

Northern Great Plains Network

National Park Service



Data Sheets

Stream Channel Monitoring

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Summary

This standard operating procedure (SOP) contains data sheets for NGPN Stream Channel Monitoring (Thornbrugh et al. 2019).

Revision Log

Previous Version	Revision Date	Author	Changes Made	Reason for Change	New Version
1.0	12/20/22	Anine Rosse	Forms 1 and 2 to include new fields	Updated datasheets to reflect updated stream data collection SOP.	1.1

NGPN Stream Habitat Assessment Form 1 - Reach Characterization

(version 1.1, 2022)

Park Name:

Site Number:

Crew Leader:

Sampling Crew:

Date:

Start Time:

End Time:

Northing :

Easting:

Datum:

GPS Unit:

Elevation(if known)

Stream Name:

Av. Wetted Width (m):

Reach Length (m):

Distance between Transects (m):

20* avg wetted width, min. 150 m

2* avg wetted width

Sampling Conditions:

Weather (circle)

Water Color (circle):

Water Clarity (circle):

Sky

Cloudy

P Cloudy

Clear

clear

brown

green

other:

clear

2

3

4

turbid

Temp

Cold

Cool

Warm

Hot

1

2

3

4

5

Wind

Calm

Light

Windy

Gusty

Number of days since last precip >.01 inch?

Amount?:

Precip

None

Light

Moderate

Heavy

Geomorphic Channel Units % area coverage between transects

Pebble Count (mm)

20

30

40

50

60

70

80

90

100

Transect

Pool

Riffle

Run

Glide

Rapid

Step

1

2

3

4

5

6

7

8

9

10

9-10

10-11

deep, still-
slow moving

shallow,
turbulent

shallow, no
turbulence

deep, no
turbulence

high
gradient,
white water

blockage
creates drop
in profile

record size of hole particle fits through on gravelometer. if <2mm, use .062, if > 512 mm, BR

Transect

1

2

3

4

5

6

7

8

9

10

11

Upstream Bearing

Upstream Photo

LB Photo

Downstream Photo

RB Photo

Center Densiometer- UP

Center Densiometer- LB

Center Densiometer- DOWN

Center Densiometer- RB

Riparian Densiometer-LB

Riparian Densiometer-RB

Large Woody Debris:

>10cm dia., >1 m in length

Transect

Length

Diameter

Transect

Length

Diameter

continue on back if needed

Notes:

Scan to :

N:\Monitoring\Stream_Channel\PARK\DATA\YEAR

Copy template from here: N:\Monitoring\Stream_Channel\Protocol\Data Entry Templates and Enter data in Template, save to:N:\Monitoring\Stream_Channel\PARK\DATA\YEAR

100% check, rescan to and file in cabinet: N:\Monitoring\Stream_Channel\PARK\DATA\YEAR\Final Data

NGPN Stream Habitat Assessment Form 2 - Standard Transect Assessments										(version 1.1, 2022)		Site Name:			
Crew Leader:				Sampling Crew:				Date:							
Start Time:				End Time:											
Transect Measurements		Distance Upstream from T1 (m)	Wetted Width (m)	Active Channel Width (m)	Bankfull Width (m)	Channelfull Width (m)	Thalweg Position (% distance from Left Bank)	Thalweg Depth (m)	Dominant Bed Sediment Class (below)	Dominant Habitat (Run, Riffle, Pool, Glide, Step, Rapid)	Presence and Type of In-Channel Feature: Bar, Island, etc	Notes :			
1		0													
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
Bed Sediment:		Bedrock	Boulder-Med	Boulder-Small	Cobble-Large	Cobble-Med	Cobble-Sm	Gravel-Coarse	Gravel-Med	Gravel-Fine	Sand	Silt/Clay			
Bed Code:		BR	BM	BS	CL	CM	CS	GC	GM	GF	S	SIC			
Size (mm):		>1024	513-1024	257-512	129-256	91-128	65-90	33-64	9-32	2-8	.063-2	<.062			
Left Bank Measurements		Bankfull Height (m) above LBB	Channelfull height (m) above LBB	Floodplain Width Left (m)	Water Depth at Base* (m)	Bank Undercut** (m), Horizontal	Bank Undercut (m), Vertical**	Bank Angle base to bankfull	Bank Angle undercut**; base to bank	Bank Sediment Code (see below) w/ 1 meter of Tr.	Erosion (No , SL (bank slump), FL(fluvial), U (undercut) or AN (animal)	Erosion length (m) in 10m strip	Vegetation %- 1 meter-wide strip to bankfull	Bare ground % 1 meter-wide strip to bankfull	Surface Protection %: Logs, rock, veg 1-meter wide strip to bankfull
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
* if edge of water is below base of bank, record a negative number ** if undercut is present															
Right Bank Measurements		Bankfull Height (m) above RBB	Channelfull height (m) above RBB	Floodplain Width Right (m)	Water Depth at Base (m)*	Bank Undercut** (m), Horizontal	Bank Undercut (m), Vertical**	Bank Angle: base to bankfull	Bank Angle undercut** base to bank	Bank Sediment Code (see below) w/ 1 meter of Tr.	Erosion (No , SL (bank slump), FL(fluvial), U (undercut) or AN (animal)	Erosion length (m) in 10m strip	Vegetation %- 1 meter-wide strip to bankfull	Bare ground % 1 meter-wide strip to bankfull	Surface Protection %: Logs, rock, veg 1-meter wide strip to bankfull
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
* if edge of water is below base of bank, record a negative number ** if undercut is present															
Bank Sediment:		Bedrock	Boulder	Clay	Silty/clay	Silt	Sandy Silty Clay	Silty Clayey Sand	Sand	Gravel/Sand					
Bank Code		BR	BL	C	SiC	Si	SSiC	SiCS	S	GS					
Size Code		1	3	4	4,5	5	5,5	6,5	8	10					
Streambed Sediment Size: use gravelometer to measure. Record bed sediment codes or large end of size range ie record an '8' for fine gravel . Use .062 for silt, BR if >512mm.															
Left		Left-Center		Center		Right-Center		Right							
Transect		size	% embedded	size	% embedded	size	% embedded	size	% embedded	size	% embedded				
1															
2															
3															
4															

NGPN Stream Channel Assessment Form 3 - Detailed Cross-Sections (Version 1.0, 2019)

Park -	Site # -	Date -	Start Time -	End Time -
Crew leader -		Sampling Crew -		

BM #	Transect # -		Bank Side -	
Northing -		Easting -	Elevation -	Datum -
Site Description -				

Description of transect -

River Left - Out of Channel (Note - Presence/Absence of floodplain, terrace, vegetation, etc.)

River Left - Bank (Note - Presence/Absence of undercutting, slumping, etc.)

In-Channel (Note - Presence/Absence of bars, emergent boulders, large woody debris, etc.)

River Right - Bank (Note - Presence/Absence of undercutting, slumping, etc.)

River Right - Out of Channel (Note - Presence/Absence of floodplain, terrace, vegetation, etc.)

	Total Station Codes
	L - Left
	R- Right
	BM - Benchmark
	OC - Out of Channel
	Cf - Channel-full
	FPm - Floodplain margin
	Bf - Bankfull
	BB - Bottom of Bank
	WE - Water's Edge
CH - Channel	
LONG- Longitudinal Profile	
WS- Water Surface	

Longitudinal Profile - (Circle points surveyed from this benchmark)

WS01 WS02 WS03 WS04 WS05 WS06 WS07 WS08 WS09 WS10 WS11

If the water surface at riffle tops/steps between transects was surveyed, indicate the position with an arrow between transect WS#s

Notes:

NGPN Stream Channel Assessment Form 3a - Tie-in Points (Version 1.0, 2019)

Park -	Site # -	Date -
---------------	-----------------	---------------

Tie-in Point 1	Location -	Bank Side -		
Northing -	Easting -	Elevation -	Datum -	
Site Description -				

Tie-in Point 2	Location -	Bank Side -		
Northing -	Easting -	Elevation -	Datum -	
Site Description -				

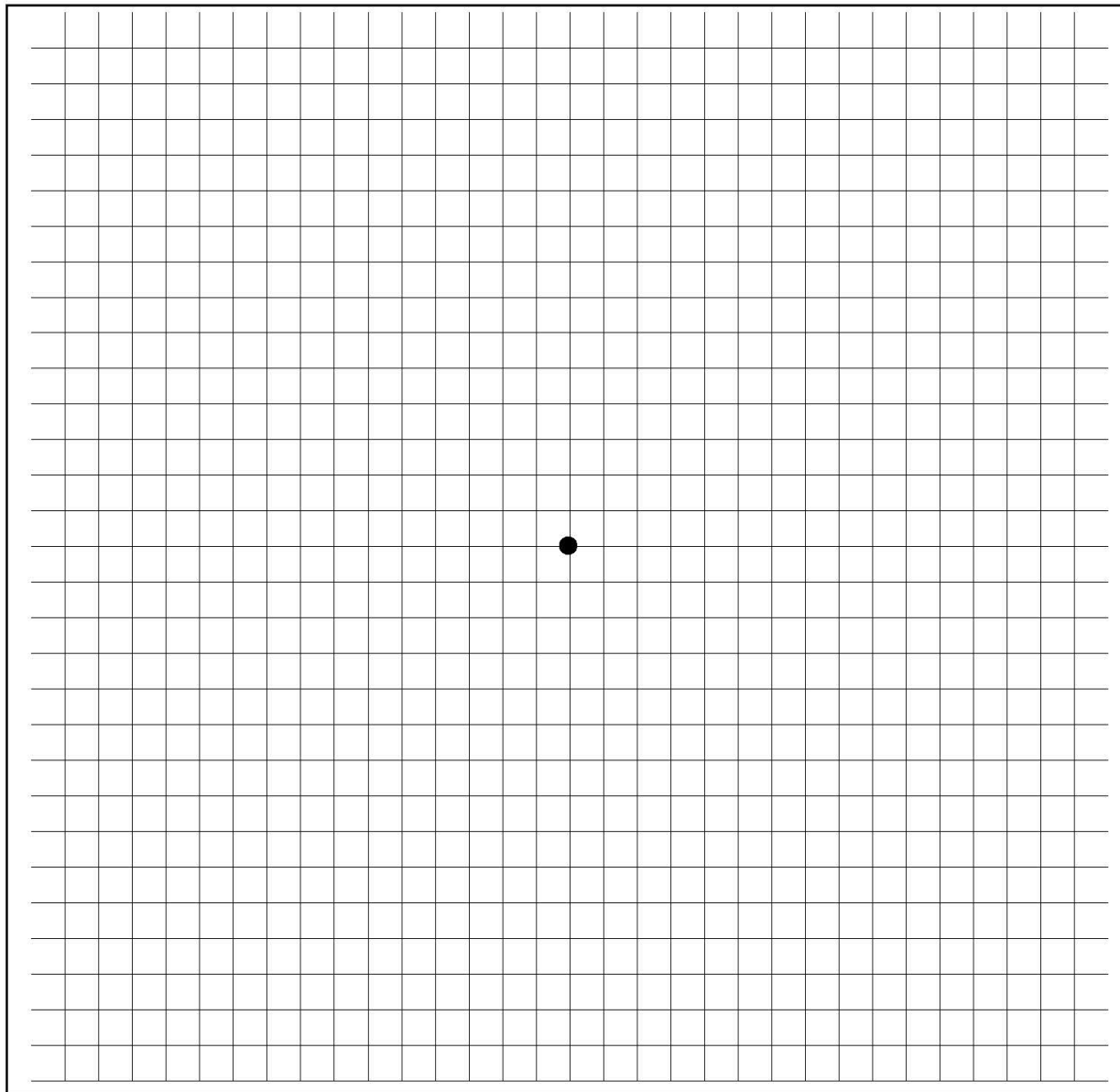
Tie-in Point 3	Location -	Bank Side -		
Northing -	Easting -	Elevation -	Datum -	
Site Description -				

Tie-in Point 4	Location -	Bank Side -		
Northing -	Easting -	Elevation -	Datum -	
Site Description -				

Tie-in Point 5	Location -	Bank Side -		
Northing -	Easting -	Elevation -	Datum -	
Site Description -				

NGPN Wadeable Stream Channel Assessment Form 4: Reach Map (Version 1.0, 2019)

Park: _____ Site #: _____ Stream: _____ Date: _____



Comments / Map Legend:

NGPN Stream Channel Assessment Form 5 - Post-Survey Report (Version 1.0, 2019)

[illegible]

PHOTOGRAPHIC RECORD SHEET

PARK: _____ SITE ID: _____

[illegible]

NPS Northern Great Plains Network Review:

Entered (initial and date): _____ 100% Checked (initial and date): _____ 10% Checked (initial and date): _____

NGPN Stream Channel Assessment Form 7 – Discharge Measurements Datasheet (Version 1.0, 2019)

NRSA 2013/14 DISCHARGE - WADEABLE ONLY					Reviewed by (initial): 								
Site ID: 		Date: / / 											
○ Velocity Area					○ Timed Filling								
Distance Units ☐ ft ☐ cm		Depth Units ☐ ft ☐ cm		Velocity Units ☐ ft/s XX.X ☐ m/s X.XX		Repeat		Volume (L)		Time (s)		Flag	
Dist. from Bank		Depth		Velocity		Flag							
1	0												
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
○ Neutral Buoyant Object													
		Float 1		Float 2		Float 3							
Float Dist. ☐ ft ☐ m													
Float Time (s)													
Flag													
Cross Sections on Float Reach													
		Upper Section		Middle Section		Lower Section							
Width ☐ ft ☐ m													
Depth 1 ☐ ft ☐ cm													
Depth 2													
Depth 3													
Depth 4													
Depth 5													
○ Q Value													
If discharge is determined directly in field, record value here: Q = 					☐ cfs ☐ m ³ /s FLAG 								
Flag		Comments											
04/08/2013 2013 Discharge					8103048936								

Literature Cited

Thornbrugh, D. J., I. W. Ashton, A. R. Jarding, J. S. Mills, and K. Paintner-Green. 2019. Protocol implementation plan for stream channel monitoring in the Northern Great Plains Network: narrative version 1.0. Natural Resource Report NPS/NGPN/NRR—2019/1918. National Park Service, Fort Collins, Colorado.

Thornbrugh DJ and Mills JS. Wadeable Stream Reach Scale Field Data Collection: Stream Channel Monitoring. Northern Great Plains Network Standard Operating Procedure NPS/NGPN/SOP. National Park Service, Rapid City, SD.