% saturation, if yes, then use HACH kit to confirm low DO
- pH: If < 6.5 or > 9, check pH meter vs buffer solutions
- If unit cannot calibrate, it <u>must be serviced</u>, so notify Bruce Kilgour

Issues with field equipment

Do not forget to mention all equipment issues to Rob Hallett as soon as possible

Datasheet Log



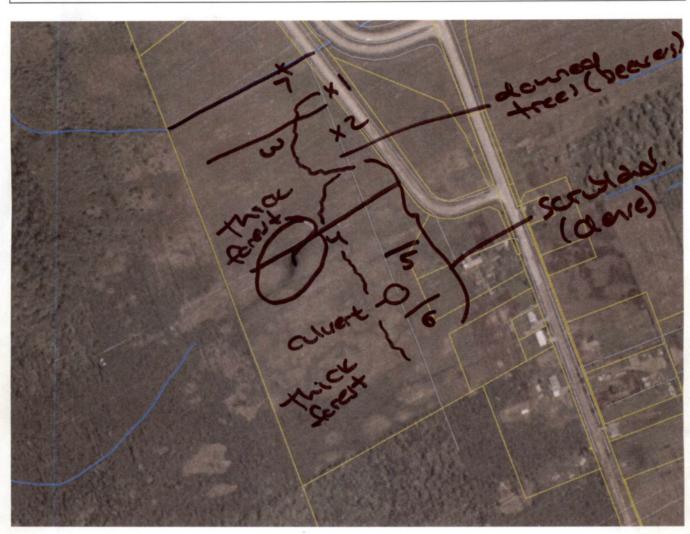
Field Map

Client/Project #: SIMP773 Crew: LH TP

Date: 2018/64/12

Location: 6150 Thursda Rd.

HDFA Visit #1



Notes



General Notes Sheet

Client/Project #: S 149773 Crew: CH TD

Date: 2018 / 04 / 12

Location: 1550 Mider Rd.

Time (hh:mm)	Map Pin	Easting	Northing	Description/Note
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CREW INITIALS:

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3											
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Direction of Assessment	:			Upstream		ownstre	am			☐ Sa	ample 3	to dow	nstream netv
Flow Influence		☐ Fres	het (1)				Spate (2)				☐ Basefle	ow (3)	7 6 1
Flow Condition		□ Dry (□ Stan	(1) iding Water	r (2)			Interstitial Flow)		☐ Substa	antial Flov	v (5)
Feature Type		☐ Char		Constrained			No Defined Filled Feature Wetland (6)	Featu	re (4)		☐ Swale ☐ Roadsi ☐ Pond (ide Ditch	(8)
Feature Vegetation			Lawn		Cropped (3)		Meadow (4)		Scrubland	(5)	Wetland(6)		rest (7)
Di-salas Vasatation													
Riparian Vegetation 0 - 1.5 m Left Bank	П	None (1)	☐ Lawn	(2) □	Cropped (3)	П	Meadow (4)	П	Combland	· □	Motland /6	, п	Forest (7)
Right Bank		None (1)	☐ Lawn		Cropped (3)		Meadow (4)			No. of Lot, House,	Wetland (6 Wetland (6	The same of the same of	Forest (7)
1.5 - 10 m Left Bank		None (1)	☐ Lawn		Cropped (3)		Meadow (4)						Forest (7)
Right Bank		None (1)	☐ Lawn		Cropped (3)		Meadow (4)			10 to	Wetland (6 Wetland (6	Section of the last	Forest (7)
10 - 30 m Left Bank Right Bank		None (1) None (1)	☐ Lawn	The state of the s	Cropped (3)		Meadow (4) Meadow (4)			A STATE OF THE PARTY OF THE PAR	Wetland (6	A. H. C.	Forest (7)
Channel Gradient (S4.M				Clinometer			rel (3)				Wetland (6 Other (5)		Forest (7) LiDAR (6)
Distance (m):					Elevation (cm)):				_	Gradient (°): _	
Distance (m): Dominant Substrate (S. Sub-Dominant Substrate			(Hard Pan) Silt	Sand (0.0		Gravel (;	22-66	mm) Cobb	ole (67-2			0 mm) Bedro
Dominant Substrate (S Sub-Dominant Substra					Sand (0.0)	6-2 mm)							0 mm) Bedro
Dominant Substrate (S.	te (S2.	M3) Can't Mea	< 10% Min	nimal (1)		6-2 mm) 0% Mod Mea	derate (2)	00	40 - 60% H	igh (3)	249 mm) Bo	oulder (25	Eme (4)
Dominant Substrate (S. Sub-Dominant Substra Feature Roughness Width Measurement Channel Dimensions	re (S2.	M3) Can't Mea	< 10% Min	nimal (1)	Sand (0.0)	6-2 mm) 0% Mod Mea	lerate (2) In Width (3) Bankfull	Depti	40 - 60% H Estimated (igh (3)	249 mm) Bo	oulder (25)	Eme (4)
Dominant Substrate (S. Sub-Dominant Substrate) Feature Roughness Width Measurement Channel Dimensions Entrenchment	Featuotal:	M3) Can't Mea ure Width (< 10% Min sture (1) (m):	nimal (1) Bani	Sand (0.0)	6-2 mm) 0% Mod Mea	lerate (2) In Width (3) Bankfull m Righ	Depti	40 - 60% H Estimated (h (mm)	igh (3) (4)	249 mm) Bo	oulder (25)	eme (4) e/GIS (6)
Dominant Substrate (S. Sub-Dominant Substrate) Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method	Featuotal:	M3) Can't Mea ure Width (> 40 Perched C	< 10% Min sure (1) (m): m	nimal (1) Bani < 40 m	Sand (0.0) E 10 - 4 kfull (2) Left Bank Hydraulic	6-2 mm) 0% Mod Mea	lerate (2) In Width (3) Bankfull m Righ	Depti	40 - 60% H Estimated of the following the fo	igh (3) (4) C	249 mm) Bo	oulder (25) 60% Extre Measur width	eme (4) e/GIS (6) m
Dominant Substrate (S. Sub-Dominant Substrate) Feature Roughness Width Measurement Channel Dimensions Entrenchment	Featuotal:	M3) Can't Mea ure Width (> 40 Perched C	< 10% Min sure (1) (m): m	nimal (1) Bani < 40 m	Sand (0.0)	6-2 mm) 0% Mod Mea	lerate (2) In Width (3) Bankfull m Righ Volume	Depti	40 - 60% H Estimated (h (mm)	igh (3) (4) C	249 mm) Bo GIS (5) Total w	oulder (25) 60% Extre Measur width	eme (4) e/GIS (6)
Dominant Substrate (S. Sub-Dominant Substrate) Feature Roughness Width Measurement Channel Dimensions Entrenchment To Surface Flow Method	Featuotal:	M3) Can't Mea ure Width (> 40 Perched C Wetted De 1 2	< 10% Min sure (1) (m): m	nimal (1) Bani < 40 m	Sand (0.0) I I I 10 - 4 kfull (2) Left Bank Hydraulic raulic head (m 2	6-2 mm) 0% Mod Mea Head (2	lerate (2) In Width (3) Bankfull m Righ Volume	Depth at Ban District	40 - 60% H Estimated in (mm) ance by Time 3	igh (3) (4) me (3) Diss	249 mm) Bo GIS (5) Total w tance (m) 2 3	oulder (25) 60% Extre Measur width Estimat utlet Scou	eme (4) e/GIS (6) m ed (4) Time (s)

	Headwater Drainage Feature	
Stream Code Site Code	Zone Easting Y64 999	Northing Date (YYYY) (MM) (DD) Time (24hr) 5027573 2018-04-12 69:15
Stream Name		Discharge Approximates Baseflow? Upstream Site Length (m
Diton#1		O Baseflow @ Freshet O Spate
Access Route		Site Description
Thuder Rd.		Diton Time dulan lenth of
		Droparty Derelai No Thines
L'al L		Rd. O
	a a LLS	
Optional Features Water Temp (C) Air Temp (C) pH	Conductivity (Ns) Turbidity (NTV) Dissolved O ₂ (ppm)	Number of upstream features Upstream Photo # Photo Name Roughness
22		
Upstream Feature(s)	Sediment Coeffeed Coeffee	—— Riparian Vederation ——— Spouldani Edityriodino Situation
Feature Distance (m) Bearing Type Flow Number	Adjacent Feature Deposition MT	(mm) Entrenchment Feat. 0.1.5 m 1.5.10 m 10.30 m Method Distance (m) Elevation Rise (col.)
	7 7 0.90 90	3.0 1194999
2		
3		
4		
Ipstream Flow Measure(s)		ER Hydraulic Head OR Volume OR Distance
Feature Wetted Depth (m Number Width (m) 1 2	m) Hydraulic Head (mm) 3 1 2 3	Volume (it) — Distance (m) — Time (sec) — 1 2 3 1 2 3
Comments		
SUSSTRETE - SIMP773	modely sitt	
SIMPTTB	0 7	
3		
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		With the second
		Pile.
		/ 1/77

	À		, u	nconst	rained l	leadwate:	Dra	Inage Fea	ature Asses	sme	nt		
Date:					Project #:			Reco	order/Crew:				
Stream Nam	e:				Stream Co	de:		Site	Code:				
Site Limits:			tream vnstream	WP# WP#	_			Field	Assessment:		ample 1 ample 2	Unconnected Not co	
Direction of A	Assessment:				Upstream		ownstr	eam			ample 3	to downst	ream network
Flow Influen	ice		☐ Fres	het (1)				Spate (2)			☐ Basef	low (3)	
Flow Condit	tion		☐ Dry	(1) Iding Water	(2)		00	Interstitial Flow			☐ Subst	antial Flow (5)
Feature Type	e		☐ Cha		Channel (1 Constrained			No Defined F Tiled Feature Wetland (6)			☐ Swale ☐ Roads ☐ Pond	side Ditch (8)	
Feature Veg	etation		None (1)	☐ Lawn	(2)	Cropped (3)		Meadow (4)	☐ Scrubland	(5)	Wetland(6	6) Fores	t (7)
Riparian Ve	getation												
0 - 1.5 m	Contraction and reaction of the con-		None (1)	☐ Lawn	(2)	Cropped (3)		Meadow (4)	☐ Scrubland	(5)	Wetland (6) 🗆 Fo	prest (7)
	Right Bank		None (1)	☐ Lawn		Cropped (3)		Meadow (4)	☐ Scrubland	-	Wetland (-	prest (7)
1.5 - 10 m l	Left Bank		None (1)	☐ Lawn	(2)	Cropped (3)		Meadow (4)	☐ Scrubland	(5)	Wetland (6) 🗆 Fo	prest (7)
F	Right Bank		None (1)	☐ Lawn	(2)	Cropped (3)		Meadow (4)	☐ Scrubland	(5)	Wetland (6)	prest (7)
10 - 30 m l	Left Bank		None (1)	☐ Lawn	(2)	Cropped (3)		Meadow (4)	☐ Scrubland	(5)	Wetland (6) 🗆 F	prest (7)
F	Right Bank		None (1)	☐ Lawn	(2)	Cropped (3)		Meadow (4)	☐ Scrubland	(5)	Wetland (6) 🗆 F	prest (7)
Distance (m) Dominant Si Sub-Domina	ubstrate (S2			(Hard Pan) Silt	Sand (0.0		n) Gravel (2	22-66 mm) Cob	ole (67-	Gradient (249 mm) B		m) Bedrock
Feature Rou Width Meas Channel Din	urement					A Comment of the Comment	train to the same of the same		40 - 60% H	_		60% Extreme	
Entrenchme	ent To	tal:	□ _{> 40}	m 🗆	< 40 m	Left Bank		m Righ	it Bank	m	n Total	width	m
Surface Flov	w Mathad	П	Perched (Subsect (4)		- Literaturi			Distance by Tim	- (2)		Estimated	
		_											
wetted t	Width (m)			epth (mm) 2 3		raulic head (m	3	1 2	e (L) 2 3	1		3 1	7 ime (s)
Sediment	Transport	Adj	acent	□ None		☐ Rill (2)		Rill and Gull		Gully (4		Outlet Scour (5	i)
	sport	Fea	ature	□ None	et Erosion (6 e (1) et Erosion (6	☐ Rill (2)		Rill and Gull	nk Erosion (7) y (3)	Gully (4	4) 🗆 0	Other (8) Outlet Scour (5 Other (8)	5)
Sediment D	eposition		Measures	s (mm):									
□ None	e (1)	Min.	imal: < 5 m	ım (2)	☐ Mod	lerate: 5-30 mn	n (3)	☐ Substan	tial: 31-80 mm (4) [Extensive	e: > 80 mm (5)	

tream Code	Site Code	-	vater Drain	age real		p- and D	own- St		ate (YYYY)	(MM)	(DD)	Time (24h	rı
ream Code	5		8 469	sica	T	5021	327			- 6H	-12	10	15
ream Name							Dischai	ge Approxi	nates Basefi	ow?	Ups	tream Site L	ength (n
d'iton			I E PI			400	О в	aseflow 🛭	Freshet	O Spat	te	5 3	
Access Route					Si	te Descriptio	n						
5+	25-K- (b	5094	502138	77.		Derna	200,00	12	to 1	nian	Old	ch	
eo	20-t- 46	2109 8	502132	7	-	Sech	Lond	Detr	0- (6				
			173	8				1	- S D D		145		
				ШШ									
Optional Features					- Num	ber of upstre	am features		m Photo#	Photo Na	ame		
Vater Temp (C) Air Temp (C)	pH Co	nductivity (Ns) Turbi	dity (NTV) Dissolv	red O ₂ (ppm)	"	oer or apsire		Roughn	ess				
0 2					Ш								5 1
pstream Feature(s)	Tra	diment report	Net		etted	B-27		- Riparian V	/egetation	Upstrea	am Longitudi		
eature Distance (m) Bearing lumber	Type Flow Adjace	Sediment ent Feature Deposition	MT Feature V	Vidth (m) BFD	lepth (mm)	Entrenchmen Width (m)	veg Left	1.5 m 1.5 Right Left	/egetation — 10 m 10-30 Right Left F	m Method	Distance (m	Plievation Rise (d0)	
1		2	ППИ		60	2.0H	7175	7 3	55				
										= -			
2										_			
3													
4			\sqcap										
						1 3 3							
						F-11-10B							
pstream Flow Measure(s)					ЕГИЕК Муап	sulic Head OR	Volume OR D	istance					
sature Wetted umber Width (m) 1	Depth (mm)	3 1	Hydraulic Head	(mm) 3	1	Volume (It) 2	3	1	-Distance (m) 2	3	1	Time (sec) —	3
			_										
Comments													
Comments	- 500	Strate	- Med	sen	di								
comments	- SUS	strate	- Mid	1500	di								

					Proje	ect #:			Reco	order	/Crew:					
Stream Na					Strea	am Coo			Site	Code						
Site Limits:			tream vnstream		P# P#				Field	Ass			mple 1		nected HD ot connect	
Direction of	Assessment:			1	☐ Upst	ream		Downstr	eam] Sar	mple 3	to dov	nstream i	netw
Flow Influe	ence		☐ Fresi	net (1)					Spate (2)				☐ Basef	low (3)		
Flow Cond	lition		☐ Dry (☐ Stan		ter (2)				Interstitial Flow)		☐ Subst	antial Flov	v (5)	
Feature Ty	ре	1	☐ Defir	ned Natu	or Cons				No Defined F Tiled Feature	eatu	re (4)		☐ Swale		(8)	
		_	☐ Multi						Wetland (6)	_			☐ Pond	1		
Feature Ve			None (1)	☐ La	wn (2)	_	Cropped (3)		Meadow (4)		Scrubland (5)		Wetland(6	6) 🗆 Fo	prest (7)	
SURVEY HARMADE DESCRIPTION	Left Bank		None (1)	☐ La	wn (2)		Cropped (3)		Meadow (4)		Scrubland (5)		Wetland (6) 🗆	Forest (7)
	Right Bank		None (1)	☐ La	wn (2)		Cropped (3)		Meadow (4)		Scrubland (5)		Wetland (6)	Forest (7)
1.5 - 10 m	Left Bank		None (1)	☐ La	wn (2)		Cropped (3)		Meadow (4)		Scrubland (5)		Wetland (6) 🗆	Forest (7)
	Right Bank		None (1)	☐ La			Cropped (3)				Scrubland (5)		Wetland (Forest (
10 - 30 m	Left Bank		None (1)	□ La	wn (2)		Cropped (3)		Meadow (4)		Scrubland (5)		Wetland (6) 🗆	Forest (7)
	Right Bank		None (1)	☐ La	wn (2)		Cropped (3)		Meadow (4)		Scrubland (5)		Wetland (6) 🗆	Forest (7)
	Substrate (S2			(Hard P	'an)	Silt	Sand (0.	06-2 mn	n) Gravel (2	22-66	mm) Cobble	(67-24 	49 mm) B	oulder (25	0 mm) B	edro
Feature Ro	oughness			< 10%	Minimal	(1)	☐ 10 -	40% Mc	oderate (2)		40 - 60% High	(3)		60% Extr	eme (4)	
	surement										Estimated (4)	-				
	imensions	Fea	ture Width	(m): _			Leading trans		Bankfull	Dept	h (mm)					
		tal:	□ _{> 40}								nk			width _		m
	nent To	_					I I bedreed	Hood	(2)	Dist	ance by Time (3)		Estima	ted (4)	
Channel D	ow Method		Perched C	ulvert (1)		Hydraulie	neau	-/	-	State of the state					s)
Channel D Entrenchn Surface FI			Wetted De				raulic head (r		Volume			Dista 1	ance (m) 2	3	1 2	
Channel D Entrenchn Surface Fl Wetted	ow Method	- Adja	Wetted De	epth (m	m)	Hyd 1	raulic head (r 2	nm) 3	Volume 1 2 Rill and Gully Instream Bar	y (3)	3 Gu	1 lly (4)		Outlet Score Other (8) Outlet Score Other (8)	1 2 ur (5)	

Headwater Drainage Features - Up- and Down- Stream Site Code Date (YYYY) Stream Code Stream Name Discharge Approximates Baseflow? Upstream Site Length (m) O Baseflow Freshet Spate Access Route Site Description Desperdicular to Proper Photo Name Upstream Photo # Optional Features -Number of upstream features -Roughness Water Temp (C) Air Temp (C) Conductivity (Ns) Turbidity (NTV) Dissolved O2 (ppm) Sediment Upstream Feature(s) hetted hetted Feat 0.1,5 m 1.5-10 m 10-30 m
Veg Left Right Left Right Left Right Upstream Longitudinal Gradient Transport Feature Width (m) BE Depth (mm) Feature Distance (m) Bearing Type Flow Sediment Width Entrenchment Feat. _ Method Distance (m) Elevation Adjacent Feature Deposition MT Width (m) Number Rise (dO) Used 1 2 3 4 -Record EITHER Hydraulic Head OR Volume OR Distance -Upstream Flow Measure(s) -Hydraulic Head (mm) -Distance (m) -Time (sec)-Volume (It)-Wetted Depth (mm) Number Width (m) faczen Substrate - had silt SIMP773

Date:			Pro	ject #:			Reco	order/Crew:			
Stream Name:			Stre	eam Coo	de:		Site	Code:			
Site Limits:		tream vnstream	WP# WP#					Assessment:		Sample 1 Sample 2	Unconnected HDF: Not connected
Direction of Assessme	nt:		☐ Ups	tream	□ Do	wnstr	eam			Sample 3	to downstream netwo
Flow Influence		☐ Fres	het (1)				Spate (2)			☐ Basefl	ow (3)
Flow Condition		□ Dry (□ Stan	(1) ding Water (2)			00	Interstitial Flow			☐ Substa	antial Flow (5)
Feature Type		☐ Char	ned Natural Cha nnelized or Con i-thread (3)				No Defined F Tiled Feature Wetland (6)			☐ Swale ☐ Roads ☐ Pond	ide Ditch (8)
Feature Vegetation		None (1)	☐ Lawn (2)		Cropped (3)		Meadow (4)	☐ Scrubland	1 (5)	☐ Wetland(6)
Riparian Vegetation										_	
0 - 1.5 m Left Bank Right Ban	Street, Square, Square,	None (1) None (1)	☐ Lawn (2) ☐ Lawn (2)		Cropped (3) Cropped (3)		Meadow (4) Meadow (4)	☐ Scrubland	The state of the s	☐ Wetland (6	Commence of the second
1.5 - 10 m Left Bank		None (1)	☐ Lawn (2)		Cropped (3)		Meadow (4)	☐ Scrubland	1 (5)	☐ Wetland (6	6)
Right Ban		None (1)	☐ Lawn (2)				A COLOR DE LA COLO			☐ Wetland (6	The second secon
10 - 30 m Left Bank Right Ban		None (1) None (1)	☐ Lawn (2) ☐ Lawn (2)		Cropped (3)		Meadow (4)	☐ Scrubland		☐ Wetland (6	A COMPANY OF THE PARTY OF THE P
Channel Gradient (S4			al (1) Clir					Survey Level (Other (5)	LiDAR (6)
Distance (m):		-		_	Elevation (cm)					Gradient (
Dominant Cubatasta	(S2.M3)		(Hard Pan)	Silt	Sand (0.06]	n) Gravel (2	22-66 mm) Co	bble (6	77-249 mm) Bo	oulder (250 mm) Bedroo
		2.M3)	_						1		
Dominant Substrate Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions	rate (S2	Can't Mea	< 10% Minima	Banl	☐ 10 - 40 kfull (2) ☐	☐ Me	ean Width (3)	40 - 60% Estimated Depth (mm)			60% Extreme (4) Measure/GIS (6)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions	rate (S2	Can't Mea	< 10% Minima	Banl	kfull (2)	☐ Me	ean Width (3) Bankfull	☐ Estimated	i (4)	GIS (5)	
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment	rate (S2	Can't Mea	< 10% Minima sure (1)	Banl 0 m	kfull (2) C	☐ Me	ean Width (3) Bankfull m Righ	Estimated Depth (mm) t Bank	d (4)	GIS (5)	Measure/GIS (6)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment	Fea	Can't Mea	< 10% Minima issure (1)	Banl 0 m	kfull (2)	Me Head (Bankfull m Righ (2)	Depth (mm) t Bank Distance by Tie	i (4)	m Total	Measure/GIS (6) widthm Estimated (4)
Sub-Dominant Subst Feature Roughness Width Measurement Channel Dimensions Entrenchment Surface Flow Method	Fea Total:	Can't Mea	< 10% Minima sure (1)	Banl O m Hyd 1	Left Bank Hydraulic I raulic head (mr 2	Head (Bankfull m Righ (2) Volume 1 2 I Rill and Gully Instream Bar Rill and Gully	Depth (mm) It Bank Distance by Ti It (L) It (3) It (3) It (3) It (3)	me (3)	GIS (5) □ m Total Distance (m) 2 (4) □ 0 (4) □ 0	Measure/GIS (6) width m Estimated (4) Time (s)

tream Code	Site Code	Zor		Northing		Date (YYYY)	(MM) (DD)	Time (24hr)	2
	7	10	E 762981	50-2	1600	2018	- 04-113	701	40
eam Name	30					oximates Baseflo	w?	Upstream Site Le	ngth
				a u u c c	O Baseflow		O Spate		
ccess Route				Site Description					
				we.~	Thirder	el Fr	in perpo	rayal ar	-
	J La			to '	Thinder	Rd.	0, ,		
	0								
ptional Features		18		Number of upstream	am reallires	ream Photo#	Photo Name		
fater Temp (C) Air Temp ((C) pH Co	onductivity (Ns) Turbid	sity (NTV) Dissolved O ₂ (ppm)		Roug	hness			
		=			_				
				2 -					
esture Distance (m) Bea	Tree Floor Tree	ansport Sediment V		Depth (mm) Entrenchmen		an Vegetation —	Upstream Longit		
imber			MT	Width (m)	U-1.5 m	1.5-10 m 10-30 l Left Right Left Ri	m Method Distance ght Used	Rise (dQ)	
1	114	3	3.20	150 81	652	5276	2		
		12 2 i							
2		4 2 2 1					╡		
3							_		
4									
					Volume OP Distance				
stream Flow Measurel	vi -		Reco	erd EITHER Hydraulic Head OR	FOILING ON DISHBITCE				
	s) Depth (mm)—			vid EITHER Hydraulic Head OR Volume (it)—	Totaline on Distance	Distance (m) -		Time (sec)	
ature Wetled		3 1			3 1	Distance (m) -	3 1	Time (sec)—	
ature Wetted	Depth (mm)	3 1				Distance (m) -	3 1		
sture Wetled	Depth (mm)	3 1				Distance (m) - 2	3 1		
	Depth (mm)	3 1				Distance (m) –	3 1		
ature Wetted	Depth (mm)	3 1				Distance (m) –	3 1		
ature Wetted	Depth (mm)	3 1				-Distance (m) -	3 1		
ature Wetted mber Width (m)	Depth (mm)	3 1				Distance (m) –	3 1		
ature Wetted mber Width (m)	Depth (mm)—1 2		Hydraulic Head (mm) — 3	Volume (it)—	3 1		3 1		
nture Wetted mber Width (m)	Depth (mm)— 1 2	13 M/S-	Hydraulic Head (mm) 3		3 1		3 1		
ature Wetted other Width (m)	Depth (mm)— 1 2 Cu = G. SUS-1	13 M/S-	Hydraulic Head (mm) 2 3 Accke	Volume (it)— 1 2 1 5 Cd Saddin	3 1	2 			
ature Wetted mber Width (m)	Depth (mm)— 1 2 1 2 1 COL = G. 1 SUSSTREE	13 MIS-	Hydraulic Head (mm) 2 3 Accke	Volume (it)—	3 1	2 			

Date:					Project #:			Reco	order/C	Crew:				
Stream Na					Stream Co	AND THE RESERVE OF THE PARTY OF			Code:					
Site Limits:			tream Instream	WP#				Field	Asse	ssment:		Sample 1 Sample 2		nected HDF: ot connected
Direction of	Assessment:				Upstream		Downstr	ream				Sample 3	to dov	vnstream net
Flow Influe	ence		☐ Fres	het (1)				Spate (2)				☐ Base	eflow (3)	
Flow Cond	lition		☐ Dry ☐ Stan	(1) ding Water	(2)			Interstitial Flow				☐ Subs	tantial Flor	w (5)
Feature Ty	ре		☐ Defi	ned Natura	Channel (1) d (2)		No Defined F	eature	e (4)		☐ Swal	e (7) dside Ditch	(8)
				i-thread (3)		- (-)		Wetland (6)	(0)			☐ Pond		(0)
Feature Ve			None (1)			Cropped (3)		Meadow (4)		Scrubland (5)	☐ Wetland(prest (7)
Riparian V	PARTY CONTRACTOR STATES AND ADDRESS OF	_		-	-				_					
U - 1.5 m	Left Bank		None (1)			Cropped (3)		Meadow (4)				☐ Wetland	A CONTRACTOR OF THE PARTY OF TH	Forest (7)
	Right Bank		None (1)			Cropped (3)		Meadow (4)				☐ Wetland		Forest (7)
1.5 - 10 m	Left Bank		None (1)			Cropped (3)	And in case of the last of the	Meadow (4)		The state of the s		☐ Wetland		Forest (7)
	Right Bank		None (1)	☐ Lawr	1(2)	Cropped (3)) 🗆	Meadow (4)		Scrubland (5)	☐ Wetland	(6)	Forest (7)
10 - 30 m	Left Bank		None (1)	☐ Lawr	(2)	Cropped (3)		Meadow (4)		Scrubland (5)	☐ Wetland	(6)	Forest (7)
	Right Bank		None (1)	☐ Lawr	(2)	Cropped (3)		Meadow (4)		Scrubland (5)	☐ Wetland	(6)	Forest (7)
	Substrate (S2			(Hard Pan	Silt		0.06-2 mr	n) Gravel (2	22-66 r	mm) Cobb	[7-249 mm) E	Soulder (25	0 mm) Bed
Feature Ro		_		< 10% Mi			-	oderate (2)		40 - 60% Hi	-		> 60% Extr	
Width Mea	surement	П	Can't Mea	sure (1)	☐ Ban	kfull (2)	☐ Me	ean Width (3)	П	Estimated (4)	☐ GIS (5)	Measu	re/GIS (6)
Channel D	imensions	Fea	ture Width	(m):				Bankfull	Depth	(mm) _				
Entrenchn	nent To	tal:	□ > 40	m 🗆	< 40 m	Left Bank		m Righ	nt Bank	·		m Tota	width _	r
Surface FI	ow Method		Perched (Culvert (1)		☐ Hydrau	lic Head	(2)	Dista	ance by Time	e (3)		☐ Estima	ted (4)
Wetter	d Width (m)		Wetted D	epth (mm)	Hyd	draulic head	(mm)	Volume	e (L)			Distance (m)		Time (s)
			1	2 3		1 2	3			3				1 2
		Adia	acent	□ None	e (1)	☐ Rill (2)		Rill and Gull	y (3)		Gully	(4)	Outlet Scor	ur (5)
Sedimer	nt Transport				et Erosion (6			Instream Ba			,		Other (8)	
		Fea	ture	☐ None	e (1)	☐ Rill (2)		Rill and Gull	y (3)		Gully	(4)	Outlet Sco	
				☐ Shee	et Erosion (6	6)		Instream Ba	nk Fro	sion (7)			Other (8)	



Daily Work Plan for Field Work

Client/Project #: 773

Date: 2018/06 /Z (

FINAL FIELD PACKAGE: P ____ OF ___

Personnel Data:

Staff Name	Date of Birth YYYY/MM/DD	Emergency contact and number	Staff hazard review initials®
R. HACLETT	2998 /1/25	KATIE 613 851 5951	BID
T. POAT	1988/07/19	MIRALDA 613 4366611	70

If there are more than four crew, use a second sheet; *indicates person responsible for check in / check out; * initial if staff has had the opportunity to review the hazard assessment and mitigations for this project, is aware of risks, and agrees the work can be done safely.

Vehicle (circle those that apply)	Owner	Licence
KAL Truck (Chev Silverado), Grev	Bruce Kilgour	685 7JZ (Ontario)
and the same of th	Bruce Kilgour	2CK47 (Ontario)
QUAD Trailer	2317833 Ontario	M7807M (Ontario)
Tracker	2317833 Ontario	C23182ON (Transport Canada)
Tracker Trailer	2317833 Ontario	J3161S (Ontario)
Red Inflatable	2317833 Ontario	C23183ON (Transport Canada)
Inflatable Trailer	Bruce Kilgour	J7553K (Ontario)
White inflatable	Kilgour & Associates Ltd.	unmarked

Describe Austria and Della Austria	Industrial Control of the Control of
	Including Location(s), Route(s) and Access Points and approx. schedule
complete HDFB	- Ferry @ Thurch Fould
Map is attached? Y⊠N□	
heck in / Check out Procedure	
KAL Contact Person and cell number:	A Frences
Hotel Details	
Client Contact Person and cell number:	
Check in method and frequency:	
Traffic enco	arter
nticipated Worst Outcome/ Catastrophic Failure (de	escribe):
711	

Home Base:	Field Location: Thursday POAC
Time leaving 1206	Time arriving 1245
Time returning (130)	Time Leaving 1 700

Person	Pre-Field Condition	Post-Field Condition
PA C	god	good
Vehicle	Pre-Field Condition	Post-Field Condition
	The state of the s	A section of the sect
Total Control of the		SACOTOR ALGORITHOUS SCHOOL SACOLOGIST SACOLO
The second secon	Start km:	End km:

					Cal	ibration				
1.1-14	6	Pre	re pH		Cond. Turbio		Turbidity	DO		
Unit	Serial No.	/ Post	4	7	10	1413	0			100% Sat.
-11		Pre								
pH pen		Post		12 42						
YSI Pro Plus W/ 2	Pre	4.00	7.03	-	1410					
	Post	4.63	7.00	-	1398					
III Touch Mater		Pre								
HI Turb. Meter		Post								
Lamotte Turb.		Pre						R. F.	76320	and the same of the same
Meter	Post				4					
39		Pre					===			
		Post						9.01	F V	Tall Makes

Rules of thumb (when to flag your result):

- DO (mg/L): < 5 mg/L, check that YSI is calibrated to 100% saturation, if yes, then use HACH kit to confirm low DO
- pH: If < 6.5 or > 9, check pH meter vs buffer solutions
- If unit cannot calibrate, it must be serviced, so notify Bruce Kilgour

Issues with field equipment

Do not forget to mention all equipment issues to Rob Hallett as soon as possible

1000

Datasheet Log

DWP, map, Fish x 4, noks



Field Map

Client/Project #: SIMP773



HDFA Visit #1

Date: 20/8/06/201-Location: 6150 Thindler Rd.

Service of the servic

Notes

new notes are in red,



Date: 2018/06/21 Start Time:

Stream type: Ct	Crew: RH TP
Reach Classification: WK	Task: 1-1 OFA
Temperature: 26.0°C	Gear type: E
Conductivity: 365 2-45/cm	Seconds/ Set + Pull Time: 630
pH: 6.49	Length fished: ~ 60m
DO: 1.65 mg/4 / 20.8%	
7	
Fish were harely being	shorted a no men of issues
	Temperature: 26.0°C Conductivity: 365 2 45/cm pH: 6.49

Species	Number	Total	Notes/Stage + Health Observations
CNMD	⊠:	13	
BROWN	6 ©	3	
BRST	*	1	
HRDC	4	3	



Date: 20/8/66 /2 Start Time:

Location: Therefor Roal	Stream type: Derm	Crew: RM
(UTM NAD 83): 14	Reach Classification: UNK	Task: ⊤⊅
Watercourse: W	Temperature: 27.5°C	Gear type:
Reach/Station: ZA	Conductivity: 4336	Seconds/ Set + Pull Time: 72
W-Depth: 3 0.40m	pH: 7.6 (.	Length fished:
W-Width: 35m	DO: 5/9/6 4 4 me/L	
Fishing Details/Other Comments:	1575	h spCand, not much Fehresporse.

BRST BORD! 52

NROC D: 15

PIUSO D

ETMN

CRCH

1



Date: 20 6 / Start Time:

Location: Thunk (Roan)	Stream type: perm.	Crew:
(UTM NAD 83): 12	Reach Classification:	Task: HOFF
Watercourse: W	Temperature: Z5°C	Gear type:
Reach/Station: Reach 3	Conductivity: 3083	Seconds/ Set + Pull Time: 338.7
W-Depth: 30cm	pH: 7.67_	Length fished: 70_{cm}
W-Width:	DO: <8% 4.75mg/L	
Fishing Details/Other Comments: 510RT 465028 5021496 END 464977 502147	J, –	

Number	Total	Notes/Stage + Health Observations
MADDED	73	
	52	
• •	3	
	2	
		-
<u> </u>		
	·: ABBBBB	*; 73 M M M M M M M M M M M M M M M M M M M



Date: 20 8/06 /2 \ Start Time:

Location: Thursday Road	Stream type: Pesw	Crew: RH TO
	Reach Classification:	Task: HOFA
Watercourse: On K	Temperature: 178	Gear type: Back Pack
Reach/Station: Reach 4	Conductivity: 123,9	Seconds/ Set + Pull Time: 37
	pH: 6.98	Length fished: 66 m
W-Width: 3cc	DO: 13,69 1.78 mg//	
Fishing Details/Other Comments: 51APT9-465065 502 END 465039 502	1389 -1373	

Species	Number	Total	Notes/Stage + Health Observations
BRST		23	