RIFFLE-POOL COMPLEX AVOIDANCE AND MINIMIZATION SUMMARY

Mountain Valley Pipeline Project January, 2022

1.0 INTRODUCTION

Mountain Valley Pipeline, LLC ("Mountain Valley") conducted an alternatives analysis to ensure that the Mountain Valley Pipeline Project (the "Project") avoids aquatic resource impacts to the maximum extent practicable. As documented in the pending permit application to the U.S. Army Corps of Engineers (USACE) and subsequent submissions, the comprehensive alternatives analysis proceeded in a logical fashion from (1) several offsite and non-structural alternatives, including major route alternatives, to (2) hundreds of route adjustments and refinements, to (3) onsite avoidance and minimization measures, including crossing-method alternatives. Through this process, Mountain Valley has demonstrated that there are no practicable alternatives to the proposed impacts.

For the purpose of conducting the onsite avoidance and minimization analysis for the pipeline, Mountain Valley combined streams and/or wetlands that are in very close proximity—such as streams and their adjacent riparian wetlands—into a single "crossing" to be evaluated.¹ This was done because, as a practical matter, the crossing of closely grouped features would be conducted as a single undertaking. Mountain Valley and its engineers relied on available data and their extensive experience in the field to analyze each crossing and determine the appropriate crossing method based on various site-specific circumstances, such as the size of the stream, steepness of the approach slopes, available workspace, time required to complete the crossing under the various methods, local geology, and proximity to residences, roads, or sensitive environmental resources, including "special aquatic sites" defined in 40 C.F.R. Part 230 (the "404(b)(1) Guidelines").

Two categories of special aquatic sites have been documented in the Project area: wetlands and rifflepool complexes. Many of the crossings grouped together for the onsite avoidance and minimization analysis included wetlands and/or streams with documented riffle-pool features that may indicate the presence of riffle-pool complexes. Accordingly, for the purpose of the analysis, Mountain Valley assumed that each crossing will or potentially may impact a special aquatic site. The analysis therefore started with the rebuttable presumption that a practicable alternative is available for *each proposed crossing* in accordance with 40 C.F.R. § 230.10(a)(3). This approach to applying the 404(b)(1) Guidelines errs on the side of avoidance and minimization of all aquatic resource impacts, including special aquatic sites.

Nevertheless, several public commenters questioned whether the process outlined above afforded due consideration to riffle-pool complexes. Following consultation with the USACE, Mountain Valley has prepared this *Riffle-Pool Complex Avoidance and Minimization Summary* to better document that impacts to riffle-pool complexes have been avoided and minimized to the extent practicable. This summary includes additional data gathered under the *Baseline Assessment Plan* to support restoration of these resources and supplemental evaluations and field verifications of locations with riffle-pool features to refine the identification of stream segments that constitute riffle-pool complexes. Mountain Valley reviewed and prepared a summary of the prior offsite and onsite alternatives evaluations for each

¹ Refer to Table 15 of the Individual Permit application (as revised).

proposed impact to a riffle-pool complex. The results summarized below demonstrate that Mountain Valley's comprehensive alternatives analysis avoided riffle-pool complexes to the extent practicable.

2.0 PROCESS FOR IDENTIFYING POTENTIAL RIFFLE-POOL COMPLEXES

To assess for the presence of riffle-pool complexes, Mountain Valley performed an initial screening exercise of the Baseline Assessment data collected in Virginia and West Virginia for potential riffle-pool complex characteristics. Riffle-pool complexes are bedform undulations developed in either supply- or transport-limited systems with gravel beds with slope gradients less than 0.02 (Leopold et al., 1964; Montgomery and Buffington, 1997). The pools offer deeper water habitat during periods of low-flow or ice cover, riffles provide spawning gravels and primary food-production areas, and riffle-pool complexes encourage hyporheic exchange (Tonina and Buffington, 2007). The following steps were performed to identify riffle-pool complexes:

- Step 1 The slope of all perennial and intermittent streams within the right-of-way (ROW) was assessed using field collected data to determine the potential for riffle-pool complexes. Slopes between 0.02 and 0.001 (2 and 0.1%) were identified for further desktop evaluation.
- Step 2 A desktop evaluation using aerial imagery/Google Earth was conducted to assess the streams beyond the limits of disturbance for a laterally oscillating bed form pattern with <2% slope and plan view pattern for stream types C, DA, E, and F (Rosgen et al. 2008)
- Step 3 The baseline data packages for streams determined to have laterally oscillating bedform pattern were reviewed with a specific focus on photos, longitudinal profile data, and pebble counts. Streams with the potential for riffle-pool complexes were flagged for additional field evaluation.
- Step 4 Streams flagged in Step 3 were visited by an Applied Geomorphologist to confirm the presence of riffle-pool complexes. Of the 59 streams identified through the initial screening exercise in the steps above, 32 had been granted landowner permission for additional study outside the ROW. The field assessment included use of the Ohio Environmental Protection Agency's Qualitative Habitat Evaluation Index (QHEI) protocol. The QHEI is a more detailed subset of the Rosgen and Montgomery & Buffington classifications. The Rosgen and Montgomery & Buffington classification methods, while including riffle-pool complexes in their schemes, evaluate a broader spectrum of stream channels including channel forms of all gradient ranges, ranges of bed material sizes, and various stages of channel evolution that arise throughout the United States. The Ohio QHEI is designed to evaluate a more limited range of stream types, in particular focusing on the quality of habitat provided by riffle-pool complexes. The QHEI identifies the presence, frequency, and depth of pools, glides, riffles, runs, and gravel/cobble substrate and the degree of embeddedness of these features. The QHEI is designed to evaluate streams of the hills and gentle mountains of eastern Ohio, which have a sufficiently similar topographic relief and similar valley forms to the mountains of West Virginia and Virginia where riffle-pool complexes may form to make the protocol valid for use in these areas.

In summary, streams with a slope of less than 2% and a laterally oscillating bedform and which met rifflepool complex criteria from the QHEI were determined to have riffle-pool complexes. Attachment A contains a summary of the field work results. A total of 27 streams were confirmed as having riffle-pool complexes; eleven of these crossings are associated with dry-ditch open cuts, and the remaining 16 are associated with travel lanes and access roads.

3.0 REVIEW OF ALTERNATIVES ANALYSIS FOR RIFFLE-POOL COMPLEXES

Mountain Valley has reviewed the avoidance and minimization analysis for each proposed stream impact identified through the process outlined above as having a likely riffle-pool complex. As previously discussed, hundreds of major and minor routing alternatives and alignment adjustments were evaluated through an iterative process that occurred over the course of several years as the then-proposed Project underwent successive rounds of internal, agency, and public review. This review summarizes avoidance and minimization determinations for crossings of streams with riffle-pool complexes.

However, it must be recognized that each such crossing cannot be considered in isolation but rather must be evaluated in the context of a 303-mile linear pipeline. Any shift in the route to avoid a resource at a specific location will necessarily require movement of the route for a distance on each side of the crossing, with the length of the pipeline affected roughly proportional to the magnitude of the shift. Any potential movement of the route will require an evaluation of constructability constraints and new or changed impacts to aquatic or other resources—which may, in turn, trigger additional avoidance actions, including additional routing adjustments. In short, each alignment shift can have a cascading effect on the route. This limits the practical utility of reviewing offsite alignment or routing alternatives for discrete crossings in isolation and without reiterating the extensive iterative process and consideration of offsite factors that led to the selection of that alignment.

To present a practical and informative illustration of the offsite alternatives for each riffle-pool complex, this summary reviews the environmental and practicability constraints within the 300-foot-wide survey corridor for the selected route. That corridor represents an area within which a potential alignment shift would not likely trigger significant changes to the route approaching the crossing. The results of the review are summarized below for each impact type.

3.1 Proposed Open-Cut Impacts for Pipeline Crossings

Based on the results of the additional riffle-pool field studies (Attachment A), 11 open-cut stream crossings contain riffle-pool complexes. Mountain Valley's alternative analysis determined that the least environmentally damaging practicable alternative for these 11 crossings is the dry-ditch open-cut method. In addition to the relevant factors for each crossing that are summarized in Table 15 of the Individual Permit application, supplemental information for each crossing is provided below.

<u>S-A1a (North Fork Fishing Creek – MP 0.65)</u> – The area surrounding this crossing consists of utility ROW and public roads. North Fork Fishing Creek extends beyond the study corridor, flowing east and west of the currently proposed crossing. Based on the existing site conditions, known stream characteristics, and field observations, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. Accordingly, a shift in the alignment would not avoid an impact to the complex. In addition, shifting the alignment to the east would place the pipeline near or on a bridge (County Route 50) and may impact wetland W-A1a, which is currently avoided. Shifting the alignment to the stream. Additionally, the factors making a trenchless crossing at the current location impracticable would apply equally if the route was adjusted within the study corridor.

<u>S-LL1 (Knawl Creek – MP 68.7)</u> – Due to the crossing being in a steep valley, a shift in either direction would create a sidehill construction scenario, which would complicate the safety and constructability in this location and would not eliminate or alter the factors supporting an open-cut crossing. Knawl Creek extends well beyond the study corridor, flowing northwest and southeast of the current crossing location. Based on the existing site conditions, known stream characteristics, and field observations, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. Accordingly, a shift in the alignment would not avoid an impact to the complex. A shift to the west would increase impacts to Knawl Creek due to the stream's current alignment. Additional impacts to forested habitat, private properties, and increased construction duration would occur with a shift in either direction. Adjusting upstream or downstream of this crossing would not make a trenchless crossing practicable either – the same limiting factors would still be applicable.

<u>S-I36 (Hominy Creek – MP 126.85)</u> – The area surrounding this crossing of Hominy Creek is forested and located on steep slopes. Hominy Creek extends beyond the study corridor, flowing northwest and southeast of the current crossing location. Based on the existing site conditions, known stream characteristics, and field observations, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. Accordingly, a shift in the alignment would not avoid an impact to the complex. Adjusting the route to the east or west would not eliminate or materially alter the factors making a trenchless crossing impracticable at this location. In addition, shifting the alignment to the west would increase impacts to wetland W-I11a. Shifting the alignment to the east would also move the pipeline closer to wetland W-U7 and may require the pipeline to be installed below this resource, which is currently only impacted with timber mats. Shifting the alignment within the study corridor in this area is not possible without increasing impacts to private properties, special aquatic sites, and forested habitats.

<u>S-E28-West (Teels Creek – MP 258.2)</u> – The area surrounding this crossing of Teels Creek consists of public roads, private residential properties, and forested areas. Teels Creek extends beyond the study corridor, flowing northwest and southeast of the currently proposed crossing. Based on the existing site conditions, known stream characteristics, and field observations, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. Accordingly, a shift in the alignment would not avoid an impact to the complex. A northern adjustment would result in impacts to the currently avoided stream S-GH5 and would not avoid impacts to Teels Creek. A southern adjustment would move the pipeline within the public ROW (SR 728) and would require additional tree clearing and sidehill construction. In addition, adjusting the route to the north or south within the study corridor would not eliminate or materially alter the challenges that make a trenchless crossing impracticable. Shifting the alignment within the study corridor in this area is not possible without increasing impacts to private properties, aquatic systems, and forested habitats. A shift would also increase the construction duration in this area.

<u>S-E28-Mid (Teels Creek – MP 259.15)</u> – The area surrounding this crossing of Teels Creek consists of public roads, private residential structures, forested areas, and wetland resources. Teels Creek extends beyond the study corridor, flowing east and west of the current crossing location. Based on the existing site conditions, known stream characteristics, and the information associated with other crossings of Teels Creek, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. Accordingly, it does not appear that a shift in the alignment would avoid an impact to the complex. Adjusting the route to the east or west within the study corridor would not eliminate or materially alter the challenges that make a trenchless crossing impracticable. An eastern

adjustment likely would result in impacts to the currently avoided stream S-E33. A western adjustment would move the pipeline closer to residential structures and would require reinstalling the road crossing in a less favorable configuration. Shifting the alignment within the study corridor in this area is not possible without increasing impacts to private properties, public ROW, aquatic systems, and forested habitats.

<u>S-E28-East (Teels Creek – MP 259.4)</u> – Teels Creek extends well beyond the Project limits, flowing north and south of the current crossing location. Based on the existing site conditions, known stream characteristics, and the information associated with other crossings of Teels Creek, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. Accordingly, it does not appear that a shift in the alignment would avoid an impact to the complex. A northern adjustment would create impacts to wetland W-E9, which is currently avoided. A southern adjustment would impact stream S-EF2 (which is currently avoided), would create additional forest clearing, and would require sidehill construction. Shifting the alignment within the study corridor in this area is not possible without increasing impacts to private properties, aquatic systems, and forested habitats. A shift would also increase the construction duration in this area. Adjusting the route to the north or south within the study corridor would not eliminate or materially alter the challenges of a trenchless crossing.

<u>S-D23 (Teels Creek – MP 261)</u> – Teels Creek extends well beyond the study corridor, flowing north and south of the currently proposed crossing. Based on the existing site conditions, known stream characteristics, and the information associated with other crossings of Teels Creek, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. Accordingly, it does not appear that a shift in the alignment would avoid an impact to the complex. Adjusting upstream or downstream of this crossing would not make a trenchless crossing practicable either – the same limiting factors would still be applicable. A northern adjustment would result in additional impacts to Teels Creek and place the stream parallel to the pipeline. A southern adjustment would also increase impacts to Teels Creek based on the stream's alignment in this area. Shifting the alignment within the study corridor at this location would eliminate the opportunity to stabilize the eroded banks along this portion of Teels Creek. An alignment shift would increase impacts to forested habitat, private properties, aquatic resources, and extend the construction duration

<u>S-CD6 (Little Creek – MP 262.6)</u> – The areas adjacent to the crossing are undeveloped forested land or undisturbed rangeland, with residential structures located north and south of the alignment. Little Creek extends beyond the study corridor, flowing northeast and southwest of the currently proposed crossing. Based on the existing site conditions, known stream characteristics, and field observations, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. Accordingly, a shift in the alignment would not avoid an impact to the complex. Adjusting the pipeline upstream or downstream of the current crossing would not make a trenchless practicable crossing. A shift to the north could also result in impacts to the currently unaffected stream S-CD6-Braid and would create a non-perpendicular crossing, while a shift to the south would increase the required bore-pit depth due to the increasing slope. Also, shifting the current alignment would eliminate the opportunity to stabilize the eroded banks along this portion of Little Creek. Shifting the alignment within the study corridor in this area is not possible without increasing impacts to private properties, impacts to forested habitats, and the construction duration.

<u>S-C19 (Maggodee Creek – MP 269.4)</u> – Maggodee Creek extends well beyond the Project limits, flowing to the north and to the south of the current location. Based on the existing site conditions, known stream characteristics, and field observations, it appears that the riffle-pool complex extends upstream and

downstream from the crossing location throughout the study corridor. Accordingly, a shift in the alignment would not avoid an impact to the complex. The steep slopes associated with the crossing extend a significant distance upstream and downstream of the crossing, further complicating the potential for a trenchless crossing or upland avoidance. Adjusting to the north or south of the proposed centerline would not eliminate or materially alter the factors that make a trenchless crossing impracticable at the current location. Shifting the alignment within the study corridor would result in impacts to additional forested habitat and private residential properties, would move the line closer to residences, and may impact a cultural resource site that is in proximity of the crossing.

<u>S-H13 (Harpen Creek – MP 290.5)</u> – Harpen Creek extends well beyond the study corridor, flowing northeast and southwest of the currently proposed crossing. Based on the existing site conditions, known stream characteristics, and field observations, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. Accordingly, a shift in the alignment would not avoid an impact to the complex. In addition, a large emergent wetland system is located southeast of the crossing and extends upstream and downstream; shifting in either direction would create additional impacts to this special aquatic site and to Harpen Creek. In addition, shifting to the north may create impacts to stream S-H14, which the existing alignment currently avoids. Shifting the alignment within the study corridor in this area is not possible without increasing impacts to private properties, forested habitats, and increasing the construction duration. Adjusting to the north or south of the proposed centerline would not eliminate or materially alter the factors making a trenchless crossing impracticable at the current location.

<u>S-Q3 (Pole Bridge Branch – MP 296.5)</u> – Pole Bridge Branch extends well beyond the study corridor, flowing northeast and southwest of the currently proposed crossing. Based on the existing site conditions, known stream characteristics, and field observations, it appears that the riffle-pool complex extends upstream and downstream from the crossing location throughout the study corridor. A large forested wetland system is located northwest of the crossing; shifting upstream or downstream would create additional impacts to this special aquatic site, with a northern shift increasing the impacts to the wetland and a southern shift increasing impacts to Pole Bridge Branch and stream S-Q2. Shifting the alignment within the study corridor in this area is not possible without increasing impacts to private properties, forested lands, and extending the construction duration. Adjusting to the north or south of the proposed centerline would not eliminate or materially alter the factors making a trenchless crossing impracticable at the current location.

3.2 Proposed Timber Mat Impacts for Proposed Trenchless Crossings and Travel Lanes

Where routing considerations necessitated crossing a stream, Mountain Valley assumed that the crossing included a special aquatic site and evaluated opportunities to avoid or substantially minimize that impact using a trenchless crossing method. Trenchless crossings avoid the instream impact associated with dewatering the stream and open cutting the streambed. But, in many areas, the right-of-way serves as the travel lane for moving construction equipment and materials. Trenchless crossings allow equipment to safely cross streams without the impacts to streambed and banks that would be caused if the streams were forded. Instream impacts are not wholly avoided, however, as there typically are minimal impacts associated with installation and removal of timber mats. As stated above, the purpose of a timber mat crossing is to span the stream while avoiding and minimizing impacts to the stream and streambed. The impacts associated with a span are typically limited to the support structures (headers) along the stream's edge and the stream section flowing directly adjacent to the headers. The span does not impact the entire

stream width; impacts are limited to the stream section directly adjacent to the streambank, thereby minimizing impacts to instream habitat, including riffle-pool complexes. In some instances, the headers are located entirely outside of the stream flow, completely avoiding impacts to the instream habitat and riffle-pool complexes.

Stream S-J32 (Big Beaver Creek) has riffle-pool complexes that will be avoided via trenchless methods but will require minor impacts associated with timber mats. Because the impacts to these resources have been avoided to the extent practicable using trenchless crossing methods, there are no other practicable onsite avoidance measures to evaluate. Impacts to the riffle-pool complexes cannot be completely avoided, but they are significantly reduced by employing the same methods that are discussed above – limiting the impacts to the stream section immediately adjacent to the stream bank and avoiding impacts to the entire stream width.

The following streams also contain riffle-pool complexes that will be avoided via trenchless method, but a travel lane is required to maintain access through the Project area. These resources will be spanned, with no fill anticipated within the ordinary highwater mark except for incidental fallback or other minor inadvertent impacts. Mountain Valley has adopted a conservative approach and has included the travel lane in the temporary impacts total to account for potential stream meandering below the span while the crossing is installed and to mitigate for the duration of the temporary crossing.

- S-IJ88 (Bottom Creek)
- S-NN17 (Sinking Creek)
- S-OO6 (Craig Creek)

3.3 Proposed Timber Mat Impacts for Travel Lane at a Completed Crossing

<u>Stream S-IJ10 (Little Creek)</u> – The pipeline crossing below this stream was installed under the Project's previous Nationwide Permit (NWP) 12 authorization. But in order to maintain access through the Project area, a timber mat crossing of this resource is required. Impacts to the resource will be reduced by limiting the impacts to the stream section immediately adjacent to the stream bank, avoiding impacts to the entire stream width, and restoring the area when the timber mat is no longer needed.

3.4 Existing Timber Mat/Travel Lane/Access Road Impacts

The following resources have existing timber mat/travel lane/access road crossings that were installed under the Project's previous NWP 12 authorization. Each crossing spans the stream with the impacts being limited to the banks and the stream section immediately adjacent to the banks. The support structures (headers) are typically installed on the banks and extend below the ordinary high water mark. The impacted banks and portion of the stream would be restored once the Project is complete. Mountain Valley has also included these impacts in the Individual Permit application and the supplemental, voluntary *Stream and Wetland Restoration, Monitoring, and Mitigation Framework* ("*Mitigation Framework*"). This will help ensure the crossings' impacts are of temporary duration, properly restored, and monitored to document the return to its pre-crossing condition.

Because impacts to these resources were previously taken under the NWP 12 authorization, there are no opportunities available to avoid or minimize the impacts (aside from restoring the impacts in accordance with the *Mitigation Framework*).

- S-A100 (Left Fork Holly Creek)
- S-DD3 (Owens Creek)
- S-G4 (Harpen Creek)
- S-C3 (Harpen Creek)

The following resources have existing timber mat/travel lane/access road crossings that were installed under the Project's previous NWP 12 authorization. However, these crossings have been placed outside of the ordinary high water mark. Mountain Valley has adopted a conservative approach and has included these crossings in the temporary impacts total to account for potential stream meandering below the span while the crossing is installed and any incidental impacts and to mitigate for the duration of the temporary crossing. Impacts to riffle-pool complexes are avoided.

- S-J62 (Right Fork Big Elk Creek)
- S-B6a (Indian Run)²
- S-J43 (Right Fork Freemans Creek)
- S-J46 (Fink Creek)
- S-G20 (Poplar Camp Creek)
- S-QQ2 (Sinking Creek)

3.5 Existing Rock-and-Flume Crossing

Like the resources listed above, the fill associated with the one rock-and-flume crossing—S-A10a (Little Rockcamp Run)—was installed under the Project's previous NWP 12 authorization. The impacts associated with this stream were included in the Individual Permit application and the supplemental, voluntary *Mitigation Framework*. This will ensure the crossing's impacts are of temporary duration, properly restored, and monitored to document the return to its pre-crossing condition.

² Stream S-B6a (Indian Run) has an existing timber mat and access road crossing.

References:

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Rosgen, D., H.L. Silvey, and D. Frantila. 2008. River Stability Field Guide. Wildland Hydrology.

Tonina, D and J.M. Buffington. 2007. Hyporheic exchange in gravel bed rivers with pool-riffle morphology: Laboratory experiments and three-dimensional modeling. Water Resources Research

Attachment A



Mountain Valley Pipeline Project Riffle-Pool Complex Field Assessment November and December 2021

In November and December 2021, Tetra Tech conducted field surveys of 59 streams—24 in West Virginia and 35 in Virginia—that were initially identified as potentially containing a riffle-pool complex during the supplemental baseline evaluations. Each identified stream was assessed by a fluvial geomorphologist to determine the stream type, based on specific stream characteristics.

Riffle-Pool Complex Identification Method

The general characteristics of riffle-pool streams, as described by Rosgen (1994) and Montgomery & Buffington (1997),¹ were used to identify candidate streams via a desktop analysis using topographic maps and aerial imagery. These characteristics include a gradient of less than 2%, an oscillating pattern, and water flowing in an unconfined floodplain. However, a desktop analysis is insufficient to determine if a stream is a riffle-pool complex. Thus, candidate streams were visited in the field to evaluate more detailed characteristics to help verify the stream type. More detailed characteristics, recognizable in the field, of riffle-pool complexes include a typical pool-riffle frequency of 5 to 7 channel widths and bed material dominated by gravel and cobble.

The field assessment included use of the Ohio Environmental Protection Agency's Qualitative Habitat Evaluation Index (QHEI) protocol. The QHEI is a more detailed subset of the Rosgen and Montgomery & Buffington classifications. The Rosgen and Montgomery & Buffington classifications including riffle-pool complexes in their schemes, evaluate a broader spectrum of stream channels including channel forms of all gradient ranges, bed material sizes ranges, and various stages of channel evolution that arise throughout the United States. The Ohio QHEI is designed to evaluate a more limited range of stream types, in particular focusing on the quality of habitat provided by riffle-pool complexes. The QHEI identifies the presence, frequency, and depth of pools, glides, riffles, runs, and gravel/cobble substrate and the degree of embeddedness of these features. The QHEI is designed to evaluate streams of the hills and gentle mountains of eastern Ohio, which have a sufficiently similar topographic relief and similar valley forms to the mountains of West Virginia and Virginia to make the protocol valid for use in these areas.

If a stream showed the characteristics of a type different than a riffle-pool complex, then it was identified as that type. Other types typically included step-pool and plane-bed per Montgomery &

¹ D.R. Montgomery & J.M. Buffington, *Channel-reach Morphology in Mountain Drainage Basins*, 109(5) Geological Society of America Bulletin (1997), *available at*

https://pubs.geoscienceworld.org/gsa/gsabulletin/article-pdf/109/5/596/3382709/i0016-7606-109-5-596.pdf; David. L. Rosgen, A Classification of Natural Rivers, 22 Catena 169 (1994), available at

https://wildlandhydrology.com/resources/docs/Stream%20Classification/Rosgen_1994_A_Classification_of_Natural _Rivers.pdf/.

Buffington. Because the variety of stream channel forms are a continuum, many streams do not fall cleanly into one of the Rosgen or Montgomery & Buffington classes.

Many of the assessed stream reaches were missing one or more of the features that define a rifflepool complex or had features that were poorly defined. Reaches that exhibited one or more of the following characteristics were classified as "poorly formed riffle-pool complex," implying that they do not provide the habitat expected of a functioning riffle-pool complex.

- A pool-riffle sequence frequency greater than 7 channel widths,
- Riffles embedded with fine sediment,
- Overly shallow pools,
- Pools not present,
- A lack of coarse material to form riffles,
- Riffles present only due to being forced by large woody debris jams, and
- Pools present only due to scour under large woody debris jams.

In a functioning riffle-pool complex, the riffles are sufficiently free of embedded fine sediment such that benthic macroinvertebrates can find refuge in the spaces between the gravels and cobbles. The pools are sufficiently deep to provide fish habitat during drought conditions. There is sufficient turbulent flow over the riffles to promote oxygenation of the water. Bed substrate is sufficiently stable so that habitats are not changing with every moderate flow event. Sufficient coarse gravel and cobble substrate material are present to create benthic macroinvertebrate home and fish nesting habitats.

Continuation of the Channel Form Beyond the Assessment Reach

In general, assuming that a channel form continues for any distance beyond sight of the assessment reach is speculation – with the degree of confidence decreasing in proportion to the distance from the observed reach. Observed streams may be under the influence of changes in flow and changes in sediment load from upstream land-use impacting features. For example, old defunct mill dams, non-permitted dams, beaver dams, non-permitted heavy machinery operating in the channel, livestock in the channel, broken sewage pipes draining to the stream, channelized reaches, large woody debris jams, trash jams, culverted reaches, hill slopes mass wasted into the channel, rapid grade transitions such as cascade to riffle-pool, and excessive fine sediment loads from tributaries have been encountered during previous projects where the entire stream reach has been assessed over a several mile stream walk. These features typically are not discernable in topographic maps and aerial photos, especially for streams that are obscured by tree canopy. That being said, a review of topographic maps and aerial photos can serve as an indication of whether the channel gradient, channel planform pattern, and land use upstream or downstream of a field verified rifflepool complex reach are consistent or inconsistent with the conditions of the verified reach within the 125-foot field study corridor (as supplemented by observation of portions of the reach extending outside of but readily visible from the field study corridor). Therefore, consistent, observed features without an indication of impacting land-use features imply the riffle-pool complex within the 300-foot study corridor would be present beyond the assessed reach.

Based supplemental baseline data, the following tables list all the streams that contained a potential riffle-pool complex. The third column confirms the presence of riffle-pool complex or another channel type.

Stream ID	NHD Stream Name	Channel Type ¹
S-A1a	North Fork Fishing Creek	Poorly formed riffle-pool complex
S-A125	Price Run	Plane bed
S-J62	Right Fork Big Elk Creek	Poorly formed riffle-pool complex
S-J51	Little Tenmile Creek	Plane bed
S-A10a	Little Rockcamp Run	Poorly formed riffle-pool complex
S-B3a	Rockcamp Run	Plane bed
S-B6a TM ²	Indian Run TM	Poorly formed riffle-pool complex
S-B6a TM ²	Indian Run TM	Poorly formed riffle-pool complex
S-A111	Laural Run	Plane bed
S-J43	Right Fork Freemans Creek	Poorly formed riffle-pool complex
S-J46	Fink Creek	Riffle-pool complex
S-K43 TM ³	Cove Lick TM	Plane bed
S-K43 TM ³	Cove Lick TM	Plane bed
S-H160	Indian Fork	Plane bed
S-L51	Barbecue Run	Step pool
S-L60	Left Fork Knawl Creek	Plane bed
S-LL1	Knawl Creek	Poorly formed riffle-pool complex
S-H132	Little Kanawha River	Plane bed
S-A100	Left Fork Holly River	Riffle-pool complex
S-B34	Amos Run	Step pool
S-E58	Little Glade Run	Plane bed
S-J32	Big Beaver Creek	Riffle-pool complex
S-I36	Hominy Creek	Riffle-pool complex
S-D31	Indian Creek	Plane bed

Table 1: West Virginia Stream Channel Type Assessment

As determined by the Project's Geomorphologist's field investigations
 Stream S-B6a is crossed by a timbermat and an access road.
 Stream S-K43TM is crossed by timbermat and an access road.

Stream ID	NHD Stream Name	Channel Type ¹
S-CC1	Cherrystone Creek	Step pool
S-G9	UNT to Jonnikin Creek	Step pool
S-D3	UNT to Jonnikin Creek	Plane bed
S-E17	UNT to Blackwater River	Step pool
S-G20	Poplar Camp Creek	Riffle-pool complex
S-II2	Little Creek	Step pool
S-IJ10	Little Creek	Poorly formed riffle-pool complex
S-II4	UNT to North Fork Blackwater River	Plane bed
S-IJ88	Bottom Creek	Riffle-pool complex
S-C21	Bradshaw Creek	Plane bed
S-NN17	Sinking Creek	Riffle-pool complex
S-006	Craig Creek	Riffle-pool complex
S-QQ2	Sinking Creek	Poorly formed riffle-pool complex
S-S5	Stony Creek	Plane bed
S-DD3	Owens Creek	Riffle-pool complex
S-CD6	Little Creek	Riffle-pool complex
S-C14	Teels Creek	Plane bed
S-EF12	Teels Creek	Plane bed
S-E28 - East	Teels Creek	Riffle-pool complex
S-E28 - Mid	Teels Creek	Riffle-pool complex
S-E28 - West	Teels Creek	Riffle-pool complex
S-C19	Maggodee Creek	Riffle-pool complex
S-C17	Teels Creek	Embedded reach
S-D22	UNT to Teels Creek	Embedded plane bed
S-D23	Teels Creek	Riffle-pool complex
S-IJ43	Mill Creek	Plane bed
S-RR13	Craig Creek	Step pool
S-G2	Little Cherrystone Creek	Plane bed
S-Q3	Pole Bridge Branch	Riffle-Pool Complex
S-EF26	Little Cherrystone Creek	Plane bed
S-H54	UNT to Little Cherrystone Creek	Step pool
S-G4	Harpen Creek	Riffle-pool complex
S-H13	Harpen Creek	Riffle-pool complex
S-C3	Harpen Creek	Riffle-pool complex
S-C7	UNT to Rocky Creek	Plane bed

Table 2: Virginia Stream Channel Type Assessment

1 - As determined by the Project's Geomorphologist's field investigations

Spread A Stream S-A1a

Wetzel County



Photo Type: Downstream View Location: 39.55394, -79.80.54519 Photo Orientation: E (81 degrees) Stream Type: Poorly formed riffle-pool complex



Photo Type: Upstream View Location: 39.55402, -80.54509 Photo Orientation: N (5 degrees) Stream Type: Poorly formed riffle-pool complex

Spread A Stream S-A125

Wetzel County



Photo Type: Riffle, Upstream View Location: 39.50331, -80.53331 Photo Orientation: NE (62 degrees) Stream Type: Plane bed



Photo Type: Substrate Location: 39.50336, -80.53331 Photo Orientation: NW (330 degrees) Stream Type: Plane bed

Harrison County



Photo Type: Riffle, Upstream View Location: 39.44425, -80.48284 Photo Orientation: N (15 degrees) Stream type: Poorly formed riffle-pool complex



Photo Type: Riffle, Upstream View Location: 39.44422, -80.48283 Photo Orientation: N (18 degrees) Stream type: Poorly formed riffle-pool complex

Harrison County



Photo Type: Riffle, Upstream View Location: 39.44422, -80.48283 Photo Orientation: N (18 degrees) Stream type: Poorly formed riffle-pool complex

Harrison County



Photo Type: Upstream View Location: 39.39822, -80.47724 Photo Orientation: E (98 degrees) Stream Type: Plane bed



Photo Type: Downstream View Location: 39.39820, -80.47707 Photo Orientation: N (340 degrees) Stream Type: Plane bed

Spread A Stream S-A10a

Harrison County



Photo Type: Downstream View Location: 39.37033, -80.48589 Photo Orientation: S (181 degrees) Stream Type: Poorly formed riffle-pool complex



Photo Type: Upstream View Location: 39.37024, -80.48542 Photo Orientation: N (22 degrees) Stream Type: Poorly formed riffle-pool complex

Spread A Stream S-B3a

Harrison County



Photo Type: Downstream View Location: 39.35895, -80.49376 Photo Orientation: SE (132 degrees) Stream Type: Plane bed



Photo Type: Downstream View Location: 39.35898, -80.49372 Photo Orientation: S (173 degrees) Stream Type: Plane bed

Harrison County



Photo Type: Upstream View Location: 39.31709, -80.52612 Photo Orientation: SW (224 degrees) Stream Type: Poorly formed riffle-pool complex



Photo Type: Upstream View Location: 39.31710, -80.52612 Photo Orientation: SW (233 degrees) Stream Type: Poorly formed riffle-pool complex

Spread A Stream S-B6a-TM

Harrison County



Photo Type: Downstream View Location: 39.31676, -80.52574 Photo Orientation: S (162 degrees) Stream Type: Poorly formed riffle-pool complex



Photo Type: Downstream View Location: 39.31696, -80.52606 Photo Orientation: NE (41 degrees) Stream Type: Poorly formed riffle-pool complex

Spread A Stream S-B6a-TM

Harrison County



Photo Type: Upstream View Location: 39.31724, -80.52717 Photo Orientation: E (107 degrees) Stream Type: Poorly formed riffle-pool complex



Photo Type: Downstream View Location: 39.31730, -80.52715 Photo Orientation: NW (300 degrees) Stream Type: Poorly formed riffle-pool complex

Doddridge County



Photo Type: Substrate Location: 39.20055, -80.55409 Photo Orientation: NE (59 degrees) Stream Type: Plane bed



Photo Type: Downstream View Location: 39.20063, -80.55394 Photo Orientation: SW (244 degrees) Stream Type: Plane bed

Lewis County



Photo Type: Substrate Location: Unavailable Photo Orientation: Unavailable Stream type: Poorly formed riffle-pool complex



Photo Type: Upstream View Location: 39.12051, -80.58105 Photo Orientation: W (285 degrees) Stream type: Poorly formed riffle-pool complex

Lewis County



Photo Type: Upstream View Location: 39.12050, -80.58117 Photo Orientation: W (277 degrees) Stream type: Poorly formed riffle-pool complex

Lewis County

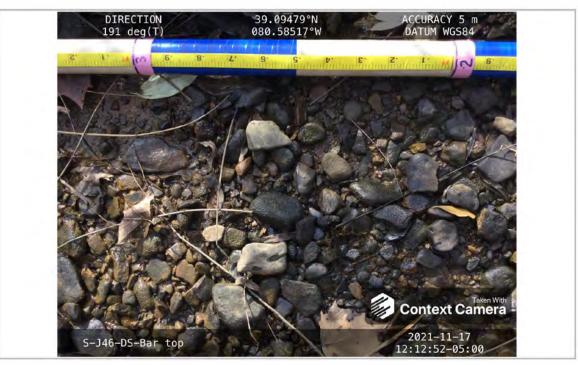


Photo Type: Substrate Location: 39.09479, -80.58517 Photo Orientation: S (191 degrees) Stream type: Riffle-pool complex



Photo Type: Upstream View Location: 39.09479, -80.58517 Photo Orientation: E (108 degrees) Stream type: Riffle-pool complex

Lewis County



Photo Type: Upstream View Location: 39.09481, -80.58515 Photo Orientation: SE (143 degrees) Stream type: Riffle-pool complex

Spread B Stream S-K43 TM

Lewis County



Photo Type: Upstream View Location: 39.00191, -80.59667 Photo Orientation: SE (137 degrees) Stream Type: Plane bed



Photo Type: Upstream View Location: Unavailable Photo Orientation: Unavailable Stream Type: Plane bed

Spread B Stream S- K43 TM

Lewis County



Photo Type: Downstream View Location: 39.00215, -80.59589 Photo Orientation: W (253 degrees) Stream Type: Plane bed



Photo Type: Downstream View Location: 39.00213, -80.59586 Photo Orientation: W (271 degrees) Stream Type: Plane bed

Spread B Stream S- K43 TM

Lewis County



Photo Type: Upstream View Location: 39.00210, -80.59584 Photo Orientation: E (109 degrees) Stream Type: Plane bed



Photo Type: Upstream View Location: 39.00208, -80.59579 Photo Orientation: S (168 degrees) Stream Type: Plane bed

Lewis County



Photo Type: Downstream View Location: 38.93328, -80.58479 Photo Orientation: W (262 degrees) Stream Type: Plane bed Notes: Earth disturbance not associated with the MVP Project



Photo Type: Downstream View Location: 38.93331, -80.58492 Photo Orientation: W (252 degrees) Stream Type: Plane bed Notes: Earth disturbance not associated with the MVP Project Spread C Stream S-L51

Braxton County



Photo Type: Upstream View Location: 38.83888, -80.52057 Photo Orientation: N (1 degree) Stream Type: Step pool



Photo Type: Upstream View Location: 38.83920, -80.52005 Photo Orientation: N (13 degrees) Stream Type: Step pool

Spread C Stream S-L60

Braxton County



Photo Type: Downstream View Location: 38.82410, -80.52506 Photo Orientation: SE (139 degrees) Stream type: Plane bed



Photo Type: Downstream View Location: 38.82406, -80.52507 Photo Orientation: SE (147 degrees) Stream type: Plane bed

Spread C Stream S-L60

Braxton County



Photo Type: Downstream View Location: 38.82402, -80.52511 Photo Orientation: S (171 degrees) Stream type: Plane bed



Photo Type: Downstream View Location: 38.82402, -80.52511 Photo Orientation: SW (208 degrees) Stream type: Plane bed

Spread C Stream S-L60

Braxton County



Photo Type: Downstream View Location: 38.82417, -80.52515 Photo Orientation: NW (314 degrees) Stream type: Plane bed Notes: Tires and instream debris not associated with the MVP Project



Photo Type: Downstream View Location: 38.82409, -80.52528 Photo Orientation: W (275 degrees) Stream type: Plane bed Notes: Tires and instream debris not associated with the MVP Project Spread C Stream S-LL1

Braxton County



Photo Type: Downstream View Location: 38.82359, -80.52537 Photo Orientation: SE (147 degrees) Stream type: Poorly formed riffle-pool complex



Photo Type: Downstream View Location: 38.82366, -80.52541 Photo Orientation: SE (149 degrees) Stream type: Poorly formed riffle-pool complex

Spread C Stream S-LL1

Braxton County



Photo Type: Downstream View Location: 38.82362, -80.52528 Photo Orientation: NE (51 degrees) Stream type: Poorly formed riffle-pool complex



Photo Type: Downstream View Location: 38.82362, -80.52530 Photo Orientation: SE (120 degrees) Stream type: Poorly formed riffle-pool complex Spread C Stream S-H132

Braxton County



Photo Type: Upstream View Location: 38.75148, -80.51483 Photo Orientation: S (175 degrees) Stream type: Plane bed



Photo Type: Upstream View Location: 38.75147, -80.51484 Photo Orientation: SW (203 degrees) Stream type: Plane bed

Spread C Stream S-H132

Braxton County



Photo Type: Upstream View Location: 38.75152, -80.51480 Photo Orientation: S (180 degrees) Stream type: Plane bed Spread C Stream S-A100

Webster County



Photo Type: Downstream View Location: 38.67667, -80.47793 Photo Orientation: S (180 degrees) Stream type: Riffle-pool complex



Photo Type: Downstream View Location: 38.67668, -80.47791 Photo Orientation: SE (132 degrees) Stream type: Riffle-pool complex

Spread C Stream S-A100

Webster County



Photo Type: Downstream View Location: 38.67665, -80.47783 Photo Orientation: S (182 degrees) Stream type: Riffle-pool complex



Photo Type: Downstream View Location: 38.67666, -80.47784 Photo Orientation: SW (234 degrees) Stream type: Riffle-pool complex

Spread C Stream S-B34

Webster County



Photo Type: Substrate Location: 38.49387, -80.56133 Photo Orientation: S (177 degrees) Stream type: Step pool



Photo Type: Upstream View Location: 38.49379, -80.56134 Photo Orientation: W (276 degrees) Stream type: Step pool

Spread C Stream S-B34

Webster County



Photo Type: Upstream View Location: 38.49379, -80.56134 Photo Orientation: W (277 degrees) Stream type: Step pool Spread D Stream S-E58

Webster County



Photo Type: Upstream View Location: 38.44358, -80.55188 Photo Orientation: N (353 degrees) Stream Type: Plane bed Spread D Stream S-J32

Nicholas County



Photo Type: Downstream View Location: 38.33175, -80.67051 Photo Orientation: E (101 degrees) Stream type: Riffle-pool complex



Photo Type: Downstream View Location: 38.33175, -80.67051 Photo Orientation: E (79 degrees) Stream type: Riffle-pool complex

Spread D Stream S-J32

Nicholas County



Photo Type: Downstream View Location: 38.33182, -80.67044 Photo Orientation: NE (66 degrees) Stream type: Riffle-pool complex



Photo Type: Downstream View Location: 38.33182, -80.67041 Photo Orientation: E (85 degrees) Stream type: Riffle-pool complex

Spread F Stream S-D31

Monroe County



Photo Type: Downstream View Location: 37.55414, -80.71088 Photo Orientation: SE (142 degrees) Stream Type: Plane bed Spread I Stream S-CC1

Pittsylvania County



Photo Type: Downstream View Location: 36.89393, -79.44573 Photo Orientation: S (176 degrees) Stream Type: Step pool



Photo Type: Downstream View Location: 36.89393, -79.44573 Photo Orientation: S (177 degrees) Stream Type: Step pool

Spread I Stream S-G9

Pittsylvania County



Photo Type: Downstream View Location: 36.95930, -79.58651 Photo Orientation: S (168 degrees) Stream type: Step pool



Photo Type: Upstream View Location: 36.95947, -79.58637 Photo Orientation: NE (43 degrees) Stream type: Step pool Spread I Stream S-D3

Pittsylvania County



Photo Type: Upstream View Location: 36.96560, -79.60554 Photo Orientation: N (358 degrees) Stream Type: Plane bed



Photo Type: Downstream View Location: 36.96558, -79.60549 Photo Orientation: S (169 degrees) Stream Type: Plane bed Spread I Stream S-E17

Franklin County



Photo Type: Downstream View Location: 37.00047, -79.74285 Photo Orientation: SE (138 degrees) Stream type: Step pool



Photo Type: Upstream View Location: 37.00047, -79.74292 Photo Orientation: NW (303 degrees) Stream type: Step pool

Spread I Stream S-G20

Franklin County



Photo Type: Downstream View Location: 37.01737, -79.75990 Photo Orientation: NE (49 degrees) Stream type: Riffle-pool complex



Photo Type: Upstream View Location: 37.01735, -79.76000 Photo Orientation: S (199 degrees) Stream type: Riffle-pool complex

Spread I Stream S-II2

Franklin County



Photo Type: Downstream View Location: 37.04916, -79.90859 Photo Orientation: NE (58 degrees) Stream type: Step pool



Photo Type: Upstream View Location: 37.04921, -79.90859 Photo Orientation: W (248 degrees) Stream type: Step pool Spread I Stream S-IJ10

Franklin County



Photo Type: DownStream View Location: 37.08917, -80.00496 Photo Orientation: Unavailable Stream type: Poorly formed riffle-pool complex



Photo Type: Upstream View Location: 37.08914, -80.00495 Photo Orientation: NW (297 degrees) Stream type: Poorly formed riffle-pool complex

Spread H Stream S-II4

Franklin County



Photo Type: Downstream View Location: 37.11559, -80.06033 Photo Orientation: S (158 degrees) Stream type: Plane bed



Photo Type: Upstream View Location: 37.11561, -80.06028 Photo Orientation: NW (336 degrees) Stream type: Plane bed

Spread H Stream S-IJ88

Roanoke County



Photo Type: DownStream View Location: 37.16846, -80.13820 Photo Orientation: SW (246 degrees) Stream type: Riffle-pool complex



Photo Type: Upstream View Location: 37.16843, -80.13821 Photo Orientation: E (78 degrees) Stream type: Riffle-pool complex

Spread H Stream S-C21

Montgomery County



Photo Type: Downstream View Location: 37.25184, -80.25908 Photo Orientation: S (189 degrees) Stream type: Plane bed



Photo Type: Upstream View Location: 37.25187, -80.25909 Photo Orientation: N (9 degrees) Stream type: Plane bed

Spread G Stream S-NN17

Giles County



Photo Type: Downstream View Location: 37.31154, -80.51623 Photo Orientation: SW (234 degrees) Stream type: Riffle-pool complex



Photo Type: Upstream View Location: 37.31160, -80.51607 Photo Orientation: E (80 degrees) Stream type: Riffle-pool complex

Spread G Stream S-OO6

Montgomery County



Photo Type: Downstream View Location: 37.31358, -80.40464 Photo Orientation: N (21 degrees) Stream type: Riffle-pool complex



Photo Type: Upstream View Location: 37.31360, -80.40463 Photo Orientation: SW (208 degrees) Stream type: Riffle-pool complex

Spread G Stream S-QQ2

Craig County



Photo Type: Downstream View Location: 37.33318, -80.42950 Photo Orientation: W (268 degrees) Stream type: Poorly formed riffle-pool complex



Photo Type: Upstream View Location: 37.33315, -80.42942 Photo Orientation: E (99 degrees) Stream type: Poorly formed riffle-pool complex

Spread G Stream S-S5

Giles County



Photo Type: Downstream View Location: 37.36015, -80.68384 Photo Orientation: W (248 degrees) Stream type: Plane bed



Photo Type: Upstream View Location: 37.36022, -80.68382 Photo Orientation: NE (31 degrees) Stream type: Plane bed

Spread I Stream S-DD3

Franklin County



Photo Type: Riffle, Upstream View Location: 36.96858, -79.64434 Photo Orientation: NW (310 degrees) Stream type: Riffle-pool complex



Photo Type: Substrate Location: 36.96871, -79.64429 Photo Orientation: NE (30 degrees) Stream type: Riffle-pool complex

Spread I Stream S-CD6

Franklin County



Photo Type: Riffle, Upstream View Location: 37.05780, -79.91349 Photo Orientation: W (273 degrees) Stream type: Riffle-pool complex



Photo Type: Substrate Location: 37.05766, -79.91369 Photo Orientation: NE (54 degrees) Stream type: Riffle-pool complex

Spread I Stream S-CD6

Franklin County



Photo Type: Substrate Location: 37.05783, -79.91351 Photo Orientation: NE (62 degrees) Stream type: Riffle-pool complex Spread I Stream S-C14

Franklin County



Photo Type: Downstream View Location: 37.06388, -79.92184 Photo Orientation: S (157 degrees) Stream type: Plane bed



Photo Type: Downstream View Location: 37.06389, -79.92189 Photo Orientation: SE (153 degrees) Stream type: Plane bed

Spread I Stream S-EF12

Franklin County



Photo Type: Riffle, Upstream View Location: 37.07332, -79.94017 Photo Orientation: W (291 degrees) Stream type: Plane bed



Photo Type: Substrate Location: 37.07334, -79.94024 Photo Orientation: NE (43 degrees) Stream type: Plane bed

Spread I Stream S-E28 East

Franklin County



Photo Type: Downstream View Location: 37.08292, -79.94564 Photo Orientation: SE (135 degrees) Stream type: Riffle-pool complex



Photo Type: Upstream View Location: 37.08277, -79.94555 Photo Orientation: NW (336 degrees) Stream type: Riffle-pool complex

Spread I Stream S-E28 MID

Franklin County



Photo Type: Riffle, Upstream View Location: 37.08522, -79.94866 Photo Photo Orientation: Nw (336 degrees) Stream type: Riffle-pool complex



Photo Type: Substrate Location: 37.08548, -79.94867 Photo Orientation: NE (33 degrees) Stream type: Riffle-pool complex

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Spread I Stream S-E28 West

Franklin County



Photo Type: Upstream View Location: 37.08900, -79.96124 Photo Orientation: NW (298 degrees) Stream type: Riffle-pool complex



Photo Type: Downstream View Location: 37.08902, -79.96124 Photo Orientation: SE (124 degrees) Stream type: Riffle-pool complex

Spread I Stream S-C19

Franklin County



Photo Type: Upstream View Location: 37.05646, -79.82983 Photo Orientation: N (14 degrees) Stream type: Riffle-pool complex



Photo Type: Substrate Location: 37.05476, -79.82983 Photo Orientation: SW (241 degrees) Stream type: Riffle-pool complex

Spread I Stream S-C17

Franklin County



Photo Type: Upstream View Location: 37.05811, -79.91806 Photo Orientation: NE (26 degrees) Stream type: Embedded reach



Photo Type: Riffle, Upstream View Location: 37.05797, -79.91785 Photo Orientation: NE (61 degrees) Stream type: Embedded reach

Spread I Stream S-C17

Franklin County



Photo Type: Substrate Location: 37.05823, -79.91803 Photo Orientation: North (17 degrees) Stream type:Embedded reach



Photo Type: Substrate Location: 37.05808, -79.91762 Photo Orientation: E (69 degrees) Stream type: Embedded reach

Spread I Stream S-D22

Franklin County



Photo Type: Riffle, Upstream View Location: 37.06997, -79.92988 Photo Orientation: NE (48 degrees) Stream type: Embedded plane bed



Photo Type: Substrate Location: 37.06998, -79.92984 Photo Orientation: SE (114 degrees) Stream type: Embedded plane bed

Spread I Stream S-D23

Franklin County



Photo Type: Riffle, Upstream View Location: 37.06931, -79.93105 Photo Orientation: N (3 degrees) Stream type: Riffle-pool complex



Photo Type: Upstream View Location: 37.06983, -79.93083 Photo Orientation: N (340 degrees) Stream type: Riffle-pool complex

Spread H Stream S-IJ43

Roanoke County



Photo Type: Upstream View Location: 37.13843, -80.14010 Photo Orientation: S (185 degrees) Stream type: Plane bed

Spread I Stream S-D23

Franklin County



Photo Type: Substrate Location: 37.06945, -79.93109 Photo Orientation: SW (209 degrees) Stream type: Riffle-pool complex



Photo Type: Substrate Location: 36.06954, -79.93122 Photo Orientation: N (17 degrees) Stream type: Riffle-pool complex

Spread G Stream S-RR13

Montgomery County



Photo Type: Riffle, Upstream View Location: 37.31496, -80.40217 Photo Orientation: S (197 degrees) Stream type: Step pool



Photo Type: Substrate Location: 37.31472, -80.40242 Photo Orientation: NW (301 degrees) Stream type: Step pool

Spread G Stream S-RR13

Montgomery County



Photo Type: Substrate Location: 37.31493, -80.40223 Photo Orientation: SE (133 degrees) Stream type: Step pool Spread I Stream S-G2

Pittsylvania County



Photo Type: Upstream View Location: 36.85201, -79.38535 Photo Orientation: W (278 degrees) Stream type: Plane bed



Photo Type: Substrate Location: 36.85198, -79.38540 Photo Orientation: S (177 degrees) Stream type: Plane bed Spread I Stream S-Q3

Pittsylvania County



Photo Type: Upstream View Location: 36.88417, -79.42835 Photo Orientation: NE (24 degrees) Stream type: Riffle-pool complex



Photo Type: Substrate Location: 36.88422, -79.42826 Photo Orientation: W (265 degrees) Stream type: Riffle-pool complex

Spread I Stream S-EF26

Pittsylvania County



Photo Type: Riffle, Upstream View Location: 36.82784, -79.34950 Photo Orientation: NW (298 degrees) Stream type: Plane bed



Photo Type: Upstream View Location: 36.82796, -79.34961 Photo Orientation: N (359 degrees) Stream type: Plane bed

Spread I Stream S-EF26

Pittsylvania County



Photo Type: Substrate Location: 36.82808, -79.34969 Photo Orientation: N (12 degrees) Stream type: Plane bed



Photo Type: Substrate Location: 36.82743, -79.34940 Photo Orientation: SW (208 degrees) Stream type: Plane bed Spread I Stream S-H54

Pittsylvania County



Photo Type: Riffle, Upstream View Location: 36.84187, -79.36620 Photo Orientation: S (192 degrees) Stream Type: Step pool



Photo Type: Substrate Location: 36.84187, -79.36616 Photo Orientation: NE (40 degrees) Stream Type: Step pool Spread I Stream S-G4

Pittsylvania County



Photo Type: Riffle, Upstream View Location: 36.91706, -79.49272 Photo Orientation: SE (114 degrees) Stream Type: Riffle-pool complex



Photo Type: Substrate Location: 36.91672, -79.49268 Photo Orientation: E (102 degrees) Stream Type: Riffle-pool complex

Spread I Stream S-H13

Pittsylvania County



Photo Type: Riffle, Upstream View Location: 36.92487, -79.51748 Photo Orientation: N (14 degrees) Stream type: Riffle-pool complex



Photo Type: Riffle, Downstream View Location: 36.92470, -79.51763 Photo Orientation: NE (32 degrees) Stream type: Riffle-pool complex

Spread I Stream S-H13

Pittsylvania County



Photo Type: Substrate Location: 36.92480, -79.51761 Photo Orientation: W (273 degrees) Stream type: Riffle-pool complex Spread I Stream S-C3

Pittsylvania County



Photo Type: Upstream View Location: 36.92973, -79.52610 Photo Orientation: SW (208 degrees) Stream Type: Riffle-pool complex



Photo Type: Downstream View Location: 36.92978, -79.52601 Photo Orientation: NE (28 degrees) Stream Type: Riffle-pool complex Spread I Stream S-C7

Pittsylvania County



Photo Type: Downstream View Location: 36.94476, -79.57110 Photo Orientation: N (346 degrees) Stream type: Plane bed



Photo Type: Downstream View Location: 36.94461, -79.57138 Photo Orientation: W (263 degrees) Stream type: Plane bed

Pittsylvania County

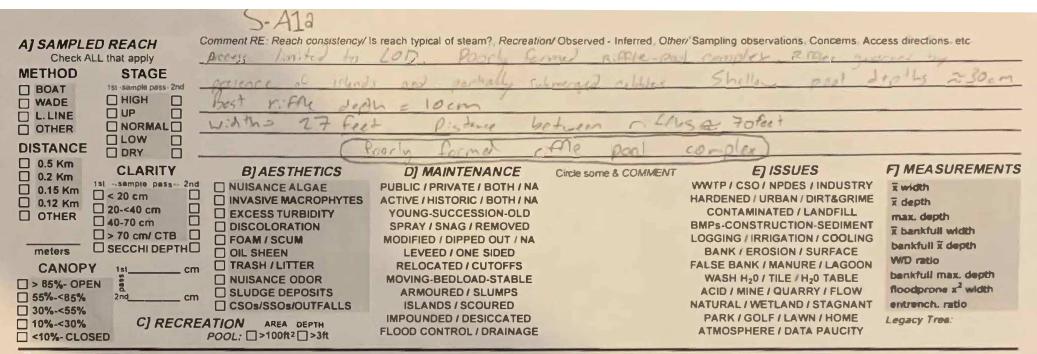


Photo Type: Downstream View Location: 36.94477, -79.57111 Photo Orientation: W (290 degrees) Stream type: Plane bed



Stream Dataforms

ChicEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet QHEI Score:
Stream & Location: S-Ala RM: Date: 1/29/21
River Code:STORET #: Lat/Long.: 39.553946, -80.545046
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES: estimate % or note every type present Check ONE (Or 2 & average) BEST TYPES BEST TYPES BEST TYPES BOOL RIFFLE BOULDER [9] OTHER TYPES DETRITUS [3] Check ONE (Or 2 & average) BLDR /SLABS [10] HARDPAN [4] HARDPAN [4] HEAVY [-2] BOULDER [9] DETRITUS [3] TILLS [1] NORMAL [0] BEDR /SLABS [10] DETRITUS [3] TILLS [1] NORMAL [0] GRAVEL [7] BILT [2] HARDPAN [0] FREE [1] Substrate GRAVEL [7] SILT [2] HARDPAN [0] FREE [1] MODERATE [-1] SAND [6] ARTIFICIAL [0] SANDSTONE [0] FREE [1] MODERATE [-1] NUMBER OF BEST TYPES: 4 or more [2] sludge from point-sources) LACUSTURINE [0] MODERATE [-1] MAXIMUM Comments 3 or less [0] SHALE [-1] NONE [1] NONE [1] MOUNT Quality: 3-Highest quality in moderate or greater amounts, be 1 not of highest quality or in small amounts of highest (I) Advarce [2] Check ONE (Or 2 & average) Check ONE (Or 2 & average) EXTENSIVE >75% [1] Quality: 3-Highest quality in moderate or greater amounts, be 1 not of highest quality or in small amounts of highest (I) Check ONE (Or 2 & average) C
SHALLOWS (IN SLOW WATER) [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] NEARLY ABSENT <5% [1] Comments Cover Maximum 20
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] Channel NONE [1] POOR [1] RECENT OR NO RECOVERY [1] Comments Read out to stream Recover Channel 25 Free 4] BACK HEROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)
River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY EROSION WIDE > 50m [4] FOREST, SWAMP [3] NONE / LITTLE [3] MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] MODERATE [2] NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1] HEAVY / SEVERE [1] VERY NARROW < 5m [1]
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH CHANNEL WIDTH CHANNEL WIDTH Check ONE (ONLY) Check ONE (Or 2 & average) Check ALL that apply 1 > 1m [6] POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] 0.7~<1m [4] POOL WIDTH = RIFFLE WIDTH [1] VERY FAST [1] INTERSTITIAL [-1] 0.4~<0.7m [2] POOL WIDTH > RIFFLE WIDTH [0] FAST [1] INTERMITTENT [-2] 0.2~<0.4m [1] C.2~<0.4m [1] C
Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). INO RIFFLE [metric=0] RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFFLE / RUN EMBEDDEDNESS BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] NONE [2] NONE [2] BEST AREAS 5-10cm [1] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] LOW [1] BEST AREAS < 5cm Retrice 0] Comments (6)
6] GRADIENT (DRAINAGE AREA (mi ²) HIGH - VERY HIGH [10-6] EPA 4520



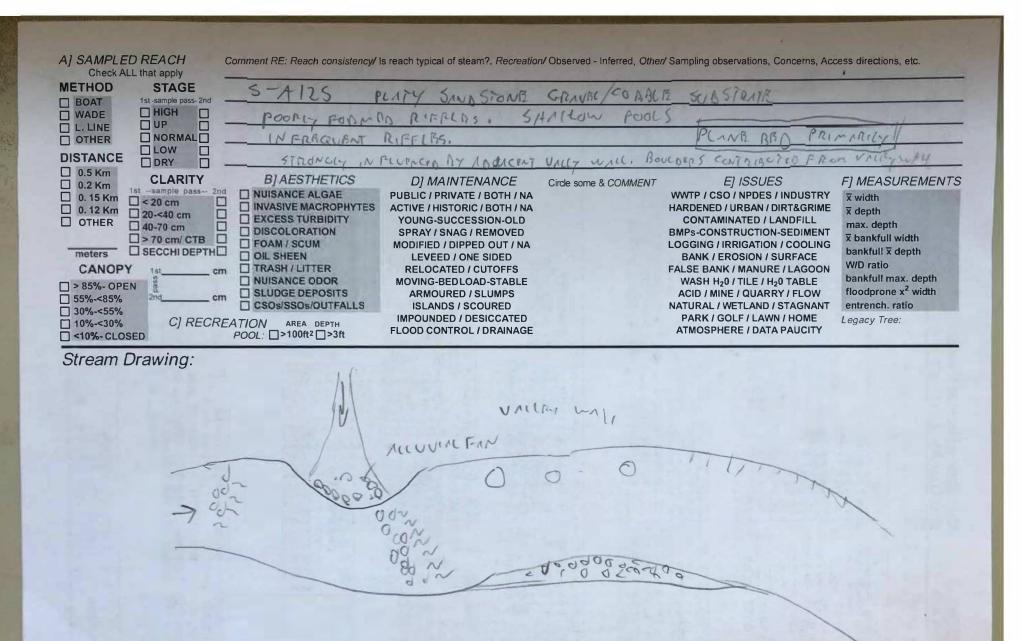
8412

RIFFLE

Stream Drawing:



Stream & Location:	5-A125	Assessment Field	RM:	. Date: 11/7/21
	2111-	Scorers Full Name &		
River Code: -	- STORET #	ь. <u>L</u>	.at./ Long.: 39.503	0ffice verified
1 SUBSTRATE Check	ONLY Two substrate TYPE E	BOXES:	Check ONE (Or :	
DECT TVDEC	te % or note every type prese POOL RIFFLE OTHER		ORIGIN	QUALITY
BLDR /SLABS [10]		PAN [4] [] LIME	ESTONE [1]	HEAVY [-2]
BOULDER [9]			.S [1] FLANDS [0] SIL	
GRAVEL [7]	🛛 🖾 SILT [2		DPAN [0]	FREE [1]
SAND [6] BEDROCK [5]	ARTIFI (Score	natural substrates; ignore RIP/I	RAP [0]	No MODERATE [-1] Maxim
NUMBER OF BEST T	YPES: 4 or more [2] sh	udge from point-sources) LAC	USTURINE [0]	S NORMAL [0] 20
Comments			L FINES [-2]	L'indire [1]
1 INSTREAM COVE	R Indicate presence 0 to 3: 0	-Absent, 1-Very small amounts or i	if more common of marg	ginal AMOUNT
quality; 3-Highest quality in	quality, 2-Moderate amoun moderate or greater amount	its, but not of highest quality or in s ts (e.g., very large boulders in dee	small amounts of highes to or fast water, large	Check ONE (Or 2 & average)
diameter log that is stable, UNDERCUT BANKS	well developed rootwad in de	eep / fast water, or deep, well-defin DLS > 70cm [2] OXBOWS	ned, functional pools.	EXTENSIVE >75% [11] MODERATE 25-75% [7]
OVERHANGING VE	GETATION [1] ROO	DTWADS [1] AQUATIC	MACROPHYTES [1]	SPARSE 5-<25% [3]
SHALLOWS (IN SLO ROOTMATS [1]	OW WATER) [1] BOU	ILDERS [1] LOGS OR	WOODY DEBRIS [1]	□ NEARLY ABSENT <5% [1]
Comments				Cover Maximum
A ALLANNEL MORAL				20
	OLOGY Check ONE in eac ELOPMENT CHAN		ABILITY	
	XCELLENT [7] INONE	[6] 🗌 HI	GH [3]	
	IOOD [5] RECOV		ODERATE [2] DW [1]	
NONE [1]	La relation (relation)	T OR NO RECOVERY [1]		Channel 12
Comments				Maximum 12
		Check ONE in each category for EA		nk & average)
River right looking downstream	LR	LR		
	U WIDE > 50m [4]	[3] Grorest, SWAMP [3]		CONSERVATION TILLAGE [1]
MODERATE [2] HEAVY / SEVERE [1]	□ □ NARROW 5-10m [2]	m [1] C RESIDENTIAL, PARI	K, NEW FIELD [1]	MINING / CONSTRUCTION [0]
			OWCROP [0] past	ate predominant land use(s) 100m riparian. Riparian
Comments				Maximum 10
5] POOL / GLIDE ANI	D RIFFLE / RUN QUAL	ITY		
MAXIMUM DEPTH	CHANNEL WID	TH CURRENT		Recreation Potential
	Check ONE (Or 2 & av	VIDTH [2] TORRENTIAL [-1]		Primary Contact Secondary Contact
0.7-<1m [4]	POOL WIDTH = RIFFLE W POOL WIDTH > RIFFLE W	VIDTH [1] VERY FAST [1]	INTERSTITIAL [-1]	(circle one and commont on back)
0.2-<0.4m [1]		MODERATE [1]	EDDIES [1]	Pool /
□ < 0.2m [0] Comments		Indicate for reach	- pools and riffies.	Current 4
				12
of riffle-obligate s	ional riffles; Best area species:	s must be large enough t Check ONE (Or 2 & average).	o support a popu	lation
RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTR	Construction of the local sector of the local	UN EMBEDDEDNESS
BEST AREAS > 10cm [2] BEST AREAS 5-10cm [1]	MAXIMUM > 50cm [2]	STABLE (e.g., Cobble, Bould MOD. STABLE (e.g., Large G		NONE [2] LOW [1]
	Strate of Concession of the Strategy of the St			
BEST AREAS < 5cm [metric=0]		UNSTABLE (e.g., Fine Gravel,	, Sand) [v]	MODERATE [0] Rifle / Run EXTENSIVE [-1] Maximum

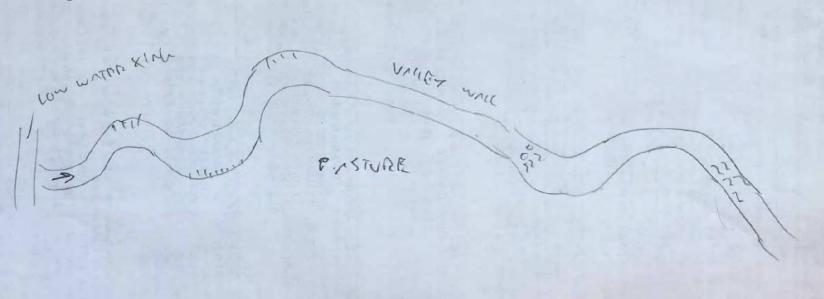


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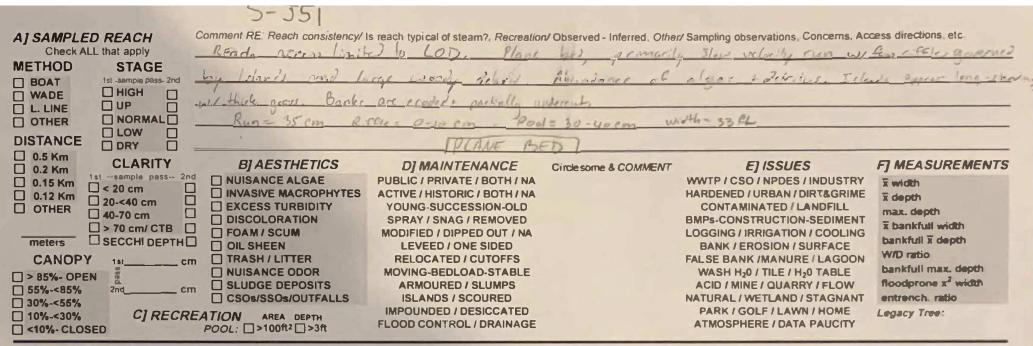
OhioEPA		itat Evaluation Inde sment Field Sheet	• QHEI Score:	
Stream & Location:	5-362	8:50	_RM: Date: 1 [117/21
		ers Full Name & Affiliation		Office verifie
River Code:	STORET #: NLY Two substrate TYPE BOXES;	(NAD 83 - decimal	39.445033, -80.482635	location
- · estimate	% or note every type present		ONE (Or 2 & average) QUALITY	,
BEST TYPES PO			HEAVY [-2]	
		TILLS [1]	SILT MODERATE	
GRAVEL [7]	[] MUCK [2] [] [] SILT [2]	HARDPAN [0]		
SAND [6] BEDROCK [5]	CScore natural subside	trates: ignore RIP/RAP [0]	DEONE MODERATE	[-2] [-1] Maxim
NUMBER OF BEST TY		oint-sources) LACUSTURINE[0		20
Comments		COAL FINES [-2]		
2] INSTREAM COVER	Indicate presence 0 to 3: 0-Absent: 1-Ve	ery small amounts or if more comm	on of marginal AMOUN	т
quality; 3-Highest quality in r	quality; 2-Moderate amounts, but not of noderate or greater amounts (e.g., very	large boulders in deep or fast wate	r, large Check ONE (Or 2 a	
diameter log that is stable, w UNDERCUT BANKS [ell developed rootwad in deep / fast wat 1] POOLS > 70cm		RS [1] MODERATE 25-	75% [7]
OVERHANGING VEGI SHALLOWS (IN SLOV		AQUATIC MACROPHY LOGS OR WOODY DE		
ROOTMATS [1]		_		over
Comments			Maxi	imum 20
	LOGY Check ONE in each category (Or 2 & average)		
	LOPMENT CHANNELIZAT			
MODERATE [3] GO	OD [5] RECOVERED [4]	MODERATE [2]		
LOW [2] FAII NONE [1] Ø POO		LOW [1]	Cha	annel
Comments		'	Maxi	imum 13
River right looking downstream		FLOOD PLAIN QUAL FOREST, SWAMP [3]	I R	
	MODERATE 10-50m [3]	SHRUB OR OLD FIELD [2]		TRIAL IOT
MODERATE [2] HEAVY / SEVERE [1]	VERY NARROW < 5m [1] [RESIDENTIAL, PARK, NEW FIELD FENCED PASTURE [1]	[1] L MINING / CONSTRU	ICTION [0]
Comments		OPEN PASTURE, ROWCROP [0]	past 100m riparian. Rip	arian
commente			Maxi	mum 10
5] POOL / GLIDE AND MAXIMUM DEPTH	RIFFLE / RUN QUALITY CHANNEL WIDTH	CURRENT VELOCITY	Recreation Po	tontial
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	Primary Con	
	POOL WIDTH > RIFFLE WIDTH [2] [POOL WIDTH = RIFFLE WIDTH [1] [TORRENTIAL [-1] 🕅 SLOW [1] VERY FAST [1] 🗌 INTERSTI	Secondary C	ontact
0.4-<0.7m [2]	POOL WIDTH > RIFFLE WIDTH [0]	GAST [1] INTERMIT	TENT [-2]	
□ < 0.2m [0]		Indicate for reach - pools and ri		Pool /
Comments				mum 12
Indicate for functio	nal riffles; Best areas must be ecies: Check ONE	e large enough to support (Or 2 & average).	a population	LE Imetric=
RIFFLE DEPTH	RUN DEPTH RIFFLE	/ RUN SUBSTRATE RIF	FLE / RUN EMBEDDEDN	
BESTAREAS > 10cm [2] BESTAREAS 5-10cm [1]	□ MAXIMUM > 50cm [2] □ STABLE MAXIMUM < 50cm [1] MOD. ST.	(e.g., Cobble, Boulder) [2] ABLE (e.g., Large Gravel) [1]	□ NONE [2] ඔ LOW [1]	
BEST AREAS < 5cm [metric=0]		LE (e.g., Fine Gravel, Sand) [0]		Riffle / 3
Comments			EXTENSIVE [-1] Max	imum
GRADIENT	/mi) VERY LOW - LOW [2-4]			0

AJ SAMPLED REACH Check ALL that apply METHOD STAGE BOAT 1st-sample pass-2nd WADE HIGH L. LINE UP OTHER NORMAL DISTANCE DRY	Comment RE: Reach consistency/ 1 S-JGZ 70 2 RIFFLUS/ 100 CHANNE WIDTH JRCY POORLY FOR	M. SHOULD FLOOD VERY SLOW F	PUNE, 30% A OUT & PEOL I LOW. LEAF DR	N Sampling observations, Concerns, AC	20/R
0.5 Km CLARITY 0.2 Km 1stsample pass 2nd 0.15 Km < 20 cm 0.12 Km 20-<40 cm 0.12 Km 20-<40 cm 0.12 Km 20-<40 cm 0.12 Km 20-<40 cm 0.70 cm/ CTB	B) AESTHETICS NUISANCE ALGAE INVASIVE MACROPHYTES EXCESS TURBIDITY DISCOLORATION FOAM / SCUM OIL SHEEN TRASH / LITTER NUISANCE ODOR SLUDGE DEPOSITS CSOs/SSOs/OUTFALLS	D] MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE	Circle some & COMMENT	<i>EJ ISSUES</i> WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	F] MEASUREMENTS \bar{x} width \bar{x} depth max. depth \bar{x} bankfull width bankfull \bar{x} depth W/D ratio bankfull max. depth floodprone x ² width entrench. ratio Legacy Tree:

Stream Drawing:



OhicEPA	Qualitative Habitat Evand Use Assessmer		I Score:
Stream & Location:			
		Name & Affiliation: LK, MB	Office weithed
River Code:		1/Long. 39.398116, -80.477174	Office verified location
1] SUBSTRATE Check (estimate	DNLY Two substrate TYPE BOXES: % or note every type present	Check ONE (Or 2 & av	erage)
BEST TYPES PC	OOL RIFFLE OTHER TYPES POOL RIFF	LE ORIGIN	QUALITY
BLDR /SLABS [10]	[] [] HARDPAN [4]		HEAVY [-2] MODERATE [-1] Substrate
COBBLE [8]		WETLANDS [0]	NORMAL [0]
GRAVEL [7]	🔲 🔲 SILT [2]		FREE [1] 19
BEDROCK [5]	(Score natural substrates; ign		EXTENSIVE [-2] Maximum
	PES: 4 or more [2] sludge from point-source	es) LACUSTURINE [0]	NORMAL [0] 20
Comments	3 or less [0]	COAL FINES [-2]	I NONE [1]
2] INSTREAM COVER	Indicate presence 0 to 3. 0-Absent, 1-Very small	amounts or if more common of marginal	AMOUNT
quality: 3-Highest quality in	quality, 2-Moderate amounts, but not of highest of moderate or greater amounts (e.g., very large bou	ilders in deen or fast water large Un	eck ONE (Or 2 & average)
UNDERCUT BANKS	well developed rootwad in deep / fast water, or dee	ep, well-defined, functional pools.	EXTENSIVE >75% [11] MODERATE 25-75% [7]
OVERHANGING VEG	SETATION [1] ROOTWADS [1]	AQUATIC MACROPHYTES [1]	SPARSE 5-<25% [3]
SHALLOWS (IN SLOT ROOTMATS [1]	W WATER) [1] BOULDERS [1]	LOGS OR WOODY DEBRIS [1]	NEARLY ABSENT <5% [1]
Comments			Maximum 20
	LOGY Check ONE in each category (Or 2 & avec and the second secon	verage) STABILITY	
	CELLENT [7] NONE [6]	🔲 нідн [3]	
MODERATE [3] GO LOW [2] FAI	DOD [5] RECOVERED [4] IR [3] RECOVERING [3]	MODERATE [2]	
NONE [1]	OR [1] RECENT OR NO RECOVER	Y [1]	Channel 11
Comments			Maximum 20
4] BANK EROSION AI River right looking downstream	ND RIPARIAN ZONE Check ONE in each ca	Itegory for EACH BANK (Or 2 per bank & a	average)
L R EROSION		LR	NSERVATION TILLAGE [1]
	MODERATE 10-50m [3]	OR OLD FIELD [2]	BAN OR INDUSTRIAL [0]
HEAVY / SEVERE [1]	NARROW 5-10m [2] RESIDE VERY NARROW < 5m [1] FENCE	NTIAL, PARK, NEW FIELD [1]	
		ASTURE, ROWCROP [0] past 100m	redominant land use(s)
Comments			Maximum 10
5] POOL / GLIDE AND MAXIMUM DEPTH	RIFFLE / RUN QUALITY CHANNEL WIDTH C		Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	Primary Contact
	POOL WIDTH > RIFFLE WIDTH [2] TORR	ENTIAL [-1] SLOW [1]	Secondary Contact
	POOL WIDTH = RIFFLE WIDTH [1] VERY POOL WIDTH > RIFFLE WIDTH [0] FAST	FAST [1] LINTERSTITIAL [-1]	circle one and comment on back)
0.2-<0.4m [1]	MODE	RATE [1] EDDIES [1]	Pool/
Comments	Indic	ate for reach - pools and riffles.	Current 4
Kittley	due to LWD or islands		Maximum 12
Indicate for function	onal riffles; Best areas must be large	enough to support a population	
of riffle-obligate sp RIFFLE DEPTH			NO RIFFLE [metric=0]
BEST AREAS > 10cm [2]	MAXIMUM > 50cm [2] STABLE (e.g., Co	obble, Boulder) [2]	
BEST AREAS 5-10cm [1] BEST AREAS < 5cm	MAXIMUM < 50cm [1] MOD. STABLE (e	.g., Large Gravel) [1]	V [1]
[metric=0]	E UNSTABLE (0.g.,	Fine Gravel, Sand) [0]	ENSIVE L11 Run 1
Comments Alundaur	of silt + detritus due to low velocity		ENSIVE [-1] Run Maximum
	ft/mi) VERY LOW - LOW [2-4]	%POOL: 5 %GLIDE:	00
DRAINAGE AREA		\leq	Gradient Maximum
-	mi ²) HIGH - VERY HIGH [10-6]	%RUN: (90)%RIFFLE:(5 10



Stream Drawing:



That DERECTION EFFIRE

	9:30 RM: Date: [[17]21
ream & Location: <u>5-AIOA</u>	corers Full Name & Affiliation: LK
ver Code:STORET #:	Lat./Long.: 39, 370005, -80.484974 Office verified
SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present	Check ONE (Or 2 & average) ORIGIN QUALITY
BEST TYPES POOL RIFFLE OTHER TYPES	POOL RIFFLE LIMESTONE [1] HEAVY [-2]
BOULDER [9] DETRITUS [3] COBBLE [8] MUCK [2]	SILT NORMAL [0] HARDPAN [0] FREE [1]
□ GRAVEL [7] □ □ SILT [2] □ SAND [6] □ ARTIFICIAL [0	SANDSTONE [0] SODED EXTENSIVE [-2]
BEDROCK [5] (Score natural : JMBER OF BEST TYPES: 4 or more [2] sludge fro	m point-sources) LACUSTURINE [0] . 05 NORMAL [0] 20
omments	COAL FINES [-2]
INSTREAM COVER Indicate presence 0 to 3: 0-Absent;	1-Very small amounts or if more common of marginal AMOUNT
quality; 2-Moderate amounts, but n uality; 3-Highest quality in moderate or greater amounts (e.g., iameter log that is stable, well developed roctwad in deep / fas	very large boulders in deep or fast water, large Check ONE (Or 2 & average)
UNDERCUT BANKS [1] POOLS > 70 OVERHANGING VEGETATION [1] ROOTWADS	OCT [2] OXBOWS, BACKWATERS [1] MODERATE 25-75% [7]
SHALLOWS (IN SLOW WATER) [1] BOULDERS ROOTMATS [1]	A REAL AND
omments	- Maximum 20
CHANNEL MORPHOLOGY Check ONE in each categ	
SINUOSITY DEVELOPMENT CHANNELI HIGH [4] EXCELLENT [7] IN NONE [6]	ZATION STABILITY
MODERATE [3] GOOD [5] RECOVERED LOW [2] FAIR [3] RECOVERING	
NONE [1] POOR [1] RECENT OR N	, Maximum 12
PANK EROSION AND DIDADIAN ZONE Chode	20 WE in each category for EACH BANK (Or 2 per bank & average)
River right looking downstream	FLOOD PLAIN QUALITY
NONE / LITTLE [3] MODERATE 10-50m [3]	Image: Display transmission of the second
HEAVY / SEVERE [1] VERY NARROW < 5m [1]	RESIDENTIAL, PARK, NEW FIELD [1] MINING / CONSTRUCTION [0] FENCED PASTURE [1] Indicate predominant land use(s)
comments	OPEN PASTURE, RÓWCROP [0] past 100m riparian. Riparian Maximum Maximum
POOL / GLIDE AND RIFFLE / RUN QUALITY	10
MAXIMUM DEPTH CHANNEL WIDTH	CURRENT VELOCITY Recreation Potential
Check ONE (ONLY!) Check ONE (Or 2 & average) > 1m [6] POOL WIDTH > RIFFLE WIDTH [:	Secondary Longart
□ 0.7<1m [4]	0] Grast [1] INTERSTITIAL [-1] (circle one and comment on back)
廖 0.2-<0.4m [1] □ < 0.2m [0]	MODERATE [1] DOIS and rifles. Pool / Current 4
omments	Maximum 12
	ONE (Or 2 & average).
BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STA	FLE / RUN SUBSTRATE RIFFLE / RUN EMBEDDEDNESS
BEST AREAS 5-10cm [1] □ MAXIMUM < 50cm [1] □ MO BEST AREAS < 5cm □ UNS	D. STABLE (e.g., Large Gravel) [1] LOW [1] STABLE (e.g., Fine Gravel, Sand) [0] MODERATE [0]
[metric=0]	EXTENSIVE [-1] Maximum
GRADIENT (ft/mi) VERY LOW - LOW [2-4	8

A] SAMPLED REACH Comm Check ALL that apply		s reach typical of steam?, Recreation ク	/ Observed - Inferred, Other	✓ Sampling observations, Concerns, Acc	ess directions, etc.
METHOD STAGE	GE L-AIDA ITH A FORGURICY OF POOL RIPFIR SBOURICES				
BOAT 1st -sample pass-2nd			- 1 11- 1122		P.
	POORLY FORMED	Pools.		FINE GANJE RIFFL	5
	Form 13 THEOR	BUI NOT MARITAT.			
	POORLY PORMED	RIFFIR- POOL COMP	UPX .		
	B] AESTHETICS	D] MAINTENANCE	Circle some & COMMENT	E] ISSUES	F] MEASUREMENTS
0.15 Km 1stsample pass 2nd	NUISANCE ALGAE	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	x width
	INVASIVE MACROPHYTES	ACTIVE / HISTORIC / BOTH / NA		HARDENED / URBAN / DIRT&GRIME	x depth
	EXCESS TURBIDITY DISCOLORATION	YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED		CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT	max. depth
□ > 70 cm/ CTB □	FOAM / SCUM	MODIFIED / DIPPED OUT / NA		LOGGING / IRRIGATION / COOLING	x bankfull width bankfull x depth
	OIL SHEEN	LEVEED / ONE SIDED		BANK / EROSION / SURFACE	W/D ratio
	TRASH / LITTER	RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE		FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE	bankfull max. depth
1 2 03%- UPEN @	SLUDGE DEPOSITS	ARMOURED / SLUMPS		ACID / MINE / QUARRY / FLOW	floodprone x ² width
□ 30%-<55%	CSOs/SSOs/OUTFALLS	ISLANDS / SCOURED		NATURAL / WETLAND / STAGNANT	entrench. ratio
10%-<30% C] RECREATION		IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE		PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	Legacy Tree:
CLOSED POO	<i>OL</i> : □ >100ft ² □ >3ft	Leeb control / DRAINAGE		Anilour HERE / DATA / Aboint	

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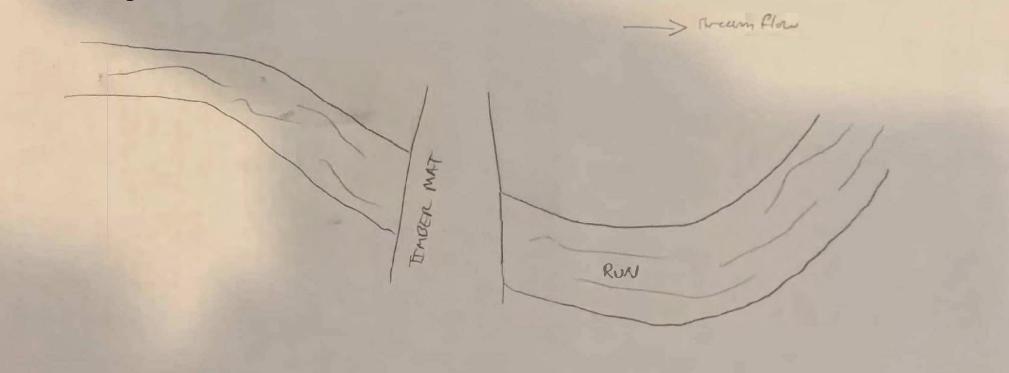
Stream Drawing:

19:20

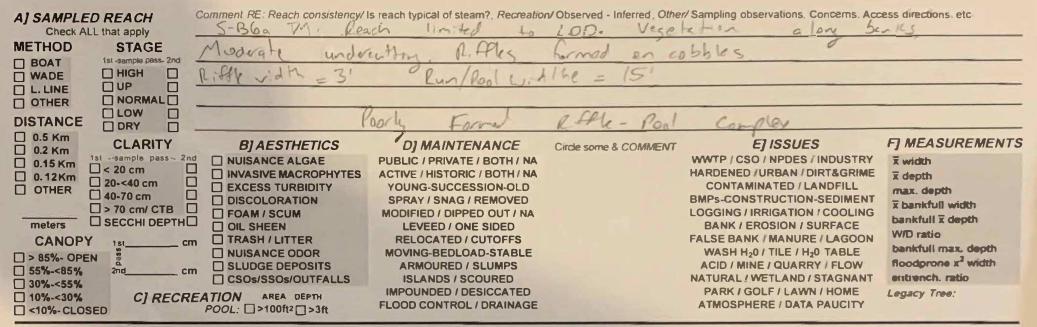
OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet QHEI Score:
Stream & Location: 5-B30 RM: Date: 11/29/06
Scorers Full Name & Affiliation: MB_LKOffice verified
River Code:STORET #:NAD 83_decimal 739.358871, -80.493707 Nocation
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES: estimate % or note every type present Check ONE (Or 2 & average) BEST TYPES OTHER TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE HARDPAN [4]
BOULDER [9] DETRITUS [3] ITLLS [1] SILT NORMAL [0] COBBLE [8] MUCK [2] HARDPAN [0] FREE [1] FREE [1] 18 GRAVEL [7] SILT [2] SAND [6] SAND STORE [0] FREE [1] Maximum BEDROCK [5] Score natural substrates: ignore RIP/RAP [0] MODERATE [-1] Maximum 20
NUMBER OF BEST TYPES: 4 of mote [2] Shale [-1] Inone [1] Comments 3 or less [0]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools. AMOUNT UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKWATERS [1] EXTENSIVE >75% [1] OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHYTES [1] SPARSE 5-<25% [3]
Comments Maximum 20
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] Channel NONE [1] POOR [1] RECENT OR NO RECOVERY [1] Comments
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY EROSION WIDE > 50m [4] FOREST, SWAMP [3] NONE / LITTLE [3] MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] MODERATE [2] NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1] HEAVY / SEVERE [1] VERY NARROW < 5m [1]
ET ROOL / GLIDE AND RIFELE / RUN QUALITY
SJ POOL / GLIDE AND for PEAR OF THE CHANNEL WIDTH CURRENT VELOCITY Recreation Potential MAXIMUM DEPTH Channel WIDTH Check ONE (Or 2 & average) Check ALL that apply Check ALL that apply Check ONE (ONLY!) Check ONE (Or 2 & average) Check ALL that apply Check ALL that apply Primary Contact > 1m [6] POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] INTERSTITIAL [-1] 0.7 < 1m [4]
Comments No Ripples
Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average).
RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFFLE / RUN EMBEDDEDNESS BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] NONE [2] BEST AREAS > 10cm [1] MAXIMUM < 50cm [1]
Comments No Riccia in reach
6] GRADIENT (ft/mi) WERY LOW - LOW [2-4] %POOL: %GLIDE: Gradient
DRAINAGE AREA (mi ²) HIGH - VERY HIGH [10-6] %RUN: 100 %RIFFLE: 10
EDA 4520 DE/16/DE

AJ SAMPLED REACH Check ALL that apply METHOD STAGE BOAT 1st sample pass-2nd WADE HIGH 1 L. LINE UP 1 OTHER NORMAL	S-B3a Comment RE: Reach consistency/ Sircan reach lis wry law gradient	wite to LOD. A	Observed - Inferred, Other	/ Sampling observations. Concerns. Acco	ess directions. etc.
DISTANCE DRY 0.5 Km CLARITY 0.2 Km Sample pass-2r 0.15 Km < 20 cm	 INVASIVE MACROPHYTES INVASIVE MACROPHYTES EXCESS TURBIDITY DISCOLORATION FOAM / SCUM OIL SHEEN TRASH / LITTER NUISANCE ODOR SLUDGE DEPOSITS CSOs/SSOs/OUTFALLS 	DJ MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / OUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE	Circle some & COMMENT	EJ ISSUES WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPS-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON WASH H20 / TILE / H20 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	FJ MEASUREMENTS x width x depth max, depth x benkfull width bankfull x dilpth W/D ratio bankfull max, depth floodprone x ² width entrench, ratio Legacy Tree:

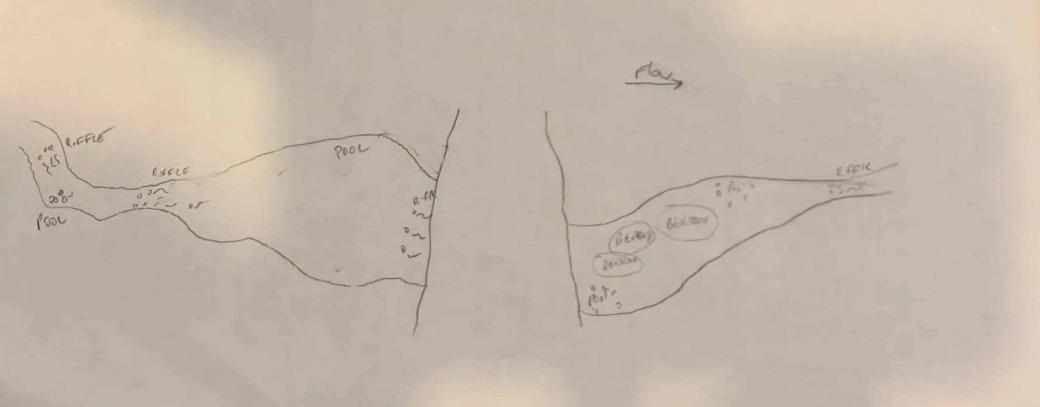
Stream Drawing:



OhioEPA	Qualitative Habitat E and Use Assessme		QHEI Score:
Stream & Location: 5-B	Ga TM		Date: 11291062
River Code:	STORFT # La	Il Name & Affiliation:	-K/MB Office verified location
BEST TYPES POOL RIFFL BLDR /SLABS [10] BOULDER [9] GRAVEL [7] SAND [6] BEDROCK [5] NUMBER OF BEST TYPES: Comments	every type present	Check ONE (C FLE ORIGIN LIMESTONE [1] TILLS [1] S WETLANDS [0] HARDPAN [0] SANDSTONE [0]	Or 2 & average) QUALITY HEAVY [-2] HILT MODERATE [-1] NORMAL [0] FREE [1]
21 INSTREAM COVER Indicate p	Moderate amounts, but not of highest or greater amounts (e.g., very large bo bed rootwad in deep / fast water, or de POOLS > 70cm [2] [1] ROOTWADS [1]	quality or in small amounts of high pulders in deep or fast water, large	Check ONE (Or 2 & average) EXTENSIVE >75% [11] MODERATE 25-75% [7] SPARSE 5-<25% [3]
3] CHANNEL MORPHOLOGY C SINUOSITY DEVELOPME HIGH [4] EXCELLENT MODERATE [3] GOOD [5] LOW [2] FAIR [3] NONE [1] POOR [1] Comments	NT CHANNELIZATION	STABILITY HIGH [3] MODERATE [2] LOW [1]	Channel Maximum 20
	PARIAN WIDTH R E > 50m [4] E DERATE 10-50m [3] E SROW 5-10m [2] E RROW 5-10m [2] E RROW 5-10m [2] E RROW 5-10m [2] E	COOD PLAIN QUALITY ST, SWAMP [3] B OR OLD FIELD [2] ENTIAL, PARK, NEW FIELD [1] ED PASTURE [1]	
Check ONE (ONLY!) Check □ > 1m [6] □ POOL W □ 0.7-<1m [4]	ANNEL WIDTH CONE (Or 2 & average) IDTH > RIFFLE WIDTH [2] TORF IDTH = RIFFLE WIDTH [1] VERY IDTH > RIFFLE WIDTH [0] FAST MOD	CURRENT VELOCITY Check ALL that apply RENTIAL [-1] SLOW [1] (FAST [1] INTERSTITIAL [- [1] INTERMITTENT ERATE [1] EDDIES [1] (cate for reach - pools and riffles.	All Recreation Potential Primary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12 5
of riffle-obligate species: RIFFLE DEPTH RUI BEST AREAS > 10cm [2] MAXIM	NUM > 50cm [2] 💼 STABLE (e.g., C NUM < 50cm [1] 🗌 MOD. STABLE (& average). N SUBSTRATE RIFFLE / cobble, Boulder) [2]	***************************************
DRAINAGE AREA	VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]		LIDE: Gradient FFLE: A Maximum 10



Stream Drawing:

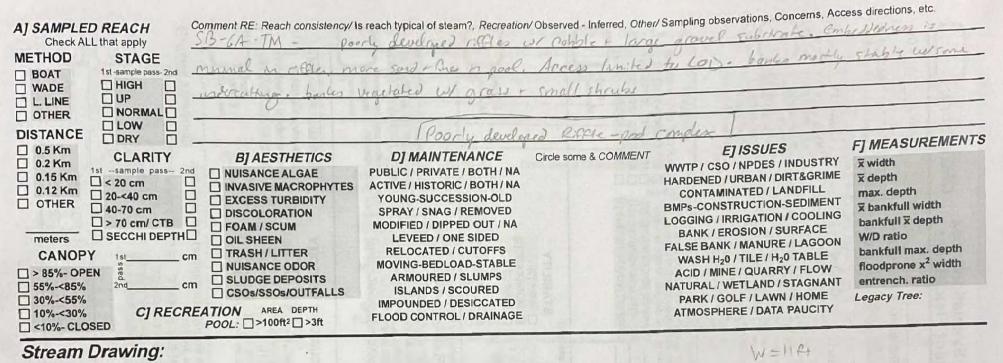


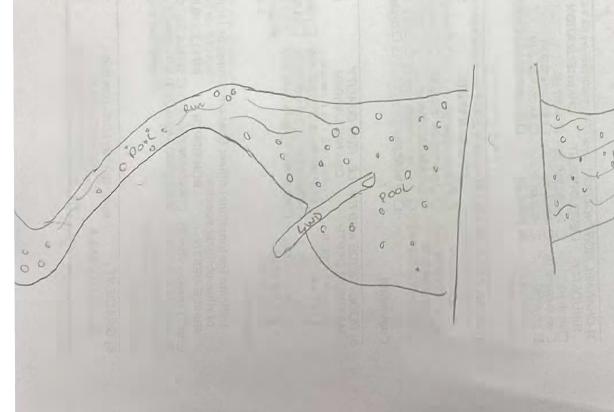
ChicEPA

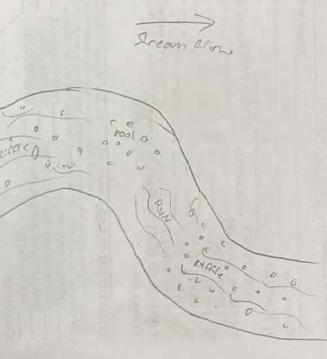
Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score:

Stream & Location:	S-B6A-7M			RM:	Date: 12 1 02 1 06
			Name & Affiliation:		Office verified
River Code:	STORET	(NAD	t./ Long.: 39.317023, -80.5	26157	location
BEST TYPES BLDR /SLABS [10] BOULDER [9] COBBLE [8] GRAVEL [7] SAND [6] BEDROCK [5]		Sent C TYPES DPAN [4] RITUS [3] K [2] [2] FICIAL [0]	ORIGIN LIMESTONE [1] TILLS [1] WETLANDS [0] HARDPAN [0] SANDSTONE [0] nore	SILT	average) QUALITY HEAVY [-2] MODERATE [-1] NORMAL [0] FREE [1] MAXIMUM 20 NONE [1] BUBSTRATE
quality: 3 Highest quality i	n moderate or greater amou , well developed rootwad in S [1] PC EGETATION [1] RC	ints (e.g., very large bo deep / fast water, or de	ulders in deep or fast water	arge pools. [[RS [1] [[TES [1] [AMOUNT Check ONE (Or 2 & average) EXTENSIVE >75% [11] MODERATE 25-75% [7] SPARSE 5-<25% [3] NEARLY ABSENT <5% [1] Cover Maximum 20
SINUOSITY DEV HIGH [4] [1] MODERATE [3] [2] LOW [2] [1]	EXCELLENT [7] INON GOOD [5] CREC FAIR [3] REC	ANNELIZATION	STABILITY HIGH [3] MODERATE [2] LOW [1]	partie c	Channel Maximum 20
4] BANK EROSION A River right looking downstre EROSION ONONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [7]	R WIDE > 50m [4] Omega MODERATE 10-50 Omega NARROW 5-10m	DTH F DTH FORES Dm [3] D SHRUE [2] D RESIDE 5 m [1] D FENCE	ategory for EACH BANK (C LOOD PLAIN QUALI ST, SWAMP [3] B OR OLD FIELD [2] ENTIAL, PARK, NEW FIELD ED PASTURE [1] PASTURE, ROWCROP [0]		* & average) CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] e predominant land use(s) 00m riparian. Riparian Maximum 10
5] POOL / GLIDE AN MAXIMUM DEPTH Check ONE (ONLY) > 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1] < 0.2m [0] Comments	ID RIFFLE / RUN QUA CHANNEL W Check ONE (Or 2 & POOL WIDTH > RIFFLI POOL WIDTH = RIFFLI POOL WIDTH > RIFFLI	IDTH C average) WIDTH [2] TORF WIDTH [1] VERY WIDTH [0] FAST MODI	CURRENT VELOCITY Check ALL that apply RENTIAL [-1] SLOW [1] FAST [1] INTERSTI [1] INTERMIT ERATE [1] EDDIES [cate for reach - pools and r	TIAL [-1] TENT [-2] 1]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12
Indicate for func of riffle-obligate RIFFLE DEPTH BEST AREAS > 10cm [2 BEST AREAS 5-10cm [1 BEST AREAS < 5cm [metric=0 Comments	RUN DEPTH MAXIMUM > 50cm [MAXIMUM < 50cm [Check ONE (Or 2 & RIFFLE / RUI 2] STABLE (e.g., C 1] MOD. STABLE (& average). N SUBSTRATE RIF cobble, Boulder) [2]		Ation NO RIFFLE [metric=0] IN EMBEDDEDNESS NONE [2] LOW [1] MODERATE [0] EXTENSIVE [-1] Maximum 8
6] <i>GRADIENT</i> (DRAINAGE AREA (ft/mi) UERY LOW - MODERATE [mi ²) HIGH - VERY	6-10]	%POOL: 55 %RUN: 5) %GLID)%RIFFL	E: Gradient







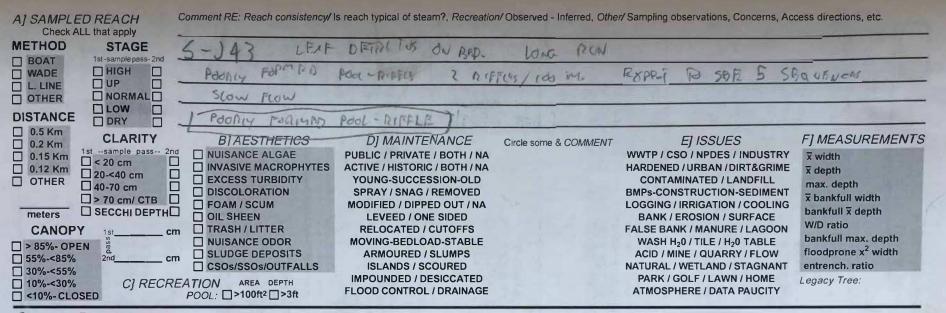
tream & Location.	1 1111	Assessment	10:30 R	M. Deter 1/11 7104
Stream & Location:	5-A [1]	Scorers Full N	Vame & Affiliation: L	
River Code:	STORET #	t:(NAD 83	Lat./Long.:	39.200749, -80.55319 Office verified location
BEST TYPES PO	OOL RIFFLE OTHER	BOXES: sent TYPES POOL RIFFLE	Check ONE ORIGIN	(Or 2 & average) QUALITY
BLDR /SLABS [10] BOULDER [9] COBBLE [8] GRAVEL [7] BEDROCK [5] NUMBER OF BEST TY Comments	HARD HARD <t< td=""><td>PPAN [4] </td><td>TILLS [1]</td><td>SILT MODERATE [-1] SILT MODERATE [-1] FREE [1] DDEONE MODERATE [-1] Maximum 20 NONE [1]</td></t<>	PPAN [4]	TILLS [1]	SILT MODERATE [-1] SILT MODERATE [-1] FREE [1] DDEONE MODERATE [-1] Maximum 20 NONE [1]
quality: 3-Highest quality in	quality; 2-Moderate amoun moderate or greater amoun well developed rootwad in or [1] PO GETATION [1] RO	nts, but not of highest qu hts (e.g., very large bould leep / fast water, or deep OLS > 70cm [2]	nounts or if more common of ality or in small amounts of h lers in deep or fast water, lar , well-defined, functional poo OXBOWS, BACKWATERS AQUATIC MACROPHYTES LOGS OR WOODY DEBRIS	Ignest Check ONE (Or 2 & average) ge EXTENSIVE >75% [11] [1] MODERATE 25-75% [7] [1] SPARSE 5-<25% [3]
□ HIGH [4] □ E □ MODERATE [3] □ G □ LOW [2] □ F	ELOPMENT CHA KCELLENT [7] ID NONE 00D [5] ID RECC AIR [3] ID RECC	NNELIZATION	STABILITY	Channel Maximum 20
River right looking downstrea		OTH FLC	gory for EACH BANK (Or 2 p DOD PLAIN QUALITY SWAMP [3] IN OLD FIELD [2]	Der bank & average)
NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [1] Comments	O NARROW 5-10m [O VERY NARROW < O NONE [0]	5m [1] G FENCED	PASTURE [1] STURE, ROWCROP [0]	Indicate predominant land use(s) past 100m riparian. Riparian Maximum 10
MODERATE [2] HEAVY / SEVERE [1]	VERY NARROW < NONE [0]	5m [1] FENCED OPEN PA OPEN	PASTURE [1] STURE, ROWCROP [0] RRENT VELOCITY Check ALL that apply NTIAL [-1] SLOW [1] AST [1] INTERSTITIA	Indicate predominant land use(s) past 100m riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact (circle one and comment on back) Pool /
☐ MODERATE [2] ☐ HEAVY / SEVERE [1] Comments 5] POOL / GLIDE AN MAXIMUM DEPTH Check ONE (ONLY!) ☐ > 1m [6] ☐ 0.7~1m [4] 取] 0.4~0.7m [2] ☐ 0.2~0.4m [1] ☐ < 0.2m [0] Comments	I U VERY NARROW < I NONE [0] D RIFFLE / RUN QUA CHANNEL WI Check ONE (0r 2 & a) POOL WIDTH > RIFFLE POOL WIDTH = RIFFLE POOL WIDTH > RIFFLE tional riffles; Best are species: RUN DEPTH MAXIMUM > 50cm [2] MAXIMUM > 50cm [2]	5m [1] C FENCED OPEN PA	PASTURE [1] STURE, ROWCROP [0] RRENT VELOCITY Check ALL that apply NTIAL [-1] SLOW [1] AST [1] INTERSTITIAN] INTERMITTEN ATE [1] EDDIES [1] te for reach - pools and riffles enough to support a p iverage). SUBSTRATE RIFFLI poble, Boulder) [2] g., Large Gravel) [1]	Indicate predominant land use(s) past 100m riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12

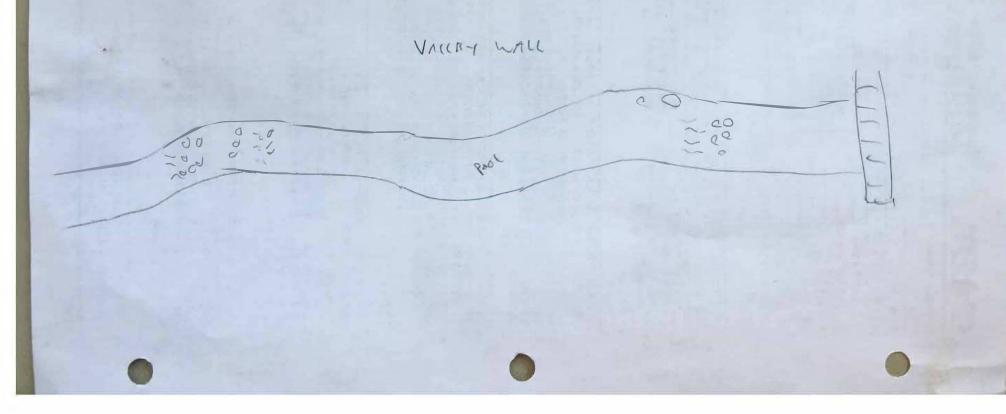
A] SAMPLED REACH Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc. Check ALL that apply METHOD STAGE LOWAR WALF ALL UPPER HALF AR SIDE FLOWING PUN. 1st-sample pass-2nd BOAT PLANA BBA WADE HIGH CRAMI UP L. LINE □ OTHER LOW PLINE DISTANCE BB DRY 0.5 Km CLARITY BIAESTHETICS D] MAINTENANCE E) ISSUES F] MEASUREMENTS ō Circle some & COMMENT 0.2 Km 1st --sample pass-- 2nd **NUISANCE ALGAE** WWTP / CSO / NPDES / INDUSTRY PUBLIC / PRIVATE / BOTH / NA 0.15 Km x width □ < 20 cm INVASIVE MACROPHYTES ACTIVE / HISTORIC / BOTH / NA HARDENED / URBAN / DIRT&GRIME 0.12 Km x depth 20-<40 cm EXCESS TURBIDITY **CONTAMINATED / LANDFILL** OTHER YOUNG-SUCCESSION-OLD max. depth 40-70 cm DISCOLORATION SPRAY / SNAG / REMOVED **BMPs-CONSTRUCTION-SEDIMENT** x bankfull width □ > 70 cm/ CTB □ FOAM / SCUM MODIFIED / DIPPED OUT / NA LOGGING / IRRIGATION / COOLING bankfull x depth SECCHI DEPTH meters OIL SHEEN LEVEED / ONE SIDED **BANK / EROSION / SURFACE** W/D ratio TRASH / LITTER **RELOCATED / CUTOFFS** FALSE BANK / MANURE / LAGOON CANOPY cm bankfullmax. depth □ NUISANCE ODOR MOVING-BEDLOAD-STABLE WASH H20 / TILE / H20 TABLE > 85%- OPEN floodprone x² width SLUDGE DEPOSITS **ARMOURED / SLUMPS** ACID / MINE / QUARRY / FLOW 55%-<85% cm CSOs/SSOs/OUTFALLS entrench. ratio **ISLANDS / SCOURED** NATURAL / WETLAND / STAGNANT 30%-<55% **IMPOUNDED / DESICCATED** PARK / GOLF / LAWN / HOME Legacy Tree: CI RECREATION AREA DEPTH 10%-<30% FLOOD CONTROL / DRAINAGE ATMOSPHERE / DATA PAUCITY POOL: □>100f@□>3ft <10%- CLOSED</p> Stream Drawing: VALLE-1 WALL A (FFCR PLANA DI LEAF DRINITUS ON BOD C RUN WM

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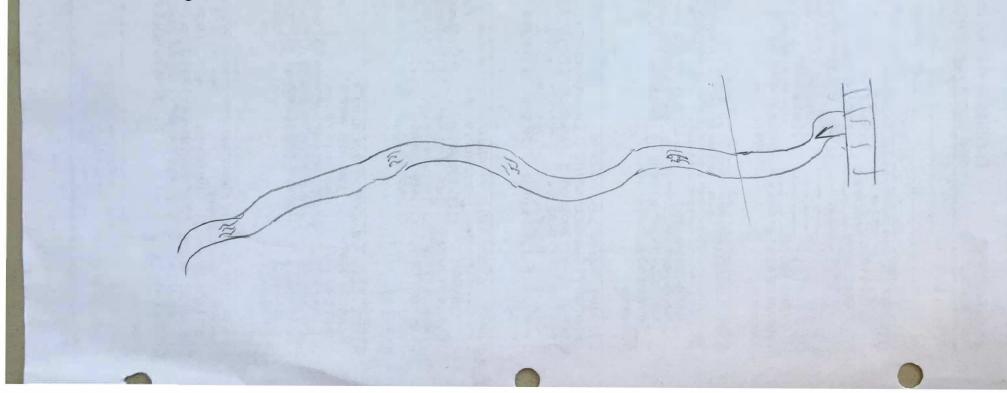
IVST CODE (MAD B) default I) SUBSTRATE Check ONLY Two substrate TYPE BOXES; extended 3% or note every type present Check ONE (07 2 & a) I) SUBSTRATE Check ONL (INT TWO substrate TYPE BOXES; extended 3% or note every type present Check ONE (07 2 & a) IB EST TYPES Interstity Interstity Check ONE (07 2 & a) IB BOULDER (1) Interstity Interstity State IB BOULDER (1) Interstity Interstity State IB BOULDER (1) Interstity Interstity State IB BOUNDER (1) Interstity Interstity State IB BOUNDER (1) Interstity Interstity Interstity State INSTREAM COVER Indicate presence 0 to 3: 0-Absent: 1-Very small amounts or if more common of marginal control of water, or deep, will developed rothwater, or deep, will developed rothwater, or develo	Date: [[]]]/21
NUMER Collog	Office verifi 7980.581328 locati
BEST TYPES POOL NIFFLE OTHER TYPES POOL RIFFLE DIMESTONE [1] BUDR /SLABS [10] IIII HARDPAN [4] DIMESTONE [1] IIIII SILT BOULDER [9] IIIII DETRITUS [3] IIIIII SILT SILT BOULDER [9] IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	79, -80.581328 locali
Image: Section of the sectin the sectin of the section of the section of the sec	average) QUALITY
Image: Second	HEAVY [-2]
Cobacter [1] Cobacter [2] Cobacter [3] Cobacter [3] <td< td=""><td>MODERATE [-1] Subs</td></td<>	MODERATE [-1] Subs
SANDE[1] SANDETOIL[1] SANDETOIL[2] SANDETOIL[2] BEDROCK [3] Socies ratural substrates, ignore RIPRAP [0] Socies [0] Socies [0] Comments 3 or less [0] Shale [:1] Shale [:1] Shale [:1] Shale [:1] Continue of the substrates, ignore Shale [:1] Shale [:1] Shale [:1] Shale [:1] Continue of the substrates, ignore Shale [:1] Shale [:1] Shale [:1] Shale [:1] Continue of the substrates, ignore Shale [:1] Shale [:1] Shale [:1] Shale [:1] Continue of the substrates, ignore Shale [:1] Shale [:1] Shale [:1] Shale [:1] Shale [:1] Contact [:1] Code [:1] POOLS > 70 cm [:2] OxBows, Backwartes [:1] I I Contact [:1] POOLS > 70 cm [:2] OxBows, Backwartes [:1] I I I Contact [:1] POOLS > 70 cm [:2] OxBows, Backwartes [:1] I	□ NORMAL [0] □ FREE [1] 1
JOINTIPUIS COAL FINES [2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent: 1-Very small amounts or if more common of marginal quality. 3-Highest quality or in small amounts of highest quality in moderate or greater amounts. but not of highest quality or in small amounts of highest quality in moderate or greater amounts but not of highest quality or in small amounts of highest quality in moderate or greater amounts but not of highest quality of instant amounts of highest quality in moderate or greater amounts but not of highest quality of instant amounts of highest quality in the device of the device builders in th	DEXTENSIVE [-2]
20/07/07/07 COAL FINES [2] 2) INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality 2-Moderate amounts, but not of highest quality or in small amounts of highest quality in small amounts of highest or quality. 3-Highest quality in moderate or greater amounts, but not of highest quality or in small amounts of highest or quality. 3-Highest quality in moderate or greater amounts, but not of highest quality or in small amounts of highest or quality. 3-Highest quality in moderate or greater amounts in deep or fast water. If the deep or fast water, or deep, well-defined, functional pools. 1 UNDERCUT BANKS [1] POOL S > Toom [2] OXBOWS, BACKWATERS [1] 0.00000000000000000000000000000000000	S NORMAL [0] 20
P: INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts of if more common of marginal quality. 3-Highest quality in moderate or greater amounts, but not of highest quality or in small amounts of highest quality. 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large or understand the defined; functional proofs Quality. 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large or defined; functional proofs CHANNEL More of defined; functional proofs UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKWATERS [1] CHANNEL MARCOPHYTES [1] I OVERHANGING VEGETATION [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] I I CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY Indep ratio GOOD [5] RECOVERED [4] MODERATE [2] LOW [1] MODERATE [2] I. COW [2] DEVELOPMENT CHANNEL [2 CON [3] MODERATE [2] LOW [1] MODERATE [2] LOW [1] MODERATE [2] I. COW [1] POOR [1] RECOVERING [3] MODERATE [2] LOW [2] I MODERATE [2] I. COW [2] DEVELOPMENT RECOVERING [3] Stability [2] Stability [2] I MODERATE [2] I MODERA	NONE [1]
quality: 2-Moderate amounts, but not of nights quality of in share amounts of mights in deep or fast water, large diameter log that is stable, well developed roctwad in deep 1 fast water. Large diameter log that is stable, well developed roctwad in deep 1 fast water, large diameter log that is stable, well developed roctwad in deep 1 fast water. Large diameter log that is stable, well developed roctwad in deep 1 fast water. Large diameter log that is stable, well developed roctwad in deep 1 fast water. Large diameter log that is stable, well developed roctwad in deep 1 fast water. Large diameter log that is stable, well defined, functional pools. UNDERCUT BANKS [1] UNDEXCUT BANKS [1] COUST V DEVELOPMENT CHANNEL ZATION STABILITY Indefined on the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deep 1 fast water. I and the developed roctwad in deve	A distance of the second
quality: 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large Image: 1 the stable, well developed rootwain deep. Tast water root eco, well-defined, functional pools. UNDERCUT BANKS [1] POOLS > 70 cm [2] OXBOWS, BACKWATERS [1] Image: 1 the stable, and th	
UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKWATERS [1] OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHYTES [1] SHALLOWS (IN SLOW WATER) [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] Comments Comments CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNEL IZATION STABILITY HIGH [4] EXCELLENT [7] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] NONE [1] POOR [1] RECOVERED [4] MODERATE [2] NONE [1] POOR [1] RECOVERED [4] MODERATE [2] I BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & 2 minght looking downatmam RIPARIAN WIDTH FELOOD PLAIN QUALITY Restorentiat, park, New Field [1] MODERATE [2] I MODERATE [2] NARROW 5-10m [3] BANK EROSION BWIDE > 50m [4] I MODERATE [2] NARROW 5-10m [3] I MODERATE [2] NARROW 5-10m [3] I MODERATE [1] VERY NARROW 5-50m [3] I MODERATE [1] VERY NARROW 5-50m [1]	Check ONE (Or 2 & average) EXTENSIVE >75% [11]
SHALLOWS (IN SLOW WATER) [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] ROOTMATS [1] COMMATS [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] Comments B) CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] Image: Anticipation of the state of the st	MODERATE 25-75% [7] SPARSE 5-<25% [3]
Comments B) CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [3] ODD [5] RECOVERED [4] ModeRate [3] Good [5] RECOVERED [4] MODERATE [2] NONE [1] POOR [1] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECOVERING [3] LOW [1] Comments RIPARIAN WIDTH FLOOD PLAIN QUALITY River right looking domstraam RIPARIAN WIDTH FLOOD PLAIN QUALITY B MONE / LITTLE [3] MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] U urk MODERATE [2] MODERATE [10] MODERATE [10] I urk I urk MODERATE [2] MORE (0) NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1] I urk MODERATE [1] I vERY I SEVERE [1] VERY NARROW 5-50m [1] SHRUB OR OLD FIELD [2] U urk MODERATE [1] I NONE [0] ODEN PASTURE, ROWCROP [0] Past 100m Comments Check ONE (0/2 & average) Check ALL that apply I hadcate pring	
B) CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECOVERING [3] LOW [1] Comments RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & a strain for the cover strain	Cover
SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] MODERATE [2] LOW [1] Comments FAIR [3] RECOVERING [3] LOW [1] LOW [1] LOW [1] LOW [1] LOW [1] Comments FAIR [3] RECOVERING [3] LOW [1] LOW [1] LOW [1] LOW [1] Comments RECOVERING [3] LOW [1] POOR [1] RECOVERING [3] LOW [1] LOW [1] Comments RIPARIAN WIDTH FLOOD PLAIN QUALITY FLOOD PLAIN QUALITY Recover [1] POOR [1] Porest, swamp [3] Col MODERATE [2] NARROW 5-10m [2] SHRUB OR OLD FIELD [2] URR Indicate price past 100m MAXIMUM DEPTH CHANNEL WIDTH CURRENT VELOCITY Maximum [1] Pool WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] Indicate price past 100m Comments POOL WIDTH > RIFFLE WIDTH [1] CURRENT VELOCITY Check ALL that apply Indicate price past 100m 0.2<0.4m [1]	Maximum 20
HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECOVERING [3] LOW [1] Comments RIPARIAN WIDTH FLOOD PLAIN QUALITY Comments River right looking downstream RIPARIAN WIDTH FOREST, SWAMP [3] Col MODERATE [2] MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] URI MODERATE [2] MARROW 5-10m [2] SHRUB OR OLD FIELD [2] URI MODERATE [2] MARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1] Indicate price past 100m Comments MODERATE [2] NARROW 5-50m [3] SHRUB OR OLD FIELD [2] URI POOL / GLIDE AND RIFFLE / RUN QUALITY Check ONE (0NLY) Check ONE (00 LIDT + RIFFLE WIDTH [2] OPEN PASTURE, ROWCROP [0] Past 100m Comments POOL WIDTH = RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] Interstitial [-1] INTERSTITIAL [-1] 0.4 <0.7m [2]	
MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] MODERATE [3] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECOVERING [3] LOW [1] Comments FAIR [3] RECOVERING [3] LOW [1] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & a River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY Recover right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY Context [2] Image: context [3] Context [3] ModeRate [2] Image: context [2] Image: context [3] Shrub or old Field [2] Image: context [3] Context [3] ModeRate [2] Image: context [3] Shrub or old Field [2] Image: context [3] Image: context [3] Image: context [3] ModeRate [2] Image: context [3] Shrub or old Field [3] Shrub or old Field [3] Image: context [3] Image: context [3] ModeRate [2] Image: context [3] Image: context [3] Shrub or old Field [3] Image: context [3] Image: context [3] ModeRate [3] Image: context [3] Ima	
INONE [1] POOR [1] RECENT OR NO RECOVERY [1] Comments Comments I) BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & emportance in the second	
41 BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & a River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY	Channel
River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY EROSION WUDE > 50m [4] FOREST, SWAMP [3] Control (1) NONE / LITTLE [3] MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] URI MODERATE [2] NARROW 5-10m [2] SHRUB OR OLD FIELD [2] URI Heavy / Severe [1] VERY NARROW < 5m [1]	Maximum 13
River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY EROSION WIDE > 50m [4] FOREST, SWAMP [3] Control (1) MODERATE [2] MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] URI MODERATE [2] NARROW 5-10m [2] SHRUB OR OLD FIELD [2] URI HEAVY / SEVERE [1] VERY NARROW < 5m [1] FENCED PASTURE [1] Indicate prime NONE / LITLE [3] NONE / NARROW < 5m [1] FENCED PASTURE, ROWCROP [0] Indicate prime NONE [0] VERY NARROW < 5m [1] FENCED PASTURE, ROWCROP [0] Indicate prime MAXIMUM DEPTH CHANNEL WIDTH CURRENT VELOCITY Indicate prime Check ONE (ONLY!) Check ONE (Or 2 & average) Check ALL that apply TORRENTIAL [-1] SLOW [1] Indicate prime 0.4 < 0.7m [2] POOL WIDTH = RIFFLE WIDTH [1] VERY FAST [1] INTERSTITIAL [-1] Indicate for reach - pools and riffles. Comments Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). Indicate for reach - pools and riffles. Comments Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 &	
Image: None / Little [3] Image: None / L	x average)
Image: Moderate [2] Image: Narrow 5-10m [2] Image: Residential, Park, New Field [1] Image: Residenti	ONSERVATION TILLAGE [1]
Image: Description of the second s	RBAN OR INDUSTRIAL [0]
Comments Sign 200L / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH CHANNEL WIDTH CURRENT VELOCITY Check ONE (ONLY) Check ONE (Or 2 & average) Check ALL that apply Check ONE (ONLY) Check ONE (Or 2 & average) Check ALL that apply Check ONE (ONLY) Check ONE (Or 2 & average) Check ALL that apply Check ONE (ONLY) POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] 0.7-<1m [4]	predominant land use(s)
MAXIMUM DEPTH Check ONE (ONLY) CHANNEL WIDTH Check ONE (Or 2 & average) CURRENT VELOCITY Check ALL that apply > 1m [6] POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] 0.7-<1m [4]	m riparian. Riparian Maximum
MAXIMUM DEPTH Check ONE (ONLY) CHANNEL WIDTH Check ONE (Or 2 & average) CURRENT VELOCITY Check ALL that apply > 1m [6] POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] 0.7-<1m [4]	10
Check ONE (ONLY) Check ONE (Or 2 & average) Check ALL that apply > 1m [6] POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] 0.7-<1m [4]	Recreation Potential
0.7-<1m [4]	Primary Contact
Image: State of the state	Secondary Contact
Indicate for reach - pools and riffles. Comments Indicate for functional riffles; Best areas must be large enough to support a populatio of riffle-obligate species: Check ONE (Or 2 & average). RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS > 10cm [1] BEST AREAS > 10cm [1] BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] Indicate for reach - pools and riffles.	(circle one and comment on back)
Indicate for functional riffles; Best areas must be large enough to support a populatio of riffle-obligate species: Check ONE (Or 2 & average). RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFFLE / RUN E BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] Imaximum > 50cm [1] BEST AREAS 5-10cm [1] MAXIMUM < 50cm [1]	Pool / Current
of riffle-obligate species: Check ONE (Or 2 & average). RIFFLE DEPTH RUN DEPTH BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] BEST AREAS > 10cm [1] MAXIMUM > 50cm [2] BEST AREAS > 10cm [1] MAXIMUM > 50cm [1] BEST AREAS > 10cm [1] MAXIMUM > 50cm [1] BEST AREAS > 10cm [1] MAXIMUM > 50cm [1] BEST AREAS > 10cm [1] MAXIMUM < 50cm [1]	Maximum 4
RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFFLE / RUN E BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] Image: Cobble and Cobble an	on
BEST AREAS < 10cm [1] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] BEST AREAS < 5cm [1] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] BEST AREAS < 5cm [1] MOD. STABLE (e.g., Fine Gravel Sand) [0] MOD.	NO RIFFLE [metric=
BEST AREAS 5-10cm [1] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] BEST AREAS < 5cm	ENBEDDEDNESS
	W [1]
Comments	DERATE [0] Riffle / 2
A ODA DICALT	Maximum 8
DRAINAGE AREA DIERY LOW - LOW [2-4] %POOL: 0 %GLIDE:	0



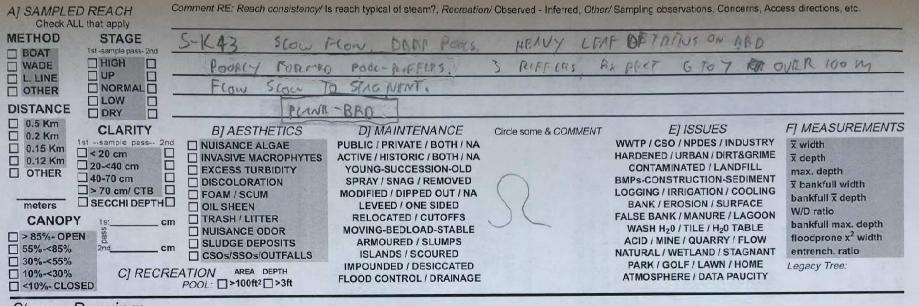


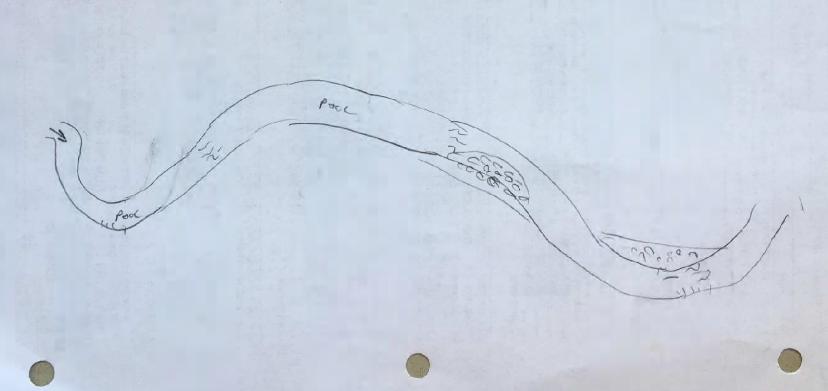
Strea	am & Location	n: <u>S-J4</u>	-6	12:1	0	RM:	. Date: 1111712	21
Dive	- O- d-			corers Full Nar	ne & Affiliation:			
	r Code:		STORET #: ostrate TYPE BOXES;	(NAD 83 - de	Lat./Long.:	39.094	778, -80.584826 Office veloc	alion
MAG	BEST TYPES	timate % or note ev	orther Type	2		ONE (Or 2	& average)	
	BLDR /SLABS [1		HARDPAN [4]		ORIGIN		QUALITY	
	BOULDER [9] COBBLE [8]		DETRITUS [3]		TILLS [1] WETLANDS [0]	SILT	MODERATE [-1] Su	bstr
	GRAVEL [7] SAND [6]		SILT [2]		HARDPAN [0]			16
	BEDROCK [5]		Cartificial (Score natural	substrates ignore	SANDSTONE [0]	SEDDEDN.	DEXTENSIVE [-2]	axim
	IBER OF BES		or more [2] sludge fro or less [0]		ACUSTURINE [0]	E	C EXTENSIVE [-2] MODERATE [-1] NORMAL [0] NONE [1]	20
Gum	ments				COAL FINES [-2]		- COLUMN COLUMN	
2] /N	ISTREAM CO	VER Indicate pres	ence 0 to 3: 0-Absent oderate amounts, but r	: 1-Very small amou	nts or if more commo	n of margin	al AMOUNT	-
quali diam	ity; 3-Highest qualitiester log that is sta	ity in moderate or c	greater amounts (e.g., d rootwad in deep / fas	very large boulders	in doon or fact water	10700	Check ONE (Or 2 & average EXTENSIVE >75% [11]	9)
	UNDERCUT BAI	NKS [1] VEGETATION [1]	POOLS > 70	cm [2] OX	BOWS, BACKWATE	RS [1]	MODERATE 25-75% [7]	
	SHALLOWS (IN	SLOW WATER) [1			UATIC MACROPHYT		NEARLY ABSENT <5% [1]	1]
Com	ROOTMATS [1]						Cover Maximum	
							20	
		PHOLOGY Che EVELOPMEN1	ck ONE in each categ		STABILITY			
	GH [4]	EXCELLENT [7]	NONE [6]		HIGH [3]			
LO	DW [2]	GOOD [5]	RECOVERED		MODERATE [2]			
	DNE [1] E] POOR [1]	RECENT OR N	O RECOVERY [1]			Channel Maximum	15
					A STREET		20	-
4] <i>B</i> / Riv	ANK EROSIO		AN ZONE Check O RIAN WIDTH		for EACH BANK (Or PLAIN QUALIT		& average)	
LR	EROSION NONE / LITTLE [> 50m [4]	FOREST, SWA	MP [3]	600	CONSERVATION TILLAGE [1	1
	MODERATE [2]		OW 5-10m [2]	SHRUB OR O	DADK NEW EIEI DI		IRBAN OR INDUSTRIAL [0]	1
	HEAVY / SEVERE		NARROW < 5m [1] [[0]	GIN FENCED PAS	TURE [1] RE. ROWCROP [0]	Indicate	predominant land use(s)	-
Сот	nments					pactio	Maximum	
5] PC	OOL / GLIDE A	AND RIFFLE / I	RUN QUALITY				10	-
MA	AXIMUM DEPT	гн сна	NNEL WIDTH NE (Or 2 & average)		ENT VELOCITY		Recreation Potential	
E] > 1m [6]	POOL WIDT	TH > RIFFLE WIDTH [2] TORRENTIA	ALL that apply	-	Primary Contact Secondary Contact	
6	0.7-<1m [4]		TH = RIFFLE WIDTH [1 TH > RIFFLE WIDTH [0] [FAST [1]	INTERMITT	AL [-1] ENT [-2]	(circle one and comment on back)	
	0.2-<0.4m [1] < 0.2m [0]			MODERATE Indicate for	[1] DEDDIES [1] reach - pools and riffl		Pool / Current	7
	iments						Maximum 12	
	ndicate for fui	nctional riffles	; Best areas mus	t be large enou	igh to support a	populat	lion _	
Com Ir	1		DEPTH RIF	ONE (Or 2 & average FLE / RUN SUB	STRATE RIFF			c=0]
Com Ir o	of riffle-obligat		M > 50cm [2] [CTAL	BLE (e.g., Cobble,	Boulder) [2]		DNE [2]	
Com Ir o RI BES	of riffle-obligat IFFLE DEPTH ST AREAS > 10cm		M < 50cm [1]	STABLE (on to	COLO Gravel) [4]		DW [1]	
Com Ir o RI BES	of riffle-obligat IFFLE DEPTH ST AREAS > 10cm ST AREAS 5-10cm ST AREAS < 5cm		M < 50cm [1] 🗌 MOD	. STABLE (e.g., La TABLE (e.g., Fine G	rge Gravel) [1] ravel, Sand) [0]	T M	ODERATE INI Riffle	7
Com Ir o RI BES BES	of riffle-obligat IFFLE DEPTH ST AREAS > 10cm ST AREAS 5-10cm		M < 50cm [1] 🗌 MOD	STABLE (e.g., La	rge Gravel) [1] ravel, Sand) [0]	T M)
Com Ir o RI BES BES Com G G G G G G G G G	of riffle-obligat IFFLE DEPTH ST AREAS > 10cm ST AREAS 5-10cm ST AREAS < 5cm [metric	ft/mi) 🗌 VE	M < 50cm [1] 🗌 MOD), STABLE (e.g., La TABLE (e.g., Fine G	ravel, Sand) [0]	T M	DERATE [0] Riffle / Run (TENSIVE [-1] Maximum 8	

A] SAMPLED REACH Check ALL that apply	comment RE: Reach consistency/	s reach typical of steam?, Recreation	n/ Observed - Inferred, Other	7/ Sampling observations, Concerns, Acc	ess directions, etc.
METHOD STAGE	5-J46 Pool	(FORMA POOL - R	IFFLE I BAF	DATPITUS ON BAD OF	DUNK
BOAT 1st -sample pass- 2nd -		1 100 1000 10			
	5 RIFFLES GOLD	A D 212 - Con			
		P-R SEQUENCE FRA	NOURNE-1		
	RIFFIR - Park C	OMPLOXT			
0.2 Km CLARITY	B] AESTHETICS	D] MAINTENANCE	Circl esome & COMMENT	E] ISSUES	F] MEASUREMENTS
□ 0.15 Km 1stsample pass 2nd	NUISANCE ALGAE	PUBLIC / PRIVATE / BOTH / NA		WWTP / CSO / NPDES / INDUSTRY	x width
□ 0.12 Km □ 20-<40 cm □		ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD		HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL	x depth
□ 40-70 cm □ □ > 70 cm/ CTB □		SPRAY / SNAG / REMOVED		BMPs-CONSTRUCTION-SEDIMENT	max. depth x bankful I width
meters SECCHI DEPTH	FOAM / SCUM	MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED		LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE	bankful Ix depth
CANOPY 1st cm		RELOCATED / CUTOFFS		FALSE BANK / MANURE / LAGOON	W/D ratio
□ > 85%- OPEN	NUISANCE ODOR	MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS		WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW	bankful I max. depth floodprone x ² width
□ 55%-<85% 2nd cm □ 30%-<55%	CSOs/SSOs/OUTFALLS	ISLANDS / SCOURED		NATURAL / WETLAND / STAGNANT	entrench. ratio
□ 10%-<30% C] RECRE	ATION AREA DEPTH	IMPOUNDED / DESICCATED		PARK / GOLF / LAWN / HOME	Legacy Tree:
<10%- CLOSED	<i>POOL:</i> □ >100ft ² □ >3ft	FLOOD CONTROL / DRAINAGE		ATMOSPHERE / DATA PAUCITY	

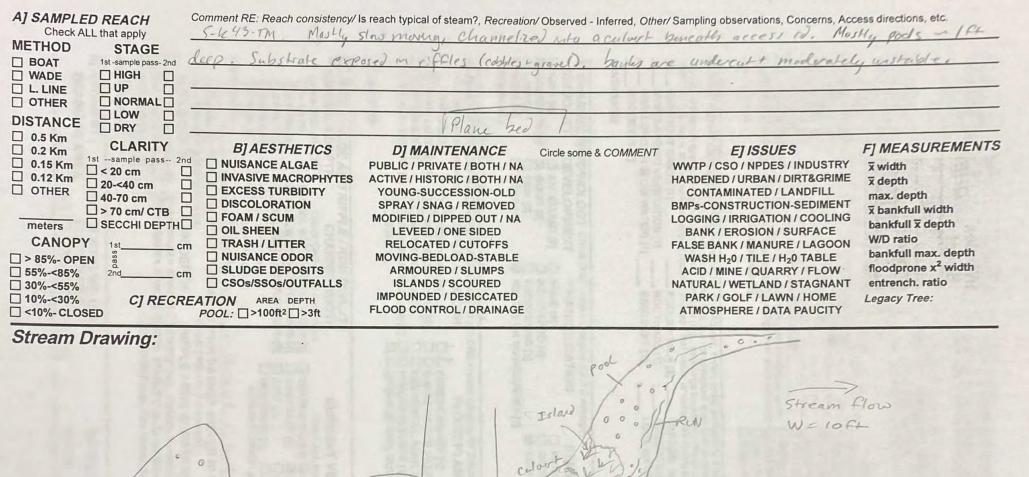


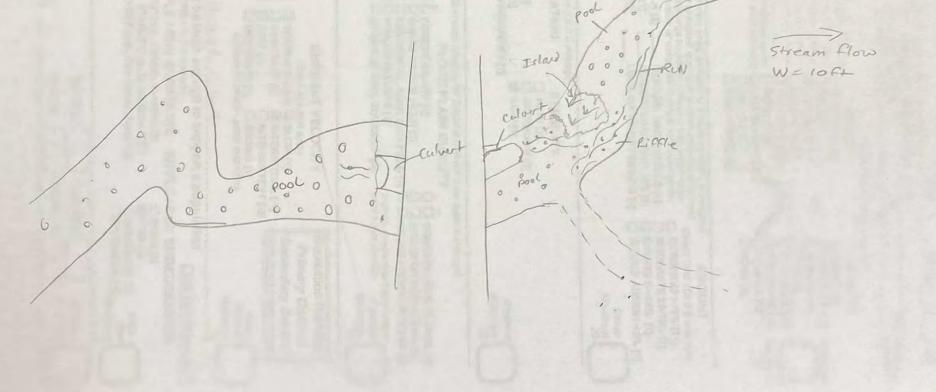
Stream & Location:	5-K93				Date: [[1]]	/21
			Name & Affiliation:_ Lat./ Long.:		Office	verified ocation [
River Code:	STORET #	NAUS	3-decimal	39.00211	1, -80.595843	ocation L
estim	k ONLY Two substrate TYPE B ate % or note every type prese	ent		NE (Or 2 & a	verage) QUALITY	
		TYPES POOL RIFFL			HEAVY [-2]	
BLDR /SLABS [10]			TILLS [1]	SILT	MODERATE [-1]	Substra
			WETLANDS [0]	U.L.I	STREE [1]	16
GRAVEL [7]			SANDSTONE [0]	ODEA	EXTENSIVE [-2]	16
BEDROCK [5]	(Score	natural substrates: igno		NRS NRS	EXTENSIVE [-2] MODERATE [-1] NORMAL [0] NONE [1]	Maximu
	TYPES: 4 or more [2] sl	uage from point-source	s) LACUSTURINE [0]	ш о	NONE [1]	20
Comments			COAL FINES [-2]			
	R Indicate presence 0 to 3: 0	Absent: 1-Van/ small o	mounts or if more commo	n of marginal	AMOUNT	
	quality; 2-Moderate amoun in moderate or greater amoun	its, but not of highest qu	ality or in small amounts	of nignest	neck ONE (Or 2 & aver	age)
diameter log that is stable	e, well developed rootwad in de	eep / fast water, or deep	o, well-defined, functional	pools.	EXTENSIVE >75% [11	1
UNDERCUT BANK OVERHANGING V	and the second of the second sec	DLS > 70cm [2] DTWADS [1]	OXBOWS, BACKWATE AQUATIC MACROPHYT	ACCOUNT OF A DESCRIPTION OF A DESCRIPTIO	MODERATE 25-75% [SPARSE 5-<25% [3]	a
SHALLOWS (IN S		JLDERS [1]	LOGS OR WOODY DEE		NEARLY ABSENT <5%	6 [1]
ROOTMATS [1]					Cover	
Comments					Maximum 20	
3] CHANNEL MORP	HOLOGY Check ONE in ear	ch category (Or 2 & ave	erage)			
SINUOSITY DE	VELOPMENT CHA	NNELIZATION	STABILITY			
		[6] VERED [4]	HIGH [3]			
		VERING [3]	LOW [1]		-	
Protection of the second secon	POOR [1] RECEN	NT OR NO RECOVERY	[1]		Channel Maximum	15
Comments					20	15
4] BANK EROSION	AND RIPARIAN ZONE				average)	
River right looking downstr	LR	R	OOD PLAIN QUALIT	LR		-
	WIDE > 50m [4] MODERATE 10-50m		SWAMP [3] DR OLD FIELD [2]		NSERVATION TILLAG BAN OR INDUSTRIAL	
MODERATE [2]	NARROW 5-10m [2]		TIAL, PARK, NEW FIELD		ING / CONSTRUCTIO	
	1] VERY NARROW < 5 NONE [0]		PASTURE [1] ASTURE, ROWCROP [0]	Indicate p past 100r	redominant land use(s)	0
Comments			CITORE, ROMOROF [0]	pasi roor	n riparian. Riparian Maximum	
					10	
5] POOL / GLIDE AI MAXIMUM DEPTH	ND RIFFLE / RUN QUAL CHANNEL WID		IRRENT VELOCITY	15	Recreation Potenti	al
Check ONE (ONLY!)	Check ONE (Or 2 & av	verage)	Check ALL that apply		Primary Contac	
□ > 1m [6]	POOL WIDTH > RIFFLE	WIDTH [2] TORRE	NTIAL [-1] SLOW [1]		Secondary Conta	ct
0.7-<1m [4]	POOL WIDTH = RIFFLE		AST [1] INTERSTIT		circle one and comment on ba	ck)
0.2-<0.4m [1]			RATE [1] DEDDIES [1]	Pool /	
□ < 0.2m [0] Comments		Indica	te for reach - pools and rif	nes.	Current Maximum	7
					12	
Indicate for fun of riffle-obligate	ctional riffles; Best area	as must be large Check ONE (Or 2 & a	enougn to support a average).	a populatio		netric=0
RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN	SUBSTRATE RIFE		EMBEDDEDNESS	-
BEST AREAS > 10cm	2] □ MAXIMUM > 50cm [2] 1] ■ MAXIMUM < 50cm [1]	STABLE (e.g., Col	oble, Boulder) [2]			
BEST AREAS 5-10cm			g., Large Gravel) [1] Fine Gravel, Sand) [0]		DERATE IOI Riffle /	0
Comments	0]			EXT	ENSIVE [-1] Run Maximum	2
Comments					8	



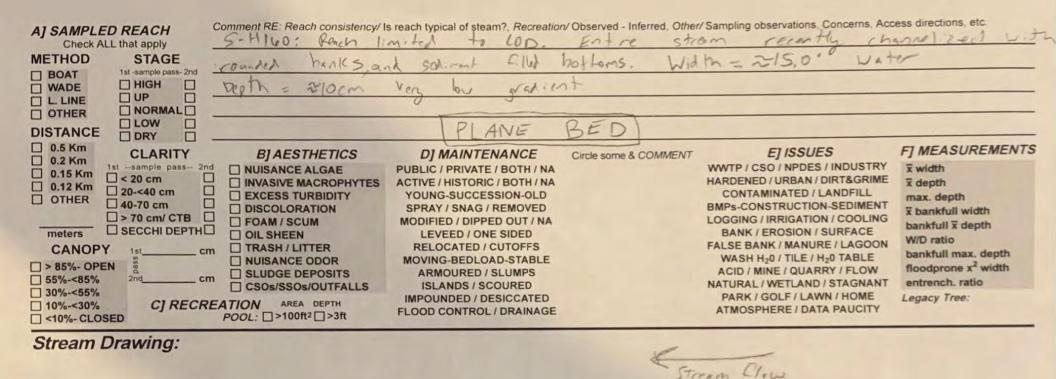


ChicEPA	and Use Asses	sment Field Sheet	Date: 10 1 02 101
Stream & Location: 5-124			Date: 12 02 21
		rers Full Name & Affiliation: Mf Lat./Long.: 39.002045	-80.596098 Office verified location
River Code:	STORET #:	(NAD 83 - decimal °)	
1] SUBSTRATE Check ONLY estimate % or BEST TYPES POOL R BLDR /SLABS [10] BOULDER [9] BOULDER [9] GRAVEL [7] BEDROCK [5] NUMBER OF BEST TYPES	Other every type present OTHER TYPES present HARDPAN [4] DETRITUS [3] MUCK [2] SILT [2] ARTIFICIAL [0]	OOL RIFFLE ORIGIN	Or 2 & average) QUALITY HEAVY [-2] SILT MODERATE [-1] Substra DEONESS MORMAL [0] MAXIMUM MAXIMUM 20 MAXIMIM 20 A
Comments	I 3 or less [0]	COAL FINES [-2]	narginal AMOUNT
quality; 3-Highest quality in mode diameter log that is stable, well di UNDERCUT BANKS [1] OVERHANGING VEGETAT SHALLOWS (IN SLOW WA ROOTMATS [1]	rate or greater amounts (e.g., ver eveloped rootwad in deep / fast w POOLS > 70cm TION [1] ROOTWADS [1	y large boulders in deep or fast water, large ater, or deep, well-defined, functional pools [2] OXBOWS, BACKWATERS [7]] AQUATIC MACROPHYTES [7]	Check ONE (0/ ≥ 2 8 86.050) EXTENSIVE >75% [11] MODERATE 25-75% [7] SPARSE 5-<25% [3]
Comments			20
River right looking downstream	5] RECOVERED [4] RECOVERING [3] 1] RECENT OR NO Access of bodge RIPARIAN ZONE Check ONE RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] [1] NARROW 5-10m [2] [1] VERY NARROW < 5m [1] [1]	Ein each category for EACH BANK (Or 2 per FLOOD PLAIN QUALITY FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD [1] FENCED PASTURE [1]	Channel Maximum 20 10 er bank & average) CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] Indicate predominant land use(s) past 100m riparian. Riparian
Comments			Maximum 10
□ > 1m [6] □ PO □ 0.7-<1m [4] □ PO	FLE / RUN QUALITY CHANNEL WIDTH Check ONE (Or 2 & average) OL WIDTH > RIFFLE WIDTH [2] OL WIDTH = RIFFLE WIDTH [1] OL WIDTH > RIFFLE WIDTH [0]	CURRENT VELOCITY Check ALL that apply TORRENTIAL [-1] SLOW [1] VERY FAST [1] INTERSTITIAL FAST [1] INTERMITTENT MODERATE [1] EDDIES [1] Indicate for reach - pools and riffles.	
Comments Indicate for functional of riffle-obligate speci RIFFLE DEPTH	es: Check O RUN DEPTH RIFFI MAXIMUM > 50cm [2] STABL MAXIMUM < 50cm [1] MOD. 3	be large enough to support a po NE (Or 2 & average). LE / RUN SUBSTRATE RIFFLE	12
6] GRADIENT (ft/mi) DRAINAGE AREA	 VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6] 		GLIDE: Gradient IFFLE: 10 Maximum 10





ChicEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet QHEI Score:
Stream & Location: Date: 271.06 2
Scorers Full Name & Affiliation: K / MB River Code: - STORET #: Lat./ Long.: 38.933171 / -80.584562 Office verified location
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES, estimate % or note every type present Check ONE (Or 2 & average) BEST TYPES OTHER TYPES BEST TYPES OTHER TYPES BOULDER [9] DETRITUS [3] Cobeck [1] HARDPAN [4] BOULDER [9] DETRITUS [3] Cobeck [6] MUCK [2] BEDROCK [5] Silt [2] Score natural substrates; ignore RIP/RAP [0] SHALE [-1] NORMAL [0] SHALE [-1] NONE [1] Comments 3 or less [0]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality in moderate or greater amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools. AMOUNT UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKWATERS [1] MODERATE 25-75% [7] OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHYTES [1] SPARSE 5-<25% [3]
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] Excellent [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] Channel Maximum 20 NONE [1] POOR [1] RECENT OR NO RECOVERY [1] Maximum 20 4
A) BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) River right looking downstream RIPARIAN WIDTH P EROSION BANK EROSION RIPARIAN WIDTH FLOOD PLAIN QUALITY P Conservation Tillage [1] RIPARIAN WIDTH River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY P River right looking downstream RIPARIAN WIDTH P FOREST, SWAMP [3] NONE / LITTLE [3] MODERATE 10-50m [3] MODERATE [2] NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1] MINING / CONSTRUCTION [0] Indicate predominant land use(s) Past 100m riparian. Riparian Riparian Maximum 10
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH CHANNEL WIDTH CURRENT VELOCITY Check ONE (ONLY!) Recreation Potential Pool WIDTH > RIFFLE WIDTH [2] > 1m [6] POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] Primary Contact Secondary Contact (circle one and comment on back) 0.7 < 1m [4]
Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS > 10cm [2] B
B] GRADIENT (ft/mi) IVERY LOW - LOW [2-4] %POOL: %OBLIDE: Gradient DRAINAGE AREA (MODERATE [6-10] %RUN: %ORIFFLE: Maximum (mi2) HIGH - VERY HIGH [10-6] %RUN: 10 %RIFFLE: 00

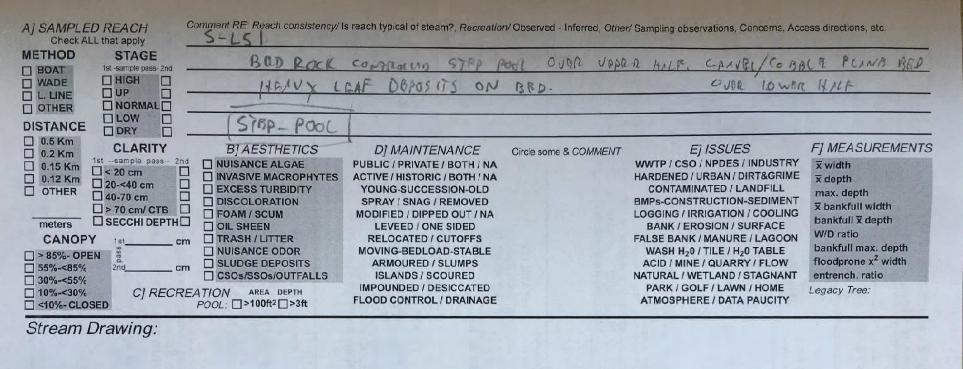


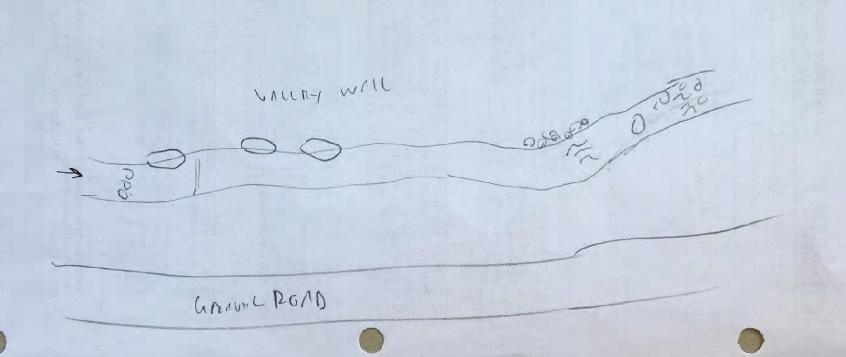
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TIMBER



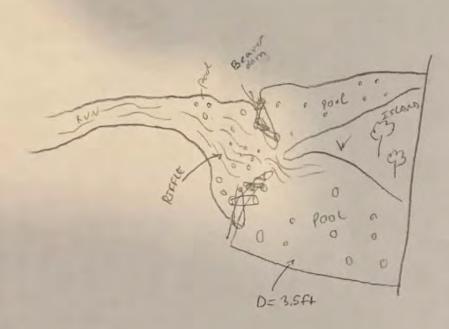
River Code: SUBSTRATE Chec estin BEST TYPES BEDR /SLABS [10]	- STORET #: k ONLY Two substrate TYPE B		me & Affiliation: LK	
BEST TYPES	k ONLY Two substrate TYPE B			Office verif.
BEST TYPES	k ONLY Two substrate TYPE B		tecimal Lat./Long.: 3	8.839355, -80.519693 locat
BIDR /SLARS 110	ate % or note every type prese	OXES: ent TYPES POOL RIFFLE	ORIGIN	(Or 2 & average) QUALITY
BOULDER [9] COBBLE [8] GRAVEL [7] SAND [6]		PAN [4] TUS [3] [2] P]	WETLANDS [0]	HEAVY [-2] SILT MODERATE [-1] Sub NORMAL [0] FREE [1] DEA EXTENSIVE [-2]
BEDROCK [5]	(Score	natural substrates: ignore	RIP/RAP [0]	MODERATE [-1] Max
NUMBER OF BEST Comments	TYPES: 4 or more [2] Site 3 or less [0]	udge from point-sources)	SHALE [-1]	DEONESSING [-2] MODERATE [-1] Max SS NORMAL [0] NONE [1]
quality: 3-Highest quality	EGETATION [1] ROO	ts, but not of highest quali is (e.g., very large boulder eep / fast water, or deep, v PLS > 70cm [2] O DTWADS [1] A	ty or in small amounts of high	gnest Check ONE (Or 2 & average) e EXTENSIVE >75% [11] 1] MODERATE 25-75% [7] [1] SPARSE 5-<25% [3]
Comments				Cover Maximum 20
MODERATE [3]	Contraction and Contraction of the Contraction of t	the second se	HIGH [3] MODERATE [2] LOW [1]]	Channel Maximum 20
4] BANK EROSION River right looking downstr EROSION NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [Comments	□ □ WIDE > 50m [4] □ □ MODERATE 10-50m □ □ NARROW 5-10m [2]	FH FLOC Image: Im	DD PLAIN QUALITY NAMP [3] OLD FIELD [2] AL, PARK, NEW FIELD [1] STURE [1]	er bank & average)
5] POOL / GL IDE AI MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1] <0.2m [0] Comments	ND RIFFLE / RUN QUAL CHANNEL WID Check ONE (Or 2 & av POOL WIDTH > RIFFLE V POOL WIDTH = RIFFLE V POOL WIDTH > RIFFLE V	TH CUR rerage) Ch VIDTH [2] TORRENT VIDTH [1] VERY FAS VIDTH [0] FAST [1] MODERAT	RENT VELOCITY eck ALL that apply IAL [-1] SLOW [1] T [1] INTERSTITIAL INTERMITTENT TE [1] EDDIES [1] for reach - pools and riffles.	
Indicate for fun of riffle-obligate RIFFLE DEPTH BEST AREAS > 10cm [BEST AREAS 5-10cm [BEST AREAS < 5cm [metric= Comments	RUN DEPTH 2] MAXIMUM > 50cm [2] 1] MAXIMUM < 50cm [1]	Check ONE (Or 2 & ave RIFFLE / RUN SU STABLE (e.g., Cobbi	rage). JBSTRATE RIFFLE e, Boulder) [2] Large Gravel) [1]	NO RIFFLE [metric / RUN EMBEDDEDNESS NONE [2] LOW [1] MODERATE [0] Riffle / Run Maximum

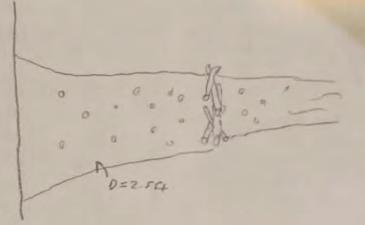




Stream & Location: 5-166 RM: Date: Dit 2 1 067 Scorers Full Name & Affiliation: U/MB River Code: - STORET #: Lat/Long.: 38.824034, -80.524988 Office verified location 1] SUBSTRATE Check ONLY Two substrate TYPE BOXES: estimate % or note every type present Check ONE (Or 2 & average) Office verified location 1] SUBSTRATE Check ONLY Two substrate TYPE BOXES: estimate % or note every type present Check ONE (Or 2 & average) Office verified location BEST TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE ORIGIN QUALITY BLDR /SLABS [10] BLDR /SLABS [10] BETRITUS [3] HARDPAN [4] HEAVY [-2] BOULDER [9] DETRITUS [3] TILLS [1] MODERATE [-1] Substrate [-1] BOULDER [9] BETRITUS [3] HARDPAN [0] FREE [1] Jule [-1] Jule [-1] BEDROCK [5] Sand [6] ARTIFICIAL [0] SANDSTONE [0] MODERATE [-1] Jule [-1]
River Code: - STORET #: Lat./ Long.: 38.824034, -80.524988 Office verified location 1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present Check ONE (Or 2 & average) Office verified location BEST TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE Check ONE (Or 2 & average) BLDR /SLABS [10] - - DETRITUS [3] - HARDPAN [4] BOULDER [9] - DETRITUS [3] - TILLS [1] SILT MODERATE [-1] Substrate [8] - MUCK [2] - WETLANDS [0] - POFE [1] -
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES, estimate % or note every type present Check ONE (Or 2 & average) BEST TYPES OTHER TYPES BLDR /SLABS [10] HARDPAN [4] DEST TYPES DETRITUS [3] DESDLER [9] DETRITUS [3] DESDLE [8] MUCK [2] DESDLE [8] DETRITUS [3] DESDLE [8] <td< td=""></td<>
estimate % or note every type present Check ONE (Or 2 & average) BEST TYPES OTHER TYPES D BLDR /SLABS [10] D HARDPAN [4] D HARDPAN [4] D HARDPAN [4] D HEAVY [-2] D BOULDER [9] D DETRITUS [3] TILLS [1] SILT MODERATE [-1] Substra D GRAVEL [7] D DETRITUS [3] HARDPAN [0] D DETRITUS [7] SILT NORMAL [0] 20
BLDR /SLABS [10] HARDPAN [4] HARDPAN [4] HEAVY [-2] BOULDER [9] DETRITUS [3] TILLS [1] NODERATE [-1] COBBLE [8] MUCK [2] HEAVY [-2] NORMAL [0] GRAVEL [7] DETRITUS [3] HEAVY [-2] NORMAL [0]
Image: Constraint of the second se
Image: Second
Comments 3 or less [0] SHALE [-1] NONE [1] COAL FINES [-2] COAL FINES [-2] Image: Coal fine fine fine fine fine fine fine fine
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest check ONE (0:2.8 automat)
diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.
UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKWATERS [1] MODERATE 25-75% [7] OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHYTES [1] SPARSE 5-<25% [3]
SHALLOWS (IN SLOW WATER) [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] NEARLY ABSENT <5% [1]
Comments Cover Maximum 20
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY
HIGH [4] EXCELLENT [7] NONE [6] Image: HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2]
LOW [2] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECENT OR NO RECOVERY [1] Channel
Comments Maximum 14 20
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY
EROSION WIDE > 50m [4] FOREST, SWAMP [3]
MODERATE [2] NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1] MINING / CONSTRUCTION [0]
HEAVY / SEVERE [1] VERY NARROW < 5m [1]
Comments Maximum 10
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH CHANNEL WIDTH CURRENT VELOCITY Recreation Potential
Check ONE (ONLY!) Check ONE (Or 2 & average) Check ALL that apply Primary Contact
Im [6]
O.2<0.4m [1] MODERATE [1] EDDIES [1] Indicate for reach - pools and riffles. Current
Comments
Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average).
RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFFLE / RUN EMBEDDEDNESS
□ BEST AREAS > 10cm [2] ■ MAXIMUM > 50cm [2] □ STABLE (e.g., Cobble, Boulder) [2] □ NONE [2] ■ BEST AREAS 5-10cm [1] □ MAXIMUM < 50cm [1] ■ MOD. STABLE (e.g., Large Gravel) [1] ■ LOW [1]
BEST AREAS < 5cm
6] GRADIENT (ft/mi) VERY LOW - LOW [2-4] %POOL: 50 %GLIDE: Gradient
DRAINAGE AREA (mi ²) HIGH - VERY HIGH [10-6] %RUN: 45 %RIFFLE: 5 Maximum 10

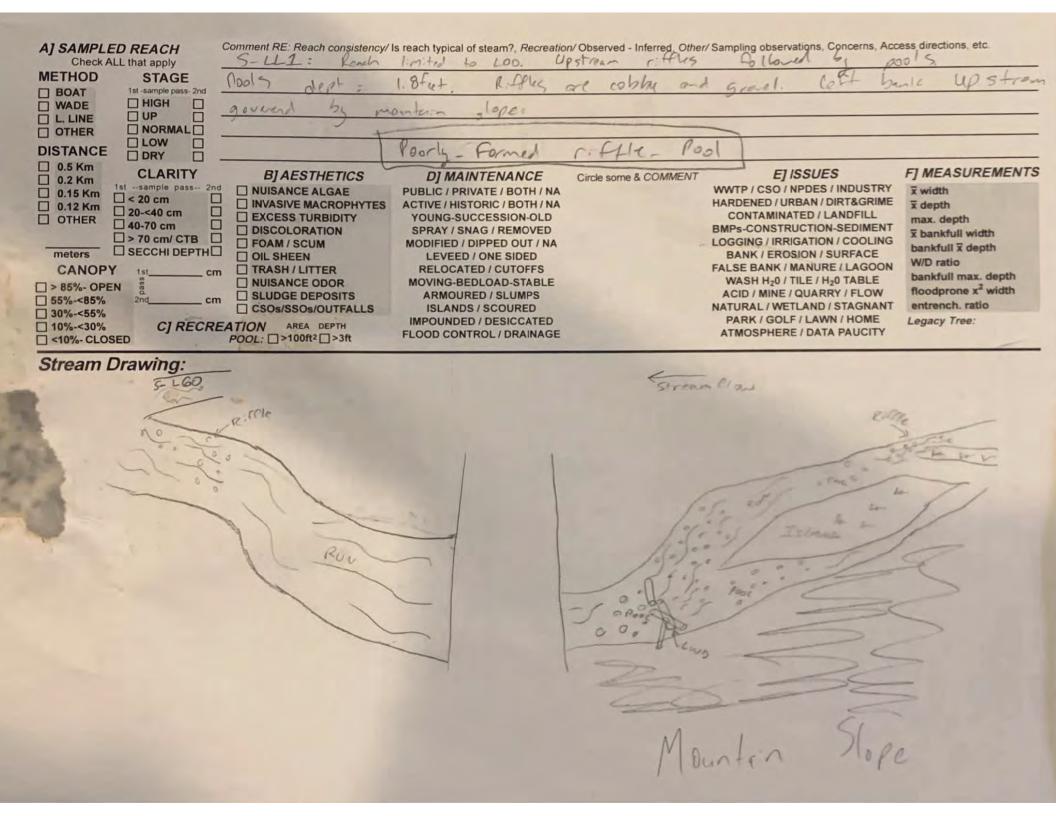
AJ SAMPLED REACH Check ALL that apply METHOD STAGE BOAT 1st-sample pass- 2nd WADE HIGH L. LINE UP OTHER NORMAL DISTANCE DRY	Reach acces (inited) Por-dam plane bed			r/Sampling observations, Concerns, Acc Past dam, Sumaus C.A.	
□ 0.5 Km CLARITY □ 0.2 Km 1stsample pass 2n □ 0.15 Km < 20 cm	 INVASIVE MACROPHYTES INVASIVE MACROPHYTES EXCESS TURBIDITY DISCOLORATION FOAM / SCUM OIL SHEEN TRASH / LITTER NUISANCE ODOR SLUDGE DEPOSITS CSOS/SSOS/OUTFALLS 	DJ MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE	Circle some & COMMENT	EJ ISSUES WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	FJ MEASUREMENTS x̄ width x̄ depth max. depth x̄ bankfull width bankfull x̄ depth W/D ratio bankfull max. depth floodprone x ² width entrench. ratio Legacy Tree:



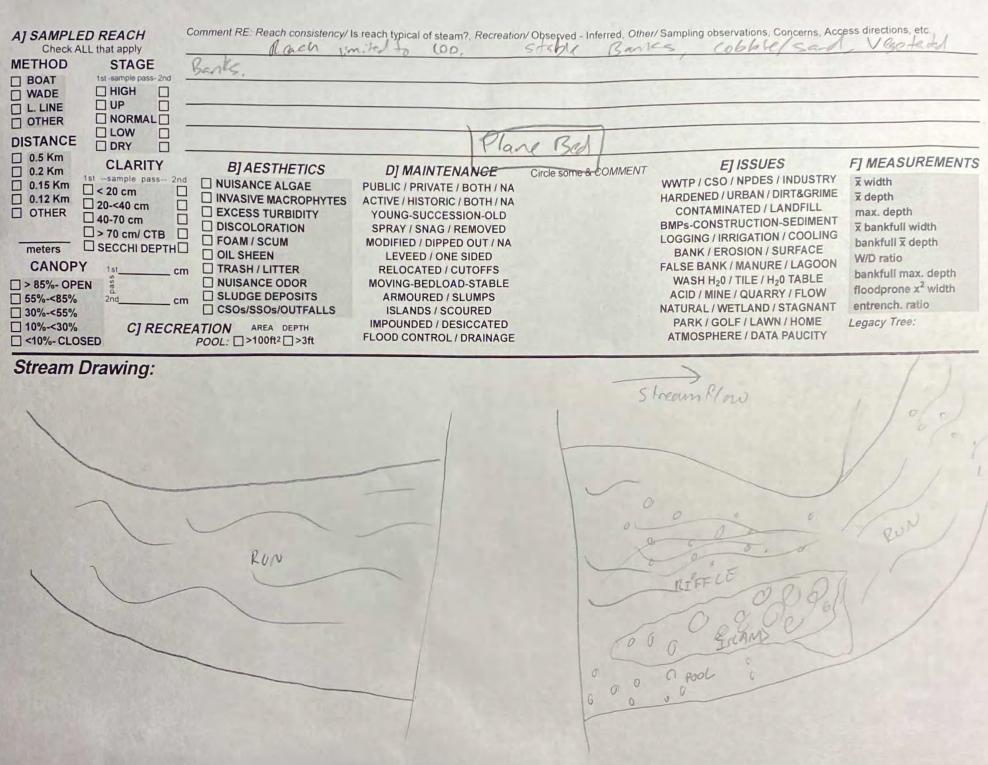


Freem line

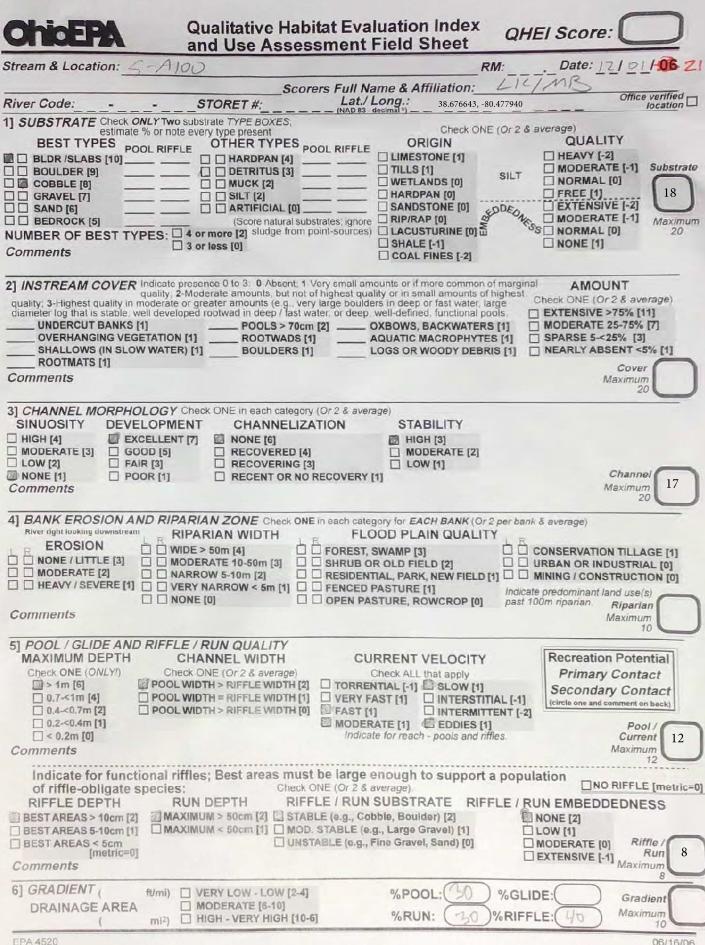
ChicEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet	QHEI Score:
- R	M: Date: 0 1 2 91.06 2 1
Stream & Location:Scorers Full Name & Affiliation:	LK/MB Office verified
River Code: STORET #: (NAD 83 - decimal "] 38.823595, -80.5	25342 location
12 CHECTRATE Check ON Y Two substrate TYPE BOXES: Check ON	E (Or 2 & average)
BEST TYPES POOL RIFFLE OTHER TYPES POOL RIFFLE ORIGIN	
BLDR /SLABS [10] SLABS [10]	SUT MODERATE [-1] Substrate
	D FREE [1] 18
GRAVEL [7] O SILT [2] SANDSTONE [0] SANDSTONE [0] O SANDSTON	DDEON DECTENSIVE [-2] Maximum
Score natural substrates: ignore KIP/KAP [0]	SS NORMAL [0] 20
NUMBER OF BEST TYPES: 4 or more [2] sludge from point-sources) LACUSTURINE [0] III SHALE [-1] Comments	□ NONE [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common or quality; 2-Moderate amounts, but not of highest quality or in small amounts of fast water, la	highest Check ONE (Or 2 & average)
quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or functional po	ols. EXTENSIVE >75% [11]
UNDERCUT BANKS [1] POOLS > 70cm [2] OABOWS, DECODING	S [1] SPARSE 5-25% [3]
OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHTTE SHALLOWS (IN SLOW WATER) [1] BOULDERS [1] LOGS OR WOODY DEBR	IS [1] NEARLY ABSENT <5% [1]
ROOTMATS [1]	Cover Maximum
Comments	20
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)	
SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY U HIGH [4] EXCELLENT [7] NONE [6] HIGH [3]	
MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2]	
LOW [2] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECENT OR NO RECOVERY [1]	Channel Maximum 13
Comments	20
4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 River right looking downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY EROSION WIDE > 50m [4] FOREST, SWAMP [3]	per bank & average)
NONE / LITTLE [3] MODERATE 10-50m [3] SHRUB OR OLD FIELD [2]	URBAN OR INDUSTRIAL [0]
HEAVY / SEVERE [1] VERY NARROW < 5m [1] FENCED PASTURE [1]	Indicate predominant land use(s)
	past 100m riparian. Riparian Maximum
Comments	10
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH CHANNEL WIDTH CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY) Check ONE (Or 2 & average) Check ALL that apply	Primary Contact
> 1m [6] POOL WIDTH > RIFFLE WIDTH [2] □ TORRENTIAL [-1] ■ SLOW [1] 0.7-<1m [4] □ POOL WIDTH = RIFFLE WIDTH [1] □ VERY FAST [1] □ INTERSTITIA	L [-1] Secondary Contact (circle one and comment on back)
0.4<0.7m [2] POOL WIDTH > RIFFLE WIDTH [0] FAST [1] INTERMITTE	NT [-2]
□ 0.2<0.4m [1] □ MODERATE [1] □ EDDIES [1] □ < 0.2m [0] Indicate for reach - pools and riffle	
Comments	Maximum 12
Indicate for functional riffles; Best areas must be large enough to support a of riffle-obligate species; Check ONE (Or 2 & average).	population NO RIFFLE [metric=0]
	E / RUN EMBEDDEDNESS
BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2]	NONE [2] LOW [1]
BEST AREAS < 5cm UNSTABLE (e.g., Fine Gravel, Sand) [0]	MODERATE [0] Riffle /
[metric=0] Comments	EXTENSIVE [-1] Run 4
6] GRADIENT (ft/mi) VERY LOW - LOW [2-4] %POOL:	GLIDE: Gradient
DRAINAGE AREA	RIFFLE:
EPA 4520	06/16/06



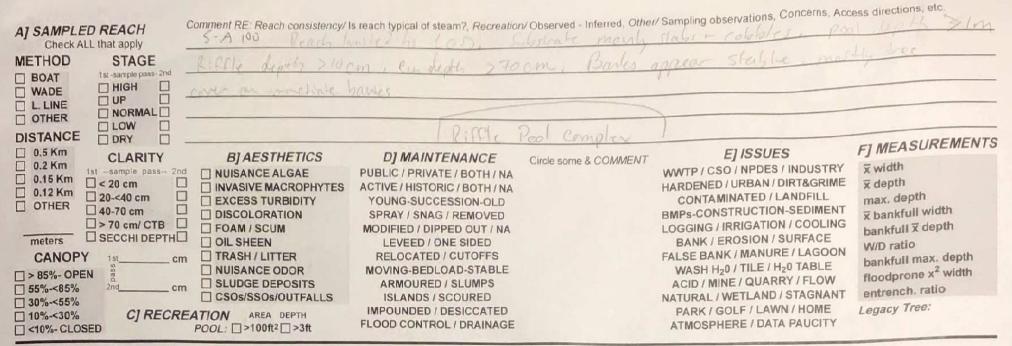
ChicEPA	and Use Asses	ssment Field Sheet	El Score:
Stream & Location:	5-132		Date:) 7_10_1/21
		rers Full Name & Affiliation: LK	Office verified
River Code:	STORET #:	Lat./Long.: 38.751499, -80.51491	
estimat	e % or note every type present	Check ONE (Or 2 &	average) QUALITY
BLDR /SLABS [10]			HEAVY [-2]
BOULDER [9]	🕘 🖸 DETRITUS [3]		MODERATE [-1] Substra
COBBLE [8]	[2] MUCK [2]	UWETLANDS [0]	□ NORMAL [0] □ FREE [1] 17
SAND [6]	C ARTIFICIAL [0]	SANDSTONE [0] SDED	EXTENSIVE [-2]
	(Score natural sub YPES: 4 or more [2] sludge from p	opint-sources) LACUSTURINE [0]	S NORMAL [0] 20
Comments	3 or less [0]	SHALE [-1]	EXTENSIVE [-2] MODERATE [-1] Maximu NORMAL [0] NONE [1]
		COAL FINES [-2]	
quality: 3-Highest quality in	quality: 2-Moderate amounts, but not c moderate or greater amounts (e.g. ven well developed rootwad in deep / fast with [1] POOLS > 70cm SETATION [1] ROOTWADS [1]	[2] OXBOWS, BACKWATERS [1]] AQUATIC MACROPHYTES [1]	AMOUNT Check ONE (Or 2 & average) EXTENSIVE >75% [11] MODERATE 25-75% [7] SPARSE 5-<25% [3] NEARLY ABSENT <5% [1] Cover Maximum 20
MODERATE [3] GO LOW [2] FA	(CELLENT [7] NONE [6] DOD [5] Image: Recovered [4] NIR [3] RECOVERING [3] DOR [1] RECENT OR NO F	the second se	Channel Maximum 20
River right looking downstream	RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW < 5m [1]	SHRUB OR OLD FIELD [2]	k & average) CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] the predominant land use(s) 00m riparian Riparian
Comments			Maximum 10
	RIFFLE / RUN QUALITY		
Check ONE (ONLY!)	CHANNEL WIDTH Check ONE (Or 2 & average)	CURRENT VELOCITY Check ALL that apply	Recreation Potential Primary Contact
2 > 1m [6]	POOL WIDTH > RIFFLE WIDTH [2]	TORRENTIAL [-1] SLOW [1]	Secondary Contact
	POOL WIDTH = RIFFLE WIDTH [1] POOL WIDTH > RIFFLE WIDTH [0]	VERY FAST [1] INTERSTITIAL [-1]	(circle one and comment on back)
0.2-<0.4m [1]		MODERATE [1] DEDDIES [1]	Pool/
Comments	ball and	Indicate for reach - pools and riffles.	Current 11 Maximum
	ANN NILISE DOD	ZImel	12
of riffle-obligate s	onal riffles; Best areas must	be large enough to support a popula NE (Or 2 & average).	Ition
RIFFLE DEPTH	RUN DEPTH RIFFL	E / RUN SUBSTRATE RIFFLE / RU	N EMBEDDEDNESS
BESTAREAS > 10cm [2]	[MAXIMUM > 50cm [2] [] STABL	E (e.g., Cobble, Boulder) [2]	IONE [2]
BEST AREAS 5-10cm [1] BEST AREAS < 5cm	MAXIMUM < 50cm [1] MOD. S	BLE (e.g., Fine Gravel Sand) [0]	OW [1] MODERATE [0] Riffle /
[metric=0] Comments			EXTENSIVE [-1] Run 6
6] GRADIENT	fl/mi) VERY LOW - LOW [2-4]	%POOL:	8
			E:() Gradient
DRAINAGE AREA	MODERATE [6-10] mi2) HIGH - VERY HIGH [10-6]	%RUN: (70)%RIFFL	



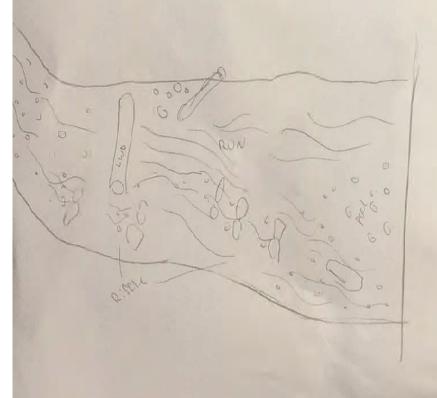
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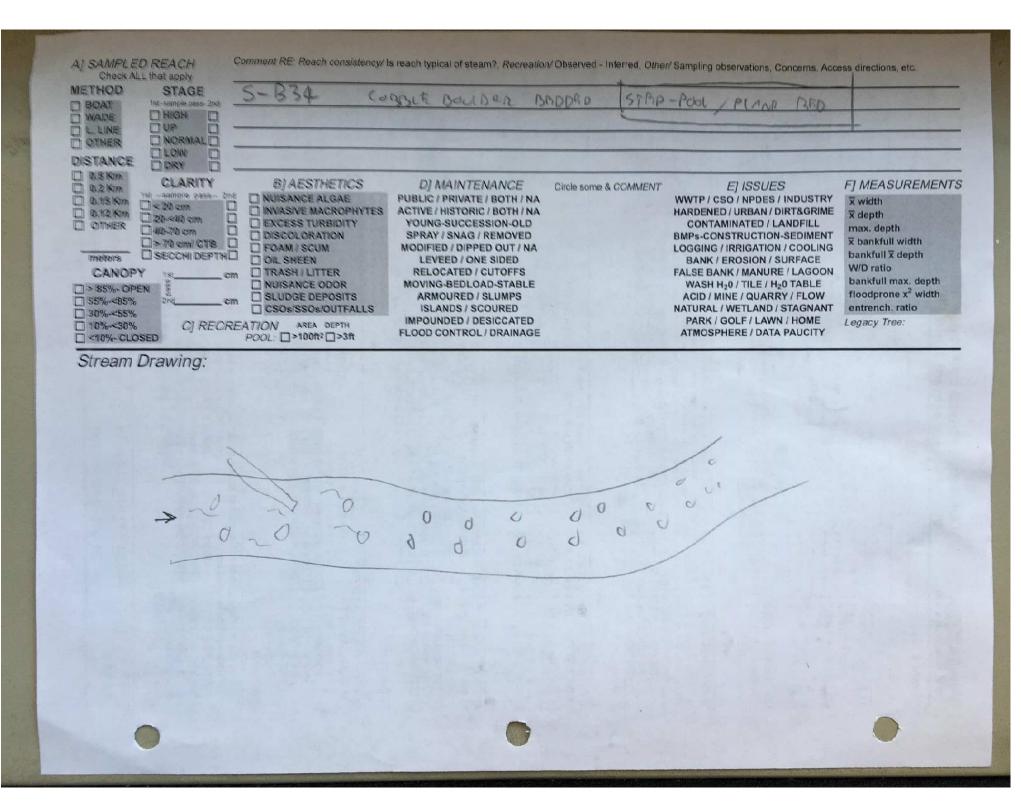


W=61ft





Stream & Location:	S- B34		16:35	RM:	Date: 1111712	21
		and a second	Full Name & Affiliation		Qffice ve	rified
River Code:	STORE		Lat./Lon	9. 38.49	3956, -80.560990 loc	ation
DECT TVDEC	e % or note every type	PE BOXES: present ER TYPES POOL I	ORIGIN	ck ONE (Or 2	QUALITY	
BLDR /SLABS [10] BOULDER [9] COBBLE [3] GRAVEL [7] SAND [6]		ARDPAN [4] ETRITUS [3] UCK [2]	UIMESTONE [TILLS [1] WETLANDS [0] HARDPAN [0])] SILT		ubstr 18
		Coord patural substrator	innore RIP/RAP [0]	MB	MODERATE [-1] M	axim
NUMBER OF BEST T Comments	YPES: 4 or more 3 or less [0	[2] sludge from point-s	OUTCES) LACUSTURIN		EXTENSIVE [-2] MODERATE [-1] MORMAL [0] NONE [1]	20
diameter log that is stable, UNDERCUT BANKS OVERHANGING VE SHALLOWS (IN SLO ROOTMATS [1]	well developed rootwac [1] GETATION [1]	nounts, out not of high	e boulders in deep or fast w r deep, well-defined, functi	atter, large onal pools. ATERS [1] PHYTES [1]	AMOUNT Check ONE (Or 2 & averag EXTENSIVE >75% [11] MODERATE 25-75% [7] SPARSE 5-<25% [3] NEARLY ABSENT <5% [Cover Maximum	
Comments					Maximum 20	
□ HIGH [4] □ E □ MODERATE [3] □ G □ LOW [2] ■ F	KCELLENT [7] Image: Non-state OOD [5] Image: R AIR [3] Image: R	CHANNELIZATION ONE [6] ECOVERED [4] ECOVERING [3] ECENT OR NO RECO	HIGH [3]		Channel Maximum 20	13
4) BANK EROSION A River right looking downstrea EROSION NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [1] Comments	RIPARIAN WIDE > 50m [4 MODERATE 10 NARROW 5-10	WIDTH -]	FLOOD PLAIN QUA REST, SWAMP [3] RUB OR OLD FIELD [2] SIDENTIAL PARK, NEW FI	ALITY	k & average) CONSERVATION TILLAGE URBAN OR INDUSTRIAL [I MINING / CONSTRUCTION le predominant land use(s) 00m riparian. 00m riparian. Maximum 10	ŋ
5] POOL / GLIDE AN MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7~1m [4] 0.4~0.7m [2] 0.2~0.4m [1] < 0.2m [0] Comments	D RIFFLE / RUN Q CHANNEL Check ONE (Or : POOL WIDTH > RIF POOL WIDTH = RIF POOL WIDTH > RIF	WIDTH 2 & average) FLE WIDTH [2] FLE WIDTH [1] Ø VI FLE WIDTH [0] FLE WIDTH [0]	CURRENT VELOC Check ALL that apply DRRENTIAL [-1] SLOW ERY FAST [1] INTER AST [1] INTER ODERATE [1] EDDIE Indicate for reach - pools an	(1) STITIAL [-1] MITTENT [-2]	Recreation Potential Primary Contact Secondary Contact leircle one and comment on back Pool / Current Maximum 12	
Indicate for funct of riffle-obligate RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS > 10cm [1] BEST AREAS < 5cm [metric=0] Comments	Species: RUN DEPTH MAXIMUM > 50c	Check ONE (O RIFFLE / F m [2] STABLE (e.ç m [1] MOD. STABI			A CALENDARY STREET, AND	tric=0
Manufacture and a second se	and the second	and the second se			8	-



tream & Location:	S- E58		17:10		Date: _ [] [] []	21
liver Code: -	- STO	Scorer: DRET #:	s Full Name & A La	ffiliation: <u>LK</u> t./ Long.: 38.4	43669, -80.551989 loc	rified ation
SUBSTRATE Check		e TYPE BOXES:	(NAD 83 - decimal	Check ONE (Or :		
BEST TYPES	POOL RIFFLE	THER TYPES POO	RIFFLE	RIGIN TONE [1]	QUALITY	
BLDR /SLABS [10]		HARDPAN [4] DETRITUS [3]			MODERATE I-11 SI	bstrate
COBBLE [8]		MUCK [2] SILT [2]		PAN IOI	EREF [1]	18
SAND [6] BEDROCK [5]		Score natural substra	tes: janore RIP/R	AP [0] 5TURINE [0]	C EXTENSIVE [-2] MODERATE [-1] MODERATE [-1] MODERATE [-1] MODERATE [-1]	aximum 20
Comments		ss [0]	SHAL	E [-1] FINES [-2]		
] INSTREAM COVE	D Indicate processo	O to 3: 0-Absent: 1-Ver	Bister State		ginal AMOUNT	
auality: 3-Highest quality i	n moderate or great	er amounts, but not of n er amounts (e.g., verv la	rge boulders in deep	or fast water, large	Check ONE (Or 2 & average EXTENSIVE >75% [11]	e)
diameter log that is stable UNDERCUT BANK	, well developed roo S [1]	twad in deep / fast wate POOLS > 70cm [2]	r, or deep, well-define	BACKWATERS [1]	ODERATE 25-75% [11] MODERATE 25-75% [7] SPARSE 5-<25% [3]	
OVERHANGING VE SHALLOWS (IN SL	and the second se	BOULDERS [1]		ACROPHYTES [1]	NEARLY ABSENT <5%	1]
Comments					Cover Maximum	
CHANNEL MORPH		NE in each category (O	r 2 & average)		20	
SINUOSITY DEV	ELOPMENT	CHANNELIZATI	ON STA			
MODERATE [3]	GOOD [5]	NONE [6]		DERATE [2]		-
NONE [1]	FAIR [3] [POOR [1] [RECOVERING [3]		(V 1 (1	Channel Maximum	13
Comments					20	
1] BANK EROSION River right looking downstree			each category for EA FLOOD PLA		ank & average)	
			OREST, SWAMP [3]		CONSERVATION TILLAGE	0]
MODERATE [2] HEAVY / SEVERE [1]		ROW < 5m [1]		1] India	MINING / CONSTRUCTION	[0]
Comments			OPEN PASTURE, RO	WCROP [0] past	100m riparian. Riparian Maximum	
5] POOL / GLIDE AN		NOLIALITY			10	
MAXIMUM DEPTH	CHANN	IEL WIDTH	CURRENT V Check ALL t		Recreation Potentia Primary Contact	
Check ONE (ONLY!) > 1m [6] 0.7-<1m [4]	POOL WIDTH >		TORRENTIAL [-1]		Secondary Contac	
0.4-<0.7m [2]		RIFFLE WIDTH [0]		INTERMITTENT [-2		
$\Box < 0.2m$ [0] Comments			Indicate for reach		Current Maximum	3
	tional riffles: F	est areas must be	large enough to	support a popu	12	
of riffle-obligate		Check ONE	(Or 2 & average). / RUN SUBSTR			tric=0]
BEST AREAS > 10cm	2] [] MAXIMUM >	50cm [2] STABLE (50cm [1] MOD. STA	e.g., Cobble, Bould	er) [2] 🛛 🗌	NONE [2]	
			E (e.g., Fine Gravel,	Sand) [0]	MODERATE [0] Riffle /	
BEST AREAS < 5cm	וו	(Sold Scholage			EXTENSIVE L1	
BEST AREAS 5-10cm [BEST AREAS < 5cm [metric=(Comments 6] GRADIENT ([נ	- teor occurso			EXTENSIVE [-1] Run Maximum 8	

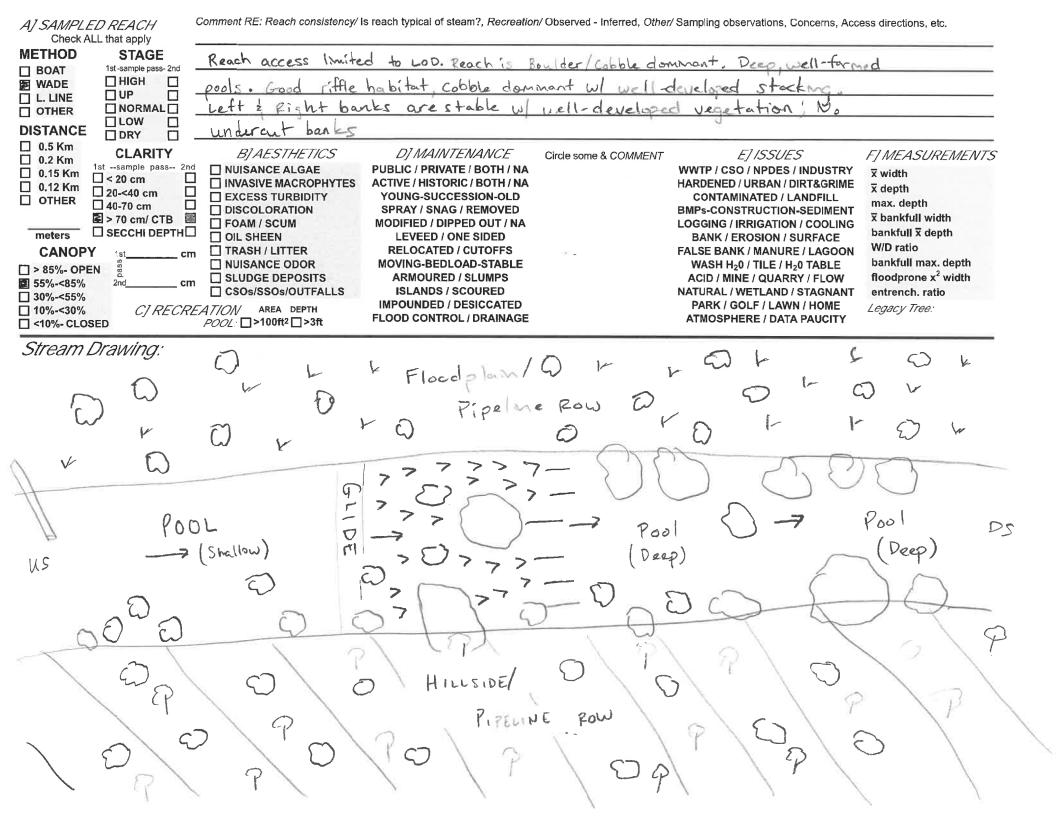
IETHOD STAGE BOAT 1st -sample pass- 2nd WADE HIGH		PORCHA RAFEUS,	Lou an	UDION PI			
] WADE ☐ HIGH ☐] L. LINE ☐ UP ☐ -] OTHER ☐ NORMAL ☐	POUR AUNTY POUL-RIFFLE, EMBED DED RUNS						
	PEND BED						
0.5 Km CLARITY 0.2 Km 1stsample pass 2nd 0.15 Km < 20 cm 0.12 Km 20-<40 cm 0THER 40-70 cm > 70 cm/ CTB meters SECCHI DEPTH CANOPY 1stcm > 85%- OPEN 2nd 30%-<55% 2nd cm 10%-<30% CJ RECREA	B) AESTHETICS	D] MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE	Circle some & COMMENT	EJ ISSUES WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	F) MEASUREMENTS x width x depth max. depth x bankfull width bankfull X depth W/D ratio bankfull max. depth floodprone x ² width entrench. ratio Legacy Tree:		
Stream Drawing:	TIMITA	LONG SILTAND LEAF		Lo	ND FORCED TRATE. WER WIDEND CHA		

C

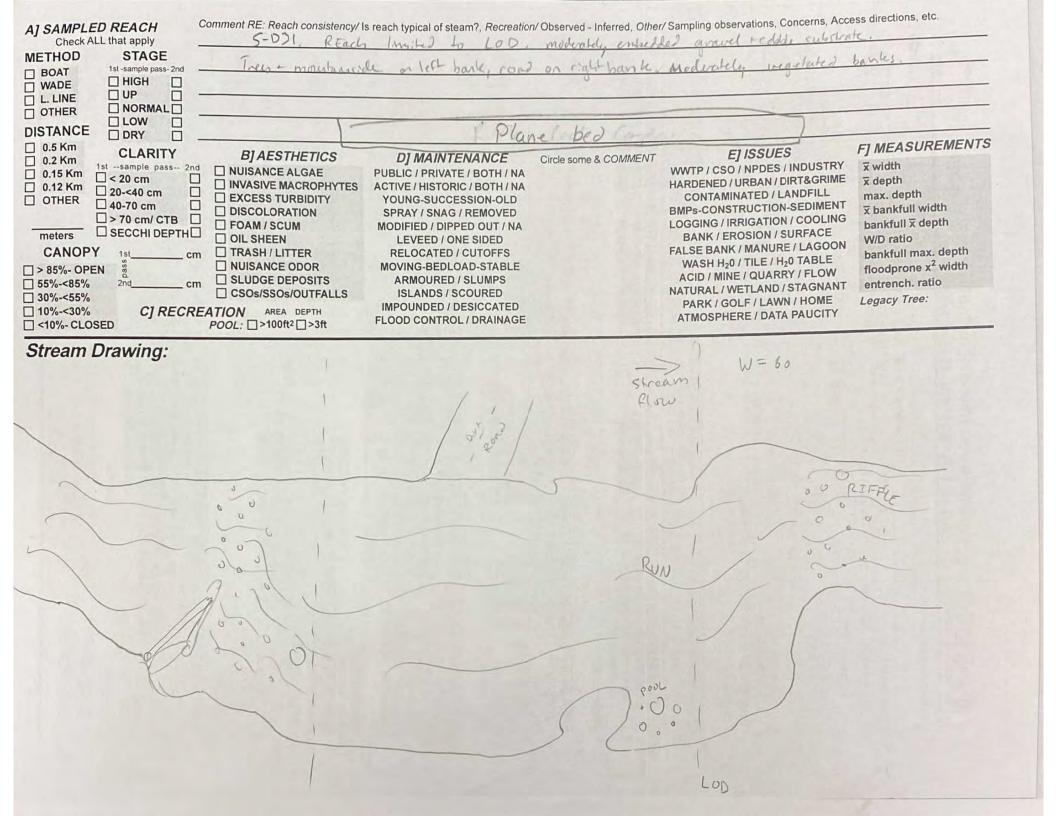
	Qualitativo Habit	tat Evaluation Index	C	-
ChicEPA		sment Field Sheet	QHEI Score:	
Stream & Location:	5-537		RM: Date:/_2101/	06 ZI
River Code: -	Score - STORET #:	rs Full Name & Affiliation: 1 Lat./ Long.: 38,331763,	-80 670342 Office v	erified
1] SUBSTRATE Check estima BEST TYPES	ONLY Two substrate TYPE BOXES; te % or note every type present	(NAD 83 - decimal 9) Check ON	<i>Io</i> NE (Or 2 & average)	<u>catio</u> n 🗀
BLDR /SLABS [10] BOULDER [9] GOBBLE [8] GRAVEL [7]	OOL RIFFLE OTHER TYPES POOL	DL RIFFLE ORIGIN	QUALITY HEAVY [-2] SILT MODERATE [-1] SI NORMAL [0] FREE [1]	ubstrate
SAND [6] BEDROCK [5] NUMBER OF BEST T Comments	C ARTIFICIAL [0] (Score natural subst (State of the second		ODEON DEXTENSIVE [-2] MODERATE [-1] SONORMAL [0] NONE [1]	aximum 20
quality; 3-Highest quality i	GETATION [1] ROOTWADS [1]	highest quality or in small amounts or large boulders in deep or fast water 1	f highest arge Check ONE (Or 2 & average ools. EXTENSIVE >75% [11] S[1] MODERATE 25-75% [7] ES [1] SPARSE 5-<25% [3]	
SINUOSITY DEV HIGH [4] [4] MODERATE [3] [4] LOW [2] [4]	OLOGY Check ONE in each category (/ELOPMENT CHANNELIZAT EXCELLENT [7] NONE [6] SOOD [5] RECOVERED [4] AIR [3] RECOVERING [3] OOR [1] RECENT OR NO RI	TON STABILITY HIGH [3] MODERATE [2]	Channel Maximum 20	17
4] BANK EROSION River right looking downstre EROSION NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [Comments	B WIDE > 50m [4] B C MODERATE 10-50m [3] C C NARROW 5-10m [2] C I VERY NARROW < 5m [1]	FLOOD PLAIN QUALIT FOREST, SWAMP [3] SHRUB OR OLD FIELD [2]		[0] 4 [0]
5] POOL / GLIDE AN MAXIMUM DEPTH Check ONE (ONLY)	Check ONE (Or 2 & average) POOL WIDTH > RIFFLE WIDTH [2] POOL WIDTH = RIFFLE WIDTH [1] POOL WIDTH > RIFFLE WIDTH [0]	CURRENT VELOCITY Check ALL that apply TORRENTIAL [-1] SLOW [1] VERY FAST [1] INTERSTIT FAST [1] INTERMIT MODERATE [1] EDDIES [1] Indicate for reach - pools and rife	TAL [-1] TENT [-2] Recreation Potenti Primary Contact Secondary Conta (circle one and comment on ba	t ct
of riffle-obligate RIFFLE DEPTH BEST AREAS > 10cm BEST AREAS 5-10cm BEST AREAS < 5cm [metric= Comments	RUN DEPTH RIFFL 2] MAXIMUM > 50cm [2] STABLE 1] MAXIMUM < 50cm [1]	IE (Or 2 & average). E / RUN SUBSTRATE RIFF E (e.g., Cobble, Boulder) [2]		s
6] GRADIENT (DRAINAGE ARE (EPA 4520	ft/mi) URRY LOW - LOW [2-4] A MODERATE [6-10] mi ²) HIGH - VERY HIGH [10-6]	%POOL: 45 %RUN: 10	%GLIDE: Gradien %RIFFLE: 45 Maximun	
and the second			Ut	5/16/06

Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc. A] SAMPLED REACH boulders and stas 2 So fret R. Ales Ididh = LOD 337 : limiter Reach Check ALL that apply Banks protected boulars METHOD 20019 STAGE Dorm ave 1st -sample pass- 2nd BOAT empedication & 446 HIGH No WADE Gnd have UP L. LINE NORMAL OTHER LOW Comples P001 LAL DISTANCE DRY F] MEASUREMENTS 🗌 0.5 Km E] ISSUES DI MAINTENANCE Circle some & COMMENT **BIAESTHETICS** CLARITY 0.2 Km WWTP / CSO / NPDES / INDUSTRY PUBLIC / PRIVATE / BOTH / NA x width 1st -- sample pass -- 2nd □ NUISANCE ALGAE 🗌 0.15 Km HARDENED / URBAN / DIRT&GRIME □ < 20 cm ACTIVE / HISTORIC / BOTH / NA x depth 🗌 0.12 Km □ INVASIVE MACROPHYTES 20-<40 cm CONTAMINATED / LANDFILL YOUNG-SUCCESSION-OLD max. depth □ OTHER EXCESS TURBIDITY 40-70 cm **BMPs-CONSTRUCTION-SEDIMENT** SPRAY / SNAG / REMOVED x bankfull width DISCOLORATION □ > 70 cm/ CTB □ LOGGING / IRRIGATION / COOLING MODIFIED / DIPPED OUT / NA FOAM / SCUM bankfull x depth SECCHI DEPTH **BANK / EROSION / SURFACE** meters LEVEED / ONE SIDED OIL SHEEN W/D ratio FALSE BANK / MANURE / LAGOON CANOPY **RELOCATED / CUTOFFS** TRASH / LITTER 151 cm bankfull max. depth WASH H20 / TILE / H20 TABLE MOVING-BEDLOAD-STABLE □ NUISANCE ODOR > 85%- OPEN floodprone x² width ACID / MINE / QUARRY / FLOW ARMOURED / SLUMPS □ SLUDGE DEPOSITS 55%-<85% cm entrench. ratio NATURAL / WETLAND / STAGNANT ISLANDS / SCOURED CSOs/SSOs/OUTFALLS 30%-<55% PARK / GOLF / LAWN / HOME Legacy Tree: IMPOUNDED / DESICCATED **CJ RECREATION** 10%-<30% AREA DEPTH ATMOSPHERE / DATA PAUCITY FLOOD CONTROL / DRAINAGE CLOSED POOL: >100ft2 >3ft Stream Drawing: Stream flow 0 00 cod Islavio RDFFLE 80° 0 0 2020

□ BEST AREAS 5-10cm [1] □ MAXIMUM < 50cm [1] □ MOD. STABLE (e.g., Large Gravel) [1] □ UNSTABLE (e.g., Fine Gravel, Sand) [0] □ LOW [1] □ Riffle Run Maximum Solution □ BEST AREAS < 5cm [metric=0] □ UNSTABLE (e.g., Fine Gravel, Sand) [0] □ MODERATE [0] □ Riffle Run Maximum Solution Comments □ UNSTABLE (e.g., Fine Gravel, Sand) [0] □ MODERATE [0] □ Riffle Run Maximum Solution 6] GRADIENT (ft/mi) □ VERY LOW - LOW [2-4] %POOL: % GLIDE: 5 MAXIMUM < 50cm [1] □ MODERATE [6-10] mi2 □ HIGH - VERY HIGH [10-6] %RUN: 5	OhicEPA	Qualitative Habitat Evaluation Index and Use Assessment Field Sheet	CHEI Score: R.5
Priver Code:	Stream & Location:		
2) //WS7REAM COVER Indicate presence 0 to 3: 6-Abcent; 1-Very small amounts of ingrest only and in a static of the static of	BEST TYPES POC BLDR /SLABS [10] 50 BOULDER [9] 50 COBBLE [8] 50 GRAVEL [7] 50		Office vertified location
gualty: 3-Highest quality in detty: 2-Moderate amounts, but not of highest quality or in small amounts of highest quality or in small amounts of highest quality or in small amounts of highest quality in decomposition of the decom		Core natural substrates; ignore RIP/RAP [0] PES: 4 or more [2] sludge from point-sources) LACUSTURINE [0 3 or less [0] SHALE [-1]	Maximum Maximum Maximum Maximum 20 1 1 1 1 1 1 1 1 1 1 1 1 1
3] CHANNEL MORPHOLOGY Check ONE in each category (0r 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] GOOD [5] RECOVENED [4] MODERATE [2] LOWN [2] FAR [3] RECOVENED [4] MODERATE [2] LOWN [2] FAR [3] RECOVENED [4] MODERATE [2] Comments RECOVENED [4] LOW [1] Channel [2] All SAMK EROSSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) Maximum [20] Biver right lexing downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY Ber Rossing downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY Biver right lexing downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY Biver right lexing downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY Biver right lexing downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY Biver right lexing downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY Biver right lexing downstream RIPARIAN WIDTH FLOOD PLAIN QUALITY Comments Maximum Socie [2] Resident and users] Resident and users] Comments Dool WIDTH > RIFFLE WIDTH [2] Check ALL that apply<	quality; 3-Highest quality in midiameter log that is stable, we UNDERCUT BANKS [1] OVERHANGING VEGE SHALLOWS (IN SLOW OROTMATS [1]	juality; 2-Moderate amounts, but not of highest quality or in small amounts oderate or greater amounts (e.g., very large boulders in deep or fast wate II developed rootwad in deep / fast water, or deep, well-defined, functiona] POOLS > 70cm [2] OXBOWS, BACKWATE TATION [1] ROOTWADS [1]!★ AQUATIC MACROPHY	s of highest Check ONE (Or 2 & average) r, large Check ONE (Or 2 & average) l pools. EXTENSIVE >75% [11] ERS [1] Image: MODERATE 25-75% [7] TES [1] SPARSE 5-<25% [3]
SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] If excluent [7] NONE [6] If HIGH [3] Channel [3] MODERATE [3] GOOD [5] RECOVERED [4] DOWDERATE [2] LOW [1] Channel [3] I NONE [1] POOR [1] RECOVERED [4] LOW [1] Channel [3] Channel [3] I NONE [1] POOR [1] RECOVERED [4] LOW [1] Channel [3] If Channel [3] I NONE [1] POOR [1] RECOVERING [3] LOW [1] Channel [2] If Channel [3]	Comments		
Ruler right looking downstream BROSION RIPARIAN WIDTH WIDE > 50m [4] FLOOD PLAIN QUALITY B FOREST, SWAMP [3] Conservation TilLage [1] URBAN ODERATE [0:50m [3] MODE / LITTLE [3] NARROW 5-10m [2] SHRUB OR OLD FIELD [2] URBAN OR INDUSTRIAL [0] Heavy / severe [1] URPN NARROW <5m [1]	SINUOSITY DEVEL HIGH [4] Image: Excelent and the second	OPMENT CHANNELIZATION STABILITY ELLENT [7] Image: NONE [6] Image: NONE [6] Image: NONE [6] D [5] Image: Recovered [4] Image: None [2] Image: None [2] [3] Image: Recovering [3] Image: Low [1] Image: None [3] Image: None [3]	Channel Maximum
MAXIMUM DEPTH Check ONE (ONLY!) CHANNEL WIDTH Check ONE (Or 2 & average) CURRENT VELOCITY Check ALL that apply Recreation Potential Primary Contact Secondary Contact	River right looking downstream	RIPARIAN WIDTH FLOOD PLAIN QUALI R I R I WIDE > 50m [4] I I MODERATE 10-50m [3] I I MODERATE 10-50m [3] I I NARROW 5-10m [2] I RESIDENTIAL, PARK, NEW FIELD I VERY NARROW < 5m [1]	TY R CONSERVATION TILLAGE [1] URBAN OR INDUST RIAL [0] [1] MINING / CONSTRUCTION [0] Indicate predominant land use(s) past 100m riparian. <i>Riparian</i> Maximum
Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: INO RIFFLE [metric=0] RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFFLE / RUN EMBEDDEDNESS BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] NONE [2] BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] NONE [2] BEST AREAS > 10cm [2] MAXIMUM < 50cm [1]	MAXIMUM DEPTH Check ONE (ONLY!) 1 0.7-<1m [6]	CHANNEL WIDTH CURRENT VELOCITY Check ONE (Or 2 & average) Check ALL that apply POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] POOL WIDTH = RIFFLE WIDTH [1] VERY FAST [1] INTERSTI POOL WIDTH < RIFFLE WIDTH [0]	TIAL [-1] TENT [-2] files. Primary Contact Secondary Contact (circle one and comment on back) Pool/ Current Maximum
DRAINAGE AREA (mi ²) HIGH - VERY HIGH [10-6]	of riffle-obligate spe RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS 5-10cm [1] BEST AREAS < 5cm [metric=0]	Check ONE (Or 2 & average). RUN DEPTH RIFFLE / RUN SUBSTRATE MAXIMUM > 50cm [2] MAXIMUM < 50cm [1]	a population NO RIFFLE [metric=0] FLE / RUN EMBEDDEDNESS NONE [2] BLOW [1] MODERATE [0] Riffle
	DRAINAGEAREA		%RIFELE:



Qualitative Habitat Evaluation Index QHEI Score: and Use Assessment Field Sheet Date: // 1301-06 21 -031 Stream & Location: RM: Scorers Full Name & Affiliation: Lk, MI Office verified location Lat./ Long .: 37.554163, -80.710853 **River** Code: STORET #: (NAD 83 - decim SUBSTRATE Check ONLY Two substrate TYPE BOXES; Check ONE (Or 2 & average) estimate % or note every type present BEST TYPES POOL RIFFLE QUALITY OTHER TYPES POOL RIFFLE ORIGIN HEAVY [-2] LIMESTONE [1] HARDPAN [4] BLDR /SLABS [10] TILLS [1] MODERATE [-1] Substrate BOULDER [9] DETRITUS [3] SILT NORMAL [0] COBBLE [8] MUCK [2] 13 □ FREE [1] HARDPAN [0] GRAVEL [7] SILT [2] HODEDNE SS NORMAL [0] EXTENSIVE [-2] SANDSTONE [0] SAND [6] ARTIFICIAL [0] RIP/RAP [0] MODERATE [-1] BEDROCK [5] Maximum (Score natural substrates; ignore NUMBER OF BEST TYPES: 4 or more [2] sludge from point-sources) LACUSTURINE [0] 20 SHALE [-1] 3 or less [0] Comments COAL FINES [-2] 2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest AMOUNT Check ONE (Or 2 & average) quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools. EXTENSIVE >75% [11] MODERATE 25-75% [7] UNDERCUT BANKS [1] _ POOLS > 70cm [2] ____ _ OXBOWS, BACKWATERS [1] SPARSE 5-<25% [3] **OVERHANGING VEGETATION [1]** AQUATIC MACROPHYTES [1] ROOTWADS [1] □ NEARLY ABSENT <5% [1] LOGS OR WOODY DEBRIS [1] SHALLOWS (IN SLOW WATER) [1] **BOULDERS** [1] ROOTMATS [1] Cover Maximum Comments 20 3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) STABILITY SINUOSITY DEVELOPMENT CHANNELIZATION HIGH [4] EXCELLENT 171 NONE [6] HIGH [3] **RECOVERED** [4] MODERATE [2] MODERATE [3] GOOD [5] **RECOVERING** [3] LOW [1] LOW [2] FAIR [3] Channel RECENT OR NO RECOVERY [1] NONE [1] POOR [1] 15 Maximum Comments 4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) FLOOD PLAIN QUALITY River right looking downstream **RIPARIAN WIDTH** EROSION CONSERVATION TILLAGE [1] WIDE > 50m [4] G G FOREST, SWAMP [3] URBAN OR INDUSTRIAL [0] SHRUB OR OLD FIELD [2] D NONE / LITTLE [3] □ □ MODERATE 10-50m [3] □ □ MODERATE [2] □ □ RESIDENTIAL, PARK, NEW FIELD [1] □ □ MINING / CONSTRUCTION [0] □ □ NARROW 5-10m [2] FENCED PASTURE [1] □ □ HEAVY / SEVERE [1] □ □ VERY NARROW < 5m [1] Indicate predominant land use(s) OPEN PASTURE, ROWCROP [0] past 100m riparian. □ □ NONE [0] Riparian Maximum Comments 10 5] POOL / GLIDE AND RIFFLE / RUN QUALITY **Recreation Potential** CHANNEL WIDTH CURRENT VELOCITY MAXIMUM DEPTH Check ALL that apply **Primary Contact** Check ONE (Or 2 & average) Check ONE (ONLY!) TORRENTIAL [-1] SLOW [1] POOL WIDTH > RIFFLE WIDTH [2] Secondary Contact □ > 1m [6] POOL WIDTH = RIFFLE WIDTH [1] VERY FAST [1] □ INTERSTITIAL [-1] 0.7-<1m [4] (circle one and comment on back) G FAST [1] INTERMITTENT [-2] POOL WIDTH > RIFFLE WIDTH [0] 0.4-<0.7m [2] MODERATE [1] EDDIES [1] Pool 0.2-<0.4m [1]</p> Current Indicate for reach - pools and riffles □ < 0.2m [0] Maximum Comments Indicate for functional riffles; Best areas must be large enough to support a population NO RIFFLE [metric=0] Check ONE (Or 2 & average). of riffle-obligate species: RIFFLE / RUN SUBSTRATE RIFFLE / RUN EMBEDDEDNESS RUN DEPTH **RIFFLE DEPTH** MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] NONE [2] BESTAREAS > 10cm [2] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] LOW [1] BESTAREAS 5-10cm [1] Riffle UNSTABLE (e.g., Fine Gravel, Sand) [0] MODERATE [0] BEST AREAS < 5cm EXTENSIVE [-1] Maximum [metric=0] Comments VERY LOW - LOW [2-4] 6] GRADIENT %POOL %GLIDE ft/mi) Gradient MODERATE [6-10] DRAINAGE AREA Maximum %RIFFLE %RUN: HIGH - VERY HIGH [10-6] 10 mi2) 06/16/06 EPA 4520

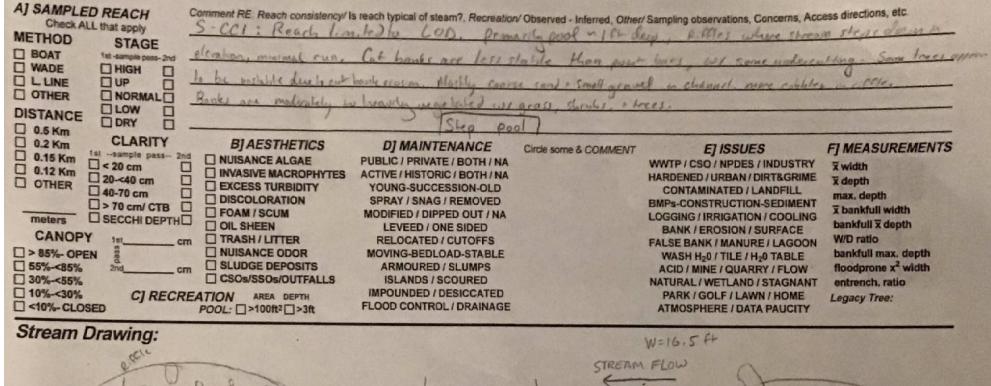


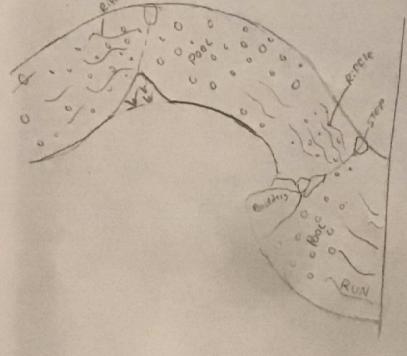


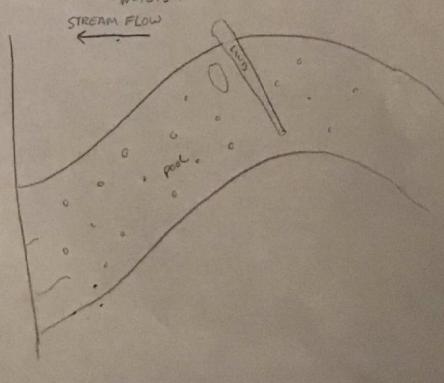
Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score:

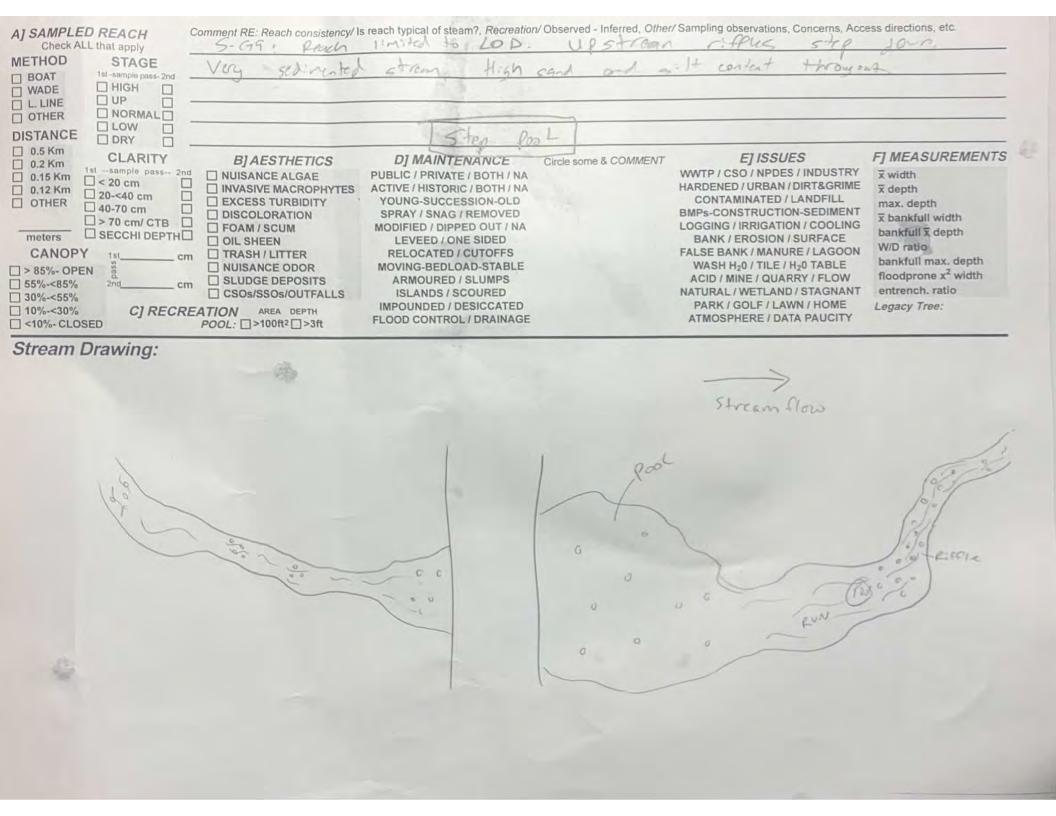
Stream & Locatio	n: <u>S-CCI</u>				
River Code:	STO	Scorers RET #:	Full Name & Affi. Lat./ Long.:	liation: LK 36.894043, -79.445744	Office verified
11 SUBSTRATE CH	POOL RIFFLE OT	TYPE BOXES; pe present HER TYPES POOL HARDPAN [4] DETRITUS [3] MUCK [2] SILT [2] ARTIFICIAL [0] (Score natural substrate [2] sludge from point-s		Check ONE (Or 2 & av SIN NE [1] [Dos [0] SILT [10] [DNE [0] [RINE [0] [1 [1] [
2] INSTREAM COV quality, 3-Highest quality diameter log that is stab UNDERCUT BAN OVERHANGING V SHALLOWS (IN S ROOTMATS [1] Comments	quality; 2-Moderate a y in moderate or greater a le, well developed rootwa KS [1]	amounts, but not of high	boulders in deep or fa	st water, large Che nctional pools E KWATERS [1] M ROPHYTES [1] SI	AMOUNT ck ONE (Or 2 & average) CTENSIVE >75% [11] ODERATE 25-75% [7] PARSE 5-25% [3] EARLY ABSENT <5% [1] Cover Maximum 20
HIGH [4] MODERATE [3] LOW [2] NONE [1] Comments	VELOPMENT C EXCELLENT [7] IN GOOD [5] IN FAIR [3] IN FOOR [1] IN FOOR [1] IN FAIR [3] IN FOOR [1] IN FOOR [1] IN FAIR [3] IN FOOR [1] IN F	HANNELIZATION ONE [6] ECOVERED [4] ECOVERING [3] ECENT OR NO RECOV	STABILI HIGH [3] MODERA LOW [1] ERY [1]	NTE [2]	Channel Maximum 20
4] BANK EROSION A River right looking downstree REROSION REROSION NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [1] Comments	RIPARIAN V RIPARIAN V O RIPARIAN V O NODE > 50m [4] O MODERATE 10- NARROW 5-10n	/IDTH 50m [3] D SHRU [2] D RESID (< 5m [1] D FENC	category for EACH BA FLOOD PLAIN Q EST, SWAMP [3] JB OR OLD FIELD [2] DENTIAL, PARK, NEW ED PASTURE [1] I PASTURE, ROWCRO		ERVATION TILLAGE [1] N OR INDUSTRIAL [0] G / CONSTRUCTION [0] ominant land use(s)
□ 0.7~<1m [4] [□ 0.4~<0.7m [2] [□ 0.2~<0.4m [1] □ < 0.2m [0] Comments	Check ONE (Or 2 & POOL WIDTH > RIFFL POOL WIDTH = RIFFL POOL WIDTH > RIFFL	E WIDTH [2] U TORI E WIDTH [1] VER E WIDTH [1] FAST E WIDTH [0] FAST MOD Indi	[1] INTE ERATE [1] EDDI cate for reach - pools of	W [1] RSTITIAL [-1] RMITTENT [-2] IES [1] and riffles	creation Potential trimary Contact condary Contact condary Contact e one and comment on back) Pool / Current Maximum 12
Indicate for function of riffle-obligate sp RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS 5-10cm [1] BEST AREAS < 5cm [metric=0] Comments	nal riffles; Best ar becies: RUN DEPTH MAXIMUM > 50cm [2 MAXIMUM < 50cm [2	RIFFLE / RUI	N SUBSTRATE obble, Boulder) [2] e.g., Large Gravel) [1 , Fine Gravel, Sand) [1	RIFFLE / RUN EM	Z] ATE [0] Riffle / SIVE [-1] Maximum 8
DRAINAGE AREA	/mi) VERY LOW - L MODERATE [6 ni²) HIGH - VERY H	-10]	%POOL:65 %RUN: 10	×	Gradient Maximum 10 06/16/06





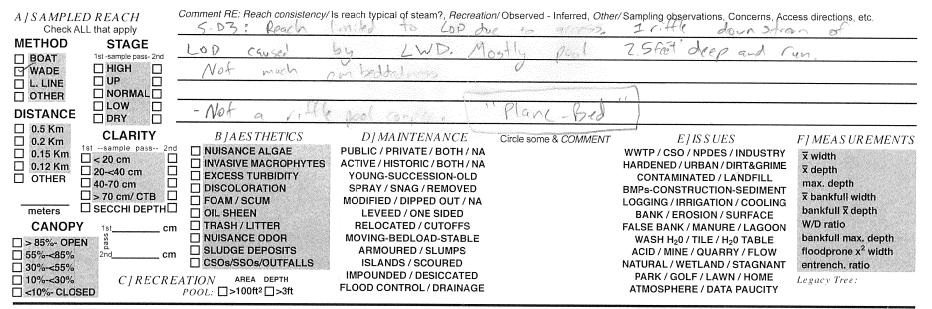


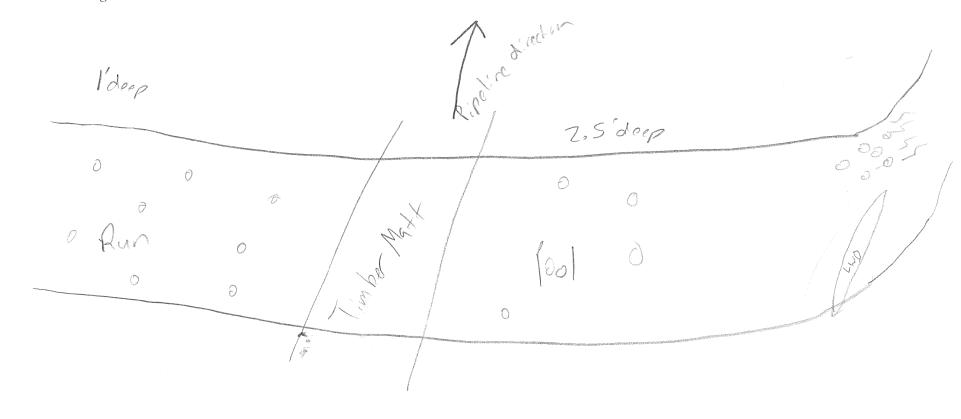
	Quellitetius Hehit	at Evaluation Index	\cap
OhicEPA	and Use Assess	at Evaluation Index ment Field Sheet	QHEI Score:
Stream & Location:	5-09	RM	1
River Code: -	Scorer	s Full Name & Affiliation: Lat./ Long.: 36.959361, -79	Office verified
11 SUBSTRATE Check	ONLY Two substrate TYPE BOXES:	<u>(NAD 83 - decimal 9 </u>	
estimat	te % or note every type present	OPICIN	Or 2 & average) QUALITY
BLDR /SLABS [10] BOULDER [9] COBBLE [8] GRAVEL [7] SAND [6] BEDROCK [5]	OOL RIFFLE OTHER THE POO HARDPAN [4] DETRITUS [3] MUCK [2] SILT [2] (Score natural substra (Score natural substra YPES: 4 or more [2] sludge from poin 3 or less [0]	L RIFFLE LIMESTONE [1] TILLS [1] WETLANDS [0] HARDPAN [0] SANDSTONE [0] 	HEAVY [-2] SILT MODERATE [-1] FREE [1] DEO MODERATE [-1] MODERATE [-1] MODERATE [-1] MAXIMUM 20 MAXIMUM 20
21 INSTREAM COVER	Indicate presence 0 to 3: 0-Absent: 1-Ven	small amounts or if more common of n	harginal AMOUNT
quality: 3-Highest quality in diameter log that is stable, UNDERCUT BANKS OVERHANGING VEC SHALLOWS (IN SLO ROOTMATS [1]	quality, 2-Moderate amounts, but not of m moderate or greater amounts (e.g., very laiwell developed rootwad in deep / fast water [1] POOLS > 70cm [2] GETATION [1] ROOTWADS [1]	rge boulders in deep or fast water, large or deep, well-defined, functional pools	Check ONE (Or 2 & average) EXTENSIVE >75% [11] MODERATE 25-75% [7] SPARSE 5-<25% [3]
Comments			20
MODERATE [3] GC LOW [2] FA NONE [1] PC Comments	CCELLENT [7] INONE [6] DOD [5] RECOVERED [4] NR [3] RECOVERING [3] DOR [1] RECENT OR NO REC	2	Channel Maximum 20
River right looking downstream	B WIDE > 50m [4] B FG C MODERATE 10-50m [3] C SI C NARROW 5-10m [2] C R C VERY NARROW < 5m [1]	FLOOD PLAIN QUALITY OREST, SWAMP [3] HRUB OR OLD FIELD [2] ESIDENTIAL, PARK, NEW FIELD [1] ENCED PASTURE [1]	CONSERVATION TILLAGE [1]
51 POOL / GLIDE AND	RIFFLE / RUN QUALITY	in the second	
MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7~(1m [4]	CHANNEL WIDTH Check ONE (Or 2 & average) POOL WIDTH > RIFFLE WIDTH [2]	CURRENT VELOCITY Check ALL that apply TORRENTIAL [-1] SLOW [1] VERY FAST [1] INTERSTITIAL FAST [1] INTERMITTENT MODERATE [1] EDDIES [1]	
□ < 0.2m [0] Comments		Indicate for reach - pools and riffles.	Current 4 Maximum
	RUN DEPTH RIFFLE / MAXIMUM > 50cm [2] STABLE (e MAXIMUM < 50cm [1]	Or 2 & average). RUN SUBSTRATE RIFFLE .g., Cobble, Boulder) [2]	12
	ft/mi) 🕅 VERY LOW - LOW [2-4]	%POOL:(40) %G	LIDE: Gradient
DRAINAGE AREA	MODERATE [6-10] mi ²) HIGH - VERY HIGH [10-6]	\leq	FFLE:
EPA 4520			06/16/06



ChieFRA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet QHEIScore:
Stream & Location: 5-D3 RM:Date:] [] [9]21
Scorers Full Name & Affiliation: KMK River Code: STORET #: Lat./ Long.: 36.965631, -79.605542 Office verified location [
I SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present Check ONE (Or 2 & average) BEST TYPES BEST TYPES BOULDER [9] OTHER TYPES POOL RIFFLE ORIGIN QUALITY BEST TYPES BOULDER [9] HARDPAN [4] BEST TYPES HARDPAN [4] BEST TYPES HARDPAN [4] BEST TYPES HEAVY [-2] BEST TYPES Substrate [-1] BEST TYPES Substrates [0] BEST TYPES Substrates [0] BEST TYPES MODERATE [-1] BEST TYPES Substrates [0] BEST TYPES MODERATE [-1] BEST TYPES Substrates [0] BEST TYPES MODERATE [-1] BEST TY
2] INS TREAM COVER quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts, but not of highest quality or in small amounts of highest diameter log that is stable, well developed rootwad in deep / ast water, or deep, well-defined, functional pools. AMOUNT Check ONE (Or 2 & average) UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKWATERS [1] BOULDERS [1] OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHYTES [1] MODERATE 25-75% [7] BOULDERS [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] NEARLY ABSENT <5% [1]
Comments Cover Maximum 20
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] Channel NONE [1] POOB [1] RECENT OR NO RECOVERY [1]
4] BANK EROS ION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) River right looking downstream RIPARIAN WIDTH RIPARIAN WIDTH RIPARIAN WIDTH BIDE 50m [4] MODERATE [2] MODERATE [2] RIPARIAN WIDTH WIDE > 50m [4] MODERATE [2] RIPARIAN WIDTH WIDE > 50m [4] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD [1] RESIDENTIAL, PARK, NEW FIELD [1] RIPARIAN WIDTH RIPARIAN WIDTH RIP
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH CHANNEL WIDTH CHANNEL WIDTH Check ONE (ONLY) / Check ONE (Or 2 & average) Check ALL that apply D 1m [6] / POOL WIDTH > RIFFLE WIDTH [2] / TORRENTIAL [-1] / SLOW [1] / INTERSTITIAL [-1] / SLOW [1]
12 12 12 12 12 12 12 12 12 12 Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). INO RIFFLE [metric=0] RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS > 10cm [2] Imaximum < 50cm [2]
[metric=0] [metric=0] [model:Rife] [mo

06/16/06





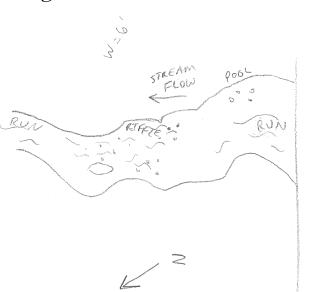
OhioEPA		tat Evaluation Index QH	El Score:
		RM:	Date: 11 10 106 21
Stream & Location:	5-E17	rs Full Name & Affiliation: LK/	MR
River Code: -	- STORET #:	Lat./ Long.: 37.000529, -79.74276	Office verified location
1] SUBSTRATE Check	ONLY Two substrate TYPE BOXES;	(NAD 83 - decimal *) Check ONE (Or 2 &	average)
DECT TVDEC	ate % or note every type present OTHER TYPES POOL	OL RIFFLE ORIGIN	QUALITY
BLDR /SLABS [10]	HARDPAN [4] DETRITUS [3]	LIMESTONE [1]	HEAVY [-2] MODERATE [-1] Substrate
COBBLE [8]	MUCK [2]	U WETLANDS [0]	NORMAL [0] FREE [1] 18
GRAVEL [7]	[] [] SILT [2] [] ARTIFICIAL [0]	SANDSTONE [0] SDED	EXTENSIVE [-2]
NUMBER OF BEST	(Score natural subst	rates; ignore RIP/RAP [0]	MODERATE [-1] Maximum
Comments	3 or less [0]	COAL FINES [-2]	□ NONE [1]
Bedrock		ery small amounts or if more common of margina	1
quality: 3-Highest quality	quality; 2-Moderate amounts, but not of in moderate or greater amounts (e.g., very e, well developed rootwad in deep / fast wal (S [1] POOLS > 70cm EGETATION [1] ROOTWADS [1]	highest quality or in small amounts of highest large boulders in deep or fast water, large ler, or deep, well-defined, functional pools. [2] OXBOWS, BACKWATERS [1]	AMOUNT Check ONE (Or 2 & average)] EXTENSIVE >75% [11]] MODERATE 25-75% [7]] SPARSE 5-<25% [3]] NEARLY ABSENT <5% [1] Cover Maximum 20
	HOLOGY Check ONE in each category (200
HIGH [4] MODERATE [3] LOW [2] NONE [1] Comments	VELOPMENT CHANNELIZAT EXCELLENT [7] INNONE [6] GOOD [5] RECOVERED [4] FAIR [3] RECOVERING [3] POOR [1] RECENT OR NO R	LOW [1]	Channel Maximum 20
River right looking downsto R EROSION NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE Comments	ream RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] NARROW 5-10m [2] VERY NARROW < 5m [1]	SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD [1] FENCED PASTURE [1] Indicate	CONSERVATION TILLAGE [1]
5] POOL / GLIDE A MAXIMUM DEPT Check ONE (ONLY!) > 1m [6] 0.7-<1m [4] 0.2-<0.4m [1] < 0.2m [0] Comments	Check ONE (Or 2 & average) POOL WIDTH > RIFFLE WIDTH [2] POOL WIDTH = RIFFLE WIDTH [1] POOL WIDTH > RIFFLE WIDTH [0]	CURRENT VELOCITY Check ALL that apply TORRENTIAL [-1] SLOW [1] VERY FAST [1] INTERSTITIAL [-1] FAST [1] INTERMITTENT [-2] MODERATE [1] EDDIES [1] Indicate for reach - pools and riffles.	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12
Indicate for fur of riffle-obligat RIFFLE DEPTH BEST AREAS > 10cm BEST AREAS 5-10cm BEST AREAS < 5cm [metric Comments	e species: Check ON RUN DEPTH RIFFL [2] MAXIMUM > 50cm [2] STABL [1] MAXIMUM < 50cm [1] MOD. S UNSTA	E (e.g., Cobble, Boulder) [2] IN No. 101 IN STABLE (e.g., Large Gravel) [1] L BLE (e.g., Fine Gravel, Sand) [0]	
6] GRADIENT (DRAINAGE ARI	ft/mi) UERY LOW - LOW [2-4]	POOL (A) POLID	
(EA DODERATE [6-10] mi ² HIGH - VERY HIGH [10-6]	%POOL: 60 %GLID %RUN: 5%RIFFL	- Maulinum

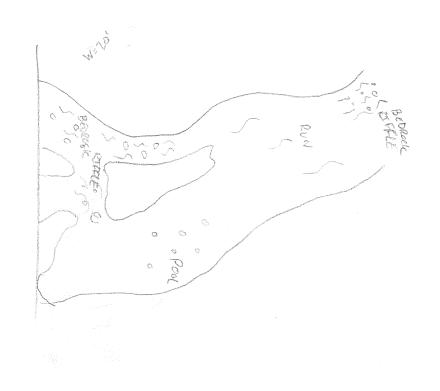
Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc. AI SAMPLED REACH LOD 5+02-2001 1 mi tech to his clessie Keach a Check ALL that apply METHOD STAGE Stos bed or k are Downstream 3005 Caused BOAT 1st-sample pass- 2nd HIGH U WADE obblec UP L. LINE □ NORMAL□ OTHER LOW Pool Step DISTANCE DRY 0.5 Km F] MEASUREMENTS E] ISSUES DI MAINTENANCE **B] AESTHETICS** Circle some & COMMENT CLARITY 0.2 Km WWTP / CSO / NPDES / INDUSTRY 1st -- sample pass-- 2nd PUBLIC / PRIVATE / BOTH / NA x width ☐ NUISANCE ALGAE 0.15 Km □ < 20 cm HARDENED / URBAN / DIRT&GRIME ACTIVE / HISTORIC / BOTH / NA □ INVASIVE MACROPHYTES x depth 0.12 Km 20-<40 cm **EXCESS TURBIDITY** CONTAMINATED / LANDFILL YOUNG-SUCCESSION-OLD max. depth OTHER 40-70 cm **BMPs-CONSTRUCTION-SEDIMENT** DISCOLORATION SPRAY / SNAG / REMOVED x bankfull width □ > 70 cm/ CTB □ LOGGING / IRRIGATION / COOLING MODIFIED / DIPPED OUT / NA FOAM / SCUM bankfull x depth SECCHI DEPTH BANK / EROSION / SURFACE LEVEED / ONE SIDED OIL SHEEN meters W/D ratio FALSE BANK / MANURE / LAGOON **RELOCATED / CUTOFFS** TRASH / LITTER CANOPY cm bankfull max. depth WASH H₂0 / TILE / H₂0 TABLE NUISANCE ODOR MOVING-BEDLOAD-STABLE > 85%- OPEN floodprone x² width ACID / MINE / QUARRY / FLOW □ SLUDGE DEPOSITS ARMOURED / SLUMPS 55%-<85% 2nd cm entrench. ratio NATURAL / WETLAND / STAGNANT CSOs/SSOs/OUTFALLS ISLANDS / SCOURED 30%-<55% PARK / GOLF / LAWN / HOME IMPOUNDED / DESICCATED Legacy Tree: AREA DEPTH C] RECREATION 10%-<30% ATMOSPHERE / DATA PAUCITY FLOOD CONTROL / DRAINAGE POOL: >100ft2 >3ft 10%- CLOSED Stream Drawing: Stream Flow DOG 00 5 400 6 10 200 Bulat 0 erre 0 0 C 0

OhicEPA		bitat Evaluation Index ssment Field Sheet	QHEI Score:
Stream & Location:	5= G20	ŀ	RM: Date: 1/9/21
	Sco	rers Full Name & Affiliation: I	_K
River Code:	<i>STORET #:</i>		L, -79.760000 Office verified location □
1] SUBSTRATE Check C estimate	DNLY Two substrate TYPE BOXES; e % or note every type present	Check ON	E (<i>Or 2 & average</i>)
BEST TYPES PC	OL RIFFLE OTHER TYPES P		QUALITY
BLDR /SLABS [10]	HARDPAN [4] DETRITUS [3]	LIMESTONE [1]	HEAVY [-2]
COBBLE [8]	🗌 🗌 MUCK [2]	WETLANDS [0]	SILT NORMAL [0]
GRAVEL [7]	SILT [2] ARTIFICIAL [0] _		
	(Score natural sub	point-sources)	Maximum S NORMAL [0]
Comments	2 3 or less [0]		DECNE DEXTENSIVE [-2] MODERATE [-1] NORMAL [0] NONE [1]
comments		COAL FINES [-2]	
- quality: 3-Highest quality in r	quality; 2-Moderate amounts, but not moderate or greater amounts (e.g., ver vell developed rootwad in deep / fast w [1] POOLS > 70cm ETATION [1] ROOTWADS [1]		Inighest arge Check ONE (Or 2 & average) ools. EXTENSIVE >75% [11] S [1] MODERATE 25-75% [7] ES [1] SPARSE 5-<25% [3]
and a second sec	R [3] RECOVERING [3]	☐ HIGH [3] @ MODERATE [2]] ☐ LOW [1]	Channel Maximum 20
River right looking downstream	RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW < 5m [1]	in each category for EACH BANK (Or 2 FLOOD PLAIN QUALIT FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD [1 FENCED PASTURE [1] OPEN PASTURE, ROWCROP [0]	
5] POOL / GLIDE AND MAXIMUM DEPTH	RIFFLE / RUN QUALITY		Recreation Potential
Check ONE (ONLY!)	CHANNEL WIDTH Check ONE (Or 2 & average)	CURRENT VELOCITY Check ALL that apply	Primary Contact
AND THE REPORT OF THE ADDRESS AND	POOL WIDTH > RIFFLE WIDTH [2] POOL WIDTH = RIFFLE WIDTH [1]	TORRENTIAL [-1] SLOW [1]	AL [-1] Secondary Contact
0.4-<0.7m [2]	POOL WIDTH > RIFFLE WIDTH [0]	FAST [1]	ENT [-2]
□ 0.2-<0.4m [1] □ < 0.2m [0]		MODERATE [1] DEDDIES [1] Indicate for reach - pools and riffle	
Comments			Maximum 12
Indicate for function of riffle-obligate spectrum RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS 5-10cm [1] BEST AREAS < 5cm [metric=0]	pecies: Check O RUN DEPTH RIFFI MAXIMUM > 50cm [2] STABL MAXIMUM < 50cm [1]	E (e.g., Cobble, Boulder) [2]	population NO RIFFLE [metric=0] LE / RUN EMBEDDEDNESS Image: None [2] Image: Low [1] Imag
Comments			Maximum 8
6] GRADIENT (DRAINAGE AREA (ft/mi) URRY LOW - LOW [2-4] MODERATE [6-10] mi ²) HIGH - VERY HIGH [10-6]		%GLIDE: Ø Gradient %GLIDE: Ø Gradient Maximum 10
EPA 4520			06/16/06

A] SAMPLED REACH Check ALL that apply METHOD STAGE BOAT 1st-sample pass- 2nd WADE HIGH L. LINE UP OTHER NORMAL DISTANCE DRY	Comment RE: Reach consistency/ S-GZO: Leve bed Cock step-post Mostly (.H.C. Complet		nils of LOD. Down stream	r/Sampling observations, Concerns, Acc Upstran is Mappers to stream is a r. file	a be
□ 0.5 Km CLARITY □ 0.2 Km 1stsample pass 2r □ 0.15 Km < 20 cm	 INVASIVE MACROPHYTES EXCESS TURBIDITY DISCOLORATION FOAM / SCUM OIL SHEEN TRASH / LITTER NUISANCE ODOR SLUDGE DEPOSITS CSOs/SSOs/OUTFALLS 	D] MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE	Circle some & COMMENT	E] ISSUES WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	F] MEASUREMENTS \overline{x} width \overline{x} depth max. depth \overline{x} bankfull width bankfull \overline{x} depth W/D ratio bankfull max. depth floodprone x^2 width entrench. ratio Legacy Tree:

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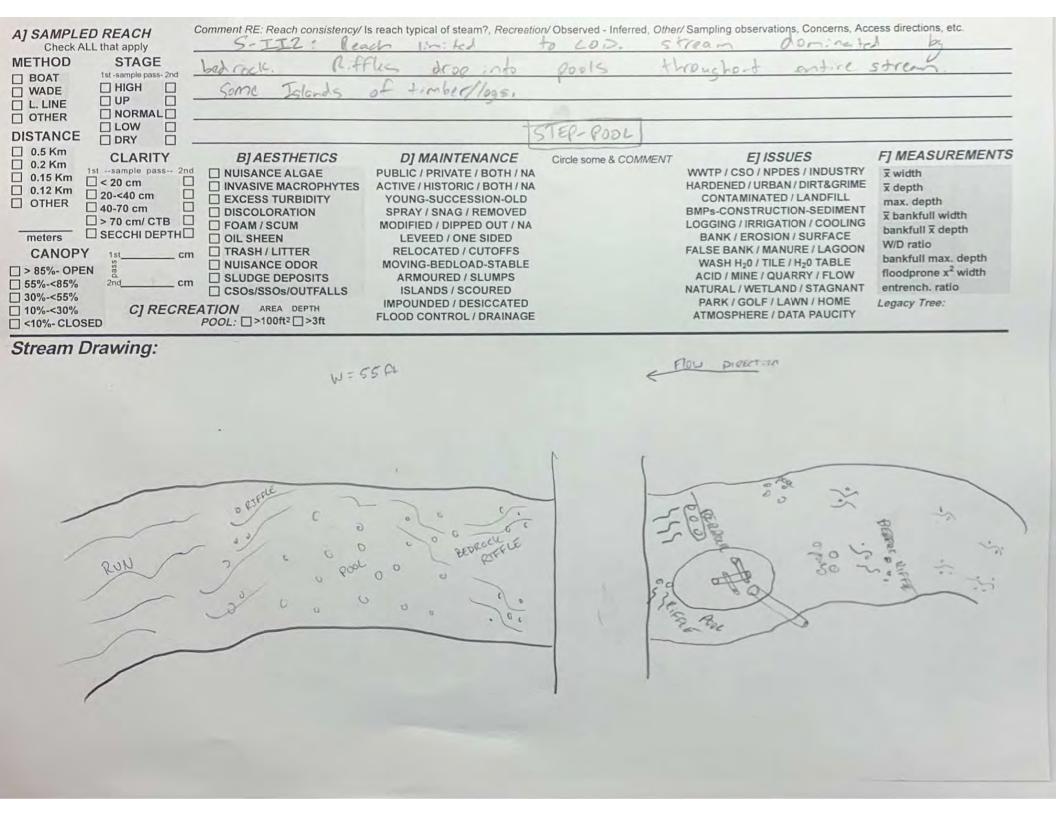


Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

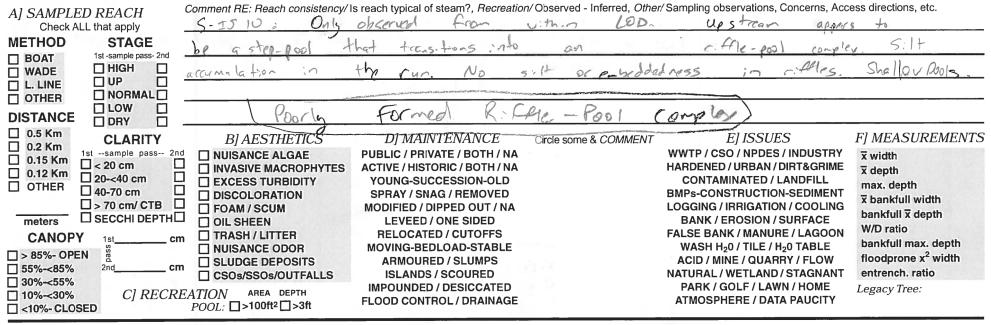
QHEI Score:

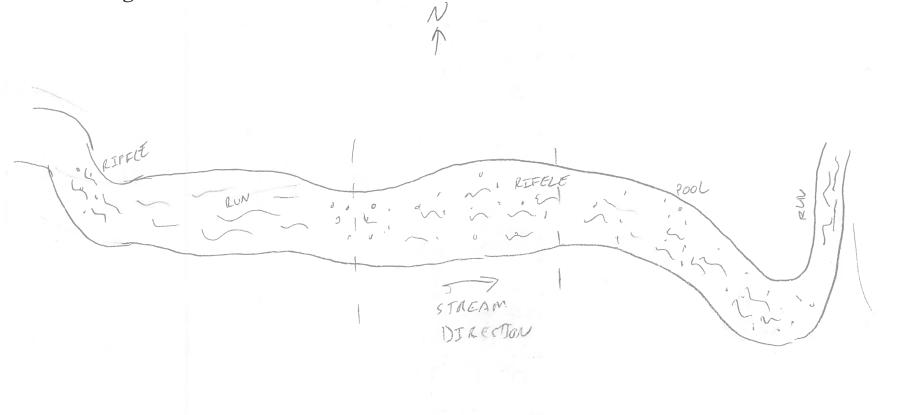
06/16/06

Stream & Location: 5	TT2		RM:	Date: 11 / 30 / 06 ZI
	Sc	orers Full Name & Affin	liation: LK	
River Code:	STORET #:	(NAD 83 - decimal ")	37.049219, -79.908513	Office verified location
estimate %	E a ser al des free	UMESTO	NE [1] DS [0] N [0] DNE [0] JRINE [0] JI 1]	QUALITY QUALITY HEAVY [-2] MODERATE [-1] NORMAL [0] EXTENSIVE [-2] MODERATE [-1] MODERATE [-1] MODERATE [-1] MAXimum 20
quality; 3-Highest quality in mo	TATION [1] ROOTWADS	ot of highest quality or in small very large boulders in deep or f water, or deep, well-defined, f cm [2] OXBOWS, BA [1] AQUATIC MAG	amounts of highest fast water, large unctional pools.	Check ONE (Or 2 & average) EXTENSIVE >75% [11]
SINUOSITY DEVEL	[3] RECOVERING	ZATION STABI HIGH [4] MODEL [3] LOW [1	3] RATE [2]	Channel Maximum 20 15
River right looking downstream	RIPARIAN ZONE Check OF RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW < 5m [1]	FLOOD PLAIN	QUALITY	& average)
🗐 0.7-<1m [4] 👘	IFFLE / RUN QUALITY CHANNEL WIDTH Check ONE (Or 2 & average) POOL WIDTH > RIFFLE WIDTH [2 POOL WIDTH = RIFFLE WIDTH [1 POOL WIDTH > RIFFLE WIDTH [0] UVERY FAST [1] IN FAST [1] IN	apply SLOW [1] NTERSTITIAL [-1] NTERMITTENT [-2] SDDIES [1]	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12
of riffle-obligate spe RIFFLE DEPTH	RUN DEPTH RIFI MAXIMUM > 50cm [2] Imaximum MAXIMUM < 50cm [1]	ONE (Or 2 & average). FLE / RUN SUBSTRATI BLE (e.g., Cobble, Boulder) I	E RIFFLE / RUI [2] IN (1) [1] Lo hol) [0] M	
DRAINAGE AREA	mi) 👿 VERY LOW - LOW [2-4] D MODERATE [6-10] mi ²) D HIGH - VERY HIGH [10-4]	%POOL:(6] %RUN: (25 %GLIDE	



ChieEPA	Qualitative Habitat and Use Assessm		QHEI Score	
Stream & Location: <u><u>S-T</u></u>	510	12:07-12:22 F	RM: Date:	_/19_/21
		Full Name & Affiliation:	LK/MB	06
River Code:	_STORET #:	Lat./Long.: 37.089179	, -80.005026	Office verified location
	every type present	ODIONI	E (Or 2 & average)	1777
BEST TYPES POOL RIFFL	E OTHER TYPES POOL F			
BOULDER [9]		TILLS [1] WETLANDS [0]		TE [-1] Substrate
COBBLE [8] GRAVEL [7]	_ [] [] MUCK [2] _ [] [] [] SILT [2]			1.0
Image: SAND [6] Image: BEDROCK [5]	_ ARTIFICIAL [0] (Score natural substrates			VE [-2]
NUMBER OF BEST TYPES:	4 or more [2] sludge from point-s	ources) LACUSTURINE [0]		[0] Maximum 20
<i>Comments</i>	3 or less [0]			
2] INSTREAM COVER Indicate pr quality; 3-Highest quality in moderate o diameter log that is stable, well develop UNDERCUT BANKS [1] OVERHANGING VEGETATION [SHALLOWS (IN SLOW WATER) ROOTMATS [1] Comments	Moderate amounts, but not of high r greater amounts (e.g., very large bed rootwad in deep / fast water, o POOLS > 70cm [2] [1] ROOTWADS [1]	est quality or in small amounts of boulders in deep or fast water, la	highest arge Check ONE (Cools. S [1] MODERATE S [1] SPARSE 5 RIS [1] NEARLY AB	0r 2 & average) >75% [11] 25-75% [7] :25% [3]
3] CHANNEL MORPHOLOGY C SINUOSITY DEVELOPMEI HIGH [4] Ø EXCELLENT [MODERATE [3] GOOD [5] LOW [2] FAIR [3] NONE [1] POOR [1] Comments	NT CHANNELIZATION	N STABILITY HIGH [3] MODERATE [2] LOW [1]		Channel Maximum 20
	PARIAN WIDTH R E > 50m [4] Image: Constraint of the property of t	FLOOD PLAIN QUALITY REST, SWAMP [3] RUB OR OLD FIELD [2] SIDENTIAL, PARK, NEW FIELD [1	A CONSERVATIO CONSERVATIO CONSERVATIO CONSERVATION CON	DUSTRIAL [0] TRUCTION [0]
Check ONE (<i>ONLY</i> !) Check Check ONE (<i>ONLY</i> !) POOL W 0.7-<1m [4]	IANNEĽ WIDTH CONE (Or 2 & average) IDTH > RIFFLE WIDTH [2]	CURRENT VELOCITY Check ALL that apply DRRENTIAL [-1] SLOW [1] ERY FAST [1] INTERSTITIA AST [1] INTERMITTE ODERATE [1] EDDIES [1] Indicate for reach - pools and riffle	ENT [-2]	Contact y Contact
BEST AREAS > 10cm [2] MAXIN	Check ONE (<i>O</i> . N DEPTH RIFFLE / F MUM > 50cm [2] STABLE (e.g MUM < 50cm [1] MOD. STABL	r 2 & average). RUN SUBSTRATE RIFFL I., Cobble, Boulder) [2]	Population	RIFFLE [metric=0] EDNESS Riffle /
DRAINAGE AREA	VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]		%GLIDE: RIFFLE:	Gradient Maximum 10 06/16/06





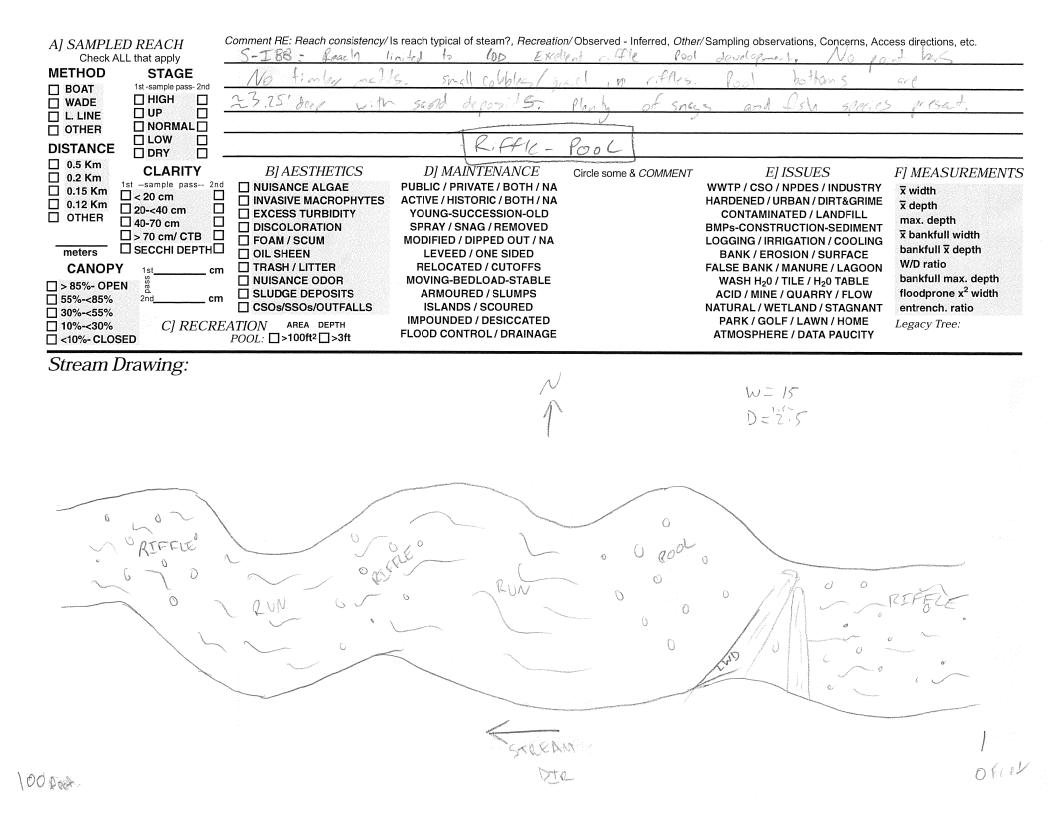
Chieff A	Qualitative Habitat Evaluation Inde and Use Assessment Field Sheet		e:
Stream & Location:	S-II4		/_/_/_/_21
	Scorers Full Name & Affiliation	: LK IMB	
River Code:		115679, -80.060300	Office verified location
estima		ONE (Or 2 & average)	
BEST TYPES	OOL RIFFLE OTHER TYPES POOL RIFFLE ORIGIN		
BOULDER [9]	📴 🗇 DETRITUS [3] 🔲 TILLS [1]		ATE [-1] Substrate
COBBLE [8] GRAVEL [7]	🗆 🗆 MUCK [2] 🔲 WETLANDS [0] 🔄 SILT [2] HARDPAN [0]		1 10
□ □ SAND [6] □ □ BEDROCK [5]	ARTIFICIAL [0] SANDSTONE [0] (Score natural substrates; ignore RIP/RAP [0]		IVE [-2]
	YPES: 4 or more [2] sludge from point-sources)		L[0] <i>Maximum</i> 20
Comments	□ 3 or less [0] □ SHALE [-1] □ COAL FINES [-2]]
	D. Indicate presence 0 to 2: 0 Absent: 1 Very small amounts or if more comp	op of morginal	
-	Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more comm quality; 2-Moderate amounts, but not of highest quality or in small amount moderate or greater amounts (e.g., very large boulders in deep or fast wate	s of highest	DUNT Or 2 & average)
diameter log that is stable,	well developed rootwad in deep / fast water, or deep, well-defined, functiona	al pools. EXTENSIVE	E >75% [11]
UNDERCUT BANKS			
SHALLOWS (IN SLO ROOTMATS [1]	DW WATER) [1] BOULDERS [1] LOGS OR WOODY DE		
Comments			Cover Maximum 20
	OLOGY Check ONE in each category (Or 2 & average)		
	ELOPMENTCHANNELIZATIONSTABILITYXCELLENT [7]INONE [6]IHIGH [3]		
MODERATE [3] G	OOD [5] RECOVERED [4] MODERATE [2]	
<u> </u>	AIR [3]		Channel 14
Comments			Maximum 14
4] BANK EROSION A River right looking downstrea	ND RIPARIAN ZONE Check ONE in each category for EACH BANK (
	□ □ ₩IDE > 50m [4] □ □ □ FOREST, SWAMP [3]		ON TILLAGE [1]
NONE / LITTLE [3] MODERATE [2]	MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIEL		
HEAVY / SEVERE [1]	Image: Wery NARROW < 5m [1]	Indicate predominant l	and use(s)
Comments			Riparian Maximum
51 POOL / GLIDE ANI	D RIFFLE / RUN QUALITY	22	10
MAXIMUM DEPTH	CHANNEL WIDTH CURRENT VELOCIT	• 11	n Potential
Check ONE (<i>ONLY!</i>)	Check ONE (Or 2 & average) Check ALL that apply POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] 2 SLOW [1]	-	^v Contact ry Contact
🗌 0.7-<1m [4]	POOL WIDTH = RIFFLE WIDTH [1] VERY FAST [1] INTERST	TITIAL [-1] (circle one and c	comment on back)
📰 0.2-<0.4m [1]		[1]	Pool /
□ < 0.2m [0] Comments	Indicate for reach - pools and	riffles.	Current 5 Maximum
	ional riffical Post grass must be large enough to suppor		12
of riffle-obligate s			RIFFLE [metric=0]
RIFFLE DEPTH BEST AREAS > 10cm [2]		FLE / RUN EMBEDD	EDNESS
BESTAREAS 5-10cm [1]	MAXIMUM < 50cm [1] MOD. STABLE (e.g., Large Gravel) [1]	LOW [1]	
BEST AREAS < 5cm [metric=0] Comments	UNSTABLE (e.g., Fine Gravel, Sand) [0]		Riffle / Run Maximum 8
6] GRADIENT	ft/mi) [] VERY LOW - LOW [2-4] %POOL:) %GLIDE:	Gradient
DRAINAGEAREA)%RIFFLE:	Maximum 10
EPA 4520			06/16/06

AJ SAMPLED REACH Check ALL that apply METHOD STAGE BOAT 1st -sample pass- 2nd (WADE HIGH L. LINE UP OTHER NORMAL DISTANCE DRY	Comment RE: Reach consistency/ <u>S-II4: Reach</u> <u>Complex: However</u> 1001 lengths	limited to LOD.		Sampling observations, Concerns, Acc EAM is an excellent of pools and as a play	short
□ 0.5 Km CLARITY □ 0.2 Km 1stsample pass 2n □ 0.15 Km < 20 cm	 INVASIVE MACROPHYTES EXCESS TURBIDITY DISCOLORATION FOAM / SCUM OIL SHEEN TRASH / LITTER NUISANCE ODOR SLUDGE DEPOSITS CSOs/SSOs/OUTFALLS 	D] MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE	Circle some & COMMENT	E] ISSUES WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON WASH H20 / TILE / H20 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT PARK / GOLF / LAWN / HOME ATMOSPHERE / DATA PAUCITY	F] MEASUREMENTS x̄ width x̄ depth max. depth x̄ bankfull width bankfull x̄ depth W/D ratio bankfull max. depth floodprone x ² width entrench. ratio Legacy Tree:

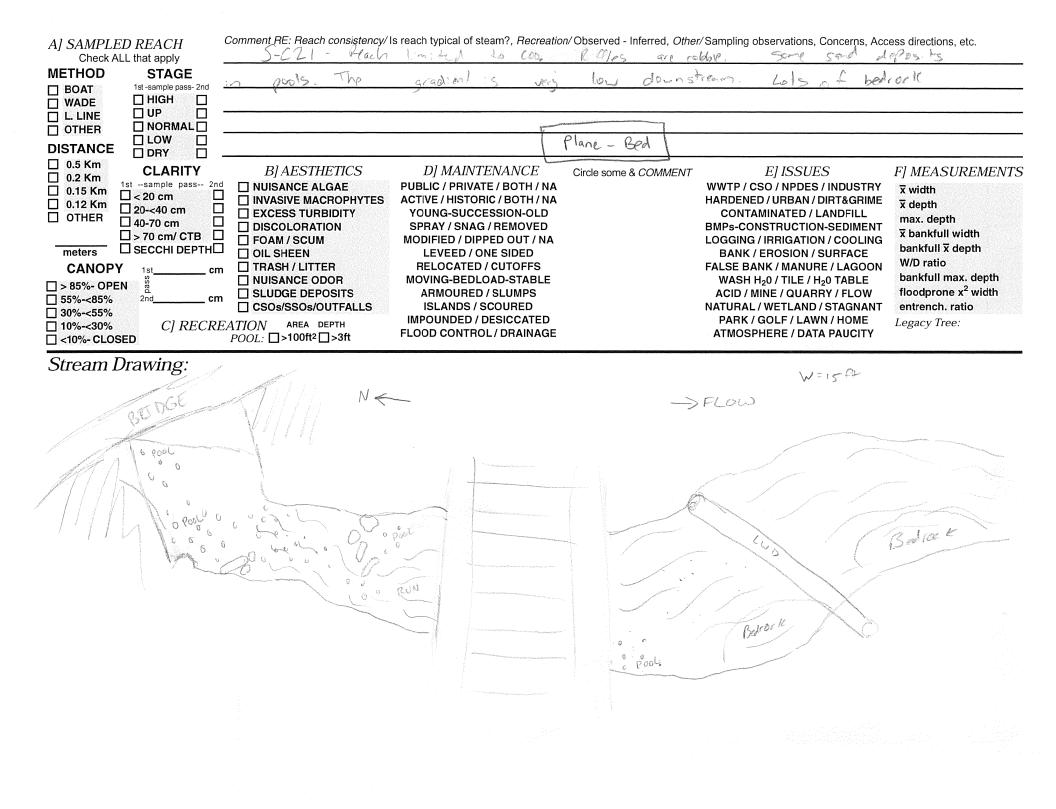
W= Freet D = Ifoot or = 30cm

FLOW DIRECTION quit RIFEIT RICHE 200 INN 1001 m B K. H. 55 5-5-5-20 0 - D - D 5 0 0 215 RUN 5 1.55% 0 (00L

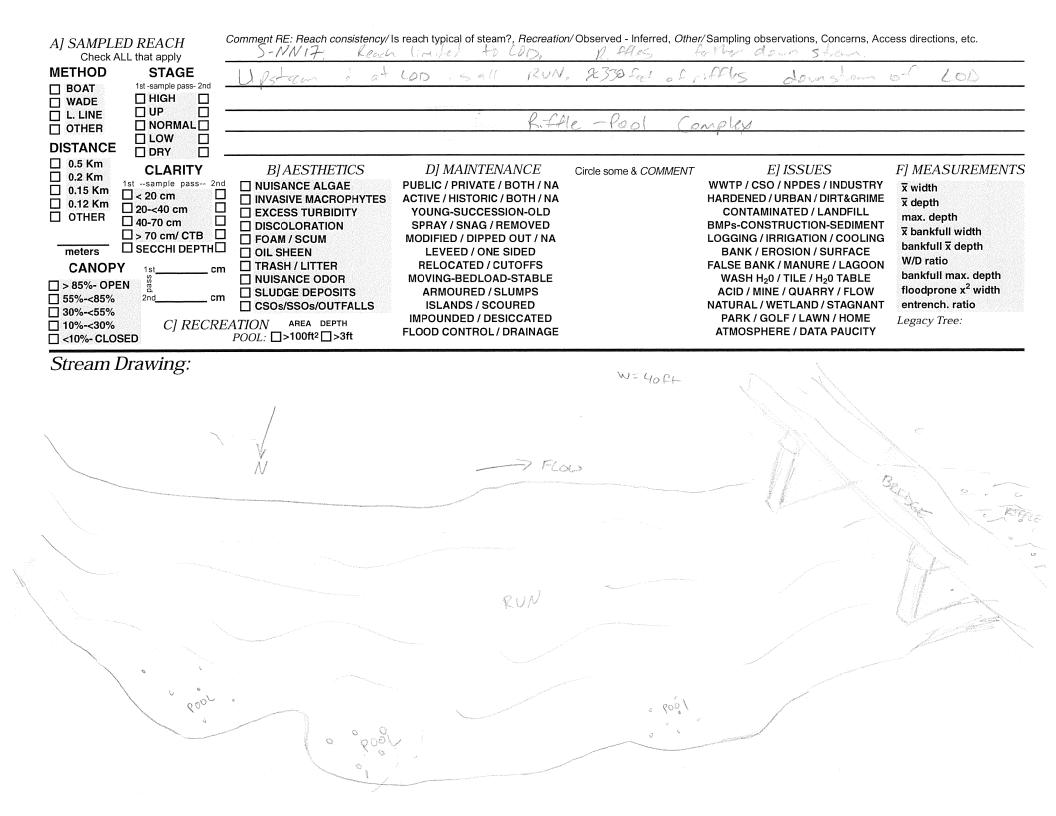
	Qualitative Habitat Eva and Use Assessment		QHEI Score:
Stream & Location: IJ 88	3	RM	:Date:///9/21
River Code:	_STORET #: Lat./	ame & Affiliation: <u>/</u> Long.: <u>37.168395, -</u> 80.	138295Office verified location □
1] SUBSTRATE Check ONLY Two su estimate % or note of BEST TYPES DOL RIFFLE BLDR /SLABS [10] BOULDER [9] COBBLE [8] GRAVEL [7] BEDROCK [5] NUMBER OF BEST TYPES: 4 Comments	OTHER TYPES OTHER	ORIGIN	Or 2 & average) QUALITY HEAVY [-2] SILT MODERATE [-1] FREE [1] DEONE MODERATE [-1] MODERATE [-1] MODERATE [-1] MODERATE [-1] MAXIMUM 20
2] INSTREAM COVER Indicate pre quality; 3-Highest quality in moderate or diameter log that is stable, well develope UNDERCUT BANKS [1] OVERHANGING VEGETATION [1 SHALLOWS (IN SLOW WATER) ROOTMATS [1] Comments	oderate amounts, but not of highest qua greater amounts (e.g., very large boulde ed rootwad in deep / fast water, or deep, POOLS > 70cm [2] C] ROOTWADS [1] A	lity or in small amounts of hig ers in deep or fast water, large well-defined, functional pools	hest Check ONE (Or 2 & average) a. EXTENSIVE >75% [11] b. MODERATE 25-75% [7] c. SPARSE 5-<25% [3]
3] CHANNEL MORPHOLOGY Ch SINUOSITY DEVELOPMEN HIGH [4] EXCELLENT [7 MODERATE [3] GOOD [5] LOW [2] FAIR [3] NONE [1] POOR [1] Comments	T CHANNELIZATION	STABILITY HIGH [3] MODERATE [2] LOW [1]	Channel Maximum 20
	ARIAN WIDTH FLO > 50m [4] Image: Design of the second se	OD PLAIN QUALITY SWAMP [3] [3] [3] R OLD FIELD [2] [3] IAL, PARK, NEW FIELD [1] [3] ASTURE [1] [4]	er bank & average)
Check ONE (ONLY!) Check □ > 1m [6] □ POOL WII □ 0.7-<1m [4]	ANNEL WIDTH CUF ONE (Or 2 & average) C DTH > RIFFLE WIDTH [2] TORREN DTH = RIFFLE WIDTH [1] VERY FA DTH > RIFFLE WIDTH [0] FAST [1] MODERA		
of riffle-obligate species: RIFFLE DEPTH RUN BEST AREAS > 10cm [2] MAXIM	ES; Best areas must be large en Check ONE (<i>Or 2 & av</i> DEPTH RIFFLE / RUN S UM > 50cm [2] □ STABLE (e.g., Cobb UM < 50cm [1]	verage). SUBSTRATE RIFFLE ble, Boulder) [2] , Large Gravel) [1]	
DRAINAGE AREA 👘 🕅 🛛	VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]		GLIDE: Gradient FFLE: D Maximum 10



ChicEPA		at Evaluation Index ment Field Sheet	QHEI Score:
Stream & Location:	5-021	RM	l:Date: [] _ [20] 21
River Code:	STORET #:	rs Full Name & Affiliation: Lat./Long.:37.251791,-80 (NAD 83-decimal*)37.2600	0.258990 Office verified location
BEST TYPES BLDR /SLABS [10] BOULDER [9] GRAVEL [7] BEDROCK [5] NUMBER OF BEST T Comments	HARDPAN [4] HARDPAN [4] DETRITUS [3] HARDPAN [4] HARDPAN [4] DETRITUS [3] HARDPAN [4] HARDPAN [4]	ORIGIN ULRIFFLE ULIMESTONE [1] ULIMESTONE [1] ULILLS [1] URETLANDS [0] ULARDPAN [0] ULACUSTURINE [0] ULACUST	GUALITY HEAVY [-2] SILT MODERATE [-1] SILT NORMAL [0] FREE [1] 17 DEO MODERATE [-1] MODERATE [-1] MAXIMUM NORMAL [0] 20
- quality: 3-Highest quality i	GETATION [1] ROOTWADS [1]	nighest quality or in small amounts of hi arge boulders in deep or fast water, larg	gnest Check ONE (<i>Or 2 & average</i>) s. □ EXTENSIVE >75% [11] 1] □ MODERATE 25-75% [7] [1] □ SPARSE 5-<25% [3]
SINUOSITY DEV HIGH [4] MODERATE [3] LOW [2] SINUOSITY DEV DEV	IOLOGY Check ONE in each category (O YELOPMENT CHANNELIZATI IXCELLENT [7] NONE [6] GOOD [5] RECOVERED [4] AIR [3] RECOVERING [3] POOR [1] RECENT OR NO RE	ION STABILITY HIGH [3] MODERATE [2] LOW [1]	Channel Maximum 20
River right looking downstree EROSION	R WIDE > 50m [4] R MODERATE 10-50m [3] R NARROW 5-10m [2] R VERY NARROW < 5m [1]	FLOOD PLAIN QUALITY FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD [1] FENCED PASTURE [1]	CONSERVATION TILLAGE [1]
5] POOL / GLIDE AN MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1] < 0.2m [0] Comments	Check ONE (<i>Or 2 & average</i>) POOL WIDTH > RIFFLE WIDTH [2] POOL WIDTH = RIFFLE WIDTH [1] POOL WIDTH > RIFFLE WIDTH [0]	CURRENT VELOCITY Check ALL that apply TORRENTIAL [-1] SLOW [1] VERY FAST [1] INTERSTITIAL FAST [1] INTERMITTEN MODERATE [1] EDDIES [1] Indicate for reach - pools and riffles.	
of riffle-obligate RIFFLE DEPTH BEST AREAS > 10cm [2 BEST AREAS 5-10cm [1 BEST AREAS < 5cm [metric=0] Comments	RUN DEPTH RIFFLE [2] [3] MAXIMUM > 50cm [2] [3] STABLE [3] [3] MAXIMUM < 50cm [1]	(Or 2 & average). / RUN SUBSTRATE RIFFLE (e.g., Cobble, Boulder) [2]	Image: None of the system Image: None system
6] GRADIENT (DRAINAGE AREA (EPA 4520	ft/mi) URRY LOW - LOW [2-4] MODERATE [6-10] mi ²) HIGH - VERY HIGH [10-6]		GLIDE: IFFLE: 25 Gradient Maximum 10 06/16/06



ChicEPA	Qualitative Habitat Evaluation Index and Use Assessment Field Sheet	QHEI Score:
Stream & Location: <u>S-N(</u>	VIF	RM:Date:2_2 21
	Scorers Full Name & Affiliation:	000
River Code:		6,_80.515786 Office verified location
BEST TYPES POOL RIFFL	every type present Check C E OTHER TYPES ORIGIN	ONE (Or 2 & average) QUALITY HEAVY [-2] SILT MODERATE [-1] FREE [1] MODERATE [-1] MODERATE [-1] MODERATE [-1] MAXimum 20 MAXIMUM
quality: 2- quality: 3-Highest quality in moderate of		of highest , large Check ONE (Or 2 & average) pools. EXTENSIVE >75% [11] IRS [1] MODERATE 25-75% [7] TES [1] SPARSE 5-<25% [3]
21 CHANNEL MODDUOLOCY	Check ONE in each category (Or 2 & average)	20
SINUOSITY DEVELOPME HIGH [4] EXCELLENT MODERATE [3] GOOD [5] LOW [2] FAIR [3] NONE [1] POOR [1] Comments Frain (1)		Channel Maximum 20
River right looking downstream RII REROSION RUI RONE / LITTLE [3] NONE / LITTLE [3] NONE / LITTLE [3] NONE RUI RODERATE [2] NAF RUI RODERATE [1] RUI RODERATE [1] RUI RODERATE (1) RUI	RY NARROW < 5m [1]	TY
Check ONE (ONLY!) Check □ > 1m [6] □ POOL W □ 0.7-<1m [4]	C / RUN QUALITY HANNEL WIDTH k ONE (Or 2 & average) /IDTH > RIFFLE WIDTH [2] DITH = RIFFLE WIDTH [1] VIDTH > RIFFLE WIDTH [1] DITH > RIFFLE WIDTH [1] DITH > RIFFLE WIDTH [1] DITH = RIFFLE WIDTH [1] DITH > RIFFLE WIDTH [2] DIT	TIAL [-1] TENT [-2]] Primary Contact Secondary Contact (circle one and comment on back) Pool/
of riffle-obligate species: RIFFLE DEPTH RU BEST AREAS > 10cm [2] MAXII	Ies; Best areas must be large enough to support Check ONE (<i>Or 2 & average</i>). N DEPTH RIFFLE / RUN SUBSTRATE RIFI MUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] MUM < 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] UNSTABLE (e.g., Fine Gravel, Sand) [0]	
DRAINAGE AREA	VERY LOW - LOW [2-4] %POOL: MODERATE [6-10] %RUN:	%GLIDE: %RIFFLE:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

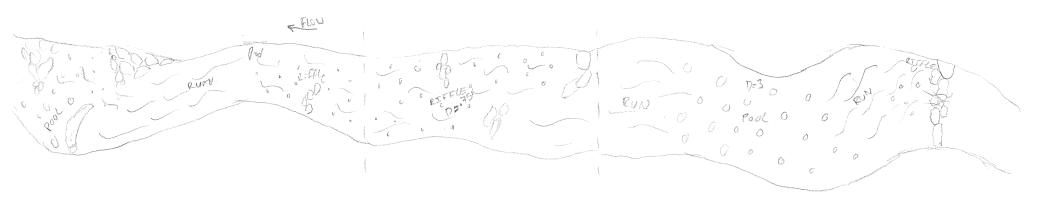
OHEI Score:

Stream & Location:(- MA *RM: Date:* | | 20/21 Scorers Full Name & Affiliation: LK Lat./Long.: (NAD 83 - decimal °) Office verified location River Code: STORET #: 37.313511, -80.404606 1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present Check ONE (Or 2 & average) OTHER TYPES POOL RIFFLE BEST TYPES ORIGIN QUALITY POOL RIFFLE LIMESTONE [1] HARDPAN [4] BLDR /SLABS [10] HEAVY [-2] MODERATE [-1] BOULDER [9] DETRITUS [3] Substrate SILT WETLANDS [0] COBBLE [8] □ □ MUCK [2] NORMAL [0] HARDPAN [0] SILT [2] GRAVEL [7] □ FREE [1] 18MODERAL MODERAL S SANDSTONE [0] SAND [6] ARTIFICIAL [0] EXTENSIVE [-2]

 Image: BEDROCK [5]
 (Score natural substrates; ignore Image: Score natural substr MODERATE [-1] Maximum 20 SHALE [-1] 3 or less [0] Comments COAL FINES [-2] Berrock pool bottoms 2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal AMOUNT quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools. Check ONE (Or 2 & average) EXTENSIVE >75% [11] **UNDERCUT BANKS [1]** POOLS > 70cm [2] _ OXBOWS, BACKWATERS [1] MODERATE 25-75% [7] **OVERHANGING VEGETATION [1]** ROOTWADS [1] SPARSE 5-<25% [3] **AQUATIC MACROPHYTES [1]** SHALLOWS (IN SLOW WATER) [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] □ NEARLY ABSENT <5% [1] ROOTMATS [1] Cover Comments Maximum 20 3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT STABILITY CHANNELIZATION HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] FAIR [3] **RECOVERING** [3] LOW [2] LOW [1] RECENT OR NO RECOVERY [1] Channel □ NONE [1] POOR [1] Maximum Comments of bank hank has 2 attento 20 Still 4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) River right looking downstream FLOOD PLAIN QUALITY **RIPARIAN WIDTH** EROSION WIDE > 50m [4] G FOREST, SWAMP [3] CONSERVATION TILLAGE [1] 🗋 🗋 NONE / LITTLE [3] URBAN OR INDUSTRIAL [0] □ □ MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] □ □ MODERATE [2] □ □ NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1]
 MINING / CONSTRUCTION [0] HEAVY / SEVERE [1] VERY NARROW < 5m [1] FENCED PASTURE [1] Indicate predominant land use(s) OPEN PASTURE, ROWCROP [0] past 100m riparian. Riparian Comments Maximum 10 5] POOL / GLIDE AND RIFFLE / RUN QUALITY **Recreation Potential** MAXIMUM DEPTH CURRENT VELOCITY CHANNEL WIDTH Check ONE (ONLY!) Check ONE (Or 2 & average) Check ALL that apply Primary Contact 📓 > 1m [6] POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] Secondary Contact POOL WIDTH = RIFFLE WIDTH [1] 0.7-<1m [4] VERY FAST [1] INTERSTITIAL [-1] (circle one and comment on back) 0.4-<0.7m [2] POOL WIDTH > RIFFLE WIDTH [0] FAST [1] INTERMITTENT [-2] MODERATE [1] EDDIES [1] 0.2-<0.4m [1] Pool Indicate for reach - pools and riffles. □ < 0.2m [0] Current Maximum Comments 12 Indicate for functional riffles; Best areas must be large enough to support a population NO RIFFLE [metric=0] of riffle-obligate species: Check ONE (Or 2 & average). **RIFFLE / RUN SUBSTRATE** RIFFLE DEPTH RUN DEPTH RIFFLE / RUN EMBEDDEDNESS BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] A STABLE (e.g., Cobble, Boulder) [2] NONE [2] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] LOW [1] BEST AREAS 5-10cm [1] Riffle MODERATE [0] BEST AREAS < 5cm UNSTABLE (e.g., Fine Gravel, Sand) [0] [metric=0] Run EXTENSIVE [-1] Maximum Comments 8 6] GRADIENT ft/mi) VERY LOW - LOW [2-4] 60 %POOL %GLIDE Gradient MODERATE [6-10] DRAINAGE AREA Maximum %RIFFLE HIGH - VERY HIGH [10-6] %RUN: mi²) (10

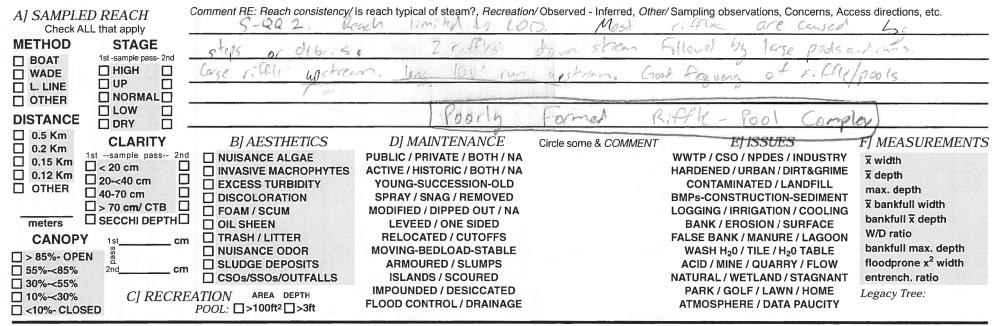
A] SAMPLED REACH Check ALL that apply	5-006: Reach	s reach typical of steam?, Recreation	n/Observed - Inferred, Other	r/Sampling observations, Concerns, Acc	
METHOD STAGE	75 Feet grut loo		i m pp hop	of belrook, Right	
	bank shares e	rossing No giges	a band de	silt deposite,	Cobbie
	bartop.				
		Kittle Mart Co	mplex)		
0.5 Km 0.2 Km 1stsample pass 2nd	B] AESTHETICS	<i>D] MAINTENANCE</i> PUBLIC / PRIVATE / BOTH / NA	Circle some & COMMENT	E] ISSUES WWTP / CSO / NPDES / INDUSTRY	F] MEASUREMENTS
□ 0.15 Km □ < 20 cm □ □ 0.12 Km □ 20-<40 cm □		ACTIVE / HISTORIC / BOTH / NA		HARDENED / URBAN / DIRT&GRIME	x width x depth
	□ EXCESS TURBIDITY □ DISCOLORATION	YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED		CONTAMINATED / LANDFILL BMPs-CONSTRUCTION-SEDIMENT	max. depth x bankfull width
□ > 70 cm/ CTB L meters □ SECCHI DEPTH	GIL SHEEN	MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED		LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE	bankfull x depth
CANOPY 1st cn		RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE		FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE	W/D ratio bankfull max. depth
□ > 85%- OPEN 6 □ 55%-<85% 2nd cm		ARMOURED / SLUMPS		ACID / MINE / QUARRY / FLOW	floodprone x ² width
30%-<55%		ISLANDS / SCOURED IMPOUNDED / DESICCATED		NATURAL / WETLAND / STAGNANT PARK / GOLF / LAWN / HOME	entrench. ratio
□ 10%-<30% C] RECRI □ <10%- CLOSED	EATION AREA DEPTH POOL: >100ft2 >3ft	FLOOD CONTROL / DRAINAGE		ATMOSPHERE / DATA PAUCITY	Legacy Tree:

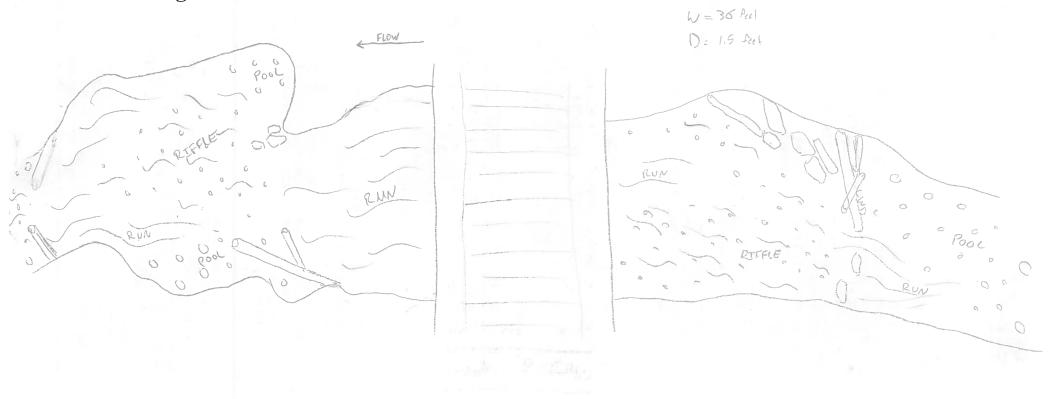
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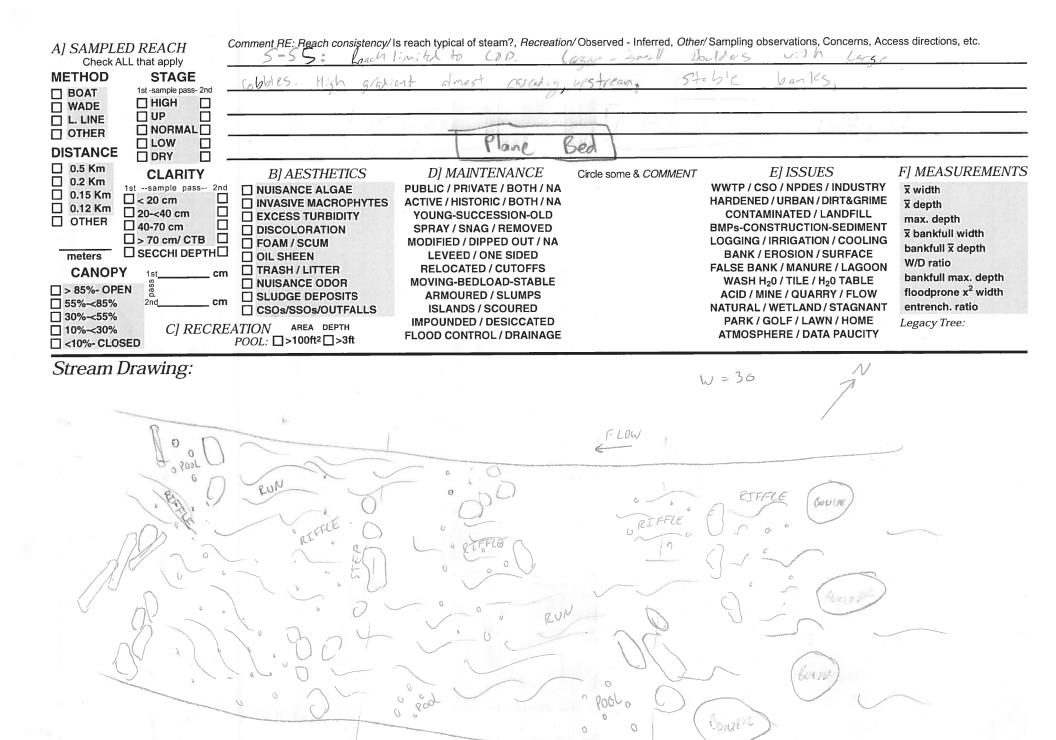


Chief PA	Qualitative Habitat I and Use Assessme		QHEI Score	
Stream & Location: 5-007		<i>R</i> M	1: Date: [1 20 21
River Code:		Ill Name & Affiliation: .at./ Long.: <u>37</u> . <u>333152</u>		Office verified
11 SUBSTRATE Check ONLY Two	substrate TYPE BOXES;	Check ONE	(Or 2 & average)	
BEST TYPES POOL RIFFI BLDR /SLABS [10]	LE OTHER TYPES POOL RII		QUAL DECONE SILT MODERA NORMAL DECONE SCINCTON NORMAL MODERA SCINCTON NORMAL NONE [1]	2] TE [-1] Substrate [0]
2] INSTREAM COVER Indicate p quality; 3-Highest quality in moderate diameter log that is stable, well develo UNDERCUT BANKS [1] OVERHANGING VEGETATION SHALLOWS (IN SLOW WATER ROOTMATS [1] Comments	-Moderate amounts, but not of highes or greater amounts (e.g., very large b ped rootwad in deep / fast water, or o POOLS > 70cm [2] [1] ROOTWADS [1]	st quality or in small amounts of h boulders in deep or fast water, lard	ighest Check ONE (O je EXTENSIVE [1] MODERATE [1] SPARSE 5- [1] NEARLY ABS	r 2 & average) >75% [11] 25-75% [7]
3] CHANNEL MORPHOLOGY (SINUOSITY DEVELOPME HIGH [4] EXCELLENT MODERATE [3] GOOD [5] LOW [2] FAIR [3] NONE [1] POOR [1] Comments	NT CHANNELIZATION	STABILITY HIGH [3] MODERATE [2] LOW [1]	I	Channel Maximum 20
	PARIAN WIDTH R DE > 50m [4] D DERATE 10-50m [3] D RROW 5-10m [2] D RROW 5-10m [2] D RROW 5-10m [2] D REAR 5m [1]	FLOOD PLAIN QUALITY ST, SWAMP [3] JB OR OLD FIELD [2] DENTIAL, PARK, NEW FIELD [1] ED PASTURE [1]	CONSERVATIO	USTRIAL [0] TRUCTION [0]
Check ONE (ONLY!) Check □ > 1m [6] Image: POOL W □ 0.7-<1m [4]	HANNEL WIDTH k ONE (<i>Or 2 & average</i>) VIDTH > RIFFLE WIDTH [2]	CURRENT VELOCITY Check ALL that apply RENTIAL [-1] SLOW [1] Y FAST [1] INTERSTITIAL T [1] INTERMITTEN DERATE [1] EDDIES [1] dicate for reach - pools and riffles.	T [-2]	Contact v Contact
of riffle-obligate species: RIFFLE DEPTH RU	MUM > 50cm [2] 💼 STABLE (e.g., MUM < 50cm [1] 🔲 MOD. STABLE	2 & average). JN SUBSTRATE RIFFLE Cobble, Boulder) [2]	Opulation	Riffle /
DRAINAGE AREA	VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]	\leq		Gradient Maximum 10

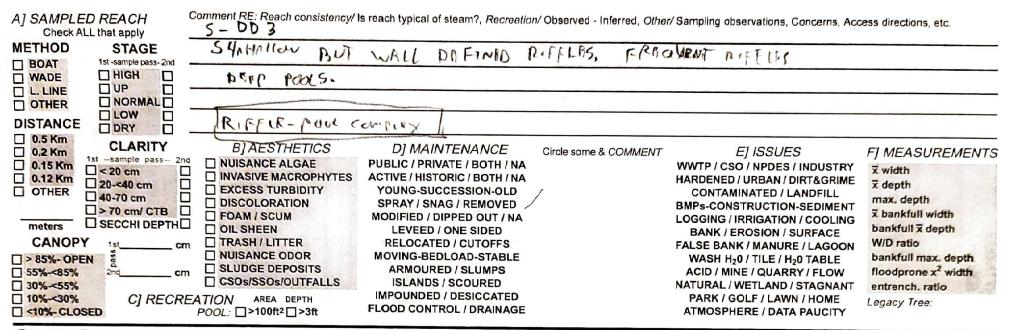


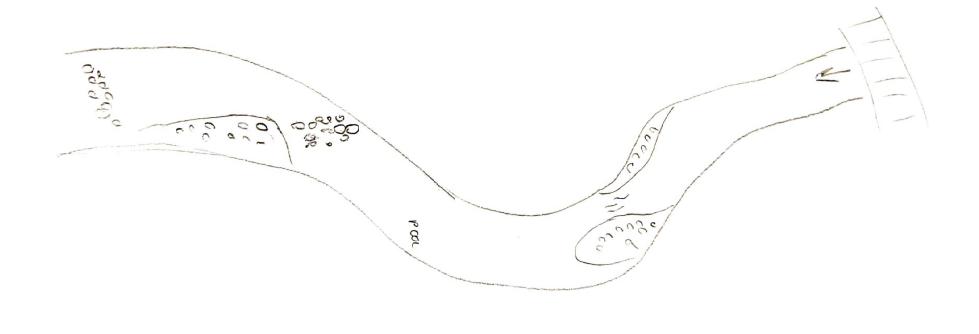


ChicEPA		itat Evaluation Index sment Field Sheet	QHEI Score:
Stream & Location:	5-55	R	M: Date: \ _/ 20_/ 21
River Code:	Score STORET #:S DNLY Two substrate TYPE BOXES; e % or note every type present	<u> </u>	
BEST TYPES PC BLDR /SLABS [10] BOULDER [9] BOULDER [9] BEDROCK [7] BEDROCK [5] NUMBER OF BEST TY Comments	OOL RIFFLE OTHER TYPES PC Image:	ORIGIN Image: Constraint of the stress of the str	QUALITY HEAVY [-2] SILT MODERATE [-1] PREE [1] FREE [1] MODERATE [-1] PREE [1] MODERATE [-1] MODERATE [-1] MODERATE [-1] MODERATE [-1] MODERATE [-1] MODERATE [-1] NORMAL [0] NONE [1]
- quality; 3-Highest quality in r	ETATION [1] ROOTWADS [1]	highest quality or in small amounts of large boulders in deep or fast water, la	highest arge Check ONE (Or 2 & average) sols. EXTENSIVE >75% [11] S [1] MODERATE 25-75% [7] S [1] SPARSE 5-<25% [3]
SINUOSITY DEVE	R [3] RECOVERING [3]	TION STABILITY	Channel Maximum 20
River right looking downstream	□ □ NARROW 5-10m [2] □ □ □ □ VERY NARROW < 5m [1] □ □	FLOOD PLAIN QUALITY FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD [1	
MAXIMUM DEPTH Check ONE (ONLY!) □ > 1m [6] □ 0.7-<1m [4]	POOL WIDTH = RIFFLE WIDTH [1] [POOL WIDTH > RIFFLE WIDTH [0]	CURRENT VELOCITY Check ALL that apply TORRENTIAL [-1] SLOW [1] VERY FAST [1] INTERSTITIA FAST [1] INTERMITTE MODERATE [1] EDDIES [1] Indicate for reach - pools and riffle	NT [-2]
Indicate for function of riffle-obligate sp RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS > 10cm [1] BEST AREAS < 5cm [metric=0] Comments	RUN DEPTH RIFFLI Image: MAXIMUM > 50cm [2] Image: STABLE Imaximum < 50cm [1]	E (Or 2 & average). E / RUN SUBSTRATE RIFFL E (e.g., Cobble, Boulder) [2]	
6] GRADIENT (DRAINAGE AREA (EPA 4520	ft/mi) UERY LOW - LOW [2-4] MODERATE [6-10] mi ²) HIGH - VERY HIGH [10-6]		GLIDE: Gradient Maximum 10 06/16/06

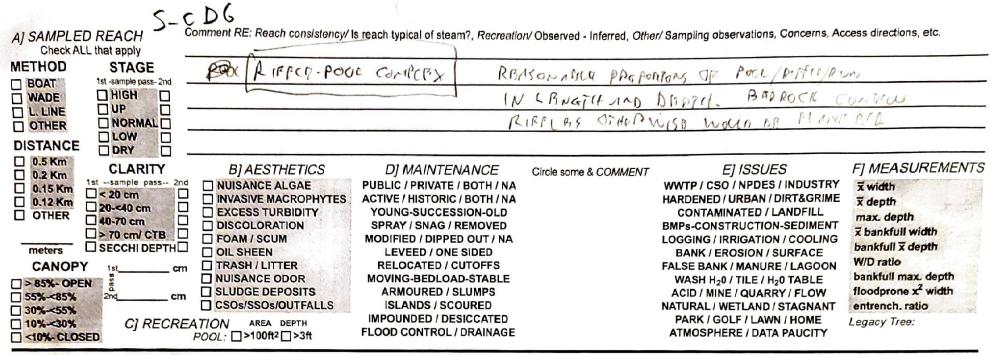


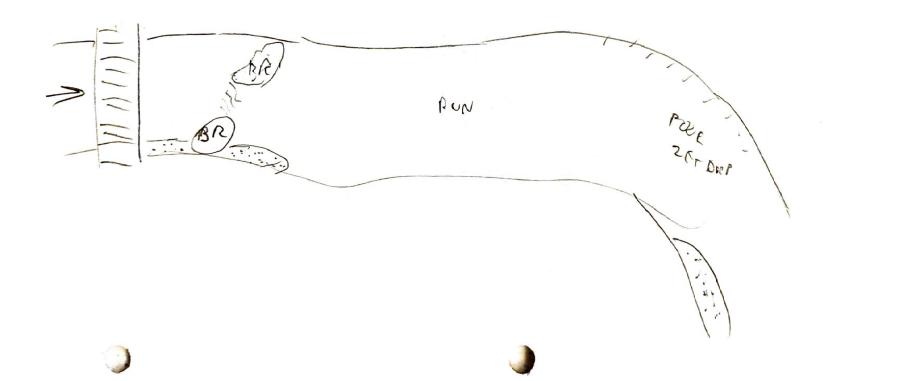
Stream & Location:	5-003	14:59	F	RM:	. Date: []]]	5/2
Disc. O. J.		Scorers Full Name				_
River Code:	- STORET #:	(NAD 83 - decima	Lat./Long.:	36.969118	3, -79.645042 Offic	e ver loca
estimate	DNLY Two substrate TYPE BOXE % or note every type present	S,	Check ON	E (Or 2 &	average)	
BEST TYPES N	OL RIFFLE OTHER TYP	ES POOL RIFFLE	ORIGIN	10/20	QUALITY	
BLDR /SLABS [10]		[4] []L	MESTONE [1]		HEAVY [-2]	
			LLS [1]	SILT	MODERATE [-1]	Su
GRAVEL [7]			ARDPAN [0]		Section NORMAL [0]	1
0 SAND [6]		L [0] [] S	ANDSTONE [0]	ODED	EXTENSIVE [-2]	L
BEDROCK [5]	(Score nature PES: 4 or more [2] sludge		ACUSTURINE [0]	NS	DEXTENSIVE [-2] MODERATE [-1] NORMAL [0] NONE [1]	Ма
Comments	3 or less [0]		HALE [-1]		NONE [1]	
Comments			OAL FINES [-2]			
21 INSTREAM COVER	Indicate presence 0 to 3: 0-Abs	ent: 1-Verv small amounts	or if more common	of margina		_
	augily 2-Moderate amounte hi	it not of highost quality or	in accell accelute of	highart	AMOUNT Check ONE (Or 2 & ave	
diameter log that is stable, v	moderate or greater amounts (e, well developed rootwad in deep /	g., very large boulders in o fast water, or deep, well-d	efined, functional po	ools.] EXTENSIVE >75% [1	
UNDERCUT BANKS	[1] POOLS >	70cm [2] OXBO	WS, BACKWATER	S [1] [MODERATE 25-75%	[7]
SHALLOWS (IN SLO	WWATER) [1] ROOTWA		OR WOODY DEBR		SPARSE 5-<25% [3] NEARLY ABSENT <5	
ROOTMATS [1]	DOULDE		OR NOODT DEBR		Cove	-
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					. 20	
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Comments 4] BANK EROSION Al River right looking downstream		NG [3]	LOW [1]	× .	Maximun 2i & average)	
4] BANK EROSION AI River right looking downstream	ND RIPARIAN ZONE Chec	NG [3]	LOW [1] EACH BANK (Or 2 PLAIN QUALITY P.[3]	× .	Maximun 2i & average)	
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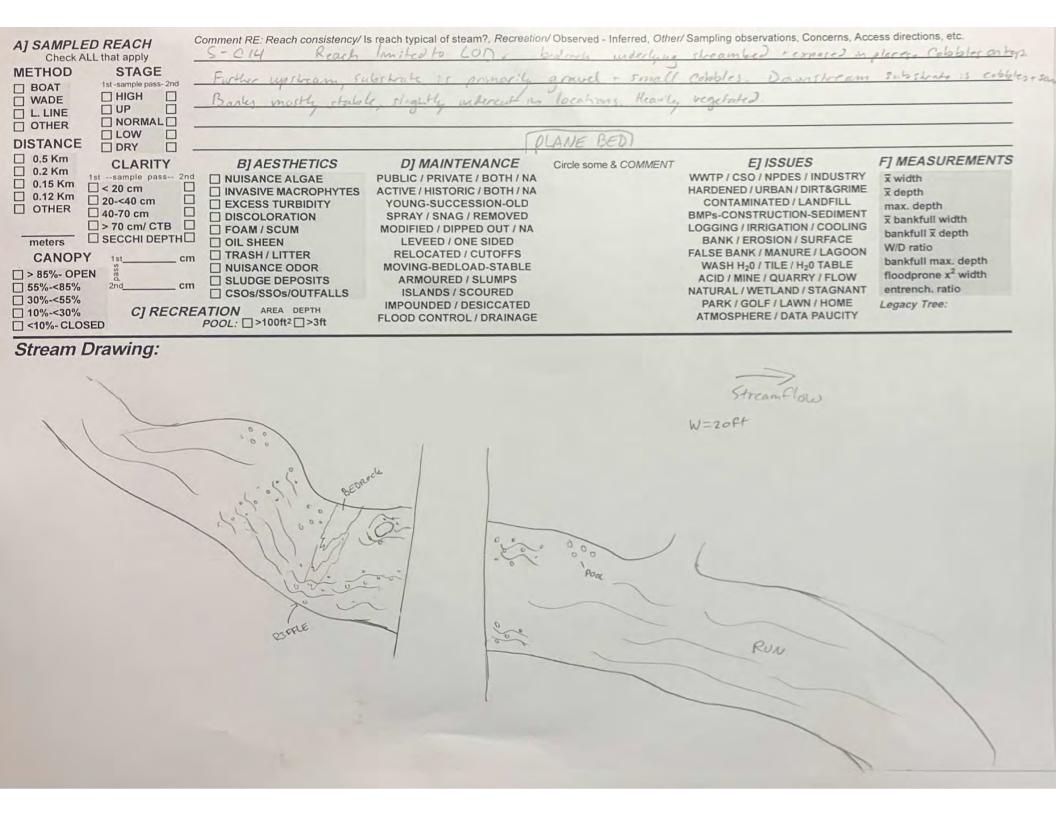


Stream & Location: 🇳	-006	7:25	A. A
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River Code: -	 Scorers STORET #: 	Lat./Long.: 37.0	57584, -79.913921 Office verifie
SUBSTRATE Check ONL	Y Two substrate TYPE BOYES	NAD 83 - decimal	(Or 2 & averago)
	or note every type present RIFFLE OTHER TYPES POOL	ORIGIN	QUALITY
L BLDR /SLABS [10]	RIFFLE POOL	LINICO COL	HEAVY [-2]
BOULDER [9]		TILLS [1]	SILT ON NORMAL [0]
	[] [] MUCK [2]	CILLADDRAN [0]	
SAND [6]	D ARTIFICIAL [0]	SANDSTONE [0]	DEO, EXTENSIVE [-2]
BEDROCK [5]	(Score natural substrate		
	Scole natural substrate S: 4 or more [2] sludge from point- 3 or less [0]	Sources) Shale [-1]	
omments		COAL FINES [-2]	
quality: 3-Highest quality in mod	icate presence 0 to 3: 0-Absent; 1-Very ality; 2-Moderate amounts, but not of hig lerate or greater amounts (e.g., very larg developed rootwad in deep / fast water,	hest quality or in small amounts of hi e boulders in deep or fast water, larg	e Check ONE (Or 2 & average)
UNDERCUT BANKS [1]		OXBOWS, BACKWATERS [1] MODERATE 25-75% [7]
OVERHANGING VEGETA	TION [1] ROOTWADS [1]	AQUATIC MACROPHYTES	[1] SPARSE 5-<25% [3]
SHALLOWS (IN SLOW W ROOTMATS [1]	ATER) [1] BOULDERS [1]	LOGS OR WOODY DEBRIS	Cover
Comments			Maximum
			20
MODERATE [3] 📓 GOOD	[5] RECOVERED [4]		
LOW [2] FAIR [3 NONE [1] POOR] RECOVERING [3]	MODERATE [2] LOW [1] VERY [1]	Channel Maximum 20
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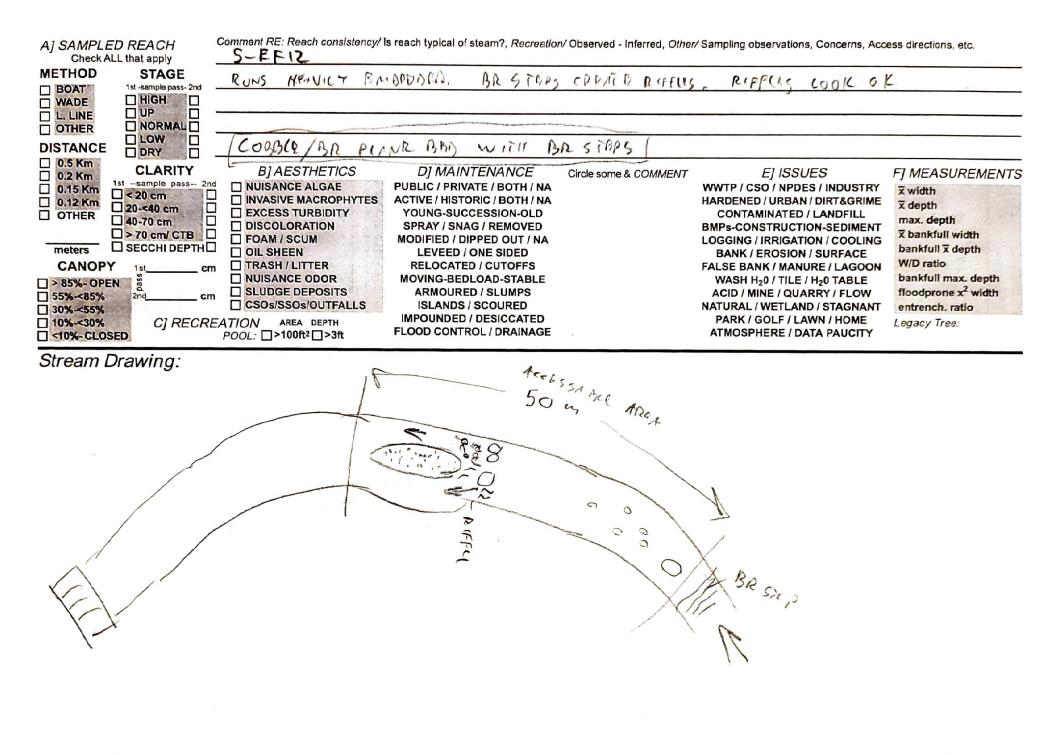




OhicEPA Qualitative Habitat Evaluation Index and Use Assessment Field Shoot QHEI Score:
and Use Assessment Field Sheet CHEI Score: Stream & Location: S-C14 RM: Date:
Scorers Full Name & Affiliation: ^L K / M B River Code: -
1] SUBSTRATE Check ONLY Two substrate TYPE BOXES: estimate % or note every type present Check ONE (Or 2 & average) BEST TYPES POOL RIFFLE OTHER TYPES BLDR /SLABS [10] HARDPAN [4] HARDPAN [4] BOULDER [9] DETRITUS [3] TILLS [1] BOULDER [9] DETRITUS [3] TILLS [1] BOULDER [9] DETRITUS [3] TILLS [1] BOULDER [9] BOULCK [2] HARDPAN [0] BEST TYPES ARTIFICIAL [0] SAND STONE [0] BEDROCK [5] (Score natural substrates; ignore RIP/RAP [0] NUMBER OF BEST TYPES: 4 or more [2] sludge from point-sources) LACUSTURINE [0] MODERATE [-1] NONE [1] NONE [1] NONE [1]
2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools. AMOUNT UNDERCUT BANKS [1] POOLS > 70cm [2] OXBOWS, BACKWATERS [1] Check ONE (Or 2 & average) OVERHANGING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHYTES [1] MODERATE 25-75% [7] SHALLOWS (IN SLOW WATER) [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] NEARLY ABSENT <5% [1]
3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average) SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY HIGH [4] EXCELLENT [7] NONE [6] HIGH [3] MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2] LOW [2] FAIR [3] RECOVERING [3] LOW [1] NONE [1] POOR [1] RECENT OR NO RECOVERY [1] Comments 13
4) BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) River right looking downstream RIPARIAN WIDTH BROSION RIPARIAN WIDTH RIVER right looking downstream RIPARIAN WIDTH RIPARIAN WIDTH FLOOD PLAIN QUALITY RIPARIAN WIDTH FOREST, SWAMP [3] NONE / LITTLE [3] MODERATE 10-50m [3] MODERATE [2] NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1] URBAN OR INDUSTRIAL [0] Indicate predominant land use(s) Indicate predominant land use(s) Indicate predominant land use(
5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH CHANNEL WIDTH CHANNEL WIDTH Check ONE (ONLY!) Check ONE (Or 2 & average) Check ALL that apply > 1m [6] POOL WIDTH > RIFFLE WIDTH [2] TORRENTIAL [-1] SLOW [1] 0.7~(1m [4] POOL WIDTH = RIFFLE WIDTH [1] VERY FAST [1] INTERSTITIAL [-1] 0.4~(0.7m [2] POOL WIDTH > RIFFLE WIDTH [0] FAST [1] INTERMITTENT [-2] 0.2~(0.4m [1] Context (1] POOL WIDTH > RIFFLE WIDTH [0] (1] (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). RIFFLE DEPTH RUN DEPTH RIFFLE / RUN SUBSTRATE RIFFLE / RUN EMBEDDEDNESS BEST AREAS > 10cm [2] MAXIMUM > 50cm [2] STABLE (e.g., Cobble, Boulder) [2] NONE [2] BEST AREAS 5-10cm [1] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Large Gravel) [1] LOW [1] BEST AREAS < 5cm NMAXIMUM < 50cm [1] MOD. STABLE (e.g., Fine Gravel, Sand) [0] MODERATE [0] Riffle / Run MAXIMUM < 50cm [1] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Fine Gravel, Sand) [0] MODERATE [0] Riffle / Run MAXIMUM < 50cm [1] MAXIMUM < 50cm [1] MOD. STABLE (e.g., Fine Gravel, Sand) [0] MODERATE [0] Riffle / Run MAXIMUM < 50cm [1] MAXIMUM < 50cm [1] MODERATE [0] Riffle / Run MAXIMUM < 50cm [1] MAXIMUM < 50cm [1] MODERATE [0] Riffle / Run MAXIMUM < 50cm [1] MAXIMUM < 50cm [1] MODERATE [0] Riffle / Run MAXIMUM < 50cm [1] MAXIMUM < 50cm [1] MODERATE [0] Riffle / Run MAXIMUM < 50cm [1] MAXIMUM < 50cm [1] MODERATE [0] Riffle / Run MAXIMUM < 50cm [1] MODERATE [0] Riffle / Run MAXIMUM < 50cm [1] MODERATE [0] RUN MAXIMUM < 50cm [1] RUN MAXIMU
6] GRADIENT (DRAINAGE AREA (mi ²) HIGH - VERY HIGH [10-6] EPA 4520 6] GRADIENT (mi ²) VERY LOW - LOW [2-4] MODERATE [6-10] mi ² HIGH - VERY HIGH [10-6] 6] WPOOL: 5 %GLIDE: Gradient %RUN: 5 %GLIDE: 3 %GLIDE: 3 %G

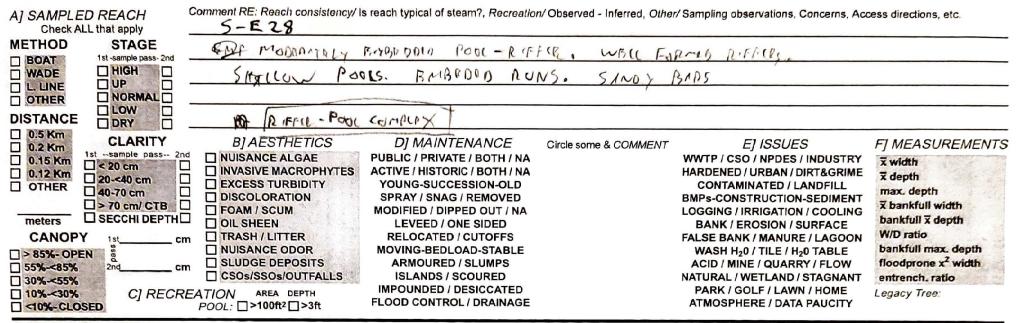


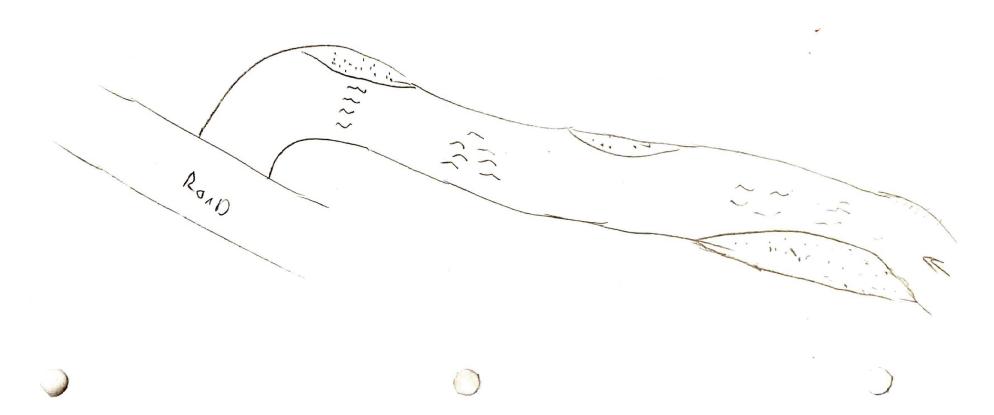
Stream & Location 5- FFIZ	1	0:05 R	M: Date: 11/ 16/21
2		Full Name & Affiliation: LH	
River Code: SUBSTRATE Check ONLY Two s	STORET #:	(NAD 83 - decimal	.073367, -79.939865 Office verifie locatio
estimate % or note	every type present	Check ONE	(Or 2 & average)
BEST TYPES POOL RIFFLI	OTHER TYPES POOL F		
BOULDER [9]		TILLS [1]	MODERATE 1.11 Subs
		WETLANDS [0]	SILT NORMAL [0]
GRAVEL [7]	□ □ SILT [2]	ARDPAN [0]	
BEDROCK [5]	(Score natural substrates	anore RIP/RAP [0]	DDEON DECONSIVE [-2]
UMBER OF BEST TYPES:	4 or more [2] sludge from point-si		S NORMAL [0] 2
Comments L1	3 or less [0]	SHALE [-1]	NONE [1]
	DALOS DALAS		Annual Annual Contraction of Street
] INSTREAM COVER Indicate pro quality 2-N	Adderate amounts, but not of high	est quality or in small amounts of I	highest
quality: 3-Highest quality in moderate or diameter log that is stable, well develop	r greater amounts (e.g., very large ed rootwad in deep / fast water, or	boulders in deep or fast water, lair r deep, well-defined, functional poi	
UNDERCUT BANKS [1]		OXBOWS, BACKWATERS	
OVERHANGING VEGETATION [SHALLOWS (IN SLOW WATER)		AQUATIC MACROPHYTES	
ROOTMATS [1]		LOGS ON MOODT DEBRI	Cover
Comments			Maximum 20
CUMNEL NORPHOLOOVO		0	
SINUOSITY DEVELOPMEN			
HIGH [4]	/		
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LOW [2] FAIR [3] NONE [1] POOR [1]	RECOVERING [3]	🗆 LOW [1]	
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BANK EROSION AND RIPAR River right looking downstream	ARIAN WIDTH	h category for EACH BANK (Or 2)	Maximum 20 20 per bank & average)
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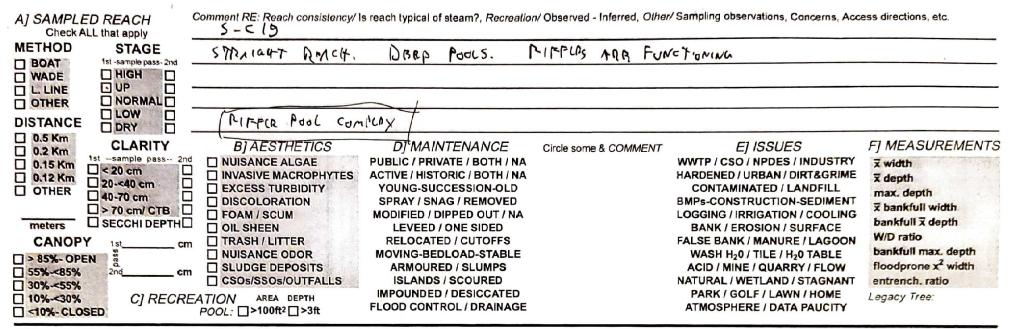
	S-E28	-10:30	RM:	. Date: 1 1 6 /21
		_Scorers Full Name & A		
River Code: -	- STORET #:		t./Long.: 37.08524	7, -79.948057 Office verifie locatio
estima	ONLY Two substrate TYPE BOX te % or note every type present		Check ONE (Or 2 d	avorago)
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BLDR /SLABS [10]			TONE [1]	HEAVY [-2]
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BEDROCK [5]	CScore na	AL [0] I SAND	STONE [0] SDDEON	MODERATE [-1]
UMBER OF BEST T	YPES: 4 or more [2] sludg	ge from point-sources) LACU	STURINE [0]	DEXTENSIVE [-2] MODERATE [-1] NORMAL [0] NONE [1]
Comments	3 or less [0]		E [-1] FINES [-2]	NONE [1]
	quality: 2-Moderate amounts.	psent; 1-Very small amounts or if but not of highest quality or in sn	all amounts of highest	Alloont
quality, 3-Highest quality in diameter log that is stable	moderate or greater amounts (e.g., very large boulders in deep / fast water, or deep, well-define	or fast water, large	Check ONE (Or 2 & average)
UNDERCUT BANKS	[1] POOLS	> 70cm [2] OXBOWS,		EXTENSIVE >75% [11] MODERATE 25-75% [7]
OVERHANGING VE	GETATION [1] ROOTV	VADS [1] AQUATIC I	ACROPHYTES [1]	SPARSE 5-<25% [3]
SHALLOWS (IN SLO ROOTMATS [1]	BOULD BOULD	ERS [1] LOGS OR	WOODY DEBRIS [1]	NEARLY ABSENT <5% [1]
Comments				Cover Maximum
				20
	OLOGY Check ONE in each o	and the second		
		El Contra de Con	BILITY	
	CELLENT [7] MINONE [6]	RED [4] HIG	H [3] DERATE [2]	
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Omments	OOR [1] RECENT (OR NO RECOVERY [1]		Channel
				Maximum 14
				Maximum 16
] BANK EROSION A	ND RIPARIAN ZONE Che	eck ONE in each category for EA	H BANK (Or 2 per ban	20
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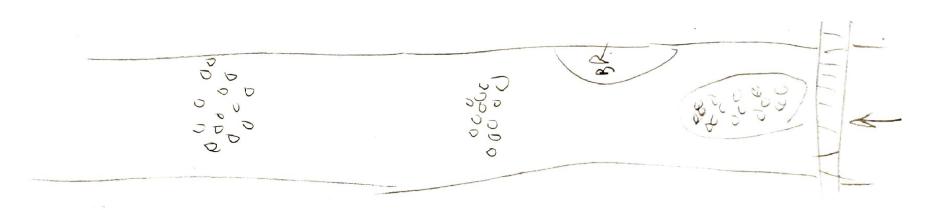
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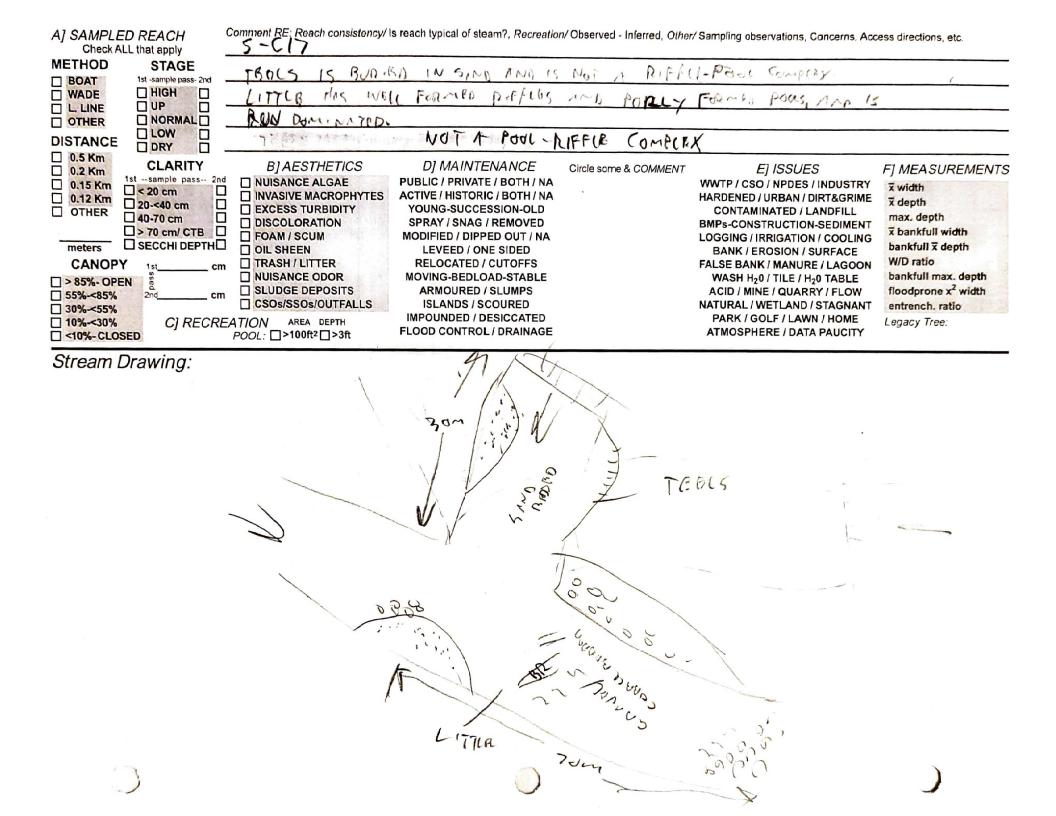


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OVERNAMCING VEGETATION [1] ROOTWADS [1] AQUATIC MACROPHYTES [1] SPARES 5-25% [3] SHALLOWS [IN SLOW WATER) [1] BOULDERS [1] LOGS OR WOODY DEBRIS [1] NEARLY ABSENT <	diameter log that is stable, w	well developed rootwad in deep / 1	rast water, or deep, well-der	neu, iunctional pr		
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/ m ^[2] HIGH - VERY HIGH [10-6] %RUN: (SO) %RIFFLE: (SO)	River right looking downstream River right looking downstream REROSION NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [1] Comments 5] POOL / GLIDE AND MAXIMUM DEPTH Check ONE (ONLY!) D > 1m [6] 0.7~1m [4] 0.4~0.7m [2] 0.2~0.4m [1] <0.2~0.4m [1] <0.2~0.4m [1] <0.2~0.4m [1] Second for function of riffle-obligate sp RIFFLE DEPTH BEST AREAS > 10cm [2] BEST AREAS < 5cm [metric=0] Comments	RIPARIAN WIDTH WIDE > 50m [4] CMODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW 5-10m [2] NONE [0] RIFFLE / RUN QUALITY CHANNEL WIDTH Check ONE (0r 2 & average POOL WIDTH > RIFFLE WIDTH NONE [2] MAXIMUM > 50cm [2] [2] ST MAXIMUM > 50cm [1] MAXI	FLOOD PL FOREST, SWAMP SHRUB OR OLD F FRESIDENTIAL, PAR FENCED PASTURE, F CURRENT OPEN PASTURE, F Check ALI FAST [1] FAST [1] MODERATE [1] Indicate for reace Ust be large enough ck ONE (Or 2 & average). IFFLE / RUN SUBSTI TABLE (e.g., Cobble, Boul DD. STABLE (e.g., Large C NSTABLE (e.g., Fine Grave	AIN QUALITY 3] ELD [2] K, NEW FIELD [1 [1] COWCROP [0] VELOCITY that apply SLOW [1] INTERSTITIA INTERSTITIA INTERMITTE EDDIES [1] 1 - pools and riffle to support a RATE RIFFL der) [2] Sravei) [1] I, Sand) [0] DL: 20 9	Recr past 100m ripa	RVATION TILLAG OR INDUSTRIAL / CONSTRUCTIO ninant land use(s) rian. Riparian Maximum 10 reation Potenti mary Contact ondary Contact ondary Contact ondary Contact ondary Contact ondary Contact ondary Contact Dondary Contact Dondary Contact on and comment on ba Pool / Current Maximum 12 DO RIFFLE [n BEDDEDNESS VTE [0] Riffle / Run VE [-1] Maximum 8 O Gradient



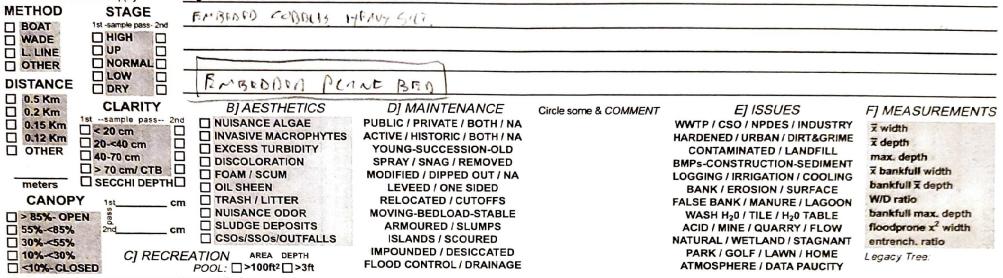


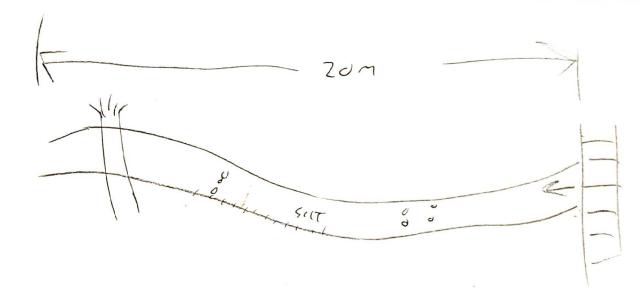
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BOULDER [9]		AN [4]	LIMESTONE [1]		HEAVY [-2]	
COBBLE [8]		2]	WETLANDS [0]	SILT	NORMAL [
GRAVEL [7]			HARDPAN [0]		ERFE (11	
BEDROCK [5]	(Score r	natural substrates: ion	ore RIP/RAP [0]	SODEON		E [-2]
NUMBER OF BEST TY	PES: 4 or more [2] slut 3 or less [0]	dge from point-sourc	es) LACUSTURINE [0		O EXTENSIV	0] M
Comments	LI 3 or less [0]		SHALE [-1]	8	LI NONE [1]	
2] INSTREAM COVER	Indicate presence 0 to 3: 0-4	Absent: 1-Very small	amounts as if more comm			
quality: 3-Highest quality in	noderate or greater amounts	, out not of nignest o	luality or in small amounts	s of highest	Check ONE (Or	·
diameter log mar is stable, v	rell developed rootwad in dee	ep / fast water, or dee	p, well-defined, functiona	pools.] EXTENSIVE >	
UNDERCUT BANKS		S > 70cm [2] WADS [1]	OXBOWS, BACKWAT	ERS [1]	MODERATE 2	
SHALLOWS (IN SLOT	and a set of the set o	DERS [1]	AQUATIC MACROPHY LOGS OR WOODY DE		SPARSE 5-<2	
ROOTMATS [1] Comments					Care Carl Contract	Cover
oonmenta					M	aximum 20
MODERATE [3] GO DOW [2] GA DOW [2] GA DONE [1] GA PO Comments	R [3] RECOVE	ERED [4] ERING [3] FOR NO RECOVER'	HIGH [3] MODERATE [2] LOW [1]			Channel aximum
NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [1]	RIPARIAN WIDTI	H FL H FOREST 3] C SHRUB C RESIDEN 1] C FENCED	OOD PLAIN QUAL ; SWAMP [3] OR OLD FIELD [2] NTIAL, PARK, NEW FIELD PASTURE [1]		ONSERVATION IRBAN OR INDU IINING / CONSTI	STRIAL [
Comments			ASTURE, ROWCROP [0]	past 10		Riparian aximum 10
0.7~1m [4]	RIFFLE / RUN QUALI CHANNEL WIDT Check ONE (Or 2 & ave. POOL WIDTH > RIFFLE WI POOL WIDTH > RIFFLE WI POOL WIDTH > RIFFLE WI	H Cl rage) DTH [2] TORRE DTH [1] VERY I DTH [0] FAST [MODEI	1] INTERMIT	TIAL [-1] TENT [-2] 1]		Contact Contact ment on back Pool / Current
Indicate for function of riffle-obligate spaces		Check ONE (Or 2 &	avorago).			FFLE (me
RIFFLE DEPTH BEST AREAS > 10cm [2]	RUN DEPTH	RIFFLE / RUN	SUBSTRATE RIF		EMBEDDE	DNESS
BEST AREAS 5-10cm [1]	MAXIMUM < 50cm [1]	MOD, STABLE (e.	g., Large Gravel) [1]		ONE [2] DW [1]	
BEST AREAS < 5cm [metric=0] Comments	[UNSTABLE (e.g.,	Fine Gravel, Sand) [0]		DERATE [0]	Riffle / Run aximum 8
6] GRADIENT	Wml) VERY LOW - LOW	V [2-4]	%POOL:	%GLIDE	$\overline{\bigcirc}$	Gradient



a can a Location.	5-022	9:05	RM:	Date: / \ 6/21
		_Scorers Full Name & Affili		
liver Code: -	- STORET #:	Lat./L	ong. 37.070101, -	79.929732 Office verified
SUBSTRATE Check	ONLY Two substrate TYPE BOX	ES;		iocanor
DEPT TUBES	e % or note every type present	PES DOU DISCLE ORIG	Check ONE (Or 2 & a	QUALITY
BLDR /SLABS [10]		PUUL RIFFLE		HEAVY [-2]
BOULDER [9]		S [3] TILLS [1]	OUT	MODERATE [-1] Subsi
COBBLE [8]	[] MUCK [2]	WETLAND	05 [0]	NORMAL [0]
GRAVEL [7]	(1) SILT [2]			
BEDROCK [5]	(Score nat	tural substrates: ignore RIP/RAP [
	PES: 4 or more [2] sludg	e from point-sources)	RINE [0]	INORMAL [0] 20
Comments	3 or less [0]			NONE [1]
INSTREAM COVER	Indicate presence 0 to 3: 0-Ab quality: 2-Moderate amounts	sent, 1-Very small amounts or if more but not of highest quality or in small	e common of marginal	AMOUNT
quality, 3-Highest quality in	moderate or greater amounts (a	a very large boulders in deep or f	ast water, large	heck ONE (Or 2 & average)
UNDERCUT BANKS		/ fast water, or deep, well-defined, fi > 70cm [2] OXBOWS, BAC	And and a second se	EXTENSIVE >75% [11] MODERATE 25-75% [7]
OVERHANGING VEG	SETATION [1] ROOTW		ROPHYTES [1]	SPARSE 5-<25% [3]
SHALLOWS (IN SLO ROOTMATS [1]	WWATER) [1] BOULD	ERS [1] LOGS OR WOO	ODY DEBRIS [1]	NEARLY ABSENT <5% [1]
Comments				Cover
				Maximum 20
CHANNEL MORPHO	OLOGY Check ONE in each o	ategory (Or 2 & average)		
		ELIZATION STABIL	ITY .	
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NONE [1]		OR NO RECOVERY [1]	a margada da	Channel
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River right looking downstream	RIPARIAN WIDTH	FLOOD PLAIN	OLIAL ITY	
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EROSION	□ □ WIDE > 50m [4] □ □ MODERATE 10-50m [3 □ □ NARROW 5-10m [2]	FLOOD PLAIN		ONSERVATION TILLAGE [1] RBAN OR INDUSTRIAL [0] INING / CONSTRUCTION [0]
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R EROSION Image: None / Little [3] Moderate [2] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] Image: None / Little [3] <tr< td=""><td>RIFFLE / RUN QUALIT CHANNEL WIDT CHANNEL WIDT Check ONE (0/ 2 & avera POOL WIDTH > RIFFLE WID POOL WIDTH > RIFFLE WID POOL WIDTH > RIFFLE WID</td><td>FLOOD PLAIN Forest, SWAMP [3] SHRUB OR OLD FIELD [Residential, Park, NE Fenced Pasture [1] OPEN PASTURE, ROWO Y Current Vel Age) Check ALL that DTH [2] TORRENTIAL [-1] STH [1] WODERATE [1] MODERATE [1] Indicate for reach - po</td><td>QUALITY [2] W FIELD [1] ROP [0] COCITY apply LOW [1] ITERSTITIAL [-1] ITERMITTENT [-2] DDIES [1] ols and riffles.</td><td>ONSERVATION TILLAGE [1] RBAN OR INDUSTRIAL [0] INING / CONSTRUCTION [0] predominant land use(s) mriparian. Riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact Secondary Contact Current Current Maximum 12</td></tr<>	RIFFLE / RUN QUALIT CHANNEL WIDT CHANNEL WIDT Check ONE (0/ 2 & avera POOL WIDTH > RIFFLE WID POOL WIDTH > RIFFLE WID POOL WIDTH > RIFFLE WID	FLOOD PLAIN Forest, SWAMP [3] SHRUB OR OLD FIELD [Residential, Park, NE Fenced Pasture [1] OPEN PASTURE, ROWO Y Current Vel Age) Check ALL that DTH [2] TORRENTIAL [-1] STH [1] WODERATE [1] MODERATE [1] Indicate for reach - po	QUALITY [2] W FIELD [1] ROP [0] COCITY apply LOW [1] ITERSTITIAL [-1] ITERMITTENT [-2] DDIES [1] ols and riffles.	ONSERVATION TILLAGE [1] RBAN OR INDUSTRIAL [0] INING / CONSTRUCTION [0] predominant land use(s) mriparian. Riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact Secondary Contact Current Current Maximum 12
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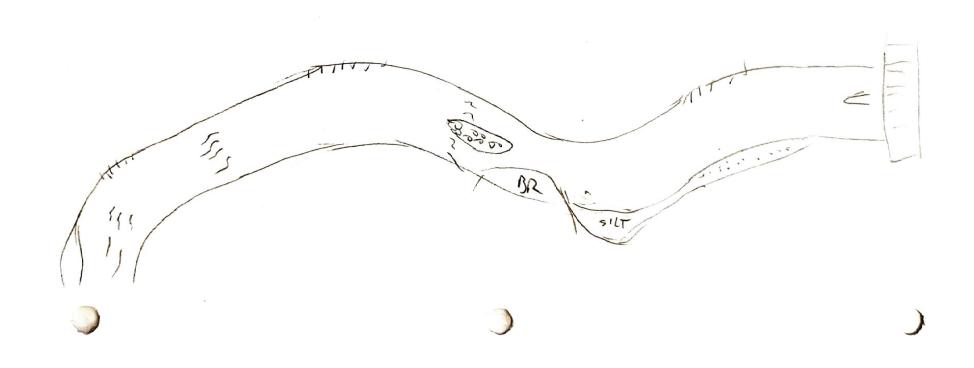
A] SAMPLED REACH Check ALL that apply Comment RE: Reach consistency/ Is reach typical of steam?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.



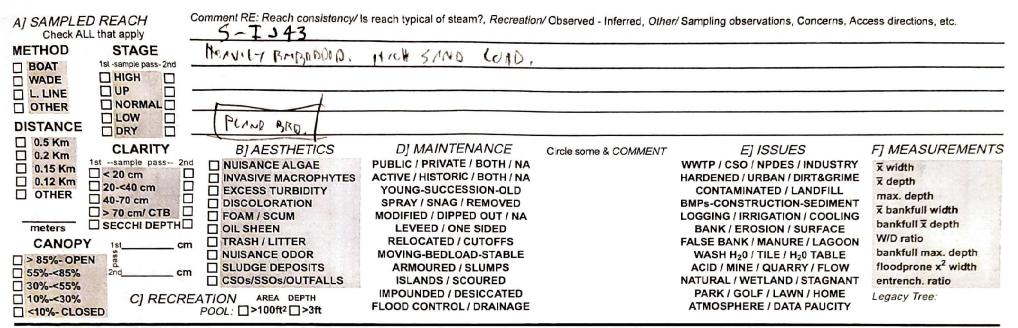


Stream & Location: 5 -	D23	2:30	RM: Date: / 1 [] 12
	a)	s Full Name & Affiliation	1: LK
River Code:	STORET #:	Lat./Long	37.070322, -79.931039 Office ve
SUBSTRATE Check ONLY	Two substrate TYPE BOXES;	- Contraction and Contraction	
estimate % or	note every type present	Check ORIGIN	ONE (Or 2 & avorage) QUALITY
BEST TYPES POOL R	IFFLE OTHER TYPES POO		HEAVY [-2]
BOULDER [9]			MODERATE I-11 SU
COBBLE [8]	MUCK [2]	WETLANDS [0]	SILI NORMAL [0]
GRAVEL [7]	[] [] SILT [2]	HARDPAN [0]	
SAND [6] BEDROCK [5]	(Score natural substra		BODEON DEXTENSIVE [-2] MODERATE [-1] SONORMAL [0] NONE [1]
NUMBER OF BEST TYPES	: 4 or more [2] sludge from poin		0
Comments	3 or less [0]	LI SHALE [-1]	□ NONE [1]
		COAL FINES [-2	
2] INSTREAM COVER Indica	ate presence 0 to 3: 0-Absent; 1-Ver	y small amounts or if more com	non of marginal AMOUNT
quality; 3-Highest quality in moder	y; 2-Moderate amounts, but not of h ate or greater amounts (e.g., very la	ighest quality or in small amoun irge boulders in deep or fast wa	ts of highest er, large Check ONE (Or 2 & averag
diameter log that is stable, well de	veloped rootwad in deep / fast water	r, or deep, well-defined, function	al pools. EXTENSIVE >75% [11]
UNDERCUT BANKS [1] OVERHANGING VEGETAT	POOLS > 70cm [2 ION [1] ROOTWADS [1]	AQUATIC MACROPH	a stand graph of the stand of the
SHALLOWS (IN SLOW WA		LOGS OR WOODY D	
ROOTMATS [1]			Cover
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SINUOSITY DEVELOP	GY Check ONE in each category (O MENT CHANNELIZATI		
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A] SAMPLED REACH Check ALL that apply	Comment RE: Reach consistency/ Is reach typical	f steam?, Recreation/ Observed - Inferred, Othe	r/ Sampling observations, Concerns, Acce	ess directions, etc.
METHOD STAGE BOAT 1st sample pass- 2nd	WALL FORMAN RIFFLAS	RSPBEINING AT THOOS P	NO. NOT FAGODOD	05.
	BR AT MY UPPON THIND !			
	B RIFFLE POUL COMPL	x (
	BJAESTHETICS DJ MA	NTENANCE Circle some & COMMENT	E] ISSUES	FJ MEASUREMENTS
		VATE / BOTH / NA TORIC / BOTH / NA	WWTP / CSO / NPDES / INDUSTRY	x width
OTHER 40-70 cm	EXCESS TURBIDITY YOUNG-S	CCESSION-OLD	HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL	x depth max. depth
□ > 70 cm/ CTB	FOAM / SCUM MODIFIED	IAG / REMOVED DIPPED OUT / NA	BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING	X bankfull width
CANOPY 1st		/ ONE SIDED ED / CUTOFFS	BANK / EROSION / SURFACE	bankfull x depth W/D ratio
□ > 85%- OPEN	NUISANCE ODOR MOVING-E	DLOAD-STABLE	FALSE BANK / MANURE / LAGOON WASH H ₂ 0 / TILE / H ₂ 0 TABLE	bankfull max. depth
□ 55%-<85% 2nd c		RED / SLUMPS S / SCOURED	ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT	floodprone x ² width
0 10%-<30% C] RECH	REATION AREA DEPTH IMPOUND	D / DESICCATED	PARK / GOLF / LAWN / HOME	entrench, ratio
CLOSED	POOL: >100ft ² >3ft FLOOD CO	TROL / DRAINAGE	ATMOSPHERE / DATA PAUCITY	



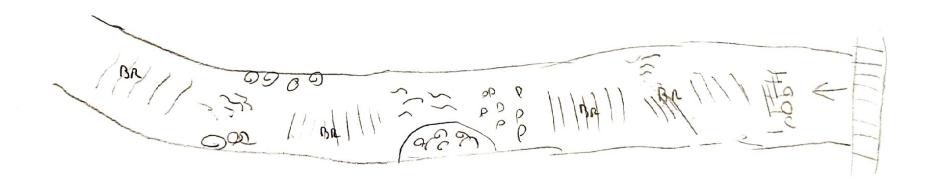
Stream & Location:	2-1243	11:40 R	RM: Date: [[] 5 /21
	Sc	corers Full Name & Affiliation: L	к
River Code:	- STORET #:	Lat./Long.: 37	1.138636, -80.139715 Office verific locality
SUBSTRATE Check (ONLY Two substrate TYPE BOXES.		E (Or 2 & avorage)
DEST TIPES N	% or note every type present OOL RIFFLE OTHER TYPES		QUALITY
LI DLUK ISLABS 10	HARDPAN [4]	LIMESTONE	HEAVY [-2]
		TILLS [1]	SILT NORMAL [0]
GRAVEL [7]		HARDPAN [0]	🗆 FREE [1] 1
SAND [6]		SANDSTONE [0]	DDED MODERATE [-1]
BEDROCK [5]	(Score natural	substrates; ignore RIP/RAP [0]	
NUMBER OF BEST TY	PES: 4 or more [2] sludge from 3 or less [0]		NONE [1]
Comments		COAL FINES [-2]	
quality 3 Highest quality in	quality: 2-Moderate amounts, but in moderate or greater amounts (e.g., t vell developed rootwad in deep / fasi [1] POOLS > 70 ETATION [1] ROOTWADS	AQUATIC MACROPHYTE	Check ONE (07 2 & 2073ge) bols. EXTENSIVE >75% [11] 5 [1] MODERATE 25-75% [7] 5 [1] SPARSE 5-<25% [3]
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GRAVEL [7]		WETLANDS	1	G FREE [1]
BEDROCK [5]	ARTIFICIAL [0]		[0] &DDEON	EXTENSIVE [-2]
UMBER OF BEST TYPE	(Score natural subs S: 4 or more [2] sludge from p	strates; ignore RIP/RAP [0]	VE [0]	SS NORMAL [0]
omments	3 or less [0]	LI SHALE [-1]		NONE [1]
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INSTREAM COVER Ind	licate presence 0 to 3: 0-Absent; 1-V ality; 2-Moderate amounts, but not o	/ery small amounts or if more of f highest quality or in small am	ommon of margin	
Quality, 3-Highest guality in mod	derate or greater amounts (e.g., very developed rootwad in deep / fast wa	large boulders in deep or fast	water, large	Check ONE (Or 2 & average) EXTENSIVE >75% [11]
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OVERHANGING VEGET/ SHALLOWS (IN SLOW V			the second se	SPARSE 5-<25% [3]
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BANK EROSION AND River right looking downstream R EROSION Image: Downstream I	RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW < 5m [1]	FLOOD PLAIN QU FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW F FENCED PASTURE [1] OPEN PASTURE, ROWCRO Check ALL that app CLURRENT VELOO Check ALL that app TORRENTIAL [-1] SLOV VERY FAST [1] INTEL MODERATE [1] EDDI Indicate for reach - pools a re large enough to supp E (Or 2 & average).	P [0] Indicate past 10 P [0] Past 10 P [0] P [0] Past 10 P [0] P [20 (& average) CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] e predominant land use(s) Dom riparian. Riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12 tion NO RIFFLE [metric
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BANK EROSION AND River right looking downstream R EROSION Image: Downstream R EROSION Image: Downstream	RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW < 5m [1]	FLOOD PLAIN QU FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW F FENCED PASTURE [1] OPEN PASTURE, ROWCRO Check ALL that app TORRENTIAL [-1] SLOV VERY FAST [1] INTEL FAST [1] INTEL MODERATE [1] EDDI Indicate for reach - pools a re large enough to supp E (Or 2 & average). E / RUN SUBSTRATE (e.g., Cobble, Boulder) [2]	P [0] Indicate P [0] Indicate P [0] Past 10 CITY V [1] RSTITIAL [-1] RMITTENT [-2] ES [1] and riffles. Poort a popula RIFFLE / RU D N	CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] e predominant land use(s) Om riparian. Riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12 tion NO RIFFLE [metric N EMBEDDEDNESS ONE [2] OW [1] ODERATE [0] Riffle / Run 6
BANK EROSION AND River right looking downstream R EROSION Image: Description of the second sec	RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW < 5m [1]	FLOOD PLAIN QU FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW F FENCED PASTURE [1] OPEN PASTURE, ROWCRO Check ALL that app TORRENTIAL [-1] SLOV VERY FAST [1] INTER FAST [1] INTER MODERATE [1] EDDI Indicate for reach - pools a re large enough to supp E (Or 2 & average). E / RUN SUBSTRATE (e.g., Cobble, Boulder) [2] TABLE (e.g., Large Gravel) [1	P [0] Indicate P [0] Indicate P [0] Past 10 CITY V [1] RSTITIAL [-1] RMITTENT [-2] ES [1] and riffles. Poort a popula RIFFLE / RU D N	CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] e predominant land use(s) Dom riparian. Riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12 tion NORIFFLE [metric N EMBEDDEDNESS ONE [2] OW [1] ODERATE [0] Riffle /
BANK EROSION AND River right looking downstream R EROSION MODE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [1] HEAVY / SEVERE [1] HEAVY / SEVERE [1] HEAVY / SEVERE [1] POOL / GLIDE AND RI/ MAXIMUM DEPTH Check ONE (ONLY!) > 1m [6] 0.7 < 1m [4]	RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW < 5m [1]	FLOOD PLAIN QU FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW F FENCED PASTURE [1] OPEN PASTURE, ROWCRO Check ALL that app TORRENTIAL [-1] SLOV VERY FAST [1] INTER FAST [1] INTER MODERATE [1] EDDI Indicate for reach - pools a re large enough to supp E (Or 2 & average). E / RUN SUBSTRATE (e.g., Cobble, Boulder) [2] TABLE (e.g., Large Gravel) [1	P [0] Indicate P [0] Indicate P [0] Past 10 CITY V [1] RSTITIAL [-1] RMITTENT [-2] ES [1] and riffles. Poort a popula RIFFLE / RU D L D L D L D L D L D L D L D L	20 (& average) CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0] e predominant land use(s) Dom riparian. Riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12 tion NO RIFFLE [metric N EMBEDDEDNESS ONE [2] OW [1] ODERATE [0] Riffle / Run Maximum 10 C

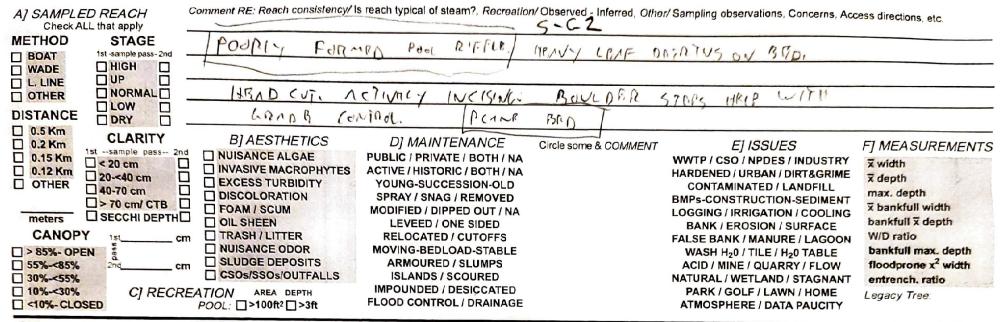
A] SAMPLED REACH Check ALL that apply	Comment RE: Reach consistency/	s reach typical of steam?, Recreation	n/Observed - Inferred, Othe	ar/ Sampling observations, Concerns, A	Access directions, etc.
METHOD STAGE BOAT 1st -sample pass- 2nd WADE HIGH L LINE UP	NOT BADED DED. Lo	ts of exposed br.	4 sirps	50 FI APANI, CHANA	inc 15 Ff wipe
DISTANCE DRY	BR STRP PO	00			
□ 0.5 Km CLARITY □ 0.2 Km 1stsample pass 2t □ 0.15 Km 20 cm □ 0.15 Km 20 cm □ 0.12 Km 20-<40 cm	 INVASIVE MACROPHYTES INVASIVE MACROPHYTES EXCESS TURBIDITY DISCOLORATION FOAM / SCUM OIL SHEEN TRASH / LITTER NUISANCE ODOR SLUDGE DEPOSITS CSOs/SSOs/OUTFALLS 	D] MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED IMPOUNDED / DESICCATED FLOOD CONTROL / DRAINAGE	Circle some & COMMENT	$EJ \ ISSUES$ $WWTP \ / \ CSO \ / \ NPDES \ / \ INDUSTRY$ $HARDENED \ / \ URBAN \ / \ DIRT&GRIME$ $CONTAMINATED \ / \ LANDFILL$ $BMPs \ -CONSTRUCTION \ -SEDIMENT$ $LOGGING \ / \ IRRIGATION \ / \ COOLING$ $BANK \ / \ EROSION \ / \ SURFACE$ $FALSE \ BANK \ / \ MANURE \ / \ LAGOON$ $WASH \ H_20 \ / \ TILE \ / \ H_20 \ TABLE$ $ACID \ / \ MINE \ / \ QUARRY \ / \ FLOW$ $NATURAL \ / \ WETLAND \ / \ STAGNANT$ $PARK \ / \ GOLF \ / \ LAWN \ / \ HOME$ $ATMOSPHERE \ / \ DATA \ PAUCITY$	F] MEASUREMENTS x̄ width x̄ depth max. depth x̄ bankfull width bankfull x̄ depth W/D ratio bankfull max. depth floodprone x ² width entrench. ratio Legacy Tree:



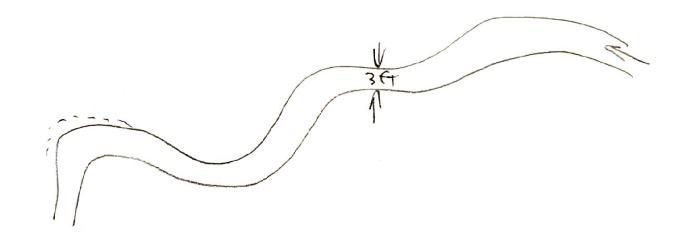
Stream & Location:	5-62-6-2	10:15	RM:	Date: 1 [5 [2
	Sc	orers Full Name & Affil		
River Code:	STORET #:	Lat./L	ong.: 36.851931,	-79.386051 Office veri
estimat	ONLY Two substrate TYPE BOXES; e % or note every type present		Check ONE (Or 2 &	average)
BEST TYPES	OOL RIFFLE OTHER TYPES	POOL RIFFLE ORIG	IN	QUALITY
BUDR /SLABS [10]	[4]		NE [1]	HEAVY [-2]
			DS [0] SILT	NORMAL [0]
GRAVEL [7]	[] [] [] SILT [2]			FREE [1]
BEDROCK [5]	(Score natural	substrates; ignore RIP/RAP		DEXTENSIVE [-2]
	YPES: 4 or more [2] sludge from 3 or less [0]	m point-sources) CACUSTU	RINE [0]	S NORMAL [0]
Comments		COAL FIN		
2] INSTREAM COVER	Indicate presence 0 to 3: 0-Absent;	1-Very small amounts or if more	e common of marginal	AMOUNT
	quality; 2-Moderate amounts, but n moderate or greater amounts (e.g.,)	ot of highest quality or in small a	amounts of highest	AMOUNT Check ONE (Or 2 & average)
diameter log that is stable, UNDERCUT BANKS	well developed rootwad in deep / fast	t water, or deep, well-defined, fu	inctional pools.	EXTENSIVE >75% [11]
OVERHANGING VEC	SETATION [1] ROOTWADS	cm [2] OXBOWS, BAC [1] AQUATIC MAC		MODERATE 25-75% [7] SPARSE 5-<25% [3]
SHALLOWS (IN SLC ROOTMATS [1]	W WATER) [1] BOULDERS			NEARLY ABSENT <5% [1]
Comments				Cover Maximum
				20
	OLOGY Check ONE in each catego			
	ELOPMENT CHANNELI	ZATION STABIL	ITY.	
KA HIGH MI	CELLENT 171 DI MONE 101			
MODERATE [3] GO	CELLENT [7] INONE [6]			
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	DOD [5] CRECOVERED [IR [3] RECOVERING	4] MODER	ATE [2]	Channel Maximum
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□ MODERATE [3] □ GG □ LOW [2] □ FA □ NONE [1] ■ PG Comments ■ 4] BANK EROSION A. River right looking downstream R EROSION □ NONE / LITTLE [3] □ MODERATE [2] □ HEAVY / SEVERE [1] Comments 5] POOL / GLIDE AND MAXIMUM DEPTH Check ONE (ONLYI) □ > 1m [6] □ 0.7 < 1m [4]	DOD [5] RECOVERED [IR [3] RECOVERING DOR [1] RECOVERING DOR [1] RECENT OR NO ND RIPARIAN ZONE Check OF RIPARIAN WIDTH Image: I	4] MODER [3] MODER [3] MODER [3] COW [1] O RECOVERY [1] NE in each category for EACH B FLOOD PLAIN (FENCED PLAIN (FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] SHRUB OR OLD FIELD [2] CORENTIAL, PARK, NEY FENCED PASTURE, ROWCI OPEN PASTURE, ROWCI Check ALL that a CURRENT VELO Check ALL that a CURRENT VELO Check ALL that a CURRENT VELO Check ALL that a CURRENT VELO Check ALL that a MODERNTIAL [-1] SSL I VERY FAST [1] INV MODERATE [1] EE Indicate for reach - pool one (Or 2 & average).	AATE [2] DANK (Or 2 per bank & QUALITY 2] B C B C 2] I I I W FIELD [1] M ROP [0] Indicate past 100 OCITY Indicate past 100 OCITY Indicate past 100 OCITY Indicate past 100 OCITY Indicate past 100 OCITY Indicate past 100 OCITY Indicate past 100 OCITY Indicate past 100 OCITY Indicate past 100 OCITY INDICES [1] INDICES [1] INDICES [1] INDICES [1]	Maximum 20 & average) ONSERVATION TILLAGE [1 RBAN OR INDUSTRIAL [0] INING / CONSTRUCTION [0] predominant land use(s) m riparian. Riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12
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□ MODERATE [3] □ GG □ LOW [2] □ FA □ NONE [1] □ FA □ NONE [1] □ FA 4] BANK EROSION A. River right looking downstream ■ ROSION □ NONE / LITTLE [3] □ MODERATE [2] □ HEAVY / SEVERE [1] Comments 5] POOL / GLIDE AND MAXIMUM DEPTH Check ONE (ONLY!) □ > 1m [6] □ 0.7-<1m [4]	DOD [5] RECOVERED [IR [3] RECOVERING DOR [1] RECENT OR NU ND RIPARIAN ZONE Check OF RIPARIAN WIDTH Image:	4] MODER [3] MODER [3] MODER [3] COW [1] O RECOVERY [1] NE in each category for EACH E FLOOD PLAIN (FOREST, SWAMP [3] FOREST, SWAMP [3] FOREST, SWAMP [3] FOREST, SWAMP [3] FOREST, SWAMP [3] FOREST, SWAMP [3] CURRENT [4] CURRENT VELC Check ALL that a CURRENT VELC Check ALL that a CURRENT VELC Check ALL that a CURRENT VELC Check ALL that a FAST [1] FAST [1] MODERATE [1] SUBSTRATE FLE / RUN SUBSTRATE FLE / RUN SUBSTRATE	ANK (Or 2 per bank & QUALITY BANK (Or 2 per bank & QUALITY B C C C C C C C C C C C C C C C C C C C	Maximum 20 & average) ONSERVATION TILLAGE [1 RBAN OR INDUSTRIAL [0] INING / CONSTRUCTION [0] predominant land use(s) m riparian. Riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12 ON Pool / Current Maximum 12 ON Pool / Current Maximum 12 ON Pool / Current Maximum 12 ON Pool / Current Maximum 12 ON Pool / Current Maximum 12 ON Pool / Current Maximum 12 ON Pool / Current Maximum 12 ON Pool / Current Naximum 12 ON Pool / Current Naximum 12 ON Pool / Current Naximum 12 ON Pool / Current Naximum 12 ON Pool / Current Naximum 12 ON Pool / Current Naximum 12 ON Pool / Current Pool / Pool / Current Pool / Curent Pool / Current Poo
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□ MODERATE [3] □ GG □ LOW [2] □ FA □ NONE [1] ■ PG Comments ■ PG 4] BANK EROSION A River right looking downstream R EROSION □ MODERATE [2] □ MODERATE [2] □ MODERATE [2] □ MODERATE [2] □ HEAVY / SEVERE [1] Comments 5] POOL / GLIDE AND MAXIMUM DEPTH Check ONE (ONLYI) □ > 1m [6] □ 0.7 - <1m [4]	DOD [5] RECOVERED [IR [3] RECOVERING DOR [1] RECENT OR NU ND RIPARIAN ZONE Check OF RIPARIAN WIDTH Image:	4] MODER [3] MODER [3] MODER [3] COW [1] O RECOVERY [1] NE in each category for EACH E FLOOD PLAIN (FOREST, SWAMP [3] FOREST, SWAMP [3] FOREST, SWAMP [3] FENCED PASTURE [1] OPEN PASTURE, ROWCH CURRENT VELC Check ALL that a CURRENT VELC Check ALL that a CORENTIAL [-1] SSL OPEN PASTURE, ROWCH Check ALL that a CURRENT VELC Check ALL that a CURRENT VELC Check ALL that a CURRENT VELC Check ALL that a CURRENT VELC Check ALL that a DOPEN PASTURE, ROWCH CHECK ALL that a CURRENT VELC Check ALL that a CORENTIAL [-1] SSL I VERY FAST [1] IN MODERATE [1] IN MODERATE [1] IN CHECK ALL that a CHECK ALL that a C	ANK (Or 2 per bank & QUALITY BANK (Or 2 per bank & QUALITY B C C C C C C C C C C C C C C C C C C C	Maximum 20 & average) ONSERVATION TILLAGE [1 RBAN OR INDUSTRIAL [0] INING / CONSTRUCTION [0] predominant land use(s) In riparian. Riparian Maximum 10 Recreation Potential Primary Contact Secondary Contact Secondary Contact (circle one and comment on back) Pool / Current Maximum 12 ION INO RIFFLE [metr EMBEDDEDNESS NE [2] W [1] DERATE [0] Riffle / Run Maximum 8

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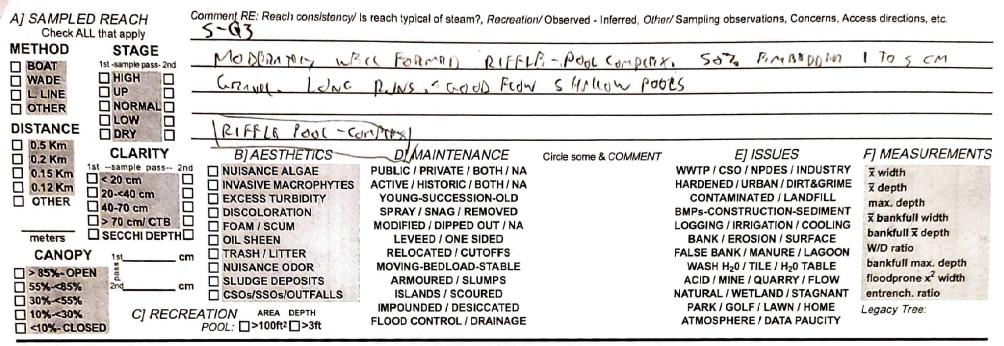
NO PROPER PREFILES. A FBW STEP POOLS MAT AT AS BND.

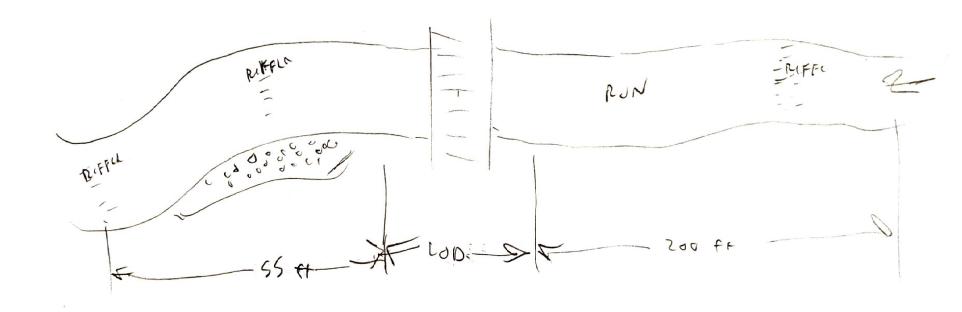


tream & Location:	5-03	11:CHAR	RI	1:Da	nte: 11/ 15/21
		Scorers Full Name	& Affiliation: LI	κ	
liver Code: -	- STORET #:	NAD 83 - docim	Lat./Long.: 36.	384444, 79.4282	2 Office verified location
SUBSTRATE Check C	NLY Two substrate TYPE BOX			(Or) Pallaraga	
estimate	% or note every type present		ORIGIN	(Or 2 & average)	UALITY
BEST TYPES PO			IMESTONE [1]		AVY [-2]
BLDR /SLABS [10]			ILLS [1]	SUT MO	DERATE [-1] Substr
	MUCK [2]		ETLANDS [0]		RMAL [0]
GRAVEL [7]			ARDPAN [0]		
SAND [6]			ANDSTONE [0]	The MOI	ENSIVE [-2]
BEDROCK [5]	PES: 4 or more [2] sludg	tural substrates; ignore	ACUSTURINE [0]	SS INOF	RMAL [0] Maxim
	D 3 or less [0]	□s	HALE [-1]		NE [1]
Comments			OAL FINES [-2]		
and a Direct With Park work and a line in	ETATION [1] ROOTV	a.g., very large boulders in 6 / fast water, or deep, well-d > 70cm [2] OXBO VADS [1] AQUA	efined, functional poo	s. EXTEN EXTEN MODEF SPARS	NE (Or 2 & average) SIVE >75% [11] RATE 25-75% [7] E 5-<25% [3] Y ABSENT <5% [1] Cover Maximum 20
HIGH [4] EXC MODERATE [3] [3] LOW [2] FAI NONE [1] PO Comments [3]	R [3] RECOVER	RED [4]	HIGH [3] MODERATE [2] LOW [1]		Channel Maximum 20
River right looking downstream EROSION NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [1]	ID RIPARIAN ZONE Che RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW < 5m [P [3] [FIELD [2] [NRK, NEW FIELD [1] [RE [1] [ATION TILLAGE [1] R INDUSTRIAL [0] ONSTRUCTION [0] ant land use(s)
MAXIMUM DEPTH Check ONE (ONLY!) □ > 1m [6] □ 0.7-<1m [4]	RIFFLE / RUN QUALITY CHANNEL WIDTH Check ONE (Or 2 & avera POOL WIDTH > RIFFLE WID POOL WIDTH = RIFFLE WID POOL WIDTH > RIFFLE WID	I CURREN ge) Check A TH [2] TORRENTIAL [- TH [1] VERY FAST [1] TH [0] D FAST [1] MODERATE [1]		[-1] Prima	tion Potential ary Contact dary Contact and comment on back) Pool / Gurrent Maximum
Indicate for function	RUN DEPTH	heck ONE (Or 2 & average) RIFFLE / RUN SUBS	RATE RIFFLE	Pulation	12 NO RIFFLE [metric=0 DDEDNESS
RIFFLE DEPTH] BEST AREAS > 10cm [2]] BEST AREAS 5-10cm [1]] BEST AREAS < 5cm [metric=0] Comments	□ MAXIMUM > 50cm [2] 2 2 MAXIMUM < 50cm [1] □ □	MOD. STABLE (e.g., Large UNSTABLE (e.g., Fine Grav	Gravel) [1]	D LOW [1]	[0] Riffle / Run [1] Maximum

EPA 4520

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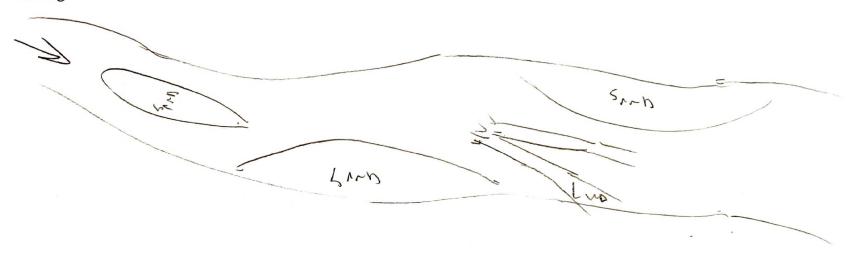


iver Code:STORE	Constant Full		RM:	Date: [] _]	
- STORE	Scorers Full	Name & Affiliation:	LK		Vilce verifie
	T #:(NAD)	Lat./Long.:	6.828207	-79.349814	localio
SUBSTRATE Check ONLY Two substrate TY/ estimate % or note every type p	DE DOVEO		NE (Or 2 &	average)	
DEST TYPES DOOL DUED OTHE	R TYPES POOL RIFFL	F ORIGIN	12 (01 2 0	QUALITY	
	RUPAN [4]	LI LIMESTONE [1]		HEAVY [-2]	-11 Subs
COBBLE [8]		UTILLS [1]	SILT	MODERATE [-	C
GRAVEL [7]	.T [2]	HARDPAN (0)		T FREE [1]	1
	TIFICIAL [0]	SANDSTONE [0]	EDDEO.		-1] Maxii
UMBER OF BEST TYPES: 4 or more [2	core natural substrates; igno sludge from point-source			DEXTENSIVE [MODERATE [NORMAL [0]	2
omments 3 or less [0]		SHALE [-1]		NONE [1]	
		COAL FINES [-2]			
INSTREAM COVER Indicate presence 0 to :	3: 0-Absent; 1-Very small a	mounts or if more common	of margina	AMOUNT	
worky, 5-1 houest offainy in thinkerste of arester sm	allate /a a yory largo boul	uality or in small amounts o ders in deep or fast water.	0.000	Check ONE (Or 2 &	average)
interest log that is stable, well developed rootwad i	n deep / fast water, or dee	p, well-defined, functional p	ools.	MODERATE 25-7	6 [11] 5% [7]
OVERHANGING VEGETATION [1]	ROOTWADS [1]	OXBOWS, BACKWATER AQUATIC MACROPHYTI	S [1] L	SPARSE 5-<25%	[3]
SHALLOWS (IN SLOW WATER) [1]	BOULDERS [1]	LOGS OR WOODY DEBI		NEARLY ABSENT	
comments					ver
ommonto				Maxin	20
CHANNEL MORPHOLOGY Check ONE in	each category (Or 2 & ave	prage)			
SINUOSITY DEVELOPMENT CI	HANNELIZATION	STABILITY			
HIGH [4] EXCELLENT [7] X NO MODERATE [3] GOOD [5] RE	NE [6]	HIGH [3]			
	COVERED [4] COVERING [3]	MODERATE [2] LOW [1]			
NONE [1] POOR [1] RE	CENT OR NO RECOVERY			Char	nnel
omments				Maxin	20
BANK EROSION AND RIPARIAN ZON	E Check ONE in each cate	TOP IN FACURANIS			
River right looking downstream RIPARIAN W	IDTH FL	OOD PLAIN QUALIT	∠perbank∍ Υ	s average)	
B CON CO	D D FOREST.	SWAMP [3]	ΔĎc	ONSERVATION TIL	LAGE [1]
MODERATE [2] MODERATE 10-3		ROLD FIELD [2]		RRAN OR INDUCT	DIAL IOT
HEAVY / SEVERE [1]	< 5m [1] G FENCED	TIAL, PARK, NEW FIELD [predominant land us	TION [0]
□ □ NONE [0]		STURE, ROWCROP [0]	past 100	predominant land us Im riparian. Ripa	
Comments				Maxim	num
POOL / GLIDE AND RIFFLE / RUN QU	ALITY				10
MAXIMUM DEPTH CHANNEL W	VIDTH CU	RRENT VELOCITY	1	Recreation Pot	ential
Check ONE (ONLY!) Check ONE (Or 2 & □ > 1m [6] □ POOL WIDTH > RIFFL	& average)	Check ALL that apply		Primary Con	
□ > 1m [6] □ POOL WIDTH > RIFFL 0.7~1m [4] □ POOL WIDTH = RIFFL		NTIAL [-1] SLOW [1] AST [1] INTERSTITI		Secondary Co	ntact
0.4~0.7m [2] 2 POOL WIDTH > RIFFL	E WIDTH [0] A FAST [1] INTERMITTE	ENT [-2]	(circle one and comment	on back)
□ 0.2~0.4m [1] □ < 0.2m [0]		ATE [1] DEDDIES [1]		Pe	
comments	Indica	te for reach - pools and riffle	95,	Cur	rent 5
				Maxin	num 12
Indicate for functional riffles; Best a of riffle-obligate species:	Check ONE (Or 2 & c	enough to support a	populat	ion	
RIFFLE DEPTH RUN DEPTH	RIFFLE / RUN	SUBSTRATE RIFFI			E [metric
BEST AREAS > 10cm [2] MAXIMUM > 50cm	[2] STABLE (e.g., Col	ble Boulder) [2]		DNE [2]	ESS
BESTAREAS 5-10cm [1] MMAXIMUM < 50cm	[1] MOD. STABLE (e.g	., Large Gravel) [1]		W [1]	
BEST AREAS < 5cm [metric=0]	UNSTABLE (e.g., F	ine Gravel, Sand) [0]		DEDATE	ffle /
omments				TENSIVE [-1] Maxin	mum 0
GRADIENT (ft/mi) UVERY LOW	LOW [2-4]	%POOL: (] 0)	%GLIDE		8
DRAINAGE AREA	10 101			-	dient

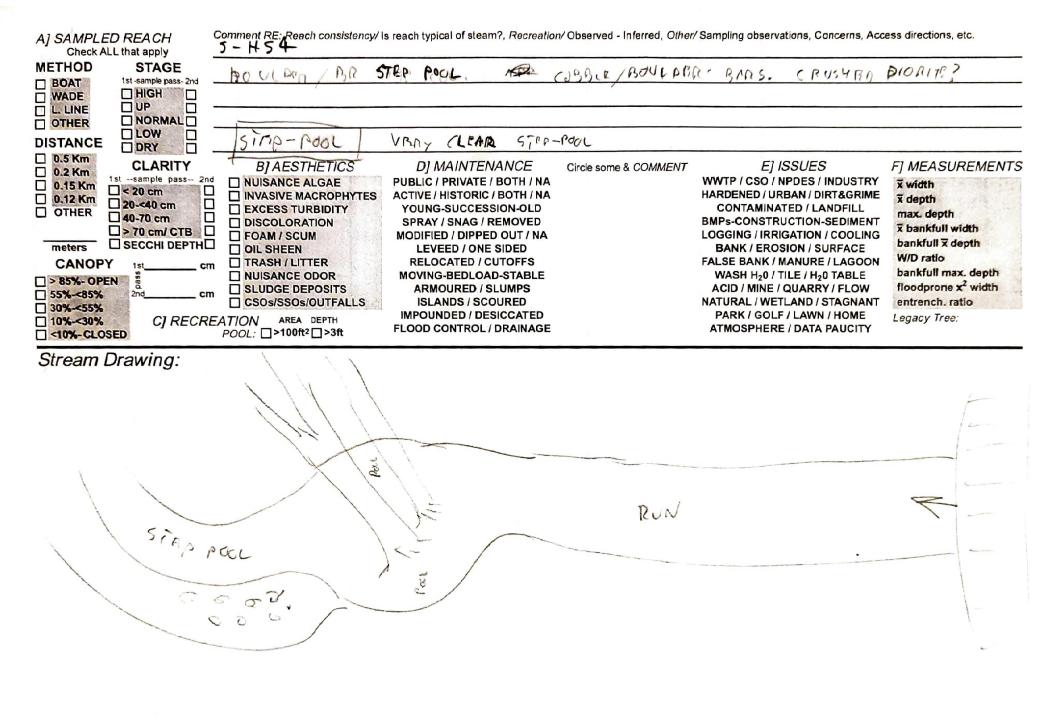
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AJ SAMPLED REACH Check ALL that apply	omment RE: Reach consistency/	s reach typical of steam?, Recreatio	n/ Observed - Inferred, Other	r/ Sampling observations, Concerns, Acc	ess directions, etc.
METHOD STAGE	ROAN HANNY SI	ND LOND PRRUPA	is RIFFLRG	FROM FULLY F	or mi Real INC.
			SNERCY SCOURF	1	
	SACEPOLITIC GNER	ANR BBDV	DRARS SOY	WIDTH OF CHANNE	11.
DISTANCE DRY 0.5 Km CLARITY 0.2 Km 1stsample pass 2nd 0.15 Km 0.15 Km 0.12 Km 20 cm 0.12 Km 20.20 cm	BJ AESTHETICS	D] MAINTENANCE PUBLIC / PRIVATE / BOTH / NA ACTIVE / HISTORIC / BOTH / NA YOUNG-SUCCESSION-OLD	Circle some & COMMENT	E] ISSUES WWTP / CSO / NPDES / INDUSTRY HARDENED / URBAN / DIRT&GRIME CONTAMINATED / LANDFILL	F] MEASUREMENTS x width x depth max. depth
	DISCOLORATION	SPRAY / SNAG / REMOVED MODIFIED / DIPPED OUT / NA LEVEED / ONE SIDED RELOCATED / CUTOFFS		BMPs-CONSTRUCTION-SEDIMENT LOGGING / IRRIGATION / COOLING BANK / EROSION / SURFACE FALSE BANK / MANURE / LAGOON	x bankfull width bankfull x depth W/D ratio
□ > 85%- OPEN □ 55%-<85% 2nd cm □ 30%-<55%	NUISANCE ODOR SLUDGE DEPOSITS CSOs/SSOs/OUTFALLS	MOVING-BEDLOAD-STABLE ARMOURED / SLUMPS ISLANDS / SCOURED IMPOUNDED / DESICCATED		WASH H ₂ 0 / TILE / H ₂ 0 TABLE ACID / MINE / QUARRY / FLOW NATURAL / WETLAND / STAGNANT PARK / GOLF / LAWN / HOME	bankfull max. depth floodprone x ² width entrench. ratio Legacy Tree:
□ 10%-<30% C] RECRE/ □ <10%- CLOSED	ATION AREA DEPTH POOL: >100ft ² >3ft	FLOOD CONTROL / DRAINAGE		ATMOSPHERE / DATA PAUCITY	

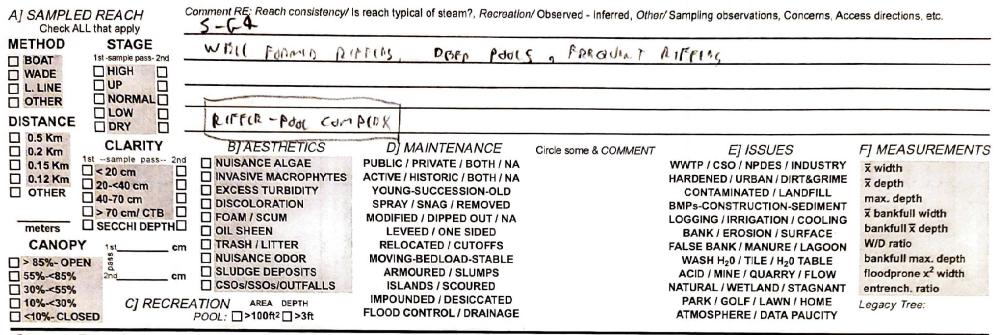


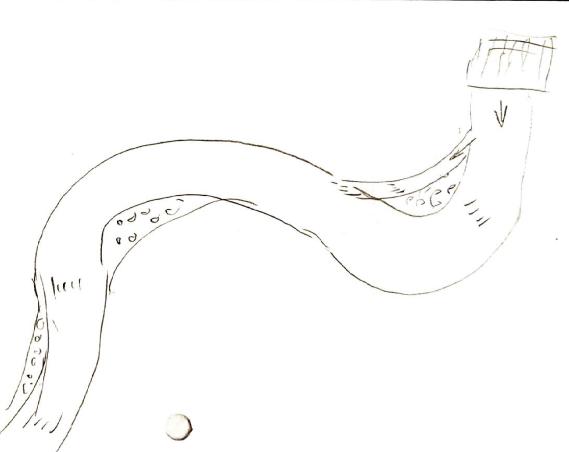
Stream & Location:	St 54 2:20 RM: Date: 1/15
	Scorers Full Name & Affiliation: LK
River Code:	STORET #: Lat./Long.: 36.841112, -79.366848
1] SUBSTRATE Check	k ONLY Two substrate TYPE BOXES; ate % or note every type present Check ONE (Or 2 & avarage)
BEST TYPES	POOL RIFFLE OTHER TYPES POOL RIFFLE ORIGIN QUALITY
BLDR /SLABS [10]	[] HARDPAN [4] [] LIMESTONE [1] [] HEAVY [-2]
	DETRITUS [3] DITILLS [1] SILT DODERATE [-1] SILT NORMAL [0]
GRAVEL [7]	□ □ SILT [2] □ HARDPAN [0] □ FREE [1]
SAND [6]	ARTIFICIAL [0] SANDSTONE [0] BEXTENSIVE [-2] (Score natural substrates; ignore RIP/RAP [0] BODE M DEPATE [-1]
NUMBER OF BEST T	TYPES: 4 or more [2] sludge from point-sources) LACUSTURINE [0]
Comments	□ 3 or less [0] □ SHALE [-1] □ NONE [1] □ COAL FINES [-2]
AL INSTREAM COVE	R Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal AMOUNT
	quality, 2-Moderate amounts, but not of highest quality or in small amounts of highest
diameter log that is stable,	well developed rootwad in deep / fast water, or deep, well-defined, functional pools.
UNDERCUT BANKS	
SHALLOWS (IN SLO	
Comments [1]	Cover
Comments	Maximum 20
and the second sec	
Comments 41 BANK EROSION A	POOR [1] RECENT OR NO RECOVERY [1] Channel Maximum 20 AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)
4] BANK EROSION A River right looking downstrea	AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)
4] BANK EROSION A River right looking downstrea	AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) am RIPARIAN WIDTH FLOOD PLAIN QUALITY R B WIDE > 50m [4] FOREST, SWAMP [3] CONSERVATION TILLAGE
4] BANK EROSION A River right looking downstrea EROSION I NONE / LITTLE [3]	AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) am RIPARIAN WIDTH FLOOD PLAIN QUALITY R Image: Bar Strain
4] BANK EROSION A River right looking downstrea EROSION I NONE / LITTLE [3]	AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) Image: Riparian Width FLOOD PLAIN QUALITY Image: Riparian Width FLOOD PLAIN QUALITY Image: Riparian Width Florest, swamp [3] Image: Riparian Width Forest, swamp [3] Image: Riparian Width Forest, swamp [3] Image: Riparian Width Image: Riparian Width Image: Riparian Width Image: Riparia
4] BANK EROSION A River right looking downstrea EROSION I NONE / LITTLE [3]	AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)
4] BANK EROSION A River right looking downstrea EROSION INONE / LITTLE [3] INODERATE [2] INODERATE [2] INDERATE [1] Comments	AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) am RIPARIAN WIDTH FLOOD PLAIN QUALITY R [] WIDE > 50m [4] FOREST, SWAMP [3] CONSERVATION TILLAGE [] MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] URBAN OR INDUSTRIAL [] NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1] MINING / CONSTRUCTION [] VERY NARROW < 5m [1]
4] BANK EROSION A River right looking downstrea EROSION INONE / LITTLE [3] INODERATE [2] INODERATE [2] INDERATE [1] Comments	AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average) am RIPARIAN WIDTH RIPARIAN WIDTH FLOOD PLAIN QUALITY B FOREST, SWAMP [3] CONSERVATION TILLAGE MODERATE 10-50m [3] SHRUB OR OLD FIELD [2] NARROW 5-10m [2] RESIDENTIAL, PARK, NEW FIELD [1] VERY NARROW < 5m [1]
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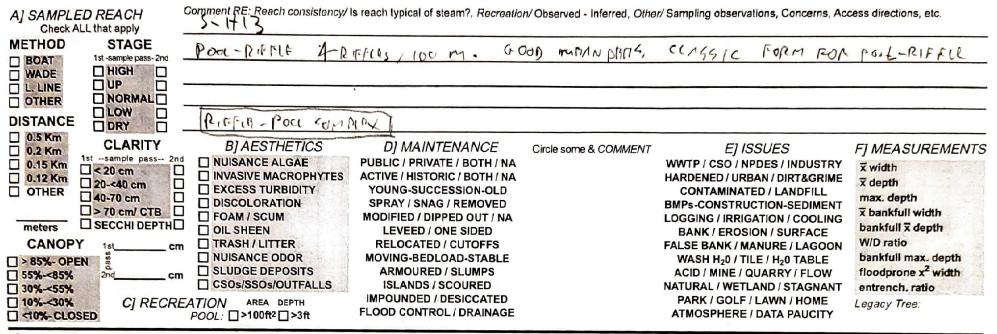
Stream & Location:	5-64	11:55	RM:	Date: [] [] []]
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1 SUBSTRATE Check ON	LYTwo substrate TYPE BOXES;	poto its - costanaa	Check ONE (Or 2	& average)
BEST TYPES	oTHER TYPES	ORIC		QUALITY
BLDR /SLABS [10]	L RIFFLE	LILIMESTO		HEAVY [-2]
BOULDER [9]	D DETRITUS [3]	TILLS [1]		NORMAL [0]
COBBLE [8]			101	FREE (1)
GRAVEL [7]			DNE [0] ODEN	EXTENSIVE [-2]
SAND [6] BEDROCK [5]	(Score natural s	substrates ignore RIP/RAP		EXTENSIVE [-2] MODERATE [-1] S NORMAL [0] NONE [1]
NUMBER OF BEST TYP	ES: 4 or more [2] sludge from	m point-sources) LACUSTU	JRINE [0] 団	
Comments	3 or less [0]	COAL FIN		
2] INSTREAM COVER In	dicate presence 0 to 3: 0-Absent; uality; 2-Moderate amounts, but no	1-Very small amounts or if mor	e common of marg amounts of highes	AMOUNT
quality 2 Ulabast suglity in mo	derate or greater amounts (e.g.)	very large boulders in deep or f	ast water, large	Check ONE (Or 2 & average EXTENSIVE >75% [11]
diameter log that is stable, well	I developed rootwad in deep / fast	t water, or deep, weil-defined. I	CKWATERS [1]	MODERATE 25-75% [7]
UNDERCUT BANKS [1] OVERHANGING VEGET		AQUATIC MAC	ROPHYTES [1]	SPARSE 5-<25% [3]
SHALLOWS (IN SLOW	WATER) [1] BOULDERS	[1] LOGS OR WO	ODY DEBRIS [1]	NEARLY ABSENT <5%
ROOTMATS [1]				Cover Maximum
Comments				20
LOW [2] FAIR NONE [1] POOF Comments		O RECOVERY [1]		Channel Maximum 20
	RIPARIAN ZONF Check OF			
River right looking downstream		NE in each category for EACH		ak & average)
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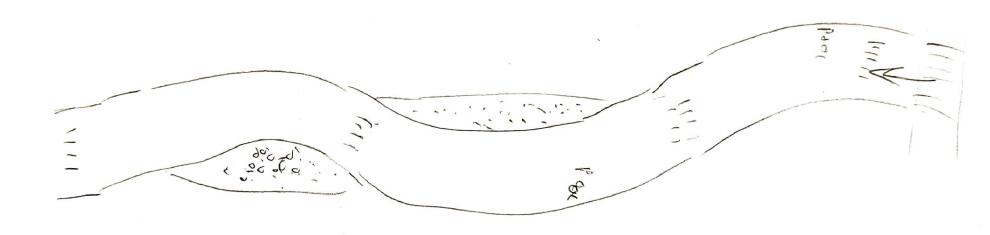
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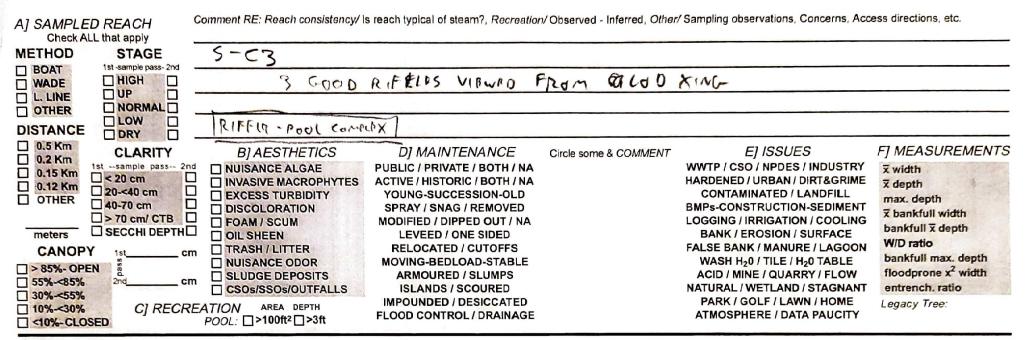


	5-1413	12:55 PM	RM:Date: [] / [\$/21
	5	Scorers Full Name & Affiliation	
River Code:	- STORET #:	Lat./Lon	9 36.925105, -79.51735 Office verific
BEST TYPES BLDR /SLABS [10] BULDER [9] COBBLE [8] GRAVEL [7] BEDROCK [5] NUMBER OF BEST TY Comments	PES: 4 or more [2] sludge fr 3 or less [0]	Che ORIGIN Che ORIGIN Che ORIGIN Che ORIGIN Che Che ORIGIN Che Che Che Che Che Che Colline Colline Coal FINES	SILT MODERATE [-1] Subs NORMAL [0] FREE [1] [0] FREE [1] EXTENSIVE [-2] [1] MODERATE [-1] Moderate [-1] [1] MODERATE [-1] Moderate [-1] [1] MODERATE [-1] NORMAL [0] 2 [-2] NONE [1] 2
quality; 3-Highest quality in I	quality; 2-Moderate amounts, but moderate or greater amounts (e.g. rell developed rootwad in deep / fa 1] POOLS > 7 ETATION [1]. ROOTWAD	S [1] AQUATIC MACROF	units of highest vater, large onal pools Check ONE (Or 2 & average) onal pools EXTENSIVE >75% [11] ATERS [1] MODERATE 25-75% [7] PHYTES [1] SPARSE 5-<25% [3]
A NONE [1] PO Comments A BANK EROSION AN River right looking downstream R EROSION A NONE / LITTLE [3]	ID RIPARIAN ZONE Check (RIPARIAN WIDTH WIDE > 50m [4] MODERATE 10-50m [3]	NO RECOVERY [1] DNE in each category for EACH BANK I FLOOD PLAIN QUA I FOREST, SWAMP [3] I SHRUB OR OLD FIELD [2]	
HEAVY / SEVERE [1]	VERY NARROW < 5m [1]		Indicate predominant land use(s)
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Indicate for function of riffle-obligate spectrum RIFFLE DEPTH	RUN DEPTH RIF	st be large enough to suppo k ONE (Or 2 & average). FFLE / RUN SUBSTRATE R ABLE (e.g., Cobble, Boulder) [2] D. STABLE (e.g., Large Gravel) [1]	IFFLE / RUN EMBEDDEDNESS

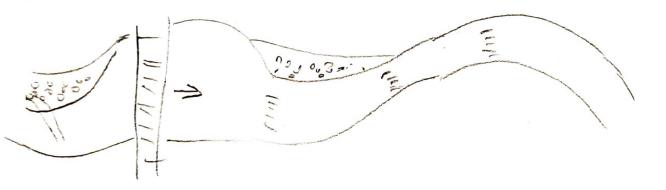




	5-03	13:25	RM:Date: (/ /) 5
		_Scorers Full Name & Al	
River Code:	STORET #:		/Long.: 36.929762, -79.526109 Office
SUBSTRATE Check O	WLY Two substrate TYPE BOX	ES;	Check ONE (Or 2 & average)
BEST TYPES PO	OL RIFFLE OTHER TYP	PUUL RIFFLE	IGIN QUALITY
BLDR /SLABS [10]			
COBBLE [8]			
GRAVEL [7]	🗌 🗌 SILT [2]	HARDP	AN [0] [] FREE [1]
BEDROCK [5]		L [0] SANDS ural substrates; ignore RIP/RA	P [0]
	PES: 4 or more [2] sludge	e from point-sources) 🔲 LACUS	TURINE [0]
Comments	3 or less [0]		[-1] INONE [1]
		COAL	INES [-2]
2] INSTREAM COVER	Indicate presence 0 to 3: 0-Abs	sent; 1-Very small amounts or if m	ore common of marginal AMOUNT
quality, 3-monest quality in m	noderate of dreater amounts (e	out not of highest quality or in sma g., very large boulders in deep o	r fast water, large Check ONE (Or 2 & ave
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OVERHANGING VEGE	ETATION [1] ROOTW		ACKWATERS [1] MODERATE 25-75% ACROPHYTES [1] SPARSE 5-<25% [3]
SHALLOWS (IN SLOW ROOTMATS [1]	WATER) [1] BOULDE		OODY DEBRIS [1] NEARLY ABSENT <5
Comments			Cover
			Maximum 20
3] CHANNEL MORPHO	LOGY Check ONE in each ca	ategory (Or 2 & average)	
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STREAM VIEWAD FROM LOD, CROSSING



	1	14:05	RM	Date: 1/151
Piuse Orda		prers Full Name &		
River Code: SUBSTRATE Check ONLY TW	STORET #:	/NAD 83 decimal	at./ Long., 36.944	016, -79.571517 Office v
estimate % or n	ote every type present		Check ONE (O	r 2 & average)
BEST TYPES POOL RIF		POOL RIFFLE	DRIGIN	QUALITY
BOULDER [9]			STONE [1]	HEAVY [-2]
COBBLE [8]			LANDS [0] SI	LT MODERATE [-1] S
GRAVEL [7] GRAVEL [7]			DPAN [0]	G FREE [1]
BEDROCK [5]	(Score natural s		RAP [0]	TA MODERATE L11
NUMBER OF BEST TYPES:	4 or more [2] sludge from	point-sources)	USTURINE [0]	SS NORMAL [0]
Comments	3 or less [0]		LE [-1] L FINES [-2]	NONE [1]
DI WOTDEAU AOUTEL				
2] INSTREAM COVER Indicate quality:	2-Moderate amounts but no	t of highest quality or in	mall amounts of high	est
quality, 3-Highest quality in moderat diameter log that is stable, well deve	e or oreater amounts (a o w	and large hould are in dea	n or fact water large	Check ONE (Or 2 & avera EXTENSIVE >75% [11]
UNDERCUT BANKS [1]	POOLS > 700	m [2] OXBOWS	BACKWATERS [1]	MODERATE 25-75% [7
OVERHANGING VEGETATIC SHALLOWS (IN SLOW WAT			MACROPHYTES [1	
ROOTMATS [1]	BOOLDERS	1 LOGS OF	WOODY DEBRIS [1	
Comments				Cover Maximum
A CLANNEL MODELIOLOO				20
3] CHANNEL MORPHOLOGY SINUOSITY DEVELOPM			ABILITY	
			GH [3]	
MODERATE [3] GOOD [5]	RECOVERED [4	I) 🗌 M	ODERATE [2]	
LOW [2] FAIR [3]		3] RECOVERY [1]	DW [1]	Channel
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				20
4] BANK EROSION AND RIP River right looking downstream	PARIAN ZONE Check ON RIPARIAN WIDTH			bank & average)
FROM I R		FOREST, SWAMP		
	ODERATE 10-50m [3]	SHRUB OR OLD FI	ELD [2]	URBAN OR INDUSTRIAL
	ARROW 5-10m [2]			
	ERY NAPPOW < 5m [4]	RESIDENTIAL, PAR		MINING / CONSTRUCTION
HEAVY / SEVERE [1]	/ERY NARROW < 5m [1]	FENCED PASTURE	[1] Inc	MINING / CONSTRUCTION
HEAVY / SEVERE [1]	/ERY NARROW < 5m [1]	C RESIDENTIAL, PAR FENCED PASTURE OPEN PASTURE, F	[1] Inc	MINING / CONSTRUCTION
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Comments 5] POOL / GLIDE AND RIFFI	VERY NARROW < 5m [1]	C FENCED PASTURE	[1] Ind OWCROP [0] pa	MINING / CONSTRUCTION licate predominant land use(s) st 100m riparian. Riparian Maximum 10
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