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1.0 Executive Summary

The Rock River is located in Windham County, Vermont in the towns of Newfane, Marlboro, Dover and Wardsboro. It is part of the Connecticut River Basin, located in the southeast corner of the State. The Rock River main stem is 12 miles long and is made up of three branches of nearly equal size: the main stem, Baker Brook and the Marlboro Branch.

Twenty reaches were selected for Phase 2 Stream Geomorphic Assessment (SGA) following completion of the Phase 1 SGA. These reaches were selected based on Phase 1 Impact scores as well as potential conflicts with infrastructure. A total of 21 miles of river were assessed and divided into 25 segments.

A Phase 2 SGA field checks Phase 1 data and updates it where necessary, providing an understanding of reference conditions, departure from reference and likely causes for this departure from reference (disequilibrium). Reference condition is the state the river would be in without human impacts occurring in the watershed. It is based on the understanding that all streams, left un-managed, will find a width, slope and pattern that are self-maintaining and will provide for sediment and flood transport in equilibrium over the long term.

Due to the steep terrain and resulting narrow valleys, most of the streams in the watershed have roads along them, focusing development in the stream corridors. The combination of roads and development within the river corridor increases the volume of water that enters the channel. In addition to existing impacts, 30% percent of the Rock River assessed here, was historically straightened. When a river is straightened, the force of the water moving through it is increased, resulting in a downcutting of the river bed. The incised channel loses access to floodplain. Eventually, the banks fail and the river becomes over-widened, dissipating energy, and allowing sediment to build up again. As sediment accumulates, the channel narrows and the stream rebuilds its floodplain at a lower elevation. The majority of the segments assessed are significantly over-widened and currently aggrading or undergoing planform adjustment (regaining sinuosity in response to historic straightening.)

This report recommends:

- 1. Focusing corridor conservation and restoration efforts on the few remaining reaches that do not have roads and houses in the corridor and still have access to floodplain. These reaches are: T2.04, T2.05A, T2.05-S1.02, T2.05-S1.04 and T2.07;
- 2. Focus on Taft Brook (T2.11-S1.01 segments A, B & C) and Baker Brook (T2.03-S2.02), two extremely sensitive headwater streams that have numerous undersized structures (Taft), and many storm water inputs, by working with landowners and towns to replace structures and implement Best Management Practices for storm water management;
- 3. Work with the towns of Newfane, Marlboro and Dover to establish Fluvial Erosion Hazard zones to prevent further development in areas most at risk for erosion; and
- 4. Provide town officials with a list of undersized structures and recommended replacement widths so that new structures are properly sized.

2.0 Project Overview

2.1 Project Partners

The Windham County Natural Resources Conservation District (WCNRCD), with funding from the Vermont Department of Environmental Conservation (DEC) River Management Section, hired Landslide Inc. to perform this Phase 2 Assessment. The Windham County Regional Planning Commission was also a partner in this project.

2.2 Description of Study Area

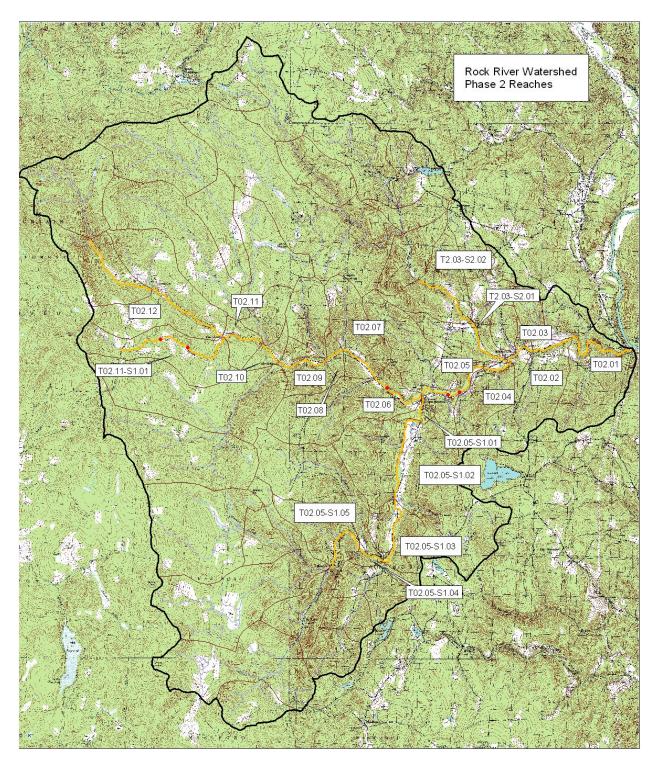
Twenty reaches were selected for Phase 2 Stream Geomorphic Assessment (SGA) following completion of the Phase 1 SGA. These reaches were selected based on Phase 1 Impact scores as well as sensitivity and potential conflicts with infrastructure. A total of 21 miles of river were assessed and were divided into 25 segments.

2.3 Goals and Objectives of the Project

A Phase 2 SGA field checks Phase 1 data and updates it where necessary, providing an understanding of reference conditions, departure from reference and likely causes for this departure from reference (disequilibrium). Reference condition is that state the river would be in without human impacts occurring in the watershed. It is based on the understanding that all streams, left un-managed, will find a width, slope and pattern that are self-maintaining and will provide for sediment and flood transport in equilibrium over the long term.

After analyzing reference and existing conditions, the study analyzes the degree of stream type departure and recommends and prioritizes potential restoration activities that can return the stream to equilibrium condition. In-stream habitat is assessed as well. Results of the Phase 2 Assessment can be used by interested organizations and agencies to work toward restoring equilibrium conditions in the watershed as opportunities arise. This plan is also intended to provide guidance for communities should money for restoration and conservation become available after a flood event.

2.4 Reach Locator Map



3.0 Background Information

3.1 Geographic Setting

The Rock River is located in Windham County, Vermont, in the towns of Newfane, Marlboro, Dover and Wardsboro. It is part of the Connecticut River Basin and is located in the southeast corner of the State. The watershed is 57 square miles or 36,871 acres. The Rock River main stem is 12 miles long and is made up of three branches of nearly equal size: the main stem, Baker Brook and the Marlboro Branch. Like much of the rest of the state, the watershed was cleared for timber and agriculture during the latter part of the 19th century, but today is primarily forested. Land use is currently 35 percent broad leaf forest, 26 percent coniferous forest, 21 percent mixed forest, 8 percent developed land (housing and roads), 4 percent crop lands and 5 percent water.

Two thirds of the watershed has steep topography but farther down in the watershed the valley broadens and some agriculture still occurs. Due to the steep terrain and resulting narrow valleys, most of the streams in the watershed have roads along them, focusing development in the stream corridors.

3.2 Geologic Setting

The Rock River watershed straddles the boundary between the Southern Vermont Piedmont and the Southern Green Mountain physiographic regions. Approximately one third of the watershed is in the Piedmont while the remaing two thirds is in the eastern Green Mountain. The Southern Vermont Piedmont is comprised of the eastern rolling foothills of the main Green Mountains. Much of the metamorphic and sedimentary rocks that were orignally here have eroded away, leaving a mixture of limestone, schist and granite. The Green Mountain region is primarily metamorphic rock in its schist form with some igneous mineral deposits along the eastern flanks. It is comprised mostly of "broad high plateau(s) with few prominent peaks" (Johnson, p. 24-30).

3.3 Geomorphic Setting

The Rock River watershed is naturally about one third A, B and C stream types (17, 21 and 19 square miles respectively). Phase 1 reference stream types are based on confinement, slope and sinuosity. A streams are in confined valleys, have gradients greater than 4%, are generally straight and have very little access to flood plain. B streams are still in confined valleys, though wider than A's and they have slopes between 2 and 4% with some meanders. C type streams are in unconfined valley settings with a slope of less than 2%; they consistently meander and have good access to floodplain. The Phase 2 study uses field measurements to determine both reference and current stream types.

3.4 Hydrology

None of the assessed reaches are impounded and there are no longer major dams in the Rock River watershed. In 1961 the U.S. Army Corps of Engineers dammed the West River upstream of the Rock River, in Townsend, Jamaica and Londonderry for flood control purposes. Most of the time, these dams are run of the river and are only regulated during high flow events. The nearest U.S. Geologic Survey gauging station is located on the West River in Jamaica, Vermont. In 1973 the Rock River, along with most of the State of Vermont, experienced a major flood event. After this event, there was extensive dredging, berming and windrowing in an attempt to control channel location and reduce future flood impacts.

3.5 Ecological Setting

At the heart of the watershed, the Vermont Biodiversity Project (VBP) has identified a 3,331 acre "Complimentary Landscape", an area where a unique combination of elevation, bedrock and surficial geology and topography combine to create a uniquely diverse and as yet unprotected, type of the Vermont Landscape. This study also identified five occurrences of native vascular plants that are rare within the state (Thompson, p. 27& 29).

Due to the steep terrain and resulting limited areas for development, the VBP identified the majority of this watershed as "core habitat". Core habitat is defined as any area of forest with 100' of forested buffer surrounding it and is essential for upland wildlife species dependent upon relatively undisturbed areas.

4.0 Methods

4.1 Fluvial Geomorphic and Habitat Assessment Protocols

The State of Vermont has developed a three phase geomorphic based assessment protocol for watershed assessment. The first phase is considered the "remote sensing" level which evaluates geology, soils, slope, and watershed size to establish a provisional reference stream type for each reach. The Stream Geomorphic Assessment Tool Version 4.53 (SGAT), an ArcView extension, was used to facilitate the collection of data (Davis). The Phase 1 study also quantifies human impacts in the watershed and assigns a provisional impact rating to each reach.

The Phase 1 information helps set the stage for understanding what the major watershed impacts are and can assist in identifying areas to focus additional assessment resources. The Phase 2 Assessment includes the collection of field measurements and observations to check against the Phase 1 reference stream types and impact ratings. This information can be used to identify Fluvial Erosion Hazard (FEH) zones as well as for identification of areas for different types of restoration activities. Phase 3 assessments involve detailed surveys and are only completed on those reaches that will benefit from active stream restoration activities. All Phase 2 data is located in Appendix B.

4.2 Rapid Geomorphic Assessment (RGA)

The RGA is useful in evaluating current stream processes, departures from a reference condition, and stages of channel evolution for a given reach. Three separate RGA forms are used in the Phase II Assessment, one for unconfined streams, one for confined streams, and one for naturally occurring Plane-Bed streams. Parameters evaluated in the RGA are summarized as follows:

- Degree of channel degradation or incision;
- Degree of channel aggradation;
- Degree of channel widening;
- Change in channel planform.

Refer to the VT ANR Protocols for more on the RGA (VTANR, March 2006).

Once the RGA is completed and the current "condition" is rated, a stage of channel evolution is identified. One of two channel evolution models is used: either the F-stage model or the D-stage model.

In the F-stage model, a channel loses floodplain access by undergoing degradation due to a disturbance. This degradation is typically followed by channel widening (Stage III), then aggradation and planform adjustments (Stage IV), before then regaining stability with regard to its water and sediment loads (Stage V).

In the D-stage model, aggradation, widening, and planform changes are the main adjustment processes, with degradation being limited, sometimes by resistant bed material or grade controls. The D-stage process can include moderate entrenchment and loss of bed features (Stage IIb), channel widening (Stage IIc), bed aggradation, bar formation (Stage IId), and regaining a balance similar to reference condition (Stage III). Please refer to the VT ANR Protocol Appendix C for more information on channel evolution models (VTANR, March 2006).

Parameters for the RGA as well as a Rapid Habitat Assessment were scored and assigned to the correlating "condition" category describing departure from a reference condition and degree of adjustment (VTANR, April 2005) as follows:

- Reference Reaches in dynamic equilibrium, having stream geomorphic processes and habitats found in mostly undisturbed streams.
- Good Reaches having stream geomorphology or habitat that is slightly impacted by human or natural disturbance, showing signs of minor adjustment, but functioning for the most part.
- Fair Reaches in moderate adjustment, having major changes in channel form, process or habitat.
- Poor Reaches experiencing extreme adjustment or departure from their reference stream type or habitat condition.

In some cases, where a score lies at one end limit of a category, the condition category that best described the reach can be selected.

A Stream Sensitivity Rating is then generated for each reach or segment according to stream type and geomorphic condition. The range of sensitivity ratings includes: very low, low, moderate, high, very high and extreme. These indicate the sensitivity of a reach or segment to ongoing disturbance or stressors.

4.3 QA/QC Summary Report

To assure a high level of confidence in this Phase 2 Assessment, strict quality assurance and quality controls were followed. These procedures included both manual and automated reviews of all data by LNRP as well as by the Department of Environmental Conservation River Management Program. A copy of the QA/QC report is in Appendix D at the end of this document.

5.0 Reach By Reach Summary

5.1 Rock River

T2.01

This reach is located at the confluence of the Rock River and the West River in a naturally semi-confined valley. The reach is dominated by series of ledge outcrops that create deep pools with steep riffles in between them. It is both a Bc by reference and currently a Bc type channel although it is moderately entrenched and very incised. The right bank has an old road bed running along its entire length that is a public right of way that facilitates access by swimmers and is likely a recently abandoned floodplain feature. This road is found on the 1893 and 1935 USGS



topographic maps but is not shown on the 1954 edition. There are six steep riffles at the upstream end of the reach which may be related to the historic dam on T08.03. When it was removed it is likely a large amount of sediment was released, causing the previously sediment starved (and thus incised) river to now be aggrading. Reference channel width is 78' and current channel width is 115'.

There are two flood chutes, ten side bars and three large islands in the reach. There is one large area of erosion on the right bank at the upstream end that is 15' high and very active. The riparian corridor is dominated by forest land use, though camps and year round housing are encroaching at both the downstream and upstream ends. There is one bridge at the downstream end of the reach on Route 30 that is a floodplain constriction with deposition above, in and below it.

This reach is in "Fair" geomorphic condition, is highly sensitive and in channel evolution stage IV-F; aggrading with historic widening and degradation. The habitat condition was rated good.

Rock River Preservation Incorporated is working to raise money to purchase four acres of land along this reach from the Connecticut River Watershed Council to preserve it in perpetuity for public access.

This reach is a good candidate for corridor conservation due to the relatively undeveloped nature of the corridor, the intense public use of the water resource as well as its strategic location at the mouth of the Rock River.

T2.02

This reach is located downstream of the village of Williamsville in a semi-confined valley and it is naturally straight. There is a gravel town road along the entire right bank, which used to connect to the road in T2.01, and the left corridor is almost entirely mowed meadow though the stream bank is vegetated along both banks. There are no channel or floodplain constrictions and no grade controls that span the entire channel. However, there is ledge across the right channel in the upstream section of the reach where the stream accesses a left bank channel during high water. Reference



channel width is 77' and current channel width is 96'.

T2.02 is a C plane bed stream type by reference but is currently an F plane bed channel type that is in stage IV of the F-stage channel evolution process. It is aggrading with historic degradation and widening and is in fair geomorphic condition. The habitat condition was rated good.

As this reach aggrades, consideration should be given to restoring access to floodplain on the left bank.

T2.03

This reach is in the village of Williamsville and has a popular public swimming area in the pools created by the channel spanning grade control. It is located in a narrowly confined valley that has been altered by human land use. There is a road the entire length of the left corridor with development along most of it. The reach is dominated by ledge with an over-widened section that has two parallel flood channels. Local residents report that the main flow has been in the left channel for at least the past 30 years and the river accesses both flood channels during high flow events. All of this is down stream of channel spanning grade control that had a



wooden dam on it until it was "dismantled naturally after being declared unnecessary in the 1980's" (Phase 1 SGA Report). Reference channel width for this reach is 76' and it is currently 96'.

There is one bridge in this reach that is flood prone area constriction with deposition above and below it. The left bank is dominated by the Dover Road and village development while the right bank is relatively undeveloped.

T2.03 is an F stream type in stage IV of the F-stage channel evolution process. The Phase 1 assessment identified this as a C riffle pool stream type. It is extremely sensitive and is in fair geomorphic condition. The habitat was condition was rated good.

Passive river management is recommended for this reach that will naturally narrow and re-build its floodplain as it continues to adjust to the removal of the dam. Community outreach is recommended to help residents and swimmers understand the fluvial processes at work in their part of the river.

T2.04

This reach is just upstream of the village of Williamsville and it is located in a broadly confined valley. During the 1990's a dredging violation occurred in the reach. Tributary rejuvenation is occurring in two gullies along the right bank of this reach and there is one mass failure on the right bank at the downstream end. There is significant erosion on the left bank in the downstream portion of the reach. There is an old channel evident on the left bank. Reference channel width is 68' and current channel width is 82'.



There is one (covered) bridge at the upstream end of the reach that is a floodplain constriction. There is dogleg shaped channel on the left bank at the downstream end of the reach that appears to be a delta bar from Baker Brook when the Rock was dammed downstream. It appears, from analysis of 1893, 1935 and 1954 U.S.G.S. topographic maps, that this reach was straightened between 1935 and 1954, most likely as part of the dam installation. (See Appendix A.)

The reach is currently an F plane bed stream type, departed from a C riffle pool by reference. The stream is currently in stage III of the F-stage channel evolution model, undergoing widening and planform adjustment. It is highly sensitive and in fair geomorphic condition. The habitat condition was good. The two gullies and one mass failure were likely triggered when the dam was removed and the water and sediment levels were lowered.

This relatively undeveloped reach is strategically located just down stream of predominantly straightened reaches and just upstream of an old dam site and the village of Williamsville, making it a good candidate for a floodplain restoration and corridor protection project.

T2.05A

Segment A is located just upstream of the covered bridge on the Dover Road and is in a broad valley. It is a C riffle pool stream type currently and by reference. It is in good geomorphic condition and is in stage I of the F-stage channel evolution model with minor widening as the dominant adjustment process. Stream sensitivity is moderate and the habitat condition was rated good. Reference channel width is 67' and current channel width is 73'.



The upstream end of this segment has

some encroachment from the road and a few houses in the corridor, but otherwise, the corridor is undeveloped and forested. There are no constrictions in this segment. It has five side bars, one mid-channel bar and one transverse riffle. It appears, from analysis of 1893, 1935 and 1954 U.S.G.S. topographic maps, that this reach was almost entirely straightened between 1935 and 1954. (See Appendix A.) The upstream end of this reach is shown to be split by the road in the 1935 topographic map but the whole channel was moved to the north by the 1954 topographic map.

This segment is a candidate for river corridor conservation.

T2.05B

This reach was segmented due to channel dimension, substrate size, and planform and slope. It is located in a narrow valley due to human caused changes to the valley width (it is up against the road). This segment is eroding on the left bank for the entire length and has rip rap along one third of right bank where the road is closest to the channel. There was an active logging operation along the top of the left bank, a steep riffle in the down stream portion of the reach and a very large mid-channel bar dominating the mid section of the reach. There are no channel constrictions in this segment. Reference



channel width is 67' and current channel width is 128'.

The stream is currently an F plane bed, though it is a C type stream by reference. It is in stage IV of the F-stage channel evolution model, currently experiencing planform adjustment. It is extremely sensitive and is in fair geomorphic condition. Habitat was rated in fair condition. The

entire length of this reach is shown to be split by the road in the 1935 topographic map but the whole channel was moved to the north by the 1954 topographic map. (See Appendix A.)

Because this segment has the first bend in 2,300' of river, it is the repository of a lot of sediment and energy dissipation. Since it will continue to be rip-rapped for the road, increasing sediment and flood attenuation areas upstream of it will alleviate pressure off of it

T2.05C

This is the upstream segment of T2.05 and ends just upstream of the confluence with the Marlboro Branch. The right bank is dominated by the road. There is one bridge that is a floodplain constriction with deposition below and scour above it. Reference channel width is 67' and current channel width is 73'.

The segment is a C riffle pool stream type currently and by reference. It is in good geomorphic condition and is in stage I of the F-stage channel evolution model with minor degradation and widening as the



dominant adjustment processes. Stream sensitivity is moderate and the habitat condition was rated good.

The left bank of this segment is critical as floodplain that it accesses during high flow events and it should be conserved.

T2.06A

This reach was segmented due to channel dimension, substrate size and depositional features. It is located in a narrowly confined valley with no human caused changes to the valley width. It is extremely over-widened, with a reference channel width of 50' and current channel width is 84'.

There are no grade controls or constrictions on this reach. The left corridor is predominantly forested while the right corridor is dominated by residences. There are three steep riffles and one flood chute present in the reach.



It is currently an F plane bed stream type, departed from a reference C plane bed stream type. It is in channel evolution stage IV of the F-stage process. Its geomorphic condition is fair and its sensitivity is extreme. It is currently in planform adjustment and aggrading. The habitat was rated in fair condition.

There are berms on both banks near the confluence with the Marlboro Branch that could be removed if that would provide floodplain access.

T2.06B

This reach was segmented due to channel dimension and substrate size. It is located in a narrowly confined valley with human caused changes to the valley width. Reference channel width is 50' and the current channel width is 65'.

There are no grade controls or channel constrictions on this reach. The left corridor is predominantly forested while the right corridor is dominated by residences. Three flood chutes were noted in the segment. There is rip-rap in both the upstream and down stream portions of the reach.



The stream is currently a B plane bed stream type, departed from a reference C stream type due to moderate entrenchment. It is moderately sensitive and in good geomorphic condition. It is in stage IV of the F-stage channel evolution process and is undergoing minor aggradation. Habitat was assessed in fair condition.

Explore removing berms to provide floodplain access.

T2.07

This reach runs along the Dover Road beginning at Stratton Hill Road and continuing .7 miles up stream. It is located in a broad valley and has one bridge that is not currently in use that is a channel constriction with deposition below and scour above and below. There are multiple mid, point and side bars in the channel, five flood chutes and one active stream crossing just upstream of the defunct bridge. Reference channel width is 49' and the current channel width is 58'.



C riffle-pool by reference, this stream is currently an F plane bed in fair geomorphic condition. Its stream sensitivity is very high and it is in stage IV of the F-stage channel evolution process. Habitat was assessed in fair condition as well.

Historically, this reach functioned as a sediment storage and flood attenuation asset, as do all C type streams, but it has degraded from a C to an F type stream. The multiple flood chutes indicate planform adjustment. Some time between 1935 and 1954 the road and river were moved south to their present location.

This reach is a critical attenuation asset for up and down stream reaches. If the structure were replaced (it accesses a camp that is in use) and the corridor conserved, it would narrow and rebuild floodplain in the near term.

T2.08

A short reach located along the north side of the Dover Road just east of Brookside in a narrowly confined valley. There are multiple bed features, one flood chute and some springs and wetlands. There is ledge at the downstream end of the reach. Reference channel width is 48' and current channel width is 51'.

The town road used to cross the downstream end of this reach to continue along the left bank of the river. At some point between 1935 and 1954 the current road was put in on the south side of the



river. The river appears to be closer to its original planform after this adjustment.

This reach is a reference B step-pool but it is currently a B plane bed due to active aggradation. It is in fair geomorphic condition and highly sensitive. Habitat was rated fair as well.

This reach is a candidate for corridor conservation of the of the right corridor.

T2.09

This reach is located immediately downstream of Brookside in a narrowly confined valley that is reduced in width because of the Dover Road. Twentyseven percent of left bank is rip-rapped for the Dover Road. There are two mass failures on the right bank of the river, the upstream one being quite large. According to local resident and owner of



T2.11, Merrill Mundell, this failure (slide) started after the 1938 hurricane and it turns the river gray after big rain events. Immediately downstream of the large mass failure is a significant flood chute on the right bank. At the downstream end of this reach there is an old bridge abutment on the right bank and some historic berming also on the right bank associated with the old bridge and road location. Just upstream of this there is right bank berming that was left bank berming from an old channel. Reference channel width is 47' and current channel width is 64'.

This reach is B Plane Bed by reference as well as currently. It is aggrading with historic widening and is in fair geomorphic condition. It is in stage IV of the F-stage channel evolution model and the habitat condition is fair.

This reach is a candidate for corridor conservation of the right corridor.

T2.10

This reach starts in Brookside and ends just upstream of the Adam's Brook confluence. It is located in a narrowly confined valley and the Dover Road runs along the entire length of the left bank. The left and right banks are 25% rip-rapped and there are two mass failures on the right bank. One thousand feet of the reach are straightened and there are multiple point and side bars present in the channel. Reference channel width is 40' and current channel width is 52'.



The stream is a B step-pool by reference but

is currently an F step-pool. It is in stage IV of the F- stage channel evolution model and is in fair geomorphic condition. It is undergoing planform adjustment with historic degradation. The habitat was found to be in good condition.

This reach is a candidate for corridor conservation.

T2.11

This reach runs from the confluence with Adam's Brook upstream to East Dover at the confluence with Taft Brook along the Dover Road. It is located in a narrowly confined valley and there are two gorges (one at either end of the reach) with numerous grade controls associated with the downstream gorge. The downstream gorge is a popular swimming area that is



made of a unique conglomerate rock that draws geology students from around the country (Merrill Mundell, Landowner interview).

At the downstream end of the reach there is one mass failure and one gully starting, both on the left bank. The mass failure extends all the way up to the road and has recently been treated with grading, erosion control fabric and seeding. The majority of this reach is well away from the road which makes it unique for the Rock River. There are numerous mid, point, side and diagonal bars throughout the reach and there is one human made channel constriction (a culvert) at the upstream end. The upstream gorge was the site of an old mill that is currently fenced off. There is a new box culvert that is 2' narrower than reference bankful at the upstream end of the reach, near the confluence with Taft Brook.

It appears, from historic topographic maps, that the town road used to be adjacent to the left bank. This feature was identified as an old logging road in the field. The reference channel width is 30' and the current channel width is 33'.

The stream is a B plane bed by reference and is currently a B. It is in stage I of the F-stage channel evolution process and its geomorphic condition is good. It is highly sensitive and the habitat condition is good.

This reach is a strong candidate for corridor conservation due to the undeveloped nature of the corridor and the fantastic scientific and recreational features of the downstream gorge area.

T2.12

This reach runs from East Dover upstream to Goose City and is located in a naturally narrowly confined valley that also has a road in it. There are numerous mid, point, side and diagonal bars as well as two islands and seven flood chutes throughout this reach. It is 17% bermed. The road is in the river corridor for almost half of its length. There are three bridges in this reach, one of which is a minor (< 1') channel constriction, and the other two are floodplain constrictions. There are three mass failures and two steep riffles. This is the first reach on the main stem with a large amount of woody debris (19 pieces).



There are numerous seasonal camps in the corridor, one of which was being accessed by a new ford while we were surveying the stream. Reference channel width is 26' and current channel width is 31'.

At some time between 1899 and 1954 the road was moved from crossing this reach twice near the middle of it to staying entirely on the north side of it. (See Appendix A.) Evidence of

channel moving, significant amounts of berming and extreme incision indicate that much of this reach was probably straightened at some point.

This reach is a B plane bed by reference but is currently moderately entrenched and very incised, making it an F plane bed. It has undergone historic degradation and is presently in planform adjustment. The geomorphic condition is fair and it is in stage IV of the F-stage channel evolution process. The habitat condition is also fair.

This reach would benefit from the establishment of a Fluvial Erosion Hazard Zone (FEH) to prevent further encroachments into the corridor and from working with landowners and the town to implement best management practices as new camps and year round residences are built.

5.2 Baker Brook

T2.03-S2.01

This reach is located in a semi-confined valley that is altered due to the presence of a road. There are multiple mid, point, side and diagonal bars throughout the reach and there are two channel spanning grade controls in the middle of the reach. There are two bridges in this reach, neither of them are constrictions. This reach is in the process of re-building active floodplain and there are numerous old terraces along the right bank. There is a lot of placed rock in the channel, possibly dating from the 1973 flood. It would be helpful to research whether the road bed was raised along this reach.



The stream was typed a B plane-bed in the Phase 1 Assessment. It is currently an F plane bed due to historic bed degradation and is in stage IV of the F-stage channel evolution process. The reference channel width is 39' and the current channel width is 38'. It is in fair geomorphic condition and extremely sensitive due to the stream type departure. It is currently aggrading and in planform adjustment. The habitat was rated in good condition.

This reach is a candidate for corridor conservation and would benefit from the establishment of a Fluvial Erosion Hazard Zone (FEH).

T2.03-S2.02

This reach is located in a narrowly confined valley that is even narrower due to the presence of a road along the entire length of the stream. There is one bridge in the reach that is a channel constriction as well as old abutments that are also channel constricting. Both structures have deposition above them. There are nine mid, one point, sixteen side and twelve diagonal bars in this segment as well as six flood chutes and eight storm water inputs. It would be helpful to research whether the road bed was raised along this reach. The reference channel width is 37' and the current channel width is 43'.



This reach is a C riffle pool by reference but is currently an F riffle pool due to historic degradation (entrenchment) and widening. It is in stage IV of the F-stage channel evolution model is extremely sensitive (due to the stream type departure) and in fair geomorphic condition. The habitat condition was good.

Restoration alternatives include: Exploring the removal of old abutments to see if floodplain access will be improved; working with towns and landowners on implementing BMP's for storm water management; conserving the corridor as this reach is an important sediment attenuation asset.

5.3 Marlboro Branch

T2.05-S1.01

The first reach of the Marlboro Branch begins in the village of South Newfane and continues south four tenths of a mile until the stream bends sharply west. It is located in a narrowly confined valley with Augerhole Road encroaching along two thirds of the right corridor. There is one bridge at the downstream end of the reach on the Dover Road that is a floodplain constriction. There is one flood chute, one transverse riffle and multiple point and side bars in the reach. There was an old channel in the left corridor. Reference channel width is 46' and current channel width is 65'.



The left bank vegetation was dominated by knotweed and the right bank was either ledge or riprap associated with the road. The reference channel width is 46' and the current width is 65'. The left corridor had abundant poison ivy and invasive burning bush (*Euonymus alatus*). Burning bush "is a threat to woodland areas, fields, and coastal scrubland because it out competes native species" (The Nature Conservancy web page).

A review of the historic topographic maps (see Appendix A) reveals that some time between 1935 and 1954 the river was moved toward the right valley wall in this reach. An old channel was noted near the left valley wall during the assessment.

The reach is C riffle pool by reference and is currently a C plane bed due to aggradation. It is in stage IV of the F-stage channel evolution process with the dominant adjustment process being aggradation due to the loss of step-pool bed features. The stream is in fair geomorphic condition and highly sensitive. Habitat was rated fair.

This reach is a good candidate for management of invasive species that were otherwise rarely noted in the watershed and for corridor conservation due to the existing floodplain access along the right bank and the potential for it along the left bank.

T2.05-S1.02

Located in the towns of Newfane and Marlboro, this reach is 1.6 miles long and is in a broad valley type. It is at the western base of the valley and there are numerous historic channels evident, many point bars and flood chutes and it has 3,288' of erosion and over 1,800' of old berms on one bank. There are multiple mass failures on the left bank and an active stream ford crosses the channel. The entire length of it has been straightened. The reference channel width is 46' and the current channel width is 70'.



A review of the historic topographic maps (see Appendix A) reveals that some time between 1935 and 1954 the river was moved toward the left valley wall in this reach. An old channel was noted near the left valley wall in some places during the assessment.

The stream is a C riffle pool type of stream by reference and is currently moderately entrenched and incised to an F stream type. It is in stage III of the F-stage channel evolution process with planform being the dominant adjustment process. Its geomorphic condition is fair and sensitivity is very high. The habitat condition was good. This stream is regaining sinuosity in response to wholesale relocation of the channel.

This reach is a good candidate for passive geomorphic restoration as the channel is naturally recreating sinuosity, it still has access to floodplain, there is limited development in the corridor and there is potential for increasing floodplain access through the removal of berms.

T2.05-S1.03

This reach begins at Gulf Brook and continues just past the junction of Augerhole Road and Lahar Road. It is located in a semi-confined valley with the left corridor being dominated by the Augerhole Road. The reach has approximately 3,800 of both left and right bank erosion and has over 800' of berming on the left or right bank. The right corridor is forested while the left corridor is dominated by the road. There are two bridges in the reach, both of which are floodplain constrictions. There are numerous mid, point, and side bars in the



reach as well as five diagonal bars and five steep riffles. The reference channel width is 42' and the current channel width is 53'.

As with the two previous reaches on the Marlboro Branch, there is evidence that the river was moved and straightened between 1935 and 1954. Please see Appendix A for more information.

The reach is a C riffle pool by reference but is currently entrenched and incised, making it an F riffle pool. It is in stage IV of the F-stage channel evolution model with aggradation and planform adjustment being the current dominant adjustment processes. It is in fair geomorphic condition and the habitat condition is good.

This reach used to provide sediment and flood storage, but it has been converted to a transport reach due to road and valley wall constrictions. Conservation of the up and down stream reaches will relieve pressure on it.

T2.05-S1.04

This reach is located along Augerhole Road from Lahar Road upstream to just after Adam's Brook joins the Marlboro Branch. It is a half a mile long and in a very broad valley type, though the valley narrows in the middle of the reach. There is 1,600' of berming and 780' of erosion along the reach. There is one bridge at the downstream end of the reach that is both a channel and floodplain constriction. The reference channel width is 38' and the current channel width is 56'.



The reach is C riffle pool both by reference and currently. It is in stage IV of the F-stage channel evolution process and is in good

geomorphic condition with minor planform being the dominant adjustment process. The habitat was also rated in good condition.

This reach is a good candidate for active restoration to remove berms that are restricting access to floodplain and for corridor conservation as it is a sediment and flood attenuation asset.

T2.05-S1.05

This reach begins just past the confluence with Adam's Brook, and runs 1.1 miles to just past the confluence with Worden Brook. It is located in a semiconfined valley and is dominated by ledge on the right bank and road encroachment along the left bank. There are abundant springs and seeps and some wetlands located along this reach. Eleven-hundred feet of erosion are along the left bank, numerous mid, point and side bars, four flood chutes and six steep riffles in the channel. The reference channel width is 36' and the current channel width is 36'.



The reach is a B step-pool currently and by reference. It is in stage IV of the F-stage channel evolution model and its geomorphic condition is good. It is moderately sensitive and has good habitat.

Removing berms where floodplain access would be improved is recommended for this reach.

5.4 Taft Brook

T2.11-S1.01A

This segment begins in East Dover and continues west until a series of channel spanning grade controls and two debris jams cause an elevation of the bed and accumulation of fine sediments upstream, reducing the particle size and changing the planform and slope of the channel to create a segment break. This reach is located in a narrowly confined valley that is narrower due to the presence of a road.

There are six structures in this reach, only one of which is not a channel constriction. They all have deposition above them and



all but one has deposition below and it has scour below. There are 12 mid channel, 22 point and 55 side bars in this reach alone and 22 pieces of large woody debris. This segment has 1,200' of erosion on both the right and left banks. There are three channel spanning natural grade controls in this segment as well. It is 21% rip-rapped along the left bank. The reference channel width is 15' and the current channel width is 18'.

This reach was originally typed as an A step pool in the Phase 1 assessment. After this assessment the reference stream type was changed to B riffle pool. This segment is currently an F riffle pool due to historic degradation and incision. It is in stage IV of the F-stage channel evolution process is undergoing planform adjustment and the geomorphic condition is fair. It is extremely sensitive and the habitat condition is also fair.

Working with landowners to replace undersized structures and implementing BMP's for storm water management is recommended for this reach.

T2.11-S1.01B

This reach was segmented from the other two due to smaller substrate size, a broad valley confinement and a different stream type. There was noticeably less erosion in this segment than in A and C, although there is one very active eroding site at the upstream end of it in a horse pasture. There is only one structure in this segment and it is not channel constricting, although there is deposition above and below it. There is an active animal crossing at the same horse farm where the sandy banks are eroding. There was evidence of gravel removal at one site in this reach and there



are three mass failures. The reference channel width is 15' and the current channel width is 25'.

This reach was originally typed as an A step pool in the Phase 1 assessment. After this assessment the reference stream type was changed to B riffle pool. This segment is currently a Cb plane bed due to current aggradation. It is in stage III of the F-stage channel evolution process and the dominant adjustment process is aggradation. It is very highly sensitive and the geomorphic condition is fair. The habitat is also in fair condition.

This segment is providing much needed sediment attenuation in an otherwise transport area. Corridor conservation, including replanting the banks at the horse farm is recommended.

T2.11-S1.01C

This segment is located in a narrowly confined valley that is narrower due to the presence of a road. The one bridge and two culverts in this reach are all channel constrictions. The two culverts both have deposition above and below them. The bridge did not have evidence of deposition. There are 17 mid channel, 10 point and 13 side bars in this reach alone and 22 pieces of large woody debris. This segment has multiple mass failures and two flood chutes. There is one channel spanning natural grade control in this segment as well. The reference channel width is 15' and the current channel width is 18'.



This reach was originally typed as an A step pool in the Phase 1 assessment. After this assessment the reference stream type was changed to B riffle pool. This segment is currently an F riffle pool due to historic degradation. It is in stage IV of the F-stage channel evolution process is undergoing planform adjustment and the geomorphic condition is fair. It is extremely sensitive and the habitat condition is also fair.

Working with landowners to replace undersized structures and implement BMP's for storm water management is recommended for this reach.

6.0 Preliminary Project Identification

6.1 Analyzing River Processes

The goal of geomorphologically based river restoration is to reduce conflicts between human built infrastructure and rivers by re-establishing natural water and sediment relations (equilibrium) to the greatest extent possible. The Phase 1 and 2 Stream Geomorphic Assessments determine natural equilibrium (reference) and current stream types (departure from reference) to inform this planning process. This section of the report summarizes the different stressors and constraints in the watershed and prioritizes reaches for restoration at the reach and watershed scale. Further work is necessary to prioritize projects from a social perspective.

6.1.1 Hydrologic Alterations

The volume and rate at which water and sediment flow through a stream system, combined with the resistance of the bed material, work together to form the channel over the long-term life of a river. Alterations to this natural "hydrologic regime" can push a stream into disequilibrium, leading to increased erosion hazards. Hydrologic stressors and physical constraints that impact the volume and rate of water and sediment moving through the stream system were analyzed to aid in our understanding of current channel adjustment processes. Among the things that can affect the hydrology of a watershed are dams, loss of wetlands, deforestation, development and related increases in storm water runoff, and ditching related to roads, farm fields and skid ruts (VT DEC Phase 2 Protocols).

The Rock River Watershed has experienced alterations to its hydrologic regime in the form of a run of the river dam that was in place on T2.03 in the village of Williamsville from sometime between 1935 and 1954 until the mid-1980's when it came out. All of the reaches downstream and immediately upstream of this dam were affected by its presence and now by its removal.

Deforestation has affected most of the state of Vermont, with almost complete clearing occurring by the end of the 19th century and re-forestation to 75% forest cover by the end of the 20th century. It is likely that the Rock River is still re-bounding from the loss and the gradual re-growth of forest cover, and some of the historic incision and subsequent widening found in the watershed may be related to the increased flows resulting from the loss of trees.

Development greater than 10% is considered to alter the hydrologic cycle in a watershed. All of the assessed reaches have between five and ten percent developed lands. Seven of the subwatersheds have between 10 and 15% developed land and three, including Taft Brook, have between 15 and 25% developed lands. Within the river corridor, there are 1.1 miles of development on both sides of the assessed reaches and 3.4 miles on one side for a total of 4.4 miles of development or 21% of the assessed corridors.

Road and road density also affect the timing and amount of water runoff in a watershed. Of the 21 river miles assessed, 12.1 miles have a road on one side within the corridor and 3.3 miles have a road on both sides within the corridor. Storm water inputs are related to development and road construction. There were only 19 storm water inputs identified throughout the watershed,

however, those inputs are concentrated on three reaches high up in the watershed: 8 on T2.03-S2.02 (Baker); 7 on T2.11S1.01 (Taft); and 4 on T2.05-S1.05 (Marlboro Branch).

6.1.2 Sediment Load Indicators

Erosion is a factor influencing the sediment regimes and adjustment processes on-going in the watershed. Changes to the natural flow of sediment can lead to channel aggradation or degradation. Stream bank erosion can be a major contributor to sediment load and is the result of either vertical or horizontal adjustments in the stream slope and planform. The Phase 2 Assessment quantifies on-going erosion impacts by measuring eroding banks and inventorying gullies, dams, steep riffles, mass failures and channel bars.

Current erosion is found on 2.3 miles (11%) of the right banks and 2.1 miles (10%) of the left banks, with the Marlboro Branch having the highest percentages overall. Mass failures can be related to erosion and are a significant source of sediment. There were 28 mass failures inventoried on 13 different segments. Nearly half of them (12) are on Taft Brook and three are on the second reach of the Marlboro Branch, which was straightened up against the valley wall. There are also three on T2.12.

Flood chutes and avulsions are an indication that the river is undergoing planform adjustment and also contribute to sediment load. There are 57 flood chutes and 2 avulsions in the assessed area: Seven each on T2.12, T2.03-S2.01 & 02 and five on T2.07. There are two flood chutes on each segment of T2.11-S1.01 (Taft) and three on T2.05-S1.05. There is one avulsion each on T2.05-S1.02 and T2.03-S2.02.

6.1.3 Channel Slope and Depth Modifiers

Erosion and mass failures can be triggered by incision that is the result of changes within the stream corridor and watershed including channel straightening, corridor encroachments, hard armoring, berming and channel constrictions. These impacts directly or indirectly affect channel slope and depth. Natural channel spanning grade control also affects channel depth by arresting degradation. Thirty percent of the assessed reaches were historically straightened (6.3 miles out of 21 miles assessed). Straightening a river concentrates flow, reduces bed resistance, and causes incision (downcutting) leading to widening.

Along with straightening and channelization, berms and hard armoring were common river management practices in the past. Of the assessed reaches, 2.3 miles (11%) of the banks are bermed and 2.1 miles of the left bank and .9 miles of the right bank are rip-rapped. One or both banks have 3.6 miles of development and 12.8 miles of either or both bank have an encroachment (mostly roads).

6.1.4 Boundary Condition and Riparian Modifiers

Riparian buffers provide many important functions for streams including: increased bank stability, reduction of overland surface water flow and shading the channel to reduce water temperatures. The following table summarizes the total number of different corridor buffer

widths in the watershed. This parameter is directly correlated to the large amount of roads within the stream corridor.

Right Buffer Width	Total Segments	Left Buffer Width	Total Segments
>100	12	>100	8
26-50	4	26-50	9
51-100	4	51-100	5
5-25	5	5-25	3
Grand Total	25	Grand Total	25

6.1.5 Constraints to Sediment Transport and Attenuation

Natural and human built constraints to sediment transport and attenuation (storage) exist throughout the watershed. These are separated into vertical constraints which keep the bed of the river from degrading and lateral constraints, which keep the river from moving sideways. Natural vertical constraints are channel spanning grade control and in this watershed, manmade constraints are culverts. Lateral constraints may be ledge or human built infrastructure such as roads and development.

There numerous bridges and culverts throughout the watershed. A Bridge and Culvert Assessment was completed on 29 structures that had abutments. There were a number of mostly pedestrian bridges to camps that were not assessed, but are included in the GIS theme of bridges and culverts. There are 11 bridges and culverts that are channel constrictions (8 of these on TAFT Brook). There are four reaches with channel constrictions: T2.07, T2.11, T2.11-S1.01 and T2.12. Channel constrictions can cause changes in the sediment regime – most notably increased deposition above them and a decrease in sediment supply below them. There are 25 bridges and culverts that are flood prone area constrictions (including the channel constrictions mentioned above). Reductions in the flood prone area increase flooding and sediment supply to downstream reaches during large flood events and can lead to channel degradation.

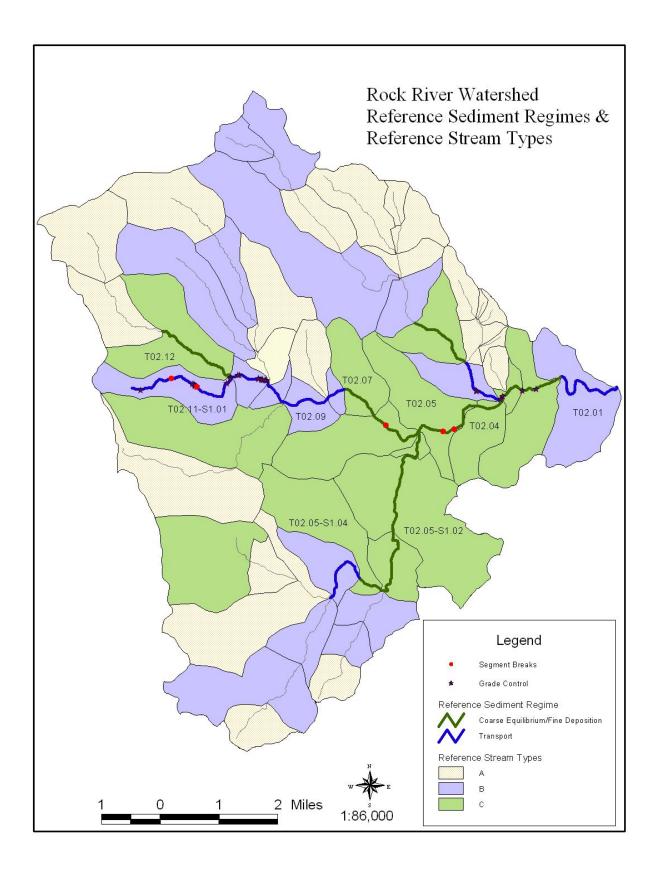
6.1.6 Existing and Reference Sediment Regimes

All of the modifiers, alterations and constraints analyzed above affect the current ability of the stream to store and move sediment. The Vermont DEC River Management Section has developed five different sediment regime descriptors to summarize reference and existing sediment transport capacity. These categories allow for a comparison of reference condition and existing sediment transport capacity and current channel adjustment, informing restoration project selection.

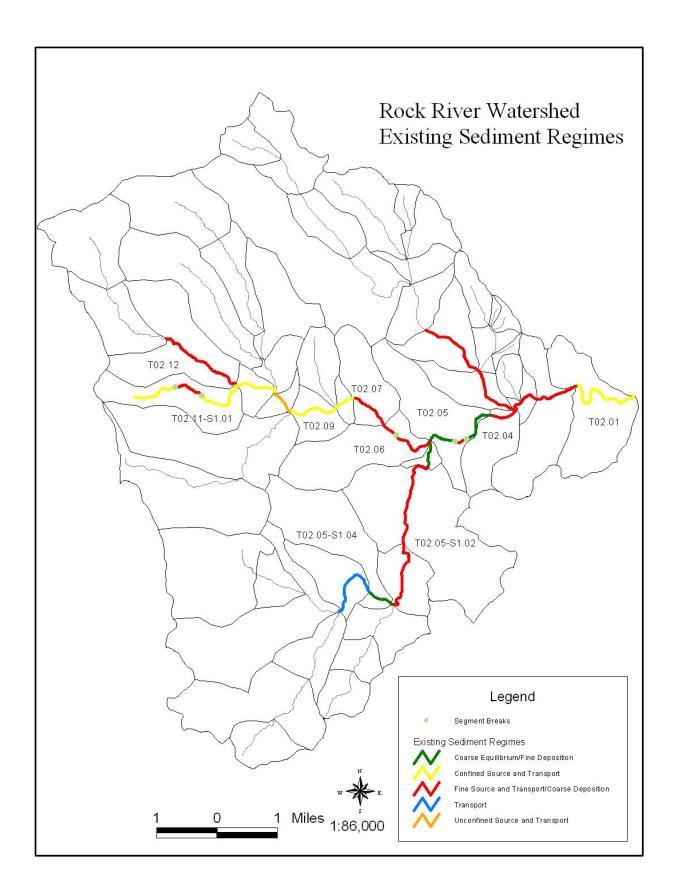
Streams that are in reference sediment regime fall into one of two categories: Transport and Coarse Equilibrium/Fine Deposition. Transport streams are those streams that are high gradient, naturally confined and have bedrock, boulder or cobble substrates. Coarse Equilibrium/Fine Deposition are streams that are in unconfined valleys and naturally provide areas for flood and sediment storage through flood plain access. Streams that are undergoing channel evolution will fall into one of the following three categories: Confined Source and Transport, Unconfined

Source and Transport and Fine Source and Transport. Confined Source and Transport are high gradient streams that have more erodable bed material and may be experiencing channel degradation and are located in naturally confined valley types. Unconfined Source and Transport are streams that have more erodable bed material, are located in unconfined valley settings and have experienced bank armoring and/or channel straightening. Finally, there are streams that are Fine Source and Transport/Coarse Deposition. These streams are located in unconfined valley settings with erodable bed material undergoing widening or planform adjustment. The latter two sediment regime types have been converted from natural Coarse Equilibrium/Fine Deposition type streams to transport type streams.

Streams that have been converted from Coarse Equilibrium/Fine Deposition to transport reduce sediment and flood attenuation capacity on that reach as well as watershed wide. This increases flood and erosion hazards downstream. Of the 25 segments assessed, 11 are transport (B type) streams by reference. There are 9 segments that have been converted to transport. Three of these converted streams have the potential to be restored to Coarse Equilibrium/Fine Deposition type streams. The following two maps represent reference and current sediment regimes in the Rock River Watershed.



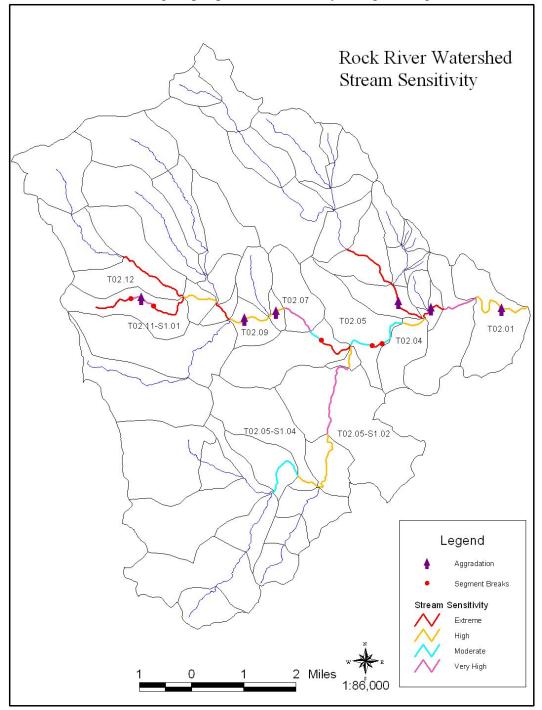
Landslide, Inc. - Rock River Phase 2 Stream Geomorphic Report May, 2007



Landslide, Inc. - Rock River Phase 2 Stream Geomorphic Report May, 2007

6.1.7 Sensitivity Analysis

The Vermont DEC River management Section has developed a five level sensitivity rating for streams based on current stream type and geomorphic condition. The rating scale is low, moderate, high, very high, and extreme. Sensitivity ratings are based on how rapidly a given stream type is expected to adjust (move laterally or horizontally) given its current geomorphic condition. The following map represents sensitivity ratings throughout the watershed.



Landslide, Inc. - Rock River Phase 2 Stream Geomorphic Report May, 2007

Sensitivity ratings assist in restoration project selection by identifying areas where rapid channel planform adjustment may occur in the presence of valuable human-built infrastructure. The following table prioritizes reaches for restoration based on sensitivity, current adjustment and potential threats to infrastructure. The results were incorporated into project identification tables in the next section.

River Segment	Sensitivity	Channel Evolution	Dominant Adjusment	Prioritization
T02.01-	High	IV	Aggradation	Low
T02.02-	Very High	IV	Aggradation	Medium
T02.03-	Extreme	IV	Planform/Aggradation	High
T02.04-	High		Planform/Widening	Low
T02.05A	Moderate	1	Minor Degradation/Widening	Low
T02.05B	Extreme	IV	Planform	High
T02.05C	Moderate	I	Minor Degradation/Widening	Medium
T02.05-S1.01-	High	IV	Aggradation	Medium
T02.05-S1.02-	Very High	III	Widening	High
T02.05-S1.03-	High	IV	Planform/Widening	High
T02.05-S1.04-	High	IV	Minor Planform	Low
T02.05-S1.05-	Moderate	IV	Planform	Low
T02.06A	Extreme	IV	Planform	High
T02.06B	Moderate	IV	Aggradation	Low
T02.07-	Very High	IV	Planform	Medium
T02.08-	High	IV	Aggradation	Medium
T02.09-	High	IV	Aggradation	Medium
T02.10-	Extreme	IV	Planform	High
T02.11-	High	IV	Aggradation	Low
T02.11-S1.01A	Extreme	IV	Planform	High
T02.11-S1.01B	Very High	IV	Aggradation	Medium
T02.11-S1.01C	Extreme	IV	Planform	High
T02.12-	Extreme	IV	Planform	High
T2.03-S2.01-	Extreme	IV	Aggradation	Medium
T2.03-S2.02-	Extreme	IV	Aggradation	Medium

Sensitivity Analysis

6.2 Preliminary Project Identification and Prioritization

The Vermont DEC River Management Section has developed a step wise procedure for identifying and prioritizing restoration projects. The categories of projects are: 1. Protect River Corridors; 2. Plant Stream Buffers; 3. Stabilize Stream Banks; 4. Arrest Head Cuts; 5. Remove Berms; 6. Remove or Replace Structures; 7 Restore Incised Reach; and 8. Restore Aggraded Reach. The tables below provide a foundation for continued planning and restoration efforts. The first table identifies potential projects by reach and prioritizes them (highest priority in yellow). The second table examines the highest priority reaches in more detail, describing stressors and constraints and technical feasibility of the projects.

Project Identification and Prioritization

River		ch rity	Watershed Priority	Independent of Reach Restoration	Next Steps & Other Project
Segment	Project Type	Reach Priority	Wat Prio	Inde of R Rest	Notes
T02.01-	Corridor Conservation	Low	High	Yes	Support Rock River Conservation Inc This reach is very important to the community for recreation and is experiencing increasing development.
	Restore floodplain	-	5		
T02.02-	access on left bank.	High	Medium	Yes	Talk with left bank landowners.
Т02.03-	Outreach & Education	Medium	Medium	Yes	Passive river management is recommended for this reach that will naturally narrow and re-build its floodplain as it continues to adjust to the removal of the dam. Community outreach is recommended to help residents and swimmers understand the fluvial processes at work in their part of the river.
T02.04-	Corridor Conservation - possible restoration of channel to old bed.	High	High	Yes	Talk with landowners & explore re- locating the stream to the old channel This reach is an important sediment attenuation asset with no vertical or lateral constraints.
T02.05A	Corridor Conservation	High	High	Yes	Talk with landonwers - This reach is an important sediment attenuation asset with no vertical or lateral constraints.
T02.05B	None.				The river was historically on the other side of the road here - it will probably require on-going maintenance of rip-rap and continued management as a converted transport stream.
T02.050	Corridor Conservation	Lliah	Modium	Vaa	Talk with landownara
T02.05C	(Left bank only) Corridor Conservation	High	Medium	res	Talk with landowners.
T02.05-S1.01-	(Left bank only)	High	High	Yes	Talk with landowners.
	Manage invaisive species	High	High	Yes	Talk with landonwers.

River Segment	Project Type	Reach Priority	Watershed Priority	Independent of Reach Restoration	Next Steps & Other Project Notes
T02.05 S1.02	Corridor Conservation & limited berm removal.	High	High	No	This reach has been 100% straightened. Further site assesment is required to determine if it can stay in this general location over the long term and/or to explore options for increasing sinuosity. It is an important sediment attenuation asset with no vertical or lateral constraints. Talk with landowners.
T02.05-S1.02-	a limited berm removal.	High	High	NO	Conservation of up and down
T02.05-S1.03-	None.				stream reaches as sediment attenuation assets will relieve pressure from this converted transport reach.
					This reach is an important sediment attenuation asset with no vertical or lateral constraints and could help take pressure off of T2.05-S1.03.Talk with
T02.05-S1.04-	Replace Structure	<mark>High</mark> Medium	<mark>High</mark> Low	<mark>Yes</mark> Yes	landowners. Talk with Town.
	(bridge) Berm Removal		Medium		Re-examine berms to see if they are impeding floodplain access.
T02.05-S1.05-	Berm Removal	Medium	Low	Yes	Re-examine berms to see if they are impeding floodplain access. Berms on both sides of stream at
T02.06A	Berm Removal -	Low	Low	Yes	confluence with Marlboro Branch. Other berms u/s not protecting infrasture. Re-examine berms to see if they are impeding floodplain access.
T02.06B	Berm Removal	Medium	Low	Yes	Re-examine berms to see if they are impeding floodplain access.
T02.07-		Medium		Yes	This reach is an important sediment attenuation asset with no vertical and limited lateral constraints. Talk with landowners.

River Segment	Project Type	Reach Priority	Watershed Priority	Independent of Reach Restoration	Next Steps & Other Project Notes
T02.07-	Replace/Remove Structure (bridge)	High	High	Yes	Talk with landowners.
102.07-	Berm Removal		Medium		Talk with landowners.
T02.08-	Corridor Conservation (Right Bank) Corridor Conservation	Low	Low	Yes	Talk with landowners.
T02.09-	(Right Bank) Corridor Conservation	Medium	Low	Yes	Talk with landowners.
T02.10-	(Right Bank)	Medium	Low	Yes	Talk with landowners.
T02.11-	Corridor Conservation	Low	High	Yes	Talk with landonwer.
T02.11-	Replace Structure (new box culvert)	Low	Low	Yes	Talk with Town.
T02.11-S1.01A	Replace Structures (5!)	High	Medium	Yes	Talk with town and landowners.
T02.11-S1.01B	Replace Structure	Medium	Low	Yes	Work with town.
T02.11-S1.01B	with buffer establishment at horse farm.	High	High	N/A	Work with landowners
T02.11-S1.01C		High	Medium	Yes	Work with town.
T02.11-S1.01C	Best Management Practices (stormwater inputs) for all of Taft	High	High	Yes	Work with towns and landowners.
T02.12-	Replace Structure (second one) Corridor Conservation	High	Medium	Yes	Work with town.
T2.03-S2.01-	(Right Bank)	Medium	Low	Yes	Talk with landowners.
T2.03-S2.02-	Berm Removal	Low	Low	Yes	Re-examine berms to see if they are impeding floodplain access.
	Best Management Practices (stormwater management)	High	High	Yes	Work with towns to establish BMP's for stormwater in the watershed.
	Corridor Conservation (Right Bank)	High	High	Yes	Talk with landowners.
	Remove old abutments	High	Medium	Yes	Determine if they are limiting floodplain access; talk with landonwers.

	River Corridor Plann	Ť		•
Projec	t and Strategy Summ			
Project #	Reach/Segment Condition/Sensitivity	Site Description including Stressors and Constraints	Project or Strategy Description	Technical Feasibility & Priority
1	T02.01- Confined Source & Transport High	Hydrologic stressors are moderate, sediment increase is moderate, no reach modification stressors, no vertial or lateral constraints, natural transport.	Corridor Conservation - support and expand efforts of Rock River Conservation Inc.	Project is on-going. High priority for social benefit.
2	T02.04- Fine Source & Transport High	Hydrologic stressors are moderate, sediment increase is high, no reach modification stressors, no vertical or lateral constraints, important sediment attenuation reach.	Corridor Conservation with possible restoration to old channel to move channel away from valley wall and provide floodplain access. Further assessment necessary.	High priority for sediement and flood water attenuation. Strategic location.
3	T02.05A Coarse Equilibrium/Fine Dep. Moderate	Hydrologic stressors are moderate, sediment increase is low, stream power increased through straightening, boundary resistance decreased b/c of buffer, no vertial or lateral constraints, important sediment attenuation reach.	Corridor Conservation.	High priority for sediment and flood water attenuation.
4	T02.05-S1.01- Coarse Equilibrium/Fine Dep. High	Hydrologic stressors are moderate, sediment increase is low, stream power is not increased, boundary resistance increased b/c of rb ledge, no vertical constraints, ledge is a lateral constraint.	Corridor conservation to protect floodplain access on left bank.	High priority for flood plain access.
5	T02.05-S1.02- Fine Source & Transport Very High	Hydrologic stressors are moderate, sediment increase is high, stream power increased through straightening, boundary resistance decreased b/c of rb buffer, no vertical or lateral constraints, important sediment attenuation reach.	Corridor Conservation, This reach has been 100% straightened. Further site assessment is required to determine if it can stay in this general location over the long term and/or to explore options for increasing sinuosity and removing berms.	adjustment and historic straightening.
6	T02.05-S1.04- Coarse Equilibrium/Fine Dep. High	Hydrologic stressors are moderate, sediment increase is moderate, stream power increased through berming, no vertical or lateral constraints, important sediment attenuation asset.	Corridor Conservation. Improving this reach's ability to store sediment and flood water could reduce pressure on d/s reach.	High priority due to u/s relationship from T2.05-S1.03, a converted transport reach.

Project #	Reach/Segment Condition/Sensitivity	Site Description including Stressors and Constraints	Project or Strategy Description	Technical Feasibility & Priority
7	T02.07- Fine Source & Transport Very High	Hydrologic stressors are moderate, sediment increase is moderate, no reach modification stressors, no vertical constraints, only half of one bank has lateral (road) constraint, important sediment attenuation reach.	Corridor Conservation & possible structure removal and/or replacement.	High priority - rare mainstem reach with out lateral constraints.
8	T02.11- Confined Source & Transport High	Hydrologic stressors are moderate, sediment increase is low, no increase in stream power, boundary resistance is increased due to natural grade control, natural vertical and lateral constraints.	Corridor Conservation.	Social benefits high - this reach is natural transport with no encroachments in either corridor. High value for geology. Medium priority.
9	T02.11-S1.01A Confined Source & Transport Extreme	Hydrologic stressors are extreme, sediment increase is high, increase in stream power and boundary resistance, natural and human vertical constraints, road is a lateral constraint.	Replace undersized structures; work with community on BMP related to stormwater.	Very High priority due to extreme sensitivity of the segment.
10	T02.11-S1.01B Fine Source & Transport Very High	Hydrologic stressors are extreme, sediment increase is high, increase in stream power, no increase in boundary resistance, natural vertical constraints, road is a lateral constraint.	Restore aggraded reach; replace structure; reduce sediment inputs from u/s at farm.	High Priority to re-establish transport capacity of segment.
11	T02.11-S1.01C Confined Source & Transport Extreme	Hydrologic stressors are extreme, sediment increase is high, increase in stream power and no increase in boundary resistance, natural and human vertical constraints, road is a lateral constraint.	Replace undersized structures; work with community on BMP related to stormwater.	Very High priority due to extreme sensitivity of the segment.
12	T2.03-S2.02 Fine Source & Transport Extreme	Hydrologic stressors are high, sediment increase is high, increase in stream power and no increase in boundary resistance, no vertical constraints, road is a lateral constraint converted to transport.	Best management practices with Town, right bank corridor conservation.	Very High priority due to extreme sensitivity of the reach.

7.0 References

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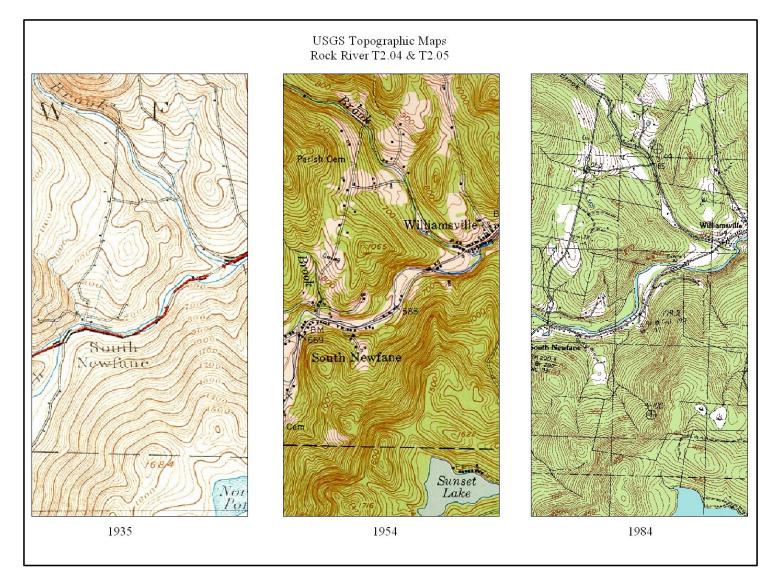
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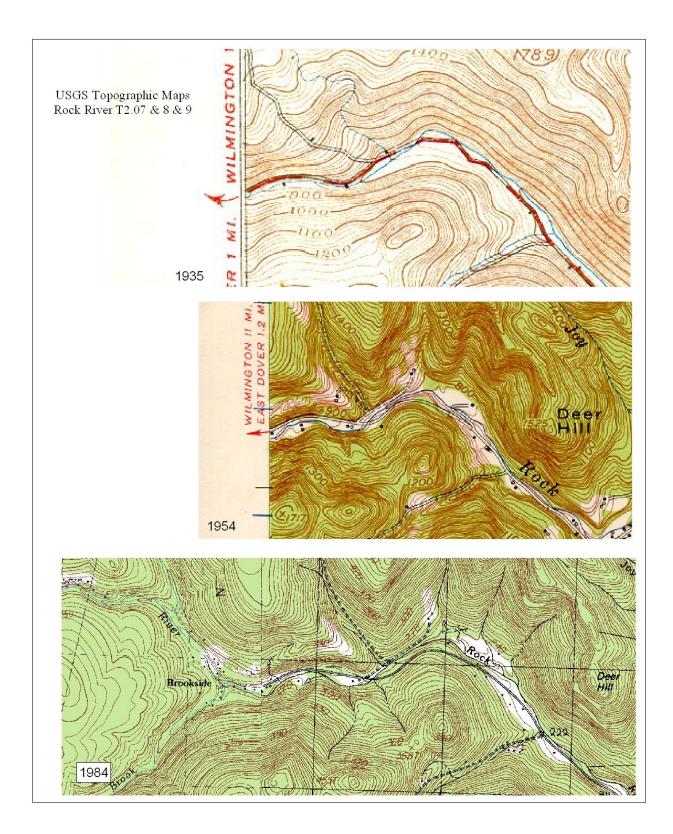
Rock River Phase 2 Stream Geomorphic Assessment

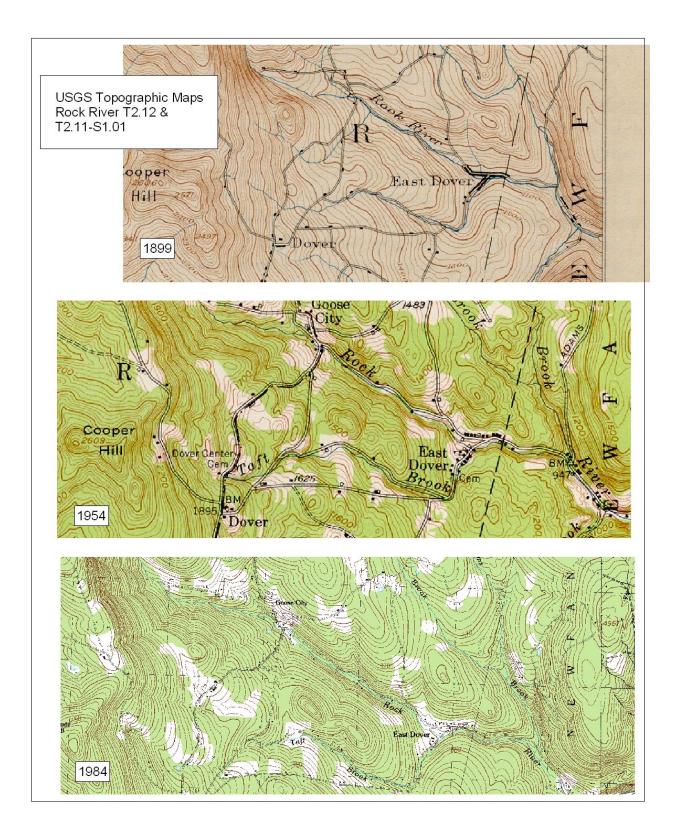
Appendix A

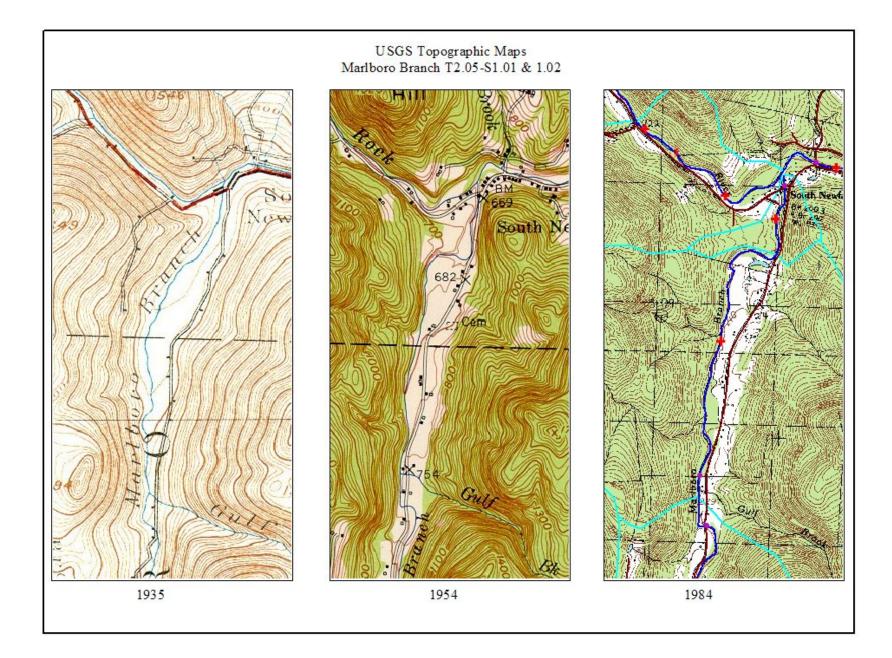
Historic Topographic Maps	1
Hydrologic Alterations	
Hydrologic Stressors	6
Sediment Load Indicators	7
Channel Slope Modifiers	8
Channel Depth Modifiers	9
Boundary Condition and Riparian Modifiers	10
Constraints to Sediment Transport and Attenuation	11
Existing and Reference Stream Types	12

Historic Topographic Maps

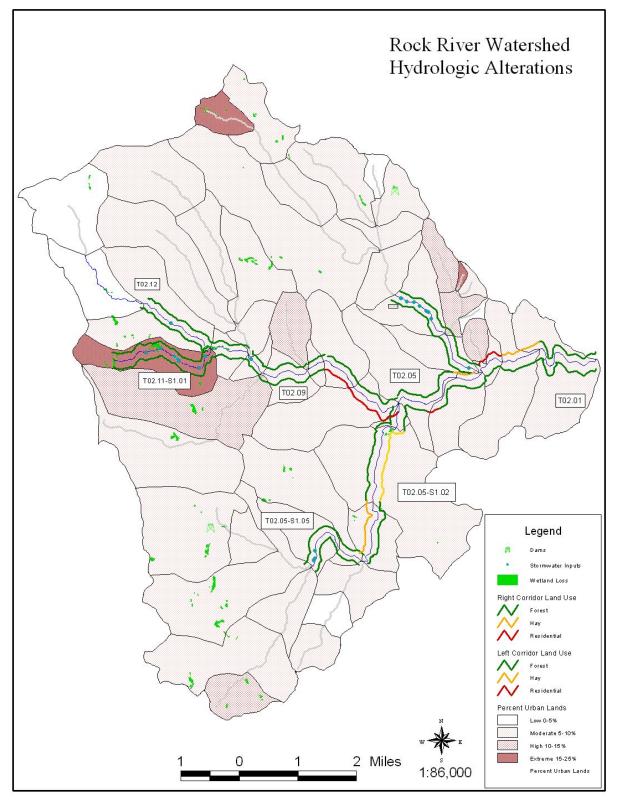








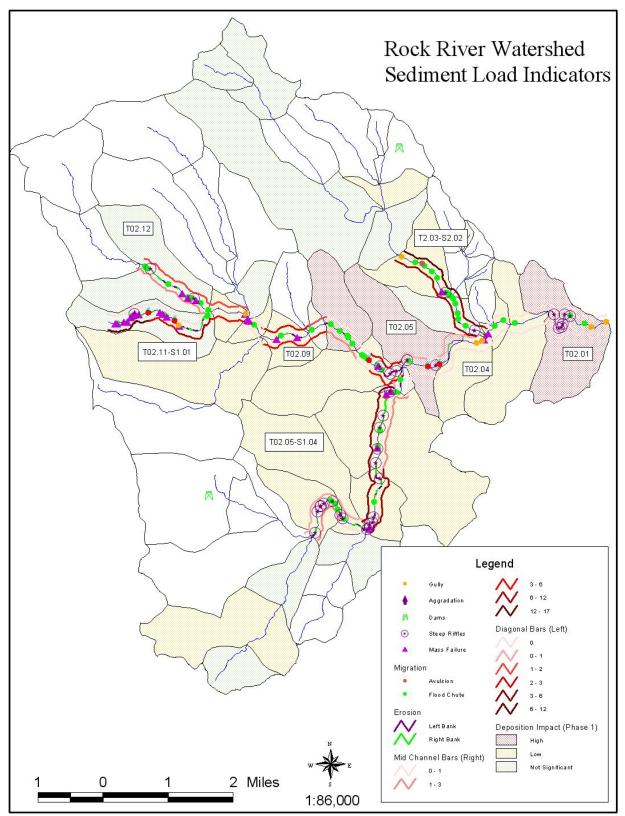
Hydrologic Alterations



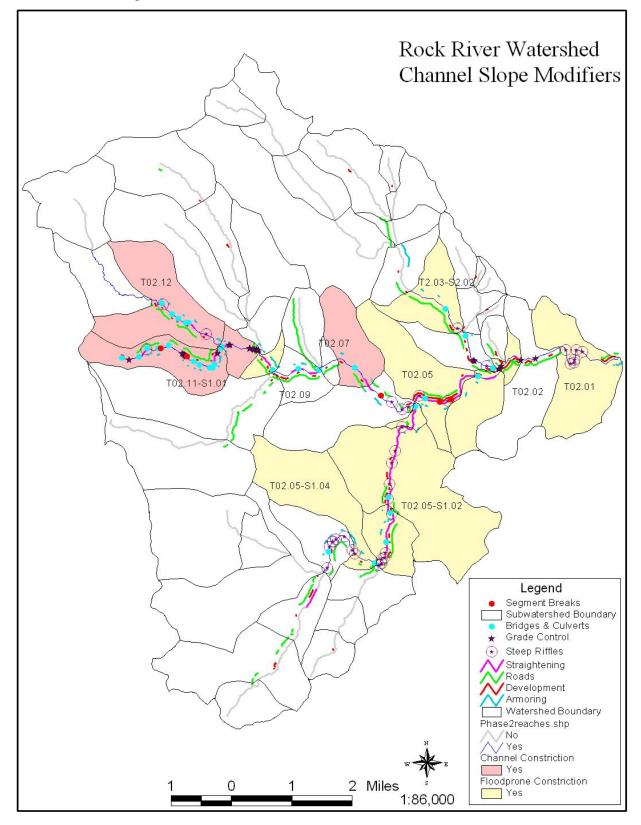
Hydrologic Stressors

	Watershee	d Input Stressors	Reach Modification Stressors						
River Segment	Hydrologic	Sediment Load Increase	Stream Power	Boundary Resistance					
T02.01-	Moderate	Moderate	None	None					
T02.02-	Moderate	Low	None	Increase - Bed (u/s GC)					
T02.03-	Moderate	Low	Decrease - Constriction	Increase - Bed (GC)					
T02.04-	Moderate	High	None	None					
T02.05A	Moderate	Low	Increase - Slope (straightening)	Decrease - Buffer					
T02.05B	Moderate	High	Increase - Slope (multiple))	Increase - Bank (armoring)					
T02.05C	Moderate	Moderate	Increase - Slope (encroachments)	Decrease - Buffer					
T02.05-S1.01-	Moderate	Low	Increase - Slope (multiple)	Increase - Bank (ledge)					
T02.05-S1.02-	Moderate	High	Increase - Slope (straightening)	Decrease - Buffer					
T02.05-S1.03-	Moderate	High	Increase - Slope (straightening)	None					
T02.05-S1.04-	Moderate	Moderate	Increase - Depth (berming)	None					
T02.05-S1.05-	Moderate	Moderate	Increase - Slope (encroachments)	Increase - (armoring); Decrease (buffer)					
T02.06A	Moderate	High	Increase - Depth (berming)	None					
			Increase - Slope (straightening &						
T02.06B	Moderate	Low	encroachments)	Decrease - Bank (armoring)					
T02.07-	Moderate	Moderate	None	None					
T02.08-	Moderate	Moderate	Increase - Slope (encroachments)	Decrease - Buffer					
T02.09-	Moderate	High	Increase - Slope (straightening & encroachments)	Increase - Bank (armoring)					
T 00.40			Increase - Slope (straightening &						
T02.10-	Moderate	Low	encroachments)	Increase - Bank (armoring)					
T02.11-	Moderate	Low	None	Increase - Bed (multiple GC)					
T02.11-S1.01A	Extreme	High	Increase - Slope (straightening & encroachments)	Increase - Bank (armoring)					
T02.11-S1.01B	Extreme	High	Decrease - Constriction (ledge & DJ)	Increase - Bed (GC)					
T02.11-S1.01C	Extreme	High	Increase - Slope (straightening & encroachments)	None					
T02.12-	Moderate	High	Increase - Slope & Depth (encroachments & berming)	None					
T2.03-S2.01-	Moderate	High	Increase - Slope (encroachments)	None					
T2.03-S2.02-	High	High	Increase - Slope (encroachments)	Decrease - Buffer					

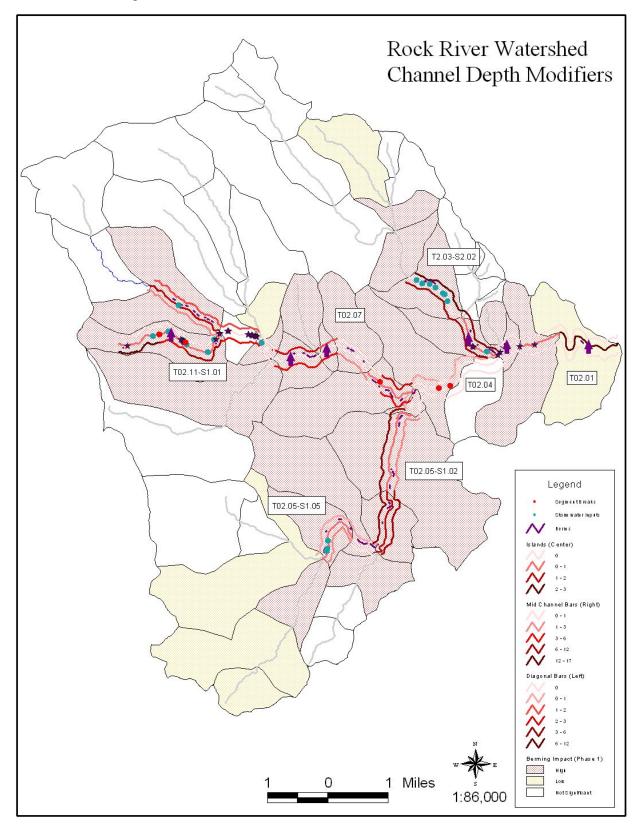
Sediment Load Indicators



Channel Slope Modifiers



Channel Depth Modifiers



Rock River Watershed Boundary Condition & Riparian Modifiers T02.12 T02.07 T02.05 T02.11 S1.01 T02.01 Legend T02.05-S1.02 Dams 102.05-51.05 Erosion Left Bank V Right Bank Grade Control × Buffer Width (Right) 26-50 5-25 51-100 >100 Buffer Width (Left) 26-50 5-25 51-100 >100 Buffer Impact H ig h Low 0 1 Miles Not Significant

Boundary Condition and Riparian Modifiers

1:86,000

Constraints to Sediment Transport and Attenuation

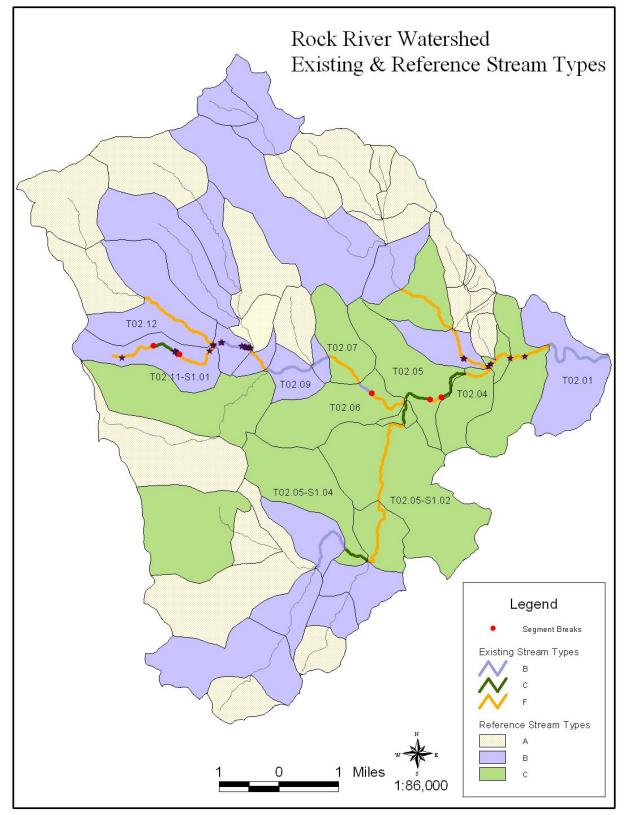
	Constrai	nts	Tra	ansport		Attenuation	
River Segment	Vertical	Lateral	Natural	Converted	Natural	Increased	Asset
T02.01-	None	None	Х			Х	
T02.02-	Natural	Road		Х	Х		Х
T02.03-	Natural	Road & Dev.		Х	Х	Х	Х
T02.04-	None	None		Х	Х		Х
T02.05A	None	None			Х		Х
T02.05B	None	Road & Dev.		Х	Х		
T02.05C	None	Road & Dev.			Х		Х
T02.05-S1.01-	None	Road			Х	Х	Х
T02.05-S1.02-	None	None			Х		Х
T02.05-S1.03-	None	Road		Х	Х		
T02.05-S1.04-	None	None		Х	Х		Х
T02.05-S1.05-	None	Road	Х				
T02.06A	None	Road & Dev.		Х		Х	
T02.06B	None	Road		Х			
T02.07-	None	Road (half)		Х	Х		Х
T02.08-	None	Road	Х			Х	
T02.09-	None	Road	Х		Х	Х	
T02.10-	None	Road	Х				
T02.11-	Natural	Natural	Х			Х	
T02.11-S1.01A	Natural & Human (cx4)	Road	Х				
T02.11-S1.01B	Natural	Road (third)	Х			Х	
T02.11-S1.01C	Natural & Human (cx2)	Road	Х				
T02.12-	None	Road (half)		Х			
T2.03-S2.01-	Natural	Road & Dev.	Х			Х	
T2.03-S2.02-	None	Road		Х	Х		Х

Departure Analysis

Yellow are priorty reaches as sediment attenuation assets.

(c) = culvert for vertical constraint

Existing and Reference Stream Types



Impact Summary Table

	Bank Armoring or	Bridge or	Debris				Grade		Mass		Steep Riffle or	Stormwater		Stream	%
Reach	Revetment	Culvert	Jam	Development	Encroachment	% Eroding	Control	Gully	Failure	Migration	Head Cut	Input	Straightening	Crossing	Straightened
T02.01	739	187		1378	1397	2%		2		2	6				0%
T02.02				919	3515	0%	1			1					0%
T02.03		254		2063	2604	1%	3		1	2			581		20%
T02.04	176	619		414		11%		2	1				1018		39%
T02.05	1040			3787	3771	9%				1	2		6873		94%
T02.05-S1.01	337	721		265	1091	7%				1			2268		100%
T02.05-S1.02	250			1435	3622	20%			3	5	5		7981	1	96%
T02.05-S1.03	1203	532		1055	5726	28%			3	1	6		4630		68%
T02.05-S1.04	276	114		215						1	1				0%
T02.05-S1.05	1978			272	5120	14%				4	7	4			0%
T02.06	1287			455					1	5	3		552	1	10%
T02.07	284	71		427	2208	13%				5			664	1	17%
T02.08				105	1734					1			106		6%
T02.09	1291	364		1324	5464	8%			1	1			2221		49%
T02.10	1137	96		429	1701	4%			2	1		1	1026		46%
T02.11	346	108		144		2%	10		1	1			508		13%
T02.11-S1.01	1524		-		7784		10	1	12	6	1	7	2141	1	19%
T02.12	983	226		739	5196	15%			3	7	2	1	1132	1	14%
T2.03-S2.01	370	417		2108	4039		2			7	1	1			0%
T2.03-S2.02	386	291	1	568	6865	3%		1	1	7	1	8		1	0%

Rock River Phase 2 Stream Geomorphic Assessment

Appendix B – Phase 2 Data

Project: Wes Stream:	t River - F Baker E	Rock River Brook	Re	each #	Phase T2.03-S	2 Segment S	Summa		ge 1 of 2 gment: 0	May Completion	/ 17, 2007 Date:	FIT: Yes August 31,	-
Organization:	Landslid	e Natural Reso	urce Obse	ervers:	ADS, C	н		Why	Not assessed:			Rain: Y	/es
Segment Length	(ft):	6,190	Segment Lo	cation:	Baker	Brook, along Ba	aker Bro	ook Rd	near Parish Hil	l Rd			
Step 1. Vall		oodplain	Step 2. Strear 2.1 Bankfull Width	n Chanr	<u>nel</u> 43	Step 3.1 Stream Banl	3. Ripar ks	ian Feat	ures	4.1 Springs / S		Flow Modifie Abund	
1.2 Alluvial Fan	No		2.2 Max Depth (ft)		2.50	Typical Bank S	lope Sha	allow		4.2 Adjacent \	Vetlands	None	
1.3 Corridor Encroa	achments		2.3 Mean Depth (ft))	1.70	Bank Texture		Left	Right	4.3 Flow Statu	IS	Moder	ate
Length (ft)) Or	e Both	2.4 Floodprone Wid	lth (ft)	53	Upper				4.4 # of Debri	s Jams	1	
Berms	5 75	1 0	2.5 Aband. Floodpli	n	2.50	Material Type		Sand	Sand	4.5 Impoundm	nents	None	
Roads	6	0 6,115	2.6 Width/Depth Ra	atio	25.29	Consistency	Non-co	ohesive	Non-cohesive	Impoundmt.	Location		
Railroads	6	0 0	2.7 Entrenchment F	Ratio	1.23	Lower				4.6 # of Storm	water Inpu	uts 8	
Improved Paths	6	0 0	2.8 Incision Ratio		1.00	Material Type	Boulde	r/Cobbl E	Boulder/Cobbl	4.7 Upstream	Flow	None	
Development	t 56	8 0	2.9 Sinuosity		Low	Consistency	Non-co	ohesive	Non-cohesive	4.9 # of Beav	er Dams	0	
1.4 Adjacent Side	Le	ft Right	2.10 Riffles Type	Com	plete	Bank Erosion		Left	Right	Affected L	ength (ft)	0	
Hillside Slope	e Fla	at Steep	2.11 Riffle/Step Spa	acing (ft)	106	Erosion Length	ı (ft)	228	164	Step 5. Chan	nel Bed a	nd Planform	ı Change
Continuous w	/ Alway	s Sometimes				Erosion Height	(ft)	0.00	0.00	5.1 Bar Types			
W/in 1 Bankfil	Alway	s Always	2.12 Substrate Con	nposition	1	Revetmt. Type	F	Rip-Rap	None	Mid	Point	Sid	e
Texture	e Sar	d Sand	Bedrock	0	%	Revetmt. Lengt	h (ft)	386	0	9	1	16	
1.5 Valley Features	5		Boulder	11	%	Near Bank Veg.	Type	Left	Right	Diagonal	Delta	Isla	
Valley Width	– n (ft) 53		Cobble	25	%	Dominant	••	iduous	Coniferous	12	0	0	
Width Determina	ation Mea	sured	Coarse Gravel	23	%	Sub-dominant	Con	iferous	Deciduous	5.2 Other Fea	tures	· ·	
Confinement T	ype Nar	rowly	Fine Gravel	17	%	Bank Canopy		Left	Right	Flood Neck (Avulsion	Braiding
Rock Gor	rge? No	-	Sand	24	%	Canopy %		76-100	76-100	6 0		1	0
Human-caused cha	anged valle	y width? yes				Mid-Channel C	anopy	С	losed	5.3 Steep Riff	es and He	ad Cuts	-
						3.2 Riparian Buf	ffer			Steep Riffles	Head Cu		Rejuv.
Notes:			Silt/Clay Present?	1	٥N	Buffer Width		Left	Right	1	0		No
This reach is a C r	iffle pool by	reference but	Detritus	0	%	Dominant		5-25	>100	5.4 Stream Fo	ord or Anim	nal	Yes
is currently an F rif			# Large Woody		11	Sub-dominant		None	None	5.5 Straighten			No
degradation (entre	,	•	2.13 Average Large	est Partic	le on	Buffer Veg. Typ	ре	Left	Right	Straighten	-		0
It is in stage IV of t evolution model is	•		Bed 14.0		inches	Dominant		d Trees	Mixed Trees	5.5 Dredging	ing Longu		None
the stream type de			Bar 13.0		inches	Sub-dominant		None	None	5.5 Dredging			None
geomorphic condit	tion. Ford is	s new for acces				3.3 Riparian Co	rridor						
to camp. It was 1		ccording to a	2.14 Stream Type			Corridor Land		Left	Right				
neighbor) when we	e saw it.		Stream Type:	F		Dominant		Forest	Forest				
			Bed Material:	Grave	l	Sub-dominant		None	None				
			Subclass Slope:				Д	mount	Mean Height	Note:			
			Bed Form:	Riffle-	Pool	Mass Failures	<u> </u>	One	12.00	Step 1.6 - Gi	ade Contr	ols and	
			2.15 Reference Str	eam Typ	be	Gullies		One	15.00	Step 4.8 - Cl	nannel Cor	nstrictions	
			(if different from	Phase	1)					are on The s report - Step			

Project: West River - Rock River Stream: Baker Brook	Reach #	Phase T2.03-S	2 Segment S 2.01	annary ·	ge 1 of 2 jment: 0	May 17, 2007 Completion Date:	FIT: Yes August 24, 2006
Organization: Landslide Natural Reso		-		,	Not assessed:		Rain: Yes
Segment Length (ft): 5,151	Segment Location:	Mouth	of Baker Brook,	Williamsville	/illage		
Step 1. Valley and Floodplain 1.1 Segmentation None	Step 2. Stream Char 2.1 Bankfull Width	inel 38	Step 3.1 Stream Bank	3. Riparian Featu <u>s</u>	ures	Step 4. Flow & 4.1 Springs / Seeps	Flow Modifiers Abundant
1.2 Alluvial Fan No	2.2 Max Depth (ft)	1.30	Typical Bank SI	ope Steep		4.2 Adjacent Wetlands	Some
1.3 Corridor Encroachments	2.3 Mean Depth (ft)	0.85	Bank Texture	Left	Right	4.3 Flow Status	Moderate
Length (ft) One Both	2.4 Floodprone Width (ft)	41	Upper			4.4 # of Debris Jams	0
Berms 809 0	2.5 Aband. Floodpln	1.30	Material Type	Sand	Sand	4.5 Impoundments	None
Roads 0 3,230	2.6 Width/Depth Ratio	45.18	Consistency	Non-cohesive	Non-cohesive	Impoundmt. Location	
Railroads 0 0	2.7 Entrenchment Ratio	1.07	Lower			4.6 # of Stormwater Inp	uts 1
Improved Paths 0 0	2.8 Incision Ratio	1.00	Material Type	Boulder/Cobbl E	Boulder/Cobbl	4.7 Upstream Flow	None
Development 2,108 0	2.9 Sinuosity	Low	Consistency	Non-cohesive	Non-cohesive	4.9 # of Beaver Dams	0
1.4 Adjacent Side Left Right	2.10 Riffles Type Not Ap	plicable	Bank Erosion	Left	Right	Affected Length (ft)	0
Hillside Slope Very Steep Flat	2.11 Riffle/Step Spacing (fi	t) O	Erosion Length	(ft) 623	268	Step 5. Channel Bed a	and Planform Changes
Continuous w/ Always Always			Erosion Height	(ft) 0.00	0.00	5.1 Bar Types	3
W/in 1 Bankfill Always Always	2.12 Substrate Compositio	n	Revetmt. Type	Multiple	Rip-Rap	Mid Point	Side
Texture Cobble Cobble	Bedrock 0	%	Revetmt. Length	(ft) 324	47	8 3	11
1.5 Valley Features	Boulder 16	%	Near Bank Veg.	Type Left	Right	Diagonal Delta	Island
Valley Width (ft) 107	Cobble 34	%	Dominant	Coniferous	Deciduous	<u></u> 6 1	1
Width Determination Measured	Coarse Gravel 18	%	Sub-dominant	None	None	5.2 Other Features	-
Confinement Type Semi-confined	Fine Gravel 17	%	Bank Canopy	Left	Right		Avulsion Braiding
Rock Gorge? No	Sand 15	%	Canopy %	76-100	76-100	7 0	0 0
Human-caused changed valley width? Yes			Mid-Channel Ca	anopy C	losed	5.3 Steep Riffles and He	
			3.2 Riparian Buff	er		Steep Riffles Head C	
Notes:	Silt/Clay Present?	No	Buffer Width	Left	Right	$\frac{1}{1} \qquad \frac{1}{1}$	No
This reach is in the process of re-building	-	%	Dominant	26-50	>100	5.4 Stream Ford or Anir	
active floodplain. There are numerous old	# Large Woody	4	Sub-dominant	None	None	5.5 Straightening	No
terraces on the RB. Abundant placed rock in	2.13 Average Largest Part	icle on	Buffer Veg. Typ		Right	Straightening Lengt	
the stream, possibly post 1973 flood.	Bed 19.6	inches	Dominant	Mixed Trees	Mixed Trees	5.5 Dredging	
	Bar 11.0	inches	Sub-dominant	None	None	5.5 Dredging	None
		moneo	3.3 Riparian Cor	ridor			
	2.14 Stream Type		Corridor Land	Left	Right		
	Stream Type: F		Dominant	Forest	Forest		
	Bed Material: Grave	el	Sub-dominant	None	None		
	Subclass Slope: None			Amount	Mean Height	Note:	
	Bed Form: Plane	Bed	Mass Failures	None	0.00	Step 1.6 - Grade Cont	rols and
	2.15 Reference Stream Ty	'ne	Gullies	None	0.00	Step 4.8 - Channel Co	
	(if different from Phase	1)				are on The second page report - Steps 6 throug	

Stream: F		r Main Stem			T02.12	2 Segment S	Se	ige 1 of 2 gment: 0	May Completion [17, 2007 Date:	FIT: Yes August 22,	2006
0		atural Reso			ADS, C		,	Not assessed:			Rain: Y	(es
Segment Length (ft)		7,821	•			River main stem						
Step 1. Valley 1.1 Segmentation No		dplain	Step 2. Strea 2.1 Bankfull Width		<u>nel</u> 31	Step 3.1 Stream Ban	3. Riparian Feat	ures	Step 4. Flow & Flow Modifiers4.1 Springs / SeepsSome			
1.2 Alluvial Fan	None		2.2 Max Depth (ft)		1.90	Typical Bank S			4.2 Adjacent W		None	
1.3 Corridor Encroach	ments		2.3 Mean Depth (fi		1.31	Bank Texture	Left	Right	4.3 Flow Status		Moder	ate
Length (ft)	One	Both	2.4 Floodprone Wi	dth (ft)	42	Upper			4.4 # of Debris	Jams	0	
Berms	1,190	174	2.5 Aband. Floodp	In	7.90	Material Type	Sand	Sand	4.5 Impoundme	ents	None	
Roads	3,832	0	2.6 Width/Depth R	atio	23.66	Consistency	Non-cohesive	Non-cohesive	Impoundmt. I	∟ocation		
Railroads	0	0	2.7 Entrenchment	Ratio	1.35	Lower			4.6 # of Storm	water Inpu	uts 1	
Improved Paths	0	0	2.8 Incision Ratio		4.16	Material Type	Boulder/Cobbl B	Boulder/Cobbl	4.7 Upstream F	-low	None	
Development	739	0	2.9 Sinuosity		Low	Consistency	Non-cohesive	Non-cohesive	4.9 # of Beave	er Dams	0	
1.4 Adjacent Side	Left	Right	2.10 Riffles Type	Not Ap	plicable	Bank Erosion	Left	Right	Affected Le	ength (ft)	0	
Hillside Slope	Flat	Flat	2.11 Riffle/Step Sp	acing (ft) 0	Erosion Length	(ft) 1,151	1,264	Step 5. Chann	el Bed a	nd Planform	Changes
Continuous w/ So	metimes	Sometimes				Erosion Height	(ft) 0.00	0.00	5.1 Bar Types			
W/in 1 Bankfill	Always	Always	2.12 Substrate Co	mpositior	<u>1</u>	Revetmt. Type	Rip-Rap	Rip-Rap	Mid	Point	Side	е
Texture	Sand	Sand	Bedrock	0	%	Revetmt. Lengt	h (ft) 645	338	2	14	10)
1.5 Valley Features			Boulder	15	%	Near Bank Veg.	Type Left	Right	Diagonal	Delta	Isla	ind
Valley Width (ft) 150		Cobble	44	%	Dominant	Coniferous	Coniferous	2	0	2	
Width Determination	n Measur	red	Coarse Gravel	17	%	Sub-dominant	None	None	5.2 Other Feat	ures		
Confinement Type	e Narrow	1	Fine Gravel	16	%	Bank Canopy	Left	Right	Flood Neck C	utoff	Avulsion	Braiding
Rock Gorge?	? No		Sand	8	%	Canopy %	76-100	76-100	7 0		0	0
Human-caused chang	ed valley wi	idth? no				Mid-Channel C	anopy C	losed	5.3 Steep Riffle	es and He	ad Cuts	
						3.2 Riparian But	fer		Steep Riffles	Head Cu	uts Trib F	Rejuv.
Notes:			Silt/Clay Present?	Y	es	Buffer Width	Left	Right	2	0		No
This reach is a B plan	•		Detritus	0	%	Dominant	26-50	>100	5.4 Stream For	d or Anin	nal	Yes
is currently an F. It is having undergone his			# Large Woody		19	Sub-dominant	None	None	5.5 Straighteni	ng	•	Yes
presently in planform			2.13 Average Larg	est Parti	cle on	Buffer Veg. Typ	be <u>Left</u>	Right	Straighteni	ng Length	ז: י	1,132
was historically closer			Bed 15.0		inches	Dominant	Mixed Trees	Mixed Trees	5.5 Dredging			None
to a30+ yr. resident, w			Bar 11.5		inches	Sub-dominant	None	None	0.0			
her about it. It may ha						3.3 Riparian Co	rridor					
road or ag. The chan places. Old channel b		-	2.14 Stream Type			Corridor Land	Left	Right				
places. Old channel i		, in many	Stream Type			Dominant	Forest	Forest				
			Bed Material		е	Sub-dominant	None	None				
			Subclass Slope		Deal		Amount	Mean Height	Note:			
			Bed Form			Mass Failures	Multiple	55.00	Step 1.6 - Gra			
			2.15 Reference St (if different fror			Gullies	None	0.00	Step 4.8 - Cha are on The se report - Steps	econd pag	ge of this	

Project: West River - Rock F Stream: Taft Brook Organization: Landslide Natu				Phase T02.11- ADS, C		Se	age 1 of 2 gment: C v Not assessed:	May Completion	717, 2007 Date: Au g	FIT: Yes gust 23, 2006 Rain: Yes
Segment Length (ft): 4	,038	Segment Lo	cation:	U/S fro	m horse farm to	end of reach				
Step 1. Valley and Floodpla 1.1 Segmentation Substrate Size	ain	Step 2. Strea 2.1 Bankfull Width		<u>nel</u> 18	Step 3. 3.1 Stream Banks	. Riparian Feat	ures	Step 4 4.1 Springs / 3	. Flow & Flo Seeps	w Modifiers Abundant
1.2 Alluvial Fan None		2.2 Max Depth (ft)		1.60	Typical Bank Slo	pe Undercut		4.2 Adjacent V	-	Some
1.3 Corridor Encroachments		2.3 Mean Depth (ff	.)	0.91	Bank Texture	Left	Right	4.3 Flow Statu	S	Moderate
Length (ft) One	Both	2.4 Floodprone Wi	dth (ft)	21	Upper			4.4 # of Debris	s Jams	1
Berms 61	0	2.5 Aband. Floodp	In	4.10	Material Type E	Boulder/Cobbl	Boulder/Cobbl	4.5 Impoundm	ents	None
Roads 2,356	0	2.6 Width/Depth R	atio	19.33	Consistency I	Non-cohesive	Non-cohesive	Impoundmt.	Location	
Railroads 0	0	2.7 Entrenchment	Ratio	1.19	Lower			4.6 # of Storm	water Inputs	1
Improved Paths 0	0	2.8 Incision Ratio		2.56	Material Type	Sand	Sand	4.7 Upstream	Flow	None
Development 239	0	2.9 Sinuosity		Low		Non-cohesive	Non-cohesive	4.9 # of Beav		0
1.4 Adjacent Side Left	Right	2.10 Riffles Type	Com	plete	Bank Erosion	Left	Right	Affected L	ength (ft)	0
Hillside Slope Flat	Flat	2.11 Riffle/Step Sp	acing (ft)) 22	Erosion Length (f	ft) 389	397	Step 5, Chan	nel Bed and	Planform Changes
Continuous w/ Always	Always				Erosion Height (fl	-	0.00	5.1 Bar Types		
W/in 1 Bankfill Always	Always	2.12 Substrate Co	mpositior	า	Revetmt. Type	Rip-Rap	Rip-Rap	Mid	Point	Side
Texture Sand	Sand	Bedrock	0	- %	Revetmt. Length ((ft) 347	32	17	10	13
1.5 Valley Features		Boulder	12	%	Near Bank Veg. T		Right	Diagonal	Delta	Island
Valley Width (ft) 59		Cobble	30	%	Dominant	Deciduous	Deciduous	0	0	<u>1</u>
Width Determination Measured		Coarse Gravel	15	%	Sub-dominant	None	None	5.2 Other Fea	tures	•
Confinement Type Narrow		Fine Gravel	26	%	Bank Canopy	Left	Right	Flood Neck (Ilsion Braiding
Rock Gorge? No		Sand	17	%	Canopy %	76-100	76-100	$\frac{1000}{2}$ $\frac{10000}{0}$		0 0
Human-caused changed valley width	? yes				Mid-Channel Car	γαοι	Closed	5.3 Steep Riff	es and Head	•
					3.2 Riparian Buffe	er		Steep Riffles	Head Cuts	Trib Rejuv.
Notes:		Silt/Clay Present?	1	No	Buffer Width	_ Left	Right	1	0	No
This reach is highly affected by unde	rsized	Detritus	0	%	Dominant	26-50	51-100	5.4 Stream Fo	rd or Animal	No
bridges and culverts and narrowing a		# Large Woody		22	Sub-dominant	None	None	5.5 Straighten		Yes
straightening from the road as well as		2.13 Average Larg	est Partio	cle on	Buffer Veg. Type		Right	-	ing Length:	1,092
numerous grade controls. The const cause u/s aggradation. There are als		Bed 12.5		inches	Dominant	Mixed Trees	Mixed Trees	5.5 Dredging	ing Longin	None
numerous mf that seem to be caused		Bar 11.0		inches	Sub-dominant	None	None	5.5 Dredging		None
seeps high in the banks. The first br	-				3.3 Riparian Corri	dor				
entered for this segment (11') has no		2.14 Stream Type			Corridor Land	Left	Right			
abutments, thus no full bridge and cu survey was done for it.	ulvert	Stream Type	F		Dominant	Forest				
Survey was done for it.		Bed Material	Grave	I	Sub-dominant	None	None			
		Subclass Slope				Amount	Mean Height	Note:		
		Bed Form	Riffle-	Pool	Mass Failures	Multiple	9.50	Step 1.6 - Gr	ade Controls	and
		2.15 Reference St	ream Typ	be	Gullies	None	0.00	Step 4.8 - Ch	annel Constr	ictions
		(if different fror	n Phase	1)				are on The s report - Step		

Project: Wes Stream:	t River - Taft Bi	Rock Riv rook	ver		Reach #	Phase T02.11	e 2 Segment S -S1.01	ann an y	ige 1 of 2 gment: B	May Completion	17, 2007 Date: A	FIT: Yes August 23, 20	06
Organization:	Landslie	de Natura	al Resou	u rce C	bservers:	ADS, C	H	Why	Not assessed:			Rain: Yes	3
Segment Length	(ft):	2,7	49	Segment	Location:	Mid-se	gment grade cor	ntrol to u/s of	farm opening o	on road.			
Step 1. Valle			<u>n</u>	Step 2. St 2.1 Bankfull Wid		am ChannelStep 3. Riparian Features253.1 Stream Banks					Step 4. Flow & Flow Modifiers 4.1 Springs / Seeps Some		
1.2 Alluvial Fan	None			2.2 Max Depth	ft)	2.30	Typical Bank Slo	_ ope Undercut		4.2 Adjacent V	Vetlands	Some	
1.3 Corridor Encroa	achments			2.3 Mean Depth	(ft)	2.00	Bank Texture	Left	Right	4.3 Flow Statu	s	Moderate	•
Length (ft)) C)ne	Both	2.4 Floodprone	Width (ft)	120	Upper			4.4 # of Debris	Jams	2	
Berms	- —	66	0	2.5 Aband. Floo	dpln	2.30	Material Type	Sand	Sand	4.5 Impoundm	ents	None	
Roads	1,3	858	0	2.6 Width/Depth	Ratio	12.50	Consistency	Non-cohesive	Non-cohesive	Impoundmt.	Location		
Railroads	6	0	0	2.7 Entrenchme	nt Ratio	4.80	Lower			4.6 # of Storm	water Inpu	ts 2	
Improved Paths	3	0	0	2.8 Incision Rat	io	1.00	Material Type	Gravel	Gravel	4.7 Upstream	Flow	None	
Development	t	0	0	2.9 Sinuosity		Low	Consistency	Non-cohesive	Non-cohesive	4.9 # of Beav	er Dams	0	
1.4 Adjacent Side	L	eft	Right	2.10 Riffles Typ	e Sedi	mented	Bank Erosion	Left	Right	Affected L	ength (ft)	0	
Hillside Slope	e F	lat	Flat	2.11 Riffle/Step	Spacing (f	t) O	Erosion Length (223	Step 5, Chan	nel Bed ar	d Planform Cl	hange
Continuous w/		ays A	Iways			,	Erosion Height (. ,	0.00	5.1 Bar Types	<u></u>		lange
W/in 1 Bankfill	l Alwa	ays A	Always	2.12 Substrate	Compositic	n	Revetmt. Type	Rip-Rap	None	Mid	Point	Side	
Texture		and	-	Bedrock	. 0	%	Revetmt. Length		0	5	15	11	
1.5 Valley Features	6			Boulder	2	%	Near Bank Veg. 1	. ,	Right	Diagonal	Delta	Island	
Valley Width	-	2		Cobble	19	%	Dominant	Deciduous	Coniferous	0	0	0	
Width Determina	. ,	easured		Coarse Gravel	20	%	Sub-dominant	None	None	5.2 Other Fea	•	Ū	
Confinement T	vpe Br	oad		Fine Gravel	33		Bank Canopy	Left	Right	Flood Neck (vulsion Bra	aiding
Rock Gor	• •)		Sand	26	%	Canopy %	76-100	76-100	$\frac{1000}{2}$ 100000	<u>/////////////////////////////////////</u>		
Human-caused cha	•	ey width?	yes				Mid-Channel Ca	inopy C	losed	5.3 Steep Riffl	es and He	• •	
	5	,					3.2 Riparian Buffe			Steep Riffles	Head Cu		шv
Notes:				Silt/Clay Preser	t? `	Yes	Buffer Width	Left	Right	0	0	<u>No</u>	
This segment is cu	irrently a (C stream ty	vpe.	Detritus		%	Dominant	>100	51-100	5.4 Stream Fo	•		
The slope is 2.9%	which ma	kes the sul	bclass	# Large Woody		10	Sub-dominant	None	None	5.5 Straighten		No	
slope b still. There	-			2.13 Average L	argest Part	icle on	Buffer Veg. Type		Right	Straighten	•		0
exacerbated by a c erosion at the hors		-	/s	Bed 4.		inches	Dominant	Mixed Trees	Mixed Trees	U U	ing Length		-
evidence of gravel			in this	Bar 7.0		inches	Sub-dominant	None	None	5.5 Dredging			None
segment near the h						meneg	3.3 Riparian Corr						
				2.14 Stream Ty	ne		Corridor Land	Left	Right				
				Stream Ty			Dominant	Forest	Forest				
				-	' 'ial: Grav e	el	Sub-dominant	None	None				
				Subclass Slo				Amount	Mean Height	Note:			
					rm: Plane	e Bed	Mass Failures	Multiple	23.33	Step 1.6 - Gr	ade Contro	ols and	
				2.15 Reference	Stream Ty	/pe	Gullies	None	0.00	Step 4.8 - Ch			
				(if different f				None	0.00	are on The s report - Step:	econd page	e of this	

Project: West River - Rock Stream: Taft Brook	River	R	Pha each # T02.	se 2 Segment 11-S1.01	• annar y	age 1 of 2 gment: A	May 17, Completion Dat			
Organization: Landslide Nat	ural Reso	urce Obs	ervers: ADS	, CH	Why	/ Not assessed:		Rain:	Yes	
Segment Length (ft):	4,571	Segment Lo	cation: Firs	t reach of Taft we	est of East Dove	er.				
Step 1. Valley and Floodp 1.1 Segmentation Substrate Size	lain	Step 2. Strea 2.1 Bankfull Width		8 3.1 Stream Ba	p 3. Riparian Feat nks	tures	Step 4. Flow & Flow Modifiers 4.1 Springs / Seeps Abundant			
1.2 Alluvial Fan None		2.2 Max Depth (ft)	1.6	0 Typical Bank	Slope Undercut		4.2 Adjacent Wetl	ands Som	ne	
1.3 Corridor Encroachments		2.3 Mean Depth (ft) 0.9		Left	Right	4.3 Flow Status	Mod	erate	
Length (ft) One	Both	2.4 Floodprone Wi	dth (ft) 2	1 Upper			4.4 # of Debris Ja	ms 0		
Berms 57	0	2.5 Aband. Floodp	In 4. 1	0 Material Type	Boulder/Cobbl	Boulder/Cobbl	4.5 Impoundment	s Non	е	
Roads 3,886	0	2.6 Width/Depth R	atio 19. 3	3 Consistency	Non-cohesive	Non-cohesive	Impoundmt. Loc	ation		
Railroads 0	0	2.7 Entrenchment	Ratio 1.1	9 Lower			4.6 # of Stormwat	er Inputs 4		
Improved Paths 0	0	2.8 Incision Ratio	2.5	6 Material Type	s Sand	Sand	4.7 Upstream Flo	w Non	е	
Development 838	0	2.9 Sinuosity	Lo		Non-cohesive	Non-cohesive	4.9 # of Beaver D			
1.4 Adjacent Side Left	Right	2.10 Riffles Type	Complete	Bank Erosion	Left	Right	Affected Leng	th (ft) 0		
Hillside Slope Flat	Flat	2.11 Riffle/Step Sp	acing (ft) 22	Erosion Leng	th (ft) 1,239	1,256	Step 5. Channel	Bed and Planfo	rm Change	
Continuous w/ Always	Always			Erosion Heigh		0.00	5.1 Bar Types			
W/in 1 Bankfill Always	Always	2.12 Substrate Co	nposition	Revetmt. Typ	e Rip-Rap	Rip-Rap		Point S	lide	
Texture Sand	Sand	Bedrock	0 %	Revetmt. Leng	gth (ft) 980	145	12		55	
1.5 Valley Features		Boulder	12 %	Near Bank Ve		Right			sland	
Valley Width (ft) 59		Cobble	30 %	Dominant	Deciduous	Deciduous	0	0	0	
Width Determination Measured	k	Coarse Gravel	15 %	Sub-dominan	t None	None	5.2 Other Feature	·	•	
Confinement Type Narrow		Fine Gravel	26 %	Bank Canopy	Left	Right	Flood Neck Cuto	_	Braiding	
Rock Gorge? No		Sand	17 %	Canopy %	76-100	76-100	$\frac{1000}{2}$ $1000000000000000000000000000000000000$	0	0	
Human-caused changed valley width	h? yes			Mid-Channel	Canopy C	Closed	5.3 Steep Riffles a	•	·	
				3.2 Riparian B			· · ·		b Rejuv.	
Notes:		Silt/Clay Present?	No	Buffer Width	Left	Right		0	No	
This reach is highly affected by und	ersized	Detritus	0 %	Dominant	26-50		5.4 Stream Ford of	•	No	
bridges and culverts and narrowing		# Large Woody	22	Sub-dominan			5.5 Straightening	, , , , , , , , , , , , , , , , , , ,	Yes	
straightening from the road as well a		2.13 Average Larg	est Particle on	Buffer Veg. T		Right	Straightening	l enath:	1,048	
numerous grade controls. The cons cause u/s aggradation. There are a		Bed 12.5	inche		Mixed Trees		5.5 Dredging	Longui.		
numerous mf that seem to be cause		Bar 11.0	inche			None	5.5 Dredging		None	
seeps high in the banks.	j		mone	3.3 Riparian C						
		2.14 Stream Type		Corridor Land		Right				
		Stream Type	F	Dominant	Forest					
		Bed Material	Gravel	Sub-dominan						
		Subclass Slope	None		Amount	Mean Height	Note:			
		Bed Form	Riffle-Pool	Mass Failures			Step 1.6 - Grade	Controls and		
		2.15 Reference St	ream Type	Gullies	One		Step 4.8 - Chanr	nel Constrictions		
		(if different fror	n Phase 1)				are on The seco report - Steps 6			

Stream: R	ock Rive	ck River er Main Stem			T02.11	2 Segment Su	Se	age 1 of 2 gment: 0	May Completion	/ 17, 2007 Date: A i	FIT: Yes ugust 30, 2006
0		Natural Reso			ADS, CI		,	Not assessed:	(D.		Rain: Yes
Segment Length (ft):		3,873			1	liver main stem, l		1			
Step 1. Valley a 1.1 Segmentation Non		dplain	Step 2. Strea 2.1 Bankfull Width	m Chan	<u>nel</u> 33	Step 3 3.1 Stream Banks	. Riparian Feat	ures	4.1 Springs / S		ow Modifiers Some
-	No		2.2 Max Depth (ft)		2.30	Typical Bank Slo	-		4.2 Adjacent \	•	None
1.3 Corridor Encroachn			2.3 Mean Depth (ff)	1.30	Bank Texture	Left	Right	4.3 Flow Statu		Moderate
Length (ft)	One	Both	2.4 Floodprone Wi		37	Upper		<u></u>	4.4 # of Debri		0
Berms	0	0	2.5 Aband. Floodp	• •	2.30	Material Type	Sand	Sand	4.5 Impoundm	nents	None
Roads	0	0	2.6 Width/Depth R		25.38		Non-cohesive	Non-cohesive	Impoundmt.		
Railroads	0	0	2.7 Entrenchment		1.12	Lower			4.6 # of Storm		6 0
Improved Paths	0	0	2.8 Incision Ratio		1.00	Material Type	Boulder/Cobbl	Boulder/Cobbl	4.7 Upstream		None
Development	144	0	2.9 Sinuosity		Low	• •	Non-cohesive	Non-cohesive	•		0
1.4 Adjacent Side	Left	Right	2.10 Riffles Type	Com	nplete	Bank Erosion	Left	Right	Affected L	ength (ft).	0
Hillside Slope	Steep	Flat	2.11 Riffle/Step Sp	acing (ft)) 62	Erosion Length (1	ft) 190	0	Step 5. Chan	nel Bed and	d Planform Changes
Continuous w/Sor	netimes	Sometimes			-	Erosion Height (f	t) 0.00	0.00	5.1 Bar Types		<u> </u>
W/in 1 Bankfill	Always	Always	2.12 Substrate Co	mpositior	n	Revetmt. Type	Rip-Rap	None	Mid	Point	Side
Texture No	ot Evalua	Sand	Bedrock	0	%	Revetmt. Length	(ft) 346	0	6	2	21
1.5 Valley Features			Boulder	18	%	Near Bank Veg. T	ype Left	Right	Diagonal	Delta	Island
Valley Width (ft)	129		Cobble	26	%	Dominant	Deciduous	Coniferous	2	0	0
Width Determination	Measu	ired	Coarse Gravel	19	%	Sub-dominant	None	None	5.2 Other Fea	tures	
Confinement Type	Narrow	N	Fine Gravel	14	%	Bank Canopy	Left	Right	Flood Neck (Cutoff Av	ulsion Braiding
Rock Gorge?	Yes		Sand	23	%	Canopy %	76-100	76-100	1 0		0 0
Human-caused change	d valley v	vidth? no				Mid-Channel Car	пору С	Closed	5.3 Steep Riff	les and Hea	d Cuts
						3.2 Riparian Buffe	er		Steep Riffles	Head Cuts	Trib Rejuv.
Notes:			Silt/Clay Present?	I	No	Buffer Width	Left	Right	0	0	No
This reach has a gorge			Detritus	0	%	Dominant	51-100	>100	5.4 Stream Fo	ord or Anima	l No
the u/s section where a			# Large Woody		7	Sub-dominant	None	None	5.5 Straighten	ing	Yes
There is unique conglo gorge. The majority of			2.13 Average Larg	est Partio	cle on	Buffer Veg. Type	Left	Right	Straighten	ing Length:	508
from the road which ma		•	Bed 18.3		inches	Dominant	Mixed Trees	Mixed Trees	5.5 Dredging		None
Rock River. However,			Bar 14.3		inches	Sub-dominant	None	None	0.0		
historic topographic ma						3.3 Riparian Corri	dor				
used to be adjacent to feature was identified a			2.14 Stream Type			Corridor Land	Left	Right			
in the field.		Syging road	Stream Type			Dominant	Forest	Forest			
			Bed Material		ł	Sub-dominant	None	None			
			Subclass Slope				Amount	Mean Height	Note:		
			Bed Form	-		Mass Failures	One	40.00	Step 1.6 - G		
			2.15 Reference St		_	Gullies	One	40.00	Step 4.8 - Cł		
			(if different fror	n Phase	1)				are on The s report - Step		
										ougi	

Project: West River - Rock River Stream: Rock River Main Ster		e 2 Segment Summary page 1 of 2 Segment: 0	May 17, 2007 FIT: Yes Completion Date: August 30, 2006
Organization: Landslide Natural Reso	-	-	Rain: Yes
Segment Length (ft): 2,245	Segment Location: Rock F	River main stem through Brookside.	
Step 1. Valley and Floodplain	Step 2. Stream Channel 2.1 Bankfull Width 52	Step 3. Riparian Features	Step 4. Flow & Flow Modifiers 4.1 Springs / Seeps None
1.1 Segmentation None 1.2 Alluvial Fan No		3.1 Stream Banks	in epinige, eeepe
1.2 Alluvial Fan No 1.3 Corridor Encroachments	2.2 Max Depth (ft) 2.80	Typical Bank Slope Steep	4.2 Adjacent Wetlands None 4.3 Flow Status Moderate
	2.3 Mean Depth (ft) 1.83 2.4 Floodprone Width (ft) 62	Bank Texture Left Right	4.3 Flow Status Moderate
Length (ft) One Both Berms 0 0		Upper Material Turne - Devider (Cabbi Devider (Cabbi	
20000	2.5 Aband. Floodpln 2.80	Material Type Boulder/Cobbl Boulder/Cobbl	
Roads 1,701 0	2.6 Width/Depth Ratio 28.42	Consistency Non-cohesive Non-cohesive	•
Railroads 0 0	2.7 Entrenchment Ratio 1.19	Lower	4.6 # of Stormwater Inputs 1
Improved Paths 0 0	2.8 Incision Ratio 1.00	Material Type Boulder/Cobbl Boulder/Cobbl	4.7 Upstream Flow None
Development 121 309	2.9 Sinuosity Low	Consistency Non-cohesive Non-cohesive	
1.4 Adjacent Side Left Right	2.10 Riffles Type Complete	Bank Erosion Left Right	Affected Length (ft) 0
Hillside Slope Flat Flat	2.11 Riffle/Step Spacing (ft) 150	Erosion Length (ft) 0 180	Step 5. Channel Bed and Planform Changes
Continuous w/ Always Always		Erosion Height (ft) 0.00 0.00	5.1 Bar Types
W/in 1 Bankfill Always Always	2.12 Substrate Composition	Revetmt. Type Rip-Rap Rip-Rap	Mid Point Side
Texture Sand Sand	Bedrock 0 %	Revetmt. Length (ft) 575 562	0 4 5
1.5 Valley Features	Boulder 19 %	Near Bank Veg. Type Left Right	Diagonal Delta Island
Valley Width (ft) 207	Cobble 19 %	Dominant Deciduous Deciduous	0 0 0
Width Determination Estimated	Coarse Gravel 21 %	Sub-dominant None None	5.2 Other Features
Confinement Type Narrowly	Fine Gravel 12 %	Bank Canopy <u>Left</u> <u>Right</u>	Flood Neck Cutoff Avulsion Braiding
Rock Gorge? No	Sand 29 %	Canopy % 51-75 76-100	<u>1</u> 0 0 0
Human-caused changed valley width? yes		Mid-Channel Canopy Open	5.3 Steep Riffles and Head Cuts
		3.2 Riparian Buffer	Steep Riffles Head Cuts Trib Rejuv.
Notes:	Silt/Clay Present? No	Buffer Width Left Right	0 0 No
This reach starts in Brookside and ends just	Detritus 0 %	Dominant 26-50 >100	5.4 Stream Ford or Animal No
upstream of the Adam's Brook confluence. It	# Large Woody 1	Sub-dominant None None	5.5 Straightening Yes
is located in a narrowly confined valley and the Dover Road runs along its entire length.	2.13 Average Largest Particle on	Buffer Veg. Type Left Right	Straightening Length: 1,026
The left and right banks are 25% rip-rapped	Bed 18.3 inches	Dominant Mixed Trees Mixed Trees	5.5 Dredging None
and there are two mass failures on the right	Bar 14.6 inches	Sub-dominant None None	o.o Dredging
bank. One thousand feet of the reach are		3.3 Riparian Corridor	
straightened and there are multiple point and	2.14 Stream Type	Corridor Land Left Right	
side bars present in the channel.	Stream Type: F	Dominant Forest Forest	
	Bed Material: Gravel	Sub-dominant Residential Residential	
	Subclass Slope: None	Amount Mean Height	Note:
	Bed Form: Step-Pool	Mass Failures Multiple 10.00	Step 1.6 - Grade Controls and
	2.15 Reference Stream Type	Gullies None 0.00	Step 4.8 - Channel Constrictions
	(if different from Phase 1)		are on The second page of this report - Steps 6 through 7.

Project: West Stream:	River - Roc Rock Rive	k River r Main Stem	Re	each #	Phase T02.09	2 Segment S	Point in the second sec	age 1 of 2 gment: 0	May Completion I	17, 2007 Date:	FIT: Y August 1	
Organization:	Landslide N	atural Reso	urce Obse	ervers:	ADS, C	н	Why	/ Not assessed:			Rain:	No
Segment Length ((ft):	4,506	Segment Lo	cation:	Rock F	River main stem	, below Brook	side				
Step 1. Valle		dplain	Step 2. Strear 2.1 Bankfull Width	n Chan	nel 64	Step 3.1 Stream Banl	3. Riparian Fea	tures	Step 4 4.1 Springs / S		Flow Modi Non	
1.2 Alluvial Fan	None		2.2 Max Depth (ft)		4.30	Typical Bank S	lope Shallow		4.2 Adjacent V	/etlands	Non	е
1.3 Corridor Encroad	chments		2.3 Mean Depth (ft)		2.65	Bank Texture	Left	Right	4.3 Flow Statu	s	Mod	lerate
Length (ft)	One	Both	2.4 Floodprone Wic	lth (ft)	83	Upper			4.4 # of Debris	Jams	0	
Berms	1,096	0	2.5 Aband. Floodpl	า	4.30	Material Type	Boulder/Cobbl	Boulder/Cobbl	4.5 Impoundm	ents	Non	е
Roads	3,632	736	2.6 Width/Depth Ra	itio	24.15	Consistency	Non-cohesive	Non-cohesive	Impoundmt.	Location		
Railroads	0	0	2.7 Entrenchment F	Ratio	1.30	Lower			4.6 # of Storm	water Inp	uts 0	
Improved Paths	0	0	2.8 Incision Ratio		1.00	Material Type	Boulder/Cobbl	Boulder/Cobbl	4.7 Upstream	Flow	Non	е
Development	1,262	62	2.9 Sinuosity		Low	Consistency	Non-cohesive	Non-cohesive	4.9 # of Beave	er Dams	0	
1.4 Adjacent Side	Left	Right	2.10 Riffles Type	Erc	oded	Bank Erosion	Left	Right	Affected Lo	ength (ft)	0	
Hillside Slope	Flat	Flat	2.11 Riffle/Step Spa	acing (ft	t) O	Erosion Length	(ft) 590	120	Step 5. Chanr	nel Bed a	nd Planfo	rm Change
Continuous w/	Always	Always				Erosion Height	(ft) 0.00	0.00	5.1 Bar Types			
W/in 1 Bankfill	Always	Always	2.12 Substrate Con	npositio	n	Revetmt. Type	Rip-Rap	Rip-Rap	Mid	Point	S	Side
Texture	Sand	Sand	Bedrock	0	%	Revetmt. Lengt	h (ft) 1,182	108	5	5		6
1.5 Valley Features			Boulder	33	%	Near Bank Veg.	Type Left	Right	Diagonal	Delta	5	sland
Valley Width	(ft) 125		Cobble	25	%	Dominant	Deciduous	Deciduous	3	0	_	0
Width Determinati	ion Measu	red	Coarse Gravel	9	%	Sub-dominant	None	None	5.2 Other Feat	ures		
Confinement Ty	/pe Semi-c	onfined	Fine Gravel	10	%	Bank Canopy	Left	Right	Flood Neck C		Avulsion	Braiding
Rock Gorg	je? No		Sand	23	%	Canopy %	26-50	51-75	1 0		0	0
Human-caused char	nged valley wi	idth? yes				Mid-Channel C	anopy	Open	5.3 Steep Riffle	es and He	ead Cuts	
						3.2 Riparian Buf	fer		Steep Riffles	Head C		b Rejuv.
Notes:			Silt/Clay Present?		No	Buffer Width	 Left	Right	0	0		No
This reach is domin	ated by the D	over Road.	Detritus	0	%	Dominant	26-50	>100	5.4 Stream Fo	rd or Anir	nal	No
It is difficult to see o			# Large Woody		3	Sub-dominant	None	None	5.5 Straighteni	na		Yes
maps, but it was like road construction.			2.13 Average Large	est Parti	icle on	Buffer Veg. Typ	be Left	Right	Straighteni	-	n:	2,221
narrowed by the roa			Bed 20.0		inches	Dominant	Mixed Trees	Mixed Trees	5.5 Dredging	5 5		None
failures, one very la			Bar 15.1		inches	Sub-dominant	None	None	0.0 Dreaging			None
1937 flood.						3.3 Riparian Co	ridor					
			2.14 Stream Type			Corridor Land	Left	Right				
			Stream Type:	В		Dominant	Forest					
			Bed Material:			Sub-dominant	None	None				
			Subclass Slope:				Amount	Mean Height	Note:			
			Bed Form:	Plane	Bed	Mass Failures	Multiple		Step 1.6 - Gra	ade Conti	rols and	
			2.15 Reference Str			Gullies	None		Step 4.8 - Ch			
			(if different from	Phase	1)				are on The se report - Steps			

Project: West River - Rock River Stream: Rock River Main Ster	n Reach#	Phase T02.08	2 Segment S	, ann an y	ge 1 of 2 gment: 0	May 17, Completion Dat		Yes 17, 2006
Drganization: Landslide Natural Res	Observers:	ADS, CI	н	Why	Not assessed:		Rai	n: No
Segment Length (ft): 1,781	Segment Location:	Rock R	iver main stem	, along Dover F	Rd, ending just	u/s from trib T2.	.08-S1.01 tha	t comes in
Step 1. Valley and Floodplain .1 Segmentation None	Step 2. Stream Chan 2.1 Bankfull Width	nnel 51	Step 3.1 Stream Bank	3. Riparian Featu	ures	Step 4. F l 4.1 Springs / See	ow & Flow Mo	odifiers ome
.2 Alluvial Fan No	2.2 Max Depth (ft)	3.50	Typical Bank Sl	 lope Shallow		4.2 Adjacent Wetl	ands So	ome
.3 Corridor Encroachments	2.3 Mean Depth (ft)	2.51	Bank Texture	Left	Right	4.3 Flow Status		oderate
Length (ft) One Both	2.4 Floodprone Width (ft)	67	Upper			4.4 # of Debris Ja	ms 0	
Berms 0 0	2.5 Aband. Floodpln	8.10	Material Type	Sand E	Boulder/Cobbl	4.5 Impoundment	s No	one
Roads 1,045 689	2.6 Width/Depth Ratio	20.32	Consistency	Non-cohesive	Non-cohesive	Impoundmt. Loc		
Railroads 0 0	2.7 Entrenchment Ratio	1.30	Lower			4.6 # of Stormwat		
Improved Paths 0 0	2.8 Incision Ratio	2.31	Material Type	Boulder/Cobbl E	Boulder/Cobbl	4.7 Upstream Flo	w No	one
Development 105 0	2.9 Sinuosity	Low	Consistency	Non-cohesive	Non-cohesive	4.9 # of Beaver D		
.4 Adjacent Side Left Right	-	oded	Bank Erosion	Left	Right	Affected Leng	th (ft) 0	
Hillside Slope Steep Flat	2.11 Riffle/Step Spacing (fl	t) 0	Erosion Length			Step 5. Channel	Red and Plan	form Changes
Continuous w/ Never Always		,	Erosion Height	. ,	0.00	5.1 Bar Types		onn onangee
W/in 1 Bankfill Always Always	2.12 Substrate Compositio	n	Revetmt. Type	None	None		Point	Side
Texture Cobble Sand			Revetmt. Length	n (ft) 0	0	4	0	8
5 Valley Features		%	Near Bank Veg.		Right	-	Delta	Island
Valley Width (ft) 246		%	Dominant	Shrubs/Saplin	Deciduous	2	0	0
Width Determination Estimated		%	Sub-dominant	None	None	5.2 Other Feature	•	v
Confinement Type Narrowly	Fine Gravel 8	%	Bank Canopy	Left	Right	Flood Neck Cuto		Braiding
Rock Gorge? No	Sand 17	%	Canopy %	26-50	51-75		0	0
uman-caused changed valley width? Yes			Mid-Channel Ca	anopy	Open	5.3 Steep Riffles a	•	
	-		3.2 Riparian Buf	••		- · ·		rib Rejuv.
Notes:	Silt/Clay Present?	No	Buffer Width	Left	Right		0	No
he town road used to cross the downstream	-	%	Dominant	5-25	>100	5.4 Stream Ford of	-	No
nd of this reach to continue along the left	# Large Woody	1	Sub-dominant	None	None	5.5 Straightening		Yes
ank of the river. At some point between	2.13 Average Largest Part	icle on	Buffer Veg. Typ		Right	Straightening	l ength:	106
935 and 1954 a new road was put in on the outh side of the river and is the main road	Bed 21.0	inches	Dominant	Deciduous	 Deciduous		Longui.	
oday. The river appears to be closer to its	Bar 15.0	inches	Sub-dominant	None	None	5.5 Dredging		None
priginal planform after this adjustment.		meneo	3.3 Riparian Cor					
	2.14 Stream Type		Corridor Land	Left	Right			
	Stream Type: B		Dominant	Forest	Forest			
	Bed Material: Cobb	le	Sub-dominant	None	None			
	Subclass Slope: None			Amount	Mean Height	Note:		
	Bed Form: Plane	Bed	Mass Failures	None	0.00	Step 1.6 - Grade	Controls and	
	2.15 Reference Stream Ty	/pe	Gullies	None	0.00	Step 4.8 - Chanr		S
	(if different from Phase		Culloo		0.00	are on The seco report - Steps 6	1 0	

Stream:	Rock R	Rock River		Reach #	T02.07	2 Segment S	S	bage 1 of 2 egment: 0	May Completion	/ 17, 2007 Date: Au	FIT: Yes gust 18, 2006	
0		e Natural Reso		bservers:				y Not assessed:			Rain: No	
Segment Length (. ,	3,802	Segment	Location:	ROCKR			Rd, beginning				
Step 1. Valle 1.1 Segmentation	ey and Fle	oodplain	Step 2. Sti 2.1 Bankfull Wig		nel 58	Step 3.1 Stream Bank	3. Riparian Fea	atures		Step 4. Flow & Flow Modifiers 4.1 Springs / Seeps Some		
1.2 Alluvial Fan	None		2.2 Max Depth (ft)	3.60	Typical Bank SI			4.2 Adjacent \	-	None	
1.3 Corridor Encroa	chments		2.3 Mean Depth		2.40	Bank Texture	Lef	t Right	4.3 Flow Statu		Moderate	
Length (ft)	Or	e Both	2.4 Floodprone	. ,	79	Upper			4.4 # of Debris	s Jams	0	
Berms	60		2.5 Aband. Floo	()	5.40	Material Type	Sand	I Sand	4.5 Impoundm	ients	None	
Roads	1,60		2.6 Width/Depth	•	24.29	Consistency	Non-cohesive		Impoundmt.			
Railroads	,	0 0	2.7 Entrenchme		1.35	Lower			4.6 # of Storm		0	
Improved Paths		0 0	2.8 Incision Rat	o	1.50		Boulder/Cobb	Boulder/Cobbl	4.7 Upstream	-	None	
Development	42		2.9 Sinuosity		Low	Consistency	Non-cohesive		4.9 # of Beav		0	
1.4 Adjacent Side	Le	ft Right	2.10 Riffles Typ	e Erc	oded	Bank Erosion	Lef	t Right	Affected L	ength (ft)	0	
Hillside Slope	Fla	at Flat	2.11 Riffle/Step	Spacing (ft	:) 0	Erosion Length	(ft) 54	5 416	Step 5. Chan	nel Bed and	Planform Change	
Continuous w/	Alway	s Always				Erosion Height	(ft) 0.0 0	0.00	5.1 Bar Types		.	
W/in 1 Bankfill	Alway	s Always	2.12 Substrate	Compositio	n	Revetmt. Type	None	e Rip-Rap	Mid	Point	Side	
Texture	Sar	d Sand	Bedrock	0	%	Revetmt. Length	n (ft) 🛛 🕻) 284	3	3	9	
1.5 Valley Features			Boulder	18	%	Near Bank Veg.	Type Lef	t Right	Diagonal	Delta	Island	
Valley Width	(ft) 363		Cobble	25	%	Dominant	Deciduous		0	0	0	
Width Determinat	ion Mea	sured	Coarse Gravel	20	%	Sub-dominant	None	e None	5.2 Other Fea	tures		
Confinement Ty	/pe Bro	ad	Fine Gravel	9	%	Bank Canopy	Lef	t <u>Right</u>	Flood Neck (ulsion Braiding	
Rock Gorg	ge? No		Sand	28	%	Canopy %	26-50	26-50	5 0		0 0	
Human-caused chai	nged valle	y width? yes				Mid-Channel Ca	anopy	Open	5.3 Steep Riff	es and Head	Cuts	
						3.2 Riparian Buff	fer		Steep Riffles	Head Cuts	Trib Rejuv.	
Notes:			Silt/Clay Presen	t?	No	Buffer Width	 Lef	t Right	0	0	No	
Historically, this rea			Detritus	0	%	Dominant	51-10	26-50	5.4 Stream Fo	ord or Animal	Yes	
sediment storage a			# Large Woody		7	Sub-dominant	Non	e None	5.5 Straighten	ing	Yes	
as do all C type stre from a C to an F typ		•	2.13 Average La	argest Parti	cle on	Buffer Veg. Typ	e Left	Right	-	ing Length:	664	
flood chutes are ind			Bed 19.	5	inches	Dominant	Deciduou	s Deciduous	5.5 Dredging	5 5	None	
adjustment. Some			Bar 9. 3	}	inches	Sub-dominant	None	e None	0.0 Dredging		None	
1954 the road and r						3.3 Riparian Cor	ridor					
their present location			2.14 Stream Ty	ре		Corridor Land	Lef	t Right				
could be restored a making it a good ca	• •		Stream Ty	pe: F		Dominant	Fores					
geomorphic restora				rial: Grave		Sub-dominant	None	e None				
- •			Subclass Slo	•			Amount	Mean Height	Note:			
				rm: Plane		Mass Failures	Non		Step 1.6 - Gi	ade Controls	and	
			2.15 Reference			Gullies	None	e 0.00	Step 4.8 - Cl			
			(if different f	rom Phase	1)				are on The s report - Step			

Stream: R	liver - Rock ∣ Rock River N	lain Stem			ch # 1	T02.06	2 Segment S	Summ	Se	ige 1 of 2 gment: B	Ma Completion	y 17, 2007 Date: A i	FIT: Yes ugust 17, 2006
0	ndslide Natu			Observ				ondo	,	Not assessed:			Rain: No
Segment Length (ft)		1,428					vest of Deer Hill						.
Step 1. Valley 1.1 Segmentation Cha	and Floodpl annel Dimens	ain sions	2.1 Bankfu	2. Stream (Il Width	Channe	<u>ei</u> 65	3.1 Stream Bank		rian Feat	ures	4.1 Springs / 3		ow Modifiers None
	None		2.2 Max De	epth (ft)		3.60	Typical Bank SI	_ ope Sh	allow		4.2 Adjacent	Netlands	None
1.3 Corridor Encroach	ments		2.3 Mean I	Depth (ft)		2.40	Bank Texture		Left	Right	4.3 Flow State	JS	Moderate
Length (ft)	One	Both	2.4 Floodp	rone Width	(ft)	113	Upper				4.4 # of Debri	s Jams	0
Berms	334	0	2.5 Aband.	Floodpln		6.70	Material Type		Mix	Boulder/Cobbl	4.5 Impoundn	nents	None
Roads	743	0	2.6 Width/[Depth Ratio)	27.08	Consistency	Non-c	ohesive	Non-cohesive	Impoundmt.	Location	
Railroads	0	0	2.7 Entren	chment Rat	tio	1.74	Lower				4.6 # of Storm	water Inputs	6 O
Improved Paths	0	0	2.8 Incisior	n Ratio		1.86	Material Type	Boulde	er/Cobbl I	Boulder/Cobbl	4.7 Upstream	Flow	None
Development	0	0	2.9 Sinuos	ity		Low	Consistency	Non-c	ohesive	Non-cohesive	4.9 # of Beav	er Dams	0
1.4 Adjacent Side	Left	Right	2.10 Riffles	з Туре No	ot App	licable	Bank Erosion		Left	Right	Affected L	ength (ft)	0
Hillside Slope	Flat	Flat	2.11 Riffle/	Step Spaci	ng (ft)	0	Erosion Length	(ft)	0	0	Step 5. Chan	nel Bed and	d Planform Changes
Continuous w/	Always	Always					Erosion Height	(ft)	0.00	0.00	5.1 Bar Types	5	
W/in 1 Bankfill	Always	Always	2.12 Subst	rate Compo	osition		Revetmt. Type		None	Multiple	Mid	Point	Side
Texture	Sand	Sand	Bedrock		0 %		Revetmt. Length	n (ft)	0	587	0	0	1
1.5 Valley Features			Boulder		8 %	%	Near Bank Veg.	• •	Left	Right	Diagonal	Delta	Island
Valley Width (ft)			Cobble		17 %	%	Dominant	De	ciduous	Shrubs/Saplin	0	0	0
Width Determination	Measured		Coarse Gra	avel		%	Sub-dominant		None	Deciduous	5.2 Other Fea	tures	
Confinement Type			Fine Grave	el .	18 %		Bank Canopy		Left	Right	Flood Neck	Cutoff Av	ulsion Braiding
Rock Gorge?			Sand		37 9	%	Canopy %		51-75	26-50	3 0		0 0
Human-caused change	ed valley width	n? yes					Mid-Channel Ca			Open	5.3 Steep Riff	les and Hea	d Cuts
Notes:				_			3.2 Riparian Buf	fer			Steep Riffles	Head Cuts	
			Silt/Clay Pi	resent?	N		Buffer Width		Left	Right	0	0	No
This reachis currently historically incising an		er	Detritus			%	Dominant		>100	5-25	5.4 Stream Fo	ord or Anima	l No
mistorically incising an	u wuening.		# Large Wo	-		0	Sub-dominant		None	None	5.5 Straighter	ing	Yes
			-	ge Largest			Buffer Veg. Typ		Left	Right	Straighter	ing Length:	552
			Bed	12.0	ir	nches	Dominant	Mixe	ed Trees	Mixed Trees	5.5 Dredging		None
			Bar	8.4	ir	nches	Sub-dominant		None	None			
				-			3.3 Riparian Cor	ridor					
			2.14 Strea	m Type m Type: B	2		Corridor Land		Left	Right			
				Material: G			Dominant		Forest	Residential			
				s Slope: C			Sub-dominant		None	None Moon Usight	•• •		
				ed Form: P		Bed	Moon Failures	4	Amount	Mean Height	Note:	rada Cantral	c and
				ence Strea			Mass Failures		None	0.00	Step 1.6 - G Step 4.8 - Cl		
				rent from Pl		_	Gullies		None	0.00	are on The s report - Step	econd page	of this

Project: West River - Rock River Stream: Rock River Main Sten	n Reach #	Phase	2 Segment S	<i>p</i> of the test of	ge 1 of 2 gment: A	May 17, 2007 Completion Date:	FIT: Yes August 12, 2006
Organization: Landslide Natural Reso	Observers:	ADS, C	н	Why	Not assessed:		Rain: No
Segment Length (ft): 3,931	Segment Location:	West o	f South Newfan	е.			
Step 1. Valley and Floodplain 1.1 Segmentation Channel Dimensions	Step 2. Stream Chann 2.1 Bankfull Width	<u>nel</u> 84	Step 3.1 Stream Banl	3. Riparian Feat	ures	Step 4. Flow & 4.1 Springs / Seeps	Flow Modifiers Abundant
1.2 Alluvial Fan None	2.2 Max Depth (ft)	4.20	Typical Bank S	lope Steep		4.2 Adjacent Wetlands	None
1.3 Corridor Encroachments	2.3 Mean Depth (ft)	2.90	Bank Texture	Left	Right	4.3 Flow Status	Moderate
Length (ft) One Both	2.4 Floodprone Width (ft)	100	Upper			4.4 # of Debris Jams	0
Berms 1,493 0	2.5 Aband. Floodpln	9.80	Material Type	Sand	Gravel	4.5 Impoundments	None
Roads 1,244 0	2.6 Width/Depth Ratio	29.10	Consistency	Non-cohesive	Non-cohesive	Impoundmt. Location	
Railroads 0 0	2.7 Entrenchment Ratio	1.19	Lower			4.6 # of Stormwater Inp	uts 0
Improved Paths 0 0	2.8 Incision Ratio	2.33	Material Type	Boulder/Cobbl B	Boulder/Cobbl	4.7 Upstream Flow	None
Development 455 0	2.9 Sinuosity	Low	Consistency	Non-cohesive	Non-cohesive	4.9 # of Beaver Dams	0
1.4 Adjacent Side Left Right	2.10 Riffles Type Not Ap	plicable	Bank Erosion	Left	Right	Affected Length (ft)	0
Hillside Slope Flat Flat	2.11 Riffle/Step Spacing (ft)	0	Erosion Length	(ft) 1,047	212	Step 5. Channel Bed a	nd Planform Changes
Continuous w/ Always Always			Erosion Height	(ft) 0.00	0.00	5.1 Bar Types	
W/in 1 Bankfill Always Always	2.12 Substrate Composition	ı	Revetmt. Type	None	Rip-Rap	Mid Point	Side
Texture Sand Sand	Bedrock 0	%	Revetmt. Lengtl	h (ft) 0	700	$\frac{1}{6}$ $\frac{1}{2}$	10
1.5 Valley Features	Boulder 31	%	Near Bank Veg.		Right	Diagonal Delta	Island
Valley Width (ft) 268	Cobble 34	%	Dominant	Deciduous	Deciduous	3 0	1
Width Determination Estimated	Coarse Gravel 16	%	Sub-dominant	None	None	5.2 Other Features	-
Confinement Type Narrow	Fine Gravel 11	%	Bank Canopy	Left	Right		Avulsion Braiding
Rock Gorge? No	Sand 9	%	Canopy %	51-75	51-75	2 0	0 0
Human-caused changed valley width? no			Mid-Channel C	anopy	Open	5.3 Steep Riffles and He	ead Cuts
			3.2 Riparian Buf	fer		Steep Riffles Head C	
Notes:	Silt/Clay Present?	No	Buffer Width	 Left	Right	3 0	No
This reach was segmented due to channel	Detritus 0	%	Dominant	>100	26-50	5.4 Stream Ford or Anin	nal Yes
dimension, substrate size and depositional	# Large Woody	5	Sub-dominant	None	None	5.5 Straightening	No
features. It is located in a narrowly confined valley with no human caused changes to the	2.13 Average Largest Partic	cle on	Buffer Veg. Typ	be Left	Right	Straightening Length	
valley with no numan caused changes to the valley width. This reach is currently in	Bed 14.0	inches	Dominant	Mixed Trees	Mixed Trees	5.5 Dredging	None
planform adjustment and is aggrading.	Bar 12.0	inches	Sub-dominant	None	None	0.0 Dreaging	None
			3.3 Riparian Cor	ridor			
	2.14 Stream Type		Corridor Land	Left	Right		
	Stream Type: F		Dominant	Forest	Residential		
	Bed Material: Cobble	e	Sub-dominant	None	None		
	Subclass Slope: None			Amount	Mean Height	Note:	
	Bed Form: Plane		Mass Failures	One	125.00	Step 1.6 - Grade Contr	rols and
	2.15 Reference Stream Typ		Gullies	None	0.00	Step 4.8 - Channel Co	
	(if different from Phase	1)				are on The second pag report - Steps 6 throug	

Project: West River - Rock R Stream: Marlboro Bran Organization: Landslide Natur	ch	urce	Reach # Observers	[±] T02.05		Se	age 1 of 2 gment: 0 7 Not assessed:		/ 17, 2007 Date: Sept	FIT: Yes ember 7, 2006 Rain: Yes
Segment Length (ft): 5,	876	Segm	nent Location	From j	ust past the conf	fluence with A	dam's Brook 1	.1 miles to jus	st past the	conluence with
Step 1. Valley and Floodpla 1.1 Segmentation None	in	Step 2 2.1 Bankful	2. Stream Cha	nnel 36	Step 3 3.1 Stream Banks	8. Riparian Feat	ures	Step 4 4.1 Springs / S	. Flow & Flow Seeps	w Modifiers Abundant
1.2 Alluvial Fan No		2.2 Max De	pth (ft)	2.80	Typical Bank Slo	pe Moderate		4.2 Adjacent V	Vetlands	Some
1.3 Corridor Encroachments		2.3 Mean D	epth (ft)	1.40	Bank Texture	Left	Right	4.3 Flow Statu	IS	Moderate
Length (ft) One	Both	2.4 Floodpr	one Width (ft)	50	Upper			4.4 # of Debris	s Jams	0
Berms 975	0	2.5 Aband.	Floodpln	2.80	Material Type	Boulder/Cobbl	Bedrock	4.5 Impoundm	ients	None
Roads 4,145	0	2.6 Width/D	epth Ratio	25.36	Consistency	Non-cohesive	Cohesive	Impoundmt.	Location	
Railroads 0	0	2.7 Entrenc	hment Ratio	1.42	Lower			4.6 # of Storm	water Inputs	4
Improved Paths 0	0	2.8 Incision	Ratio	1.00	Material Type	Boulder/Cobbl	Bedrock	4.7 Upstream	Flow	None
Development 272	0	2.9 Sinuosi	ty	Low	Consistency	Non-cohesive	Cohesive	4.9 # of Beave	er Dams	0
1.4 Adjacent Side Left	Right	2.10 Riffles	Type Co	mplete	Bank Erosion	Left	Right	Affected L	ength (ft)	0
Hillside Slope Flat Ver	y Steep	2.11 Riffle/S	Step Spacing (ft) 32	Erosion Length ((ft) 1,153	440	Step 5. Chan	nel Bed and I	Planform Changes
Continuous w/ Always Som	etimes				Erosion Height (ft) 0.00	0.00	5.1 Bar Types		
W/in 1 Bankfill Always Som	etimes	2.12 Substr	ate Composition	on	Revetmt. Type	Rip-Rap	Rip-Rap	Mid	Point	Side
Texture Sand	Cobble	Bedrock	26	%	Revetmt. Length	(ft) 1,796	182	3	5	14
1.5 Valley Features		Boulder	18	%	Near Bank Veg. 1	Type Left	Right	Diagonal	Delta	Island
Valley Width (ft) 85		Cobble	12	2 %	Dominant	Deciduous	Coniferous	1	0	1
Width Determination Measured		Coarse Gra	avel 10	%	Sub-dominant	Coniferous	Deciduous	5.2 Other Feat	tures	
Confinement Type Semi-confi	ned	Fine Grave	12	. %	Bank Canopy	Left	Right	Flood Neck C	Cutoff Avu	lsion Braiding
Rock Gorge? No		Sand	22	. %	Canopy %	76-100	76-100	4 0		0 0
Human-caused changed valley width?	No				Mid-Channel Ca	nopy	Open	5.3 Steep Riffl	es and Head	Cuts
					3.2 Riparian Buffe	er		Steep Riffles	Head Cuts	Trib Rejuv.
Notes:		Silt/Clay Pro	esent?	No	Buffer Width	Left	Right	7	0	No
RB dominated by bedrock; LB contain	ied by	Detritus	1	%	Dominant	5-25	>100	5.4 Stream Fo	rd or Animal	No
road.		# Large Wo	ody	1	Sub-dominant	None	None	5.5 Straighten	ing	No
		2.13 Avera	ge Largest Par	ticle on	Buffer Veg. Type	e <u>Left</u>	Right	Straighten	ing Length:	0
		Bed	24.0	inches	Dominant	Mixed Trees	Mixed Trees	5.5 Dredging		None
		Bar	16.0	inches	Sub-dominant	None	None			
					3.3 Riparian Corr	idor				
		2.14 Strear			Corridor Land	Left	Right			
			m Type: B		Dominant	Forest	Forest			
			Aaterial: Cobl		Sub-dominant	Residential	None			
			s Slope: None			Amount	Mean Height	Note:		
			d Form: Step		Mass Failures	None	0.00	Step 1.6 - Gr		
			ence Stream T ent from Phase		Gullies	None	0.00	are on The s	econd page o	f this
								report - Steps	s 6 through 7.	

Project: West River - Rock River Stream: Marlboro Branch	P Reach # T	hase 02.05-9	2 Segment S S1.04	, and the second s	age 1 of 2 egment: 0		,	FIT: Yes ember 7, 2006
Drganization: Landslide Natural Reso	urce Observers: A	DS, CH	4		v Not assessed:	•	•	Rain: Yes
Segment Length (ft): 2,372	Segment Location: C	Continu	ues along Auge	rhole Road af	, ter Lahar Rd. h	eads south fo	r .45 miles t	o just after
Step 1. Valley and Floodplain .1 Segmentation None	Step 2. Stream Channel 2.1 Bankfull Width	56	Step 3.1 Stream Bank	3. Riparian Fea	tures	Step 4 4.1 Springs / S	. Flow & Flow Seeps	v Modifiers Abundant
.2 Alluvial Fan None	2.2 Max Depth (ft)	3.90	Typical Bank SI	_ ope Steep		4.2 Adjacent V	-	Some
.3 Corridor Encroachments	2.3 Mean Depth (ft)	2.33	Bank Texture	Left	Right	4.3 Flow Statu		Moderate
Length (ft) One Both	2.4 Floodprone Width (ft)	180	Upper			4.4 # of Debris	Jams	0
Berms 1,622 0	2.5 Aband. Floodpln	6.50	Material Type	Sand	Sand	4.5 Impoundm	ents	None
Roads 388 0	2.6 Width/Depth Ratio	23.86	Consistency	Non-cohesive	Non-cohesive	Impoundmt.	Location	
Railroads 0 0	2.7 Entrenchment Ratio	3.24	Lower			4.6 # of Storm	water Inputs	0
Improved Paths 0 0	2.8 Incision Ratio	1.67	Material Type	Boulder/Cobbl	Boulder/Cobbl	4.7 Upstream	Flow	None
Development 215 0	2.9 Sinuosity	Low	Consistency	Non-cohesive	Non-cohesive			0
4 Adjacent Side Left Right	2.10 Riffles Type Comple	ete	Bank Erosion	Left	Right	Affected L	ength (ft)	0
Hillside Slope Flat Flat	2.11 Riffle/Step Spacing (ft)	52	Erosion Length	(ft) 307	·	Step 5, Chan	nel Bed and F	Planform Change
Continuous w/ Always Always			Erosion Height		0.00	5.1 Bar Types		
W/in 1 Bankfill Always Always	2.12 Substrate Composition		Revetmt. Type	Rip-Rap	None	Mid	Point	Side
Texture Sand Sand	Bedrock 0 %	, o	Revetmt. Length	n (ft) 276	0	1	2	1
5 Valley Features	Boulder 34 %	, o	Near Bank Veg.	Type Left	Right	Diagonal	Delta	Island
Valley Width (ft) 475	Cobble 15 %	, o	Dominant	Deciduous		1	0	0
Width Determination Estimated	Coarse Gravel 11 %	ó	Sub-dominant	None	None	5.2 Other Feat	ures	-
Confinement Type Very Broad	Fine Gravel 17 %	, o	Bank Canopy	Left	Right	Flood Neck C		lsion Braiding
Rock Gorge? No	Sand 23 %	, o	Canopy %	76-100	76-100	1 0		0 0
uman-caused changed valley width? no			Mid-Channel Ca	anopy	Open	5.3 Steep Riffl	es and Head (Cuts
			3.2 Riparian Buff	fer		Steep Riffles	Head Cuts	Trib Rejuv.
Notes:	Silt/Clay Present? No	b	Buffer Width	 Left	Right	1	0	No
he reach is C riffle pool both by reference	Detritus 0 %	, o	Dominant	26-50	>100	5.4 Stream Fo	rd or Animal	No
nd currently. It is in stage IV of the F-stage	# Large Woody 0)	Sub-dominant	None	None	5.5 Straighten		No
hannel evolution process with minor lanform being the dominant adjustment	2.13 Average Largest Particle	on	Buffer Veg. Typ		Right	-	ing Length:	0
rocess.	Bed 19.0 in	ches	Dominant	Mixed Trees	Mixed Trees	5.5 Dredging	5 0	None
	Bar 13.0 in	ches	Sub-dominant	None	e None	Ste Brodging		
			3.3 Riparian Cor	ridor				
	2.14 Stream Type		Corridor Land	Left	Right			
	Stream Type: C		Dominant	Forest				
	Bed Material: Gravel		Sub-dominant	None	None			
	Subclass Slope: None			Amount	Mean Height	Note:		
	Bed Form: Riffle-Po		Mass Failures	None			ade Controls a	and
	2.15 Reference Stream Type (if different from Phase 1)		Gullies	None	.00	are on The s	econd page of 6 through 7.	

•	River - Roc Marlboro B		R	each #	Phase	e 2 Segment S S1.03	umm	~ y	ige 1 of 2 gment: 0		y 17, 2007 Date: Sep	FIT: Yes tember 6, 2006
Organization: La	andslide Na	atural Reso	urce Obs	ervers:	ADS, C	н		Why	Not assessed:			Rain: Yes
Segment Length (ft):	6,788	Segment Lo	cation:	From t	he confluence w	ith the	Gulf B	rook, the reach	continues so	outh 1.3 mil	es to the
Step 1. Valley		lplain	Step 2. Strea 2.1 Bankfull Width	m Chan	<u>nel</u> 53	3.1 Stream Bank		rian Feat	ures	Step 4.1 Springs / S		w Modifiers None
1.2 Alluvial Fan	No		2.2 Max Depth (ft)		2.40	Typical Bank Sl	ope Sh	allow		4.2 Adjacent \	Vetlands	None
1.3 Corridor Encroach	ments		2.3 Mean Depth (ft)	1.64	Bank Texture		Left	Right	4.3 Flow Statu	IS	Moderate
Length (ft)	One	Both	2.4 Floodprone Wie	dth (ft)	76	Upper				4.4 # of Debri	s Jams	0
Berms	818	0	2.5 Aband. Floodpl	n	6.10	Material Type		Sand	Sand	4.5 Impoundm	nents	None
Roads	4,908	0	2.6 Width/Depth Ra	atio	32.07	Consistency	Non-co	ohesive	Non-cohesive	Impoundmt.	Location	
Railroads	0	0	2.7 Entrenchment	Ratio	1.45	Lower				4.6 # of Storm	water Inputs	0
Improved Paths	0	0	2.8 Incision Ratio		2.54	Material Type	Boulde	r/Cobbl I	Boulder/Cobbl	4.7 Upstream	Flow	None
Development	1,055	0	2.9 Sinuosity		Low	Consistency	Non-co	ohesive	Non-cohesive	4.9 # of Beav	er Dams	0
1.4 Adjacent Side	Left	Right	2.10 Riffles Type	Corr	nplete	Bank Erosion		Left	Right	Affected L	ength (ft).	0
Hillside Slope	Flat	Flat	2.11 Riffle/Step Sp	acing (ft) 53	Erosion Length	(ft)	1,920	1,888	Step 5. Chan	nel Bed and	Planform Changes
Continuous w/	Always	Always				Erosion Height	(ft)	0.00	0.00	5.1 Bar Types		
W/in 1 Bankfill	Always	Always	2.12 Substrate Cor	npositior	n	Revetmt. Type	F	Rip-Rap	Rip-Rap	Mid	Point	Side
Texture	Sand	Sand	Bedrock	5	%	Revetmt. Length	ı (ft)	853	350	10	12	12
1.5 Valley Features			Boulder	25	%	Near Bank Veg.	Туре	Left	Right	Diagonal	Delta	Island
Valley Width (f	t) 147		Cobble	34	%	Dominant	Dec	ciduous	Coniferous	5	0	2
Width Determinatio	n Measur	ed	Coarse Gravel	10	%	Sub-dominant	Con	niferous	Deciduous	5.2 Other Fea	tures	
Confinement Typ	e Semi-co	onfined	Fine Gravel	13	%	Bank Canopy		Left	Right	Flood Neck		ulsion Braiding
Rock Gorge	? No		Sand	13	%	Canopy %		76-100	76-100	1 0		0 0
Human-caused chang	ged valley wi	dth? Yes				Mid-Channel Ca	anopy		Open	5.3 Steep Riff	les and Head	Cuts
						3.2 Riparian Buff	er			Steep Riffles	Head Cuts	Trib Rejuv.
Notes:			Silt/Clay Present?		No	Buffer Width		Left	Right	6	0	No
The reach is a C riffle	pool by refe	erence but is	Detritus	0	%	Dominant		26-50	>100	5.4 Stream Fo	ord or Animal	No
currently a F riffle poo			# Large Woody		5	Sub-dominant		None	None	5.5 Straighten		Yes
entrenchment. It is in	•	-	2.13 Average Larg	est Parti	cle on	Buffer Veg. Typ	е	Left	Right		ing Length:	4,630
channel evolution mo and planform adjustm			Bed 19.0		inches	Dominant	Mixe	d Trees	Mixed Trees	5.5 Dredging		None
current adjustment pr	•		Bar 9.0		inches	Sub-dominant		None	None	5.5 Dredging		None
significant evidence f						3.3 Riparian Corr	ridor					
maps that the river w			2.14 Stream Type			Corridor Land		Left	Right			
straightened betweer	1935 and 1	954.	Stream Type:	F		Dominant		Hay	Forest			
			Bed Material:	Cobbl	е	Sub-dominant		None	None			
			Subclass Slope:				A	Amount	Mean Height	Note:		
			Bed Form:	Riffle-	Pool	Mass Failures	-	One	12.00		ade Controls	and
			2.15 Reference St	eam Ty	ре	Gullies		None	0.00	Step 4.8 - Cl	nannel Const	rictions
			(if different fron	n Phase	1)					are on The s report - Step	econd page o s 6 through 7	

Project: West River - Rock River Stream: Marlboro Branch	Pha Reach # T02.	se 2 Segment 05-S1.02	• anna y	age 1 of 2 gment: 0	May 17, 200 Completion Date:	7 FIT: Yes September 1, 2006
Organization: Landslide Natural Reso	Observers: ADS	, CH	Why	Not assessed:	·	Rain: Yes
Segment Length (ft): 8,326	Segment Location: 1.6	niles long, beginr	ning where the	Marlboro Brand	ch moves west away	y from the road and
Step 1. Valley and Floodplain 1.1 Segmentation None	Step 2. Stream Channel 2.1 Bankfull Width	Ster 0 3.1 Stream Bar	3. Riparian Feat Iks	ures	Step 4. Flow 4.1 Springs / Seeps	& Flow Modifiers None
1.2 Alluvial Fan No	2.2 Max Depth (ft) 2.9	0 Typical Bank S	Blope Undercut		4.2 Adjacent Wetland	s None
1.3 Corridor Encroachments	2.3 Mean Depth (ft) 2.3		Left	Right	4.3 Flow Status	Moderate
Length (ft) One Both	2.4 Floodprone Width (ft) 14	2 Upper			4.4 # of Debris Jams	0
Berms 1,849 0	2.5 Aband. Floodpln 4.8	Material Type	Sand	Sand	4.5 Impoundments	None
Roads 1,773 0	2.6 Width/Depth Ratio 30.4	3 Consistency	Non-cohesive	Non-cohesive	Impoundmt. Locatio	n
Railroads 0 0	2.7 Entrenchment Ratio 2.0	3 Lower			4.6 # of Stormwater Ir	nputs 0
Improved Paths 0 0	2.8 Incision Ratio 1.6	6 Material Type	Boulder/Cobbl	Boulder/Cobbl	4.7 Upstream Flow	None
Development 1,034 402	2.9 Sinuosity Lo		Non-cohesive		4.9 # of Beaver Dam	s 0
1.4 Adjacent Side Left Right	2.10 Riffles Type Complete	Bank Erosion	Left	Right	Affected Length (ft) 0
Hillside Slope Flat Flat	2.11 Riffle/Step Spacing (ft) 50	Erosion Lengtl		2,971	Step 5. Channel Bec	and Planform Change
Continuous w/ Always Always		Erosion Heigh	t (ft) 0.00	0.00	5.1 Bar Types	
W/in 1 Bankfill Always Always	2.12 Substrate Composition	Revetmt. Type	Rip-Rap	Rip-Rap	Mid Poir	nt Side
Texture Sand Sand	Bedrock 0 %	Revetmt. Leng		101	2 10	
1.5 Valley Features	Boulder 9 %	Near Bank Veg		Right	Diagonal Delt	
Valley Width (ft) 690	Cobble 35 %	Dominant	Deciduous	Deciduous	5 0	<u>1</u>
Width Determination Estimated	Coarse Gravel 23 %	Sub-dominant	None	None	5.2 Other Features	•
Confinement Type Broad	Fine Gravel 16 %	Bank Canopy	Left	Right	Flood Neck Cutoff	Avulsion Braiding
Rock Gorge? No	Sand 17 %	Canopy %	76-100	76-100	<u>4</u> 0	<u>1</u> 0
Human-caused changed valley width? Yes		Mid-Channel C	Canopy	Open	5.3 Steep Riffles and	
	-	3.2 Riparian Bu		•	Steep Riffles Head	
Notes:	Silt/Clay Present? No	Buffer Width	Left	Right	5 0	<u>No</u>
A review of the historic topographic maps	Detritus 0 %	Dominant	>100	5-25	5.4 Stream Ford or A	
reveals that some time between 1935 and	# Large Woody 14	Sub-dominant		None	5.5 Straightening	Yes
1954 the river was moved toward the left	2.13 Average Largest Particle on	Buffer Veg. Ty		Right	Straightening Len	
valley wall in this reach. An old channel was noted near the left valley wall in some places	Bed 17.0 inche		Mixed Trees	Deciduous	5.5 Dredging	None
during the assessment, in one case it is a	Bar 13.0 inche		None	None	5.5 Dredging	None
current flood chute. Many point bars,		3.3 Riparian Co				
abandoned channels and flood chutes. This	2.14 Stream Type	Corridor Land	Left	Right		
reach is re-establishing meanders after	Stream Type: F	Dominant	Forest			
having been straightened.	Bed Material: Gravel	Sub-dominant		None		
	Subclass Slope: None		Amount	Mean Height	Note:	
	Bed Form: Riffle-Pool	Mass Failures	Multiple		Step 1.6 - Grade Co	ntrols and
	2.15 Reference Stream Type	Gullies	None	0.00	Step 4.8 - Channel (
	(if different from Phase 1)				are on The second p report - Steps 6 thro	-

Stream: Marl	r - Rock River boro Branch		each #	T02.05-		Se	ge 1 of 2 gment: 0	May Completion I	17, 2007 Date: Au g	FIT: Yes gust 31, 2006
J	slide Natural Reso			ADS, C		,	Not assessed:			Rain: Yes
Segment Length (ft):	2,268	-		1	n South Newfa		i	Rock and con	tinues sou	th .44 miles
Step 1. Valley and 1.1 Segmentation None	d Floodplain	Step 2. Stream 2.1 Bankfull Width	n Chann	el 65	Step 3.1 Stream Bank	3. Riparian Feat	ures	Step 4 4.1 Springs / S		w Modifiers None
1.2 Alluvial Fan Nor	ne	2.2 Max Depth (ft)		3.40	Typical Bank Sl	ope Shallow		4.2 Adjacent W	/etlands	None
1.3 Corridor Encroachmen	nts	2.3 Mean Depth (ft)		2.27	Bank Texture	Left	Right	4.3 Flow Statu	S	Moderate
Length (ft)	One Both	2.4 Floodprone Wid	lth (ft)	174	Upper			4.4 # of Debris	Jams	0
Berms	0 0	2.5 Aband. Floodplr	า	5.90	Material Type	Sand	Sand	4.5 Impoundm	ents	None
Roads	1,091 0	2.6 Width/Depth Ra	itio	28.63	Consistency	Non-cohesive	Non-cohesive	Impoundmt.	Location	
Railroads	0 0	2.7 Entrenchment F	Ratio	2.68	Lower			4.6 # of Storm	water Inputs	0
Improved Paths	0 0	2.8 Incision Ratio		1.74	Material Type	Boulder/Cobbl	Boulder/Cobbl	4.7 Upstream I	-low	None
Development	265 0	2.9 Sinuosity		Low	Consistency	Non-cohesive	Non-cohesive	4.9 # of Beave	er Dams	0
1.4 Adjacent Side	Left Right	2.10 Riffles Type	Sedim	ented	Bank Erosion	Left	Right	Affected Le	ength (ft)	0
Hillside Slope	Flat Flat	2.11 Riffle/Step Spa	acing (ft)	0	Erosion Length	(ft) 312	0	Step 5. Chanr	nel Bed and	Planform Changes
Continuous w/ Al	ways Always				Erosion Height	(ft) 0.00	0.00	5.1 Bar Types		<u> </u>
W/in 1 Bankfill Al	ways Always	2.12 Substrate Com	nposition		Revetmt. Type	Rip-Rap	Rip-Rap	Mid	Point	Side
Texture	Sand Sand	Bedrock	0	%	Revetmt. Length	n (ft) 138	199	0	5	3
1.5 Valley Features		Boulder	17	%	Near Bank Veg.	Type Left	Right	Diagonal	Delta	Island
Valley Width (ft)	174	Cobble	38	%	Dominant	Invasives	Invasives	1	0	0
Width Determination	Estimated	Coarse Gravel	19	%	Sub-dominant	Deciduous	Deciduous	5.2 Other Feat	ures	
Confinement Type	Narrow	Fine Gravel	4	%	Bank Canopy	Left	Right	Flood Neck C	utoff Avu	ulsion Braiding
Rock Gorge?	No	Sand	22	%	Canopy %	51-75	76-100	1 0		0 0
Human-caused changed v	valley width? yes				Mid-Channel Ca	anopy	Open	5.3 Steep Riffle	es and Head	Cuts
					3.2 Riparian Buf	fer		Steep Riffles	Head Cuts	Trib Rejuv.
Notes:		Silt/Clay Present?	N	lo	Buffer Width	Left	Right	0	0	No
A review of the historic top		Detritus	0	%	Dominant	51-100	26-50	5.4 Stream For	rd or Animal	No
reveals that some time be		# Large Woody		1	Sub-dominant	None	None	5.5 Straighteni	ng	Yes
1954 the river was moved valley wall in this reach. A	-	2.13 Average Large	est Partic	le on	Buffer Veg. Typ	e <u>Left</u>	Right	Straighteni	-	2,268
noted near the left valley v		Bed 16.0	i	inches	Dominant	Deciduous	Deciduous	5.5 Dredging	0 0	None
assessment. The reach is		Bar 16.6	i	inches	Sub-dominant	None	None	olo Drodging		
reference and is currently	-				3.3 Riparian Cor	ridor				
to aggradation. It is in sta channel evolution process		2.14 Stream Type			Corridor Land	Left	Right			
adjustment process being		Stream Type:	С		Dominant	Forest	Forest			
the loss of step-pool bed f		Bed Material:		•	Sub-dominant	None	None			
		Subclass Slope:				Amount	Mean Height	Note:		
		Bed Form:			Mass Failures	None	0.00	Step 1.6 - Gra		
		2.15 Reference Stre		-	Gullies	None	0.00	Step 4.8 - Ch		
		(if different from	Phase 1)				are on The se report - Steps		

Project: West River - Rock River Stream: Rock River Main Sten Organization: Landslide Natural Reso	n Reach # T02.05 burce Observers: ADS, J	C Segn	e 1 of 2 nent: C lot assessed:		FIT: Yes ugust 11, 2006 Rain: Yes
Segment Length (ft): 2,651	Segment Location: South	Newfane Village to covered brid	ge in William	sville.	
Step 1. Valley and Floodplain 1.1 Segmentation Planform and Scope	Step 2. Stream Channel 2.1 Bankfull Width 73	Step 3. Riparian Featur 3.1 Stream Banks	es	Step 4. Flow & Fl 4.1 Springs / Seeps	ow Modifiers None
1.2 Alluvial Fan None	2.2 Max Depth (ft) 5.20	Typical Bank Slope Steep		4.2 Adjacent Wetlands	None
1.3 Corridor Encroachments	2.3 Mean Depth (ft) 3.70	Bank Texture Left	Right	4.3 Flow Status	Moderate
Length (ft) One Both	2.4 Floodprone Width (ft) 169	Upper		4.4 # of Debris Jams	0
Berms 0 0	2.5 Aband. Floodpln 8.10	Material Type Sand Bo	ulder/Cobbl	4.5 Impoundments	None
Roads 1,787 0	2.6 Width/Depth Ratio 19.73	Consistency Non-cohesive	Non-cohesive	Impoundmt. Location	
Railroads 0 0	2.7 Entrenchment Ratio 2.31	Lower		4.6 # of Stormwater Input	s O
Improved Paths 0 0	2.8 Incision Ratio 1.56	Material Type Boulder/Cobbl Bo	ulder/Cobbl	4.7 Upstream Flow	None
Development 820 1,272	2.9 Sinuosity Low	Consistency Non-cohesive	Non-cohesive	4.9 # of Beaver Dams	0
1.4 Adjacent Side Left Right	2.10 Riffles Type Complete	Bank Erosion Left	Right	Affected Length (ft)	0
Hillside Slope Flat Flat	2.11 Riffle/Step Spacing (ft) 168	Erosion Length (ft) 143	192	Step 5. Channel Bed and	d Planform Changes
Continuous w/ Always Sometimes		Erosion Height (ft) 0.00	0.00	5.1 Bar Types	
W/in 1 Bankfill Always Sometimes	2.12 Substrate Composition	Revetmt. Type Rip-Rap	Rip-Rap	Mid Point	Side
Texture Cobble Cobble	Bedrock 4 %	Revetmt. Length (ft) 164	204	1 0	5
1.5 Valley Features	Boulder 22 %	Near Bank Veg. Type Left	Right	Diagonal Delta	Island
Valley Width (ft) 320	Cobble 29 %	Dominant Deciduous Sh	nrubs/Saplin	1 0	0
Width Determination Estimated	Coarse Gravel 19 %	Sub-dominant None	Deciduous	5.2 Other Features	
Confinement Type Narrow	Fine Gravel 1 %	Bank Canopy Left	Right	Flood Neck Cutoff Av	ulsion Braiding
Rock Gorge? No	Sand 25 %	Canopy % 76-100	1-25	1 0	0 0
Human-caused changed valley width? yes		Mid-Channel Canopy O	pen	5.3 Steep Riffles and Hea	d Cuts
	-	3.2 Riparian Buffer		Steep Riffles Head Cut	Trib Rejuv.
Notes:	Silt/Clay Present? No	Buffer Width Left	Right	1 0	No
The right bank is dominated by the road.	Detritus 0 %	Dominant >100	5-25	5.4 Stream Ford or Anima	l No
There is one bridge that is a floodplain	# Large Woody 2	Sub-dominant None	None	5.5 Straightening	Yes
constriction with deposition below and scour above it.	2.13 Average Largest Particle on	Buffer Veg. Type Left	Right	Straightening Length:	2,480
	Bed 12.0 inches	Dominant Deciduous	Herbaceous	5.5 Dredging	None
The segment is a C riffle pool stream type	Bar 8.0 inches	Sub-dominant None	None	010 210 49.1.9	
currently and by reference. It is in good		3.3 Riparian Corridor			
geomorphic condition and is in stage II of the F-stage channel evolution model with minor	2.14 Stream Type	Corridor Land Left	Right		
widening as the dominant adjustment	Stream Type: C	Dominant Forest	Forest		
process. The left bank provides critical	Bed Material: Cobble	Sub-dominant None	None		
floodplain along this straight segment.	Subclass Slope: None	Amount	Mean Height	Note:	
	Bed Form: Riffle-Pool	Mass Failures None	0.00	Step 1.6 - Grade Control	
	2.15 Reference Stream Type	Gullies None	0.00	Step 4.8 - Channel Cons	
	(if different from Phase 1)			are on The second page report - Steps 6 through	

Project:West River - Rock RiverStream:Rock River Main StemOrganization:Landslide Natural ResoSegment Length (ft):1,101	Reach # TO	02.05 DS, S⊦		See Why	ge 1 of 2 gment: B Not assessed:	May 17, 20 Completion Date:	August 16, 2006 Rain: Yes
Step 1. Valley and Floodplain 1.1 Segmentation Planform and Scope	Step 2. Stream Channel 2.1 Bankfull Width	1		. Riparian Feat	1	-	/ & Flow Modifiers None
1.2 Alluvial Fan No	2.2 Max Depth (ft)	5.00	Typical Bank Slo	pe Undercut		4.2 Adjacent Wetland	ds None
1.3 Corridor Encroachments	2.3 Mean Depth (ft)	3.30	Bank Texture	Left	Right	4.3 Flow Status	Moderate
Length (ft) One Both	2.4 Floodprone Width (ft)	163	Upper			4.4 # of Debris Jams	0
Berms 0 0	2.5 Aband. Floodpln 1	11.00	Material Type	Sand B	Boulder/Cobbl	4.5 Impoundments	None
Roads 1,121 0	2.6 Width/Depth Ratio 3	38.79	Consistency	Non-cohesive	Non-cohesive	Impoundmt. Locati	on
Railroads 0 0	2.7 Entrenchment Ratio	1.27	Lower			4.6 # of Stormwater	Inputs 0
Improved Paths 0 0	2.8 Incision Ratio	2.20	Material Type	Boulder/Cobbl B	Boulder/Cobbl	4.7 Upstream Flow	None
Development 861 0	2.9 Sinuosity	Low	Consistency	Non-cohesive	Non-cohesive	4.9 # of Beaver Dan	ns 0
1.4 Adjacent Side Left Right	2.10 Riffles Type Sedimen	nted	Bank Erosion	Left	Right	Affected Length	(ft) 0
Hillside Slope Flat Flat	2.11 Riffle/Step Spacing (ft)	0	Erosion Length (ft) 638	0	Step 5. Channel Be	d and Planform Changes
Continuous w/ Always Sometimes			Erosion Height (f	ft) 0.00	0.00	5.1 Bar Types	<u> </u>
W/in 1 Bankfill Always Sometimes	2.12 Substrate Composition		Revetmt. Type	None	Rip-Rap	Mid Po	int Side
Texture Sand Sand	Bedrock 0 %		Revetmt. Length	(ft) 0	368	1 0	
1.5 Valley Features	Boulder 19 %		Near Bank Veg. T	ype Left	Right	Diagonal De	Ita Island
Valley Width (ft) 428	Cobble 48 %		Dominant	Coniferous	Deciduous	0 0	
Width Determination Estimated	Coarse Gravel 17 %		Sub-dominant	Deciduous	None	5.2 Other Features	
Confinement Type Semi-confined	Fine Gravel 5 %		Bank Canopy	Left	Right	Flood Neck Cutoff	Avulsion Braiding
Rock Gorge? No	Sand 11 %		Canopy %	51-75	51-75	0 0	0 0
Human-caused changed valley width? yes			Mid-Channel Ca	nopy	Open	5.3 Steep Riffles and	Head Cuts
			3.2 Riparian Buffe	er	-	· · · ·	d Cuts Trib Rejuv.
Notes:	Silt/Clay Present? No		Buffer Width	Left	Right	1 0	No
This reach is widening, eroding and	Detritus 0 %		Dominant	>100	26-50	5.4 Stream Ford or A	Animal No
aggrading. It used to be split by the road but	# Large Woody 0		Sub-dominant	None	None	5.5 Straightening	Yes
was moved to the north channel between	2.13 Average Largest Particle	on	Buffer Veg. Type		Right	Straightening Lei	
1935 and 1954. It is extensively rip-rapped along the right bank for the road and is the	Bed 24.0 inc	ches	Dominant	Mixed Trees	Deciduous	5.5 Dredging	None
first wide, bend in the river for 2,000 feet.	Bar 15.0 inc	ches	Sub-dominant	None	None	5.5 Dredging	None
			3.3 Riparian Corri	dor			
	2.14 Stream Type		Corridor Land	Left	Right		
	Stream Type: F		Dominant	Forest	Residential		
	Bed Material: Cobble		Sub-dominant	None	None		
	Subclass Slope: None			Amount	Mean Height	Note:	
	Bed Form: Plane Bed	d	Mass Failures	None	0.00	Step 1.6 - Grade Co	ontrols and
	2.15 Reference Stream Type		Gullies	None	0.00	Step 4.8 - Channel	Constrictions
	(if different from Phase 1)					are on The second report - Steps 6 thre	

Project: West River - Rock River Stream: Rock River Main Sten Organization: Landslide Natural Reso	n Reach # T02.05 burce Observers: ADS, J	5	
Segment Length (ft): 3,533 Step 1. Valley and Floodplain 1.1 Segmentation Planform and Scope	Segment Location: South Step 2. Stream Channel 73	Newfane village to covered bridge west of W Step 3. Riparian Features 3.1 Stream Banks	Villiamsville. Step 4. Flow & Flow Modifiers 4.1 Springs / Seeps None
1.2 Alluvial Fan None	2.2 Max Depth (ft) 5.20	Typical Bank Slope Steep	4.2 Adjacent Wetlands None
1.3 Corridor Encroachments	2.3 Mean Depth (ft) 3.66	Bank Texture Left Right	4.3 Flow Status Moderate
Length (ft) One Both	2.4 Floodprone Width (ft) 169	Upper	4.4 # of Debris Jams 0
Berms 0 0	2.5 Aband. Floodpln 8.10	Material Type Sand Boulder/Cobbl	4.5 Impoundments None
Roads 863 0	2.6 Width/Depth Ratio 19.95	Consistency Non-cohesive Non-cohesive	Impoundmt. Location
Railroads 0 0	2.7 Entrenchment Ratio 2.31	Lower	4.6 # of Stormwater Inputs 0
Improved Paths 0 0	2.8 Incision Ratio 1.56	Material Type Boulder/Cobbl Boulder/Cobbl	4.7 Upstream Flow None
Development 835 0	2.9 Sinuosity Low	Consistency Non-cohesive Non-cohesive	4.9 # of Beaver Dams 0
1.4 Adjacent Side Left Right	2.10 Riffles Type Complete	Bank Erosion Left Right	Affected Length (ft) 0
Hillside Slope Flat Flat	2.11 Riffle/Step Spacing (ft) 168	Erosion Length (ft) 38 232	Step 5. Channel Bed and Planform Changes
Continuous w/ Always Sometimes		Erosion Height (ft) 0.00 0.00	5.1 Bar Types
W/in 1 Bankfill Always Sometimes	2.12 Substrate Composition	Revetmt. Type None Rip-Rap	Mid Point Side
Texture Cobble Cobble	Bedrock 4 %	Revetmt. Length (ft) 0 304	1 0 5
1.5 Valley Features	Boulder 22 %	Near Bank Veg. Type Left Right	Diagonal Delta Island
Valley Width (ft) 600	Cobble 29 %	Dominant Deciduous Shrubs/Saplin	$\frac{1}{1}$ 0 0
Width Determination Estimated	Coarse Gravel 19 %	Sub-dominant None Deciduous	5.2 Other Features
Confinement Type Broad	Fine Gravel 1 %	Bank Canopy Left Right	Flood Neck Cutoff Avulsion Braiding
Rock Gorge? No	Sand 25 %	Canopy % 76-100 1-25	
Human-caused changed valley width? no		Mid-Channel Canopy Open	5.3 Steep Riffles and Head Cuts
		3.2 Riparian Buffer	Steep Riffles Head Cuts Trib Rejuv.
Notes:	Silt/Clay Present? No	Buffer Width Left Right	1100000000000000000000000000000000000
This reach was straightened between 1935	Detritus 0 %	Dominant >100 5-25	5.4 Stream Ford or Animal No
and 1954. It has few corridor encroachments	# Large Woody 2	Sub-dominant None None	5.5 Straightening Yes
and is in reference stream type with minor	2.13 Average Largest Particle on	Buffer Veg. Type Left Right	Straightening Length: 3,416
widening.	Bed 12.0 inches	Dominant Deciduous Herbaceous	
	Bar 8.0 inches	Sub-dominant None None	5.5 Dredging None
		3.3 Riparian Corridor	
	2.14 Stream Type	Corridor Land Left Right	
	Stream Type: C	Dominant Forest Forest	
	Bed Material: Cobble	Sub-dominant None None	
	Subclass Slope: None	Amount Mean Height	Noto
	Bed Form: Riffle-Pool	Mass Failures None 0.00	Note: Step 1.6 - Grade Controls and
	2.15 Reference Stream Type	Gullies None 0.00	Step 4.8 - Channel Constrictions
	(if different from Phase 1)		are on The second page of this report - Steps 6 through 7.

1.1 Segmentation None2.1 Bankfull Width823.1 Stream Banks4.1 Spring1.2 Alluvial FanNo2.2 Max Depth (ft)2.70Typical Bank Slope4.2 Adja1.3 Corridor Encroachments2.3 Mean Depth (ft)1.90Bank TextureLeftRight4.3 FlowLength (ft)OneBoth2.4 Floodprone Width (ft)133Upper4.4 # ofBerms002.5 Aband. Floodpln4.90Material TypeSand Boulder/Cobbl4.5 ImpouRoads002.6 Width/Depth Ratio43.16ConsistencyNon-cohesiveImpouRailroads002.8 Incision Ratio1.81Material TypeBoulder/Cobbl Boulder/Cobbl4.7 Upst	atep 4. Flow & Flow M gs / Seeps S gs / Seeps S scent Wetlands M Status M Debris Jams M undments M udmt. Location S Stormwater Inputs M Beaver Dams 0 ted Length (ft) 0	Some None Moderate 0 None 0 None
Step 1. Valley and Floodplain1.1 Segmentation NoneStep 2. Stream Channel82Step 3. Riparian Features4.1 Spring1.2 Alluvial FanNo2.2 Max Depth (ft)2.70Typical Bank Slope4.2 Adja1.3 Corridor Encroachments2.3 Mean Depth (ft)1.90Bank TextureLeftRightLength (ft)OneBoth2.4 Floodprone Width (ft)133Upper4.4 # ofBerms002.5 Aband. Floodpln4.90Material TypeSand Boulder/Cobbl4.5 ImpouRoads002.7 Entrenchment Ratio1.62Lower4.6 # of4.7 UpstImproved Paths002.8 Incision Ratio1.81Material TypeBoulder/Cobbl Boulder/Cobbl4.7 Upst	gs / Seeps S cent Wetlands N Status N Debris Jams N undments N udmt. Location Stormwater Inputs ceam Flow N Beaver Dams 0 ted Length (ft) 0	Some None Moderate 0 None 0 None 0
1.1 Segmentation None2.1 Bankfull Width823.1 Stream Banks4.1 Spring1.2 Alluvial FanNo2.2 Max Depth (ft)2.70Typical Bank Slope Steep4.2 Adja1.3 Corridor Encroachments2.3 Mean Depth (ft)1.90Bank TextureLeftRight4.3 FlowLength (ft)OneBoth2.4 Floodprone Width (ft)133Upper4.4 # ofBerms002.5 Aband. Floodpln4.90Material TypeSand Boulder/Cobbl4.5 ImpoundRoads002.6 Width/Depth Ratio43.16ConsistencyNon-cohesiveImpound4.6 # ofImproved Paths002.8 Incision Ratio1.81Material TypeBoulder/Cobbl Boulder/Cobbl4.7 Upst	gs / Seeps S cent Wetlands N Status N Debris Jams N undments N udmt. Location Stormwater Inputs ceam Flow N Beaver Dams 0 ted Length (ft) 0	Some None Moderate 0 None 0 None 0
1.3 Corridor Encroachments2.3 Mean Depth (ft)1.90Bank TextureLeftRight4.3 FlowLength (ft)OneBoth2.4 Floodprone Width (ft)133Upper4.4 # ofBerms002.5 Aband. Floodpln4.90Material TypeSand Boulder/Cobbl4.5 ImportRoads002.6 Width/Depth Ratio43.16ConsistencyNon-cohesiveNon-cohesiveImportRailroads002.7 Entrenchment Ratio1.62Lower4.6 # ofImproved Paths002.8 Incision Ratio1.81Material TypeBoulder/Cobbl Boulder/Cobbl4.7 Upst	Status M Debris Jams M undments M udmt. Location Stormwater Inputs Stormwater Inputs M Beaver Dams 0 ted Length (ft) 0	Moderate 0 None 0 None 0
Length (ft)One BermsBoth2.4 Floodprone Width (ft)133Upper4.4 # ofBerms002.5 Aband. Floodpln4.90Material TypeSand Boulder/Cobbl4.5 ImpoRoads002.6 Width/Depth Ratio43.16ConsistencyNon-cohesiveNon-cohesiveImpouRailroads002.7 Entrenchment Ratio1.62Lower4.6 # ofImproved Paths002.8 Incision Ratio1.81Material TypeBoulder/Cobbl Boulder/Cobbl4.7 Upst	Debris Jams undments N Idmt. Location Stormwater Inputs ream Flow N Beaver Dams O Ited Length (ft) (0 None 0 None 0
Berms002.5 Aband. Floodpln4.90Material TypeSand Boulder/Cobbl4.5 ImpoRoads002.6 Width/Depth Ratio43.16ConsistencyNon-cohesiveNon-cohesiveImpouRailroads002.7 Entrenchment Ratio1.62Lower4.6 # ofImproved Paths002.8 Incision Ratio1.81Material TypeBoulder/Cobbl Boulder/Cobbl4.7 Upst	undments N Idmt. Location Stormwater Inputs ream Flow N Beaver Dams 0 Ited Length (ft) 0	None 0 None 0
Roads002.6 Width/Depth Ratio43.16ConsistencyNon-cohesiveNon-cohesiveImpouRailroads002.7 Entrenchment Ratio1.62Lower4.6 # ofImproved Paths002.8 Incision Ratio1.81Material TypeBoulder/Cobbl Boulder/Cobbl4.7 Upst	admt. Location Stormwater Inputs ream Flow N Beaver Dams 0 ted Length (ft) 0	0 None 0
Railroads002.7 Entrenchment Ratio1.62Lower4.6 # ofImproved Paths002.8 Incision Ratio1.81Material TypeBoulder/Cobbl Boulder/Cobbl 4.7 Upst	Stormwater Inputs eam Flow N Beaver Dams 0 ted Length (ft) 0	None 0
Improved Paths 0 0 2.8 Incision Ratio 1.81 Material Type Boulder/Cobbl Boulder/Cobbl 4.7 Upst	ream Flow N Beaver Dams 0 ted Length (ft) 0	None 0
	Beaver Dams 0 ted Length (ft) 0	0
	ted Length (ft)	•
Development 0 414 2.9 Sinuosity Low Consistency Non-cohesive Non-cohesive 4.9 # of	• • • •	0
1.4 Adjacent Side Left Right 2.10 Riffles Type Eroded Bank Erosion Left Right Affe	Shammal David and Dias	
Hillside Slope Flat Very Steep 2.11 Riffle/Step Spacing (ft) 0 Erosion Length (ft) 586 0 Step 5.	nannei Bed and Piar	nform Changes
Continuous w/ Always Always Erosion Height (ft) 0.00 0.00 5.1 Bar		<u> </u>
W/in 1 Bankfill Always Always 2.12 Substrate Composition Revetmt. Type Rip-Rap None	Point	Side
Texture Sand Cobble Bedrock 0 % Revetmt. Length (ft) 176 0 0	0	5
1.5 Valley Features Boulder 11 % Near Bank Veg. Type Left Right Diagon	al Delta	Island
Valley Width (ft) 624 Cobble 37 % Dominant Deciduous Coniferous 1	0	0
Width Determination Estimated Coarse Gravel 16 % Sub-dominant None None 5.2 Other	Features	
Confinement Type Broad Fine Gravel 8 % Bank Canopy Left Right Flood	eck Cutoff Avulsio	on Braiding
Rock Gorge? No Sand 28 % Canopy % 26-50 26-50 0 -	0 0	
Human-caused changed valley width? no Mid-Channel Canopy Open 5.3 Stee	Riffles and Head Cut	ts
3.2 Riparian Buffer		 Trib Rejuv.
Notes: Silt/Clay Present? No Buffer Width Left Right 0	0	Yes
There was a dredging violation on this reach Detritus 0 % Dominant 51-100 >100 5.4 Stre	m Ford or Animal	No
in the 1990's. It is located just upstream of an # Large Woody 7 Sub-dominant None None 5.5 Stra	ahtening	Yes
old dam that was removed in the 1980's.	phtening Length:	1,018
is currently widening and undergoing Bed 0.0 Dominant Deciduous Mixed Trees 5.5 Drec		None
planform adjustment. Bar 0.0 Sub-dominant None None	,g	liene
Not Evaluated 3.3 Riparian Corridor		
2.14 Stream Type Corridor Land Left Right		
Stream Type: F Dominant Hay Forest		
Bed Material: Gravel Sub-dominant Residential None		
Subclass Slope: None Amount Mean Height Note:		
	6 - Grade Controls and	
(if different from Phase 1) are on	3 - Channel Constrictio The second page of thi Steps 6 through 7.	

Stream:	Rock Ri	Rock River ver Main Stem e Natural Reso			Phase T02.03 ADS, J	2 Segment S	umma	Se	age 1 of 2 gment: 0 v Not assessed:	May Completion	/ 17, 2007 Date:	FIT: Ye August 16, Rain: `	, 2006
Segment Length (fi		2,883			-	ge of Williamsvi	lle.	vviiy	1101 25555560.			Nain.	162
Step 1. Valley	, and Flo	•	Step 2. Stream Channel 2.1 Bankfull Width 96			Step 3. Riparian Features 3.1 Stream Banks				Step 4. Flow & Flow Modifiers 4.1 Springs / Seeps Abundant			
1.2 Alluvial Fan	No		2.2 Max Depth (ft)		5.60	Typical Bank Slo	_ ope Ste	ер		4.2 Adjacent V	Vetlands	None	
1.3 Corridor Encroacl	hments		2.3 Mean Depth (ft)		3.10	Bank Texture		Left	Right	4.3 Flow Statu	IS	Mode	rate
Length (ft)	On	e Both	2.4 Floodprone Width	n (ft)	103	Upper				4.4 # of Debris	s Jams	0	
Berms		0 0	2.5 Aband. Floodpln		5.60	Material Type	Boulder	/Cobbl	Boulder/Cobbl	4.5 Impoundm	nents	None	
Roads	2,12	0 485	2.6 Width/Depth Rati	D	31.06	Consistency	Non-co	hesive	Non-cohesive	Impoundmt.	Location		
Railroads		0 0	2.7 Entrenchment Ra	tio	1.07	Lower				4.6 # of Storm	water Inpu	its 0	
Improved Paths		0 0	2.8 Incision Ratio		1.00	Material Type		Gravel	Gravel	4.7 Upstream	Flow	None	
Development	96	1 1,102	2.9 Sinuosity		Low	Consistency	Non-co	hesive	Non-cohesive	4.9 # of Beav	er Dams	0	
1.4 Adjacent Side	Le	ft Right	2.10 Riffles Type	Ero	oded	Bank Erosion		Left	Right	Affected L	ength (ft).	0	
Hillside Slope	Stee	p Steep	2.11 Riffle/Step Spac	ing (ft)) 0	Erosion Length	(ft)	63	0	Step 5. Chan	nel Bed ar	nd Planforn	n Changes
Continuous w/S	ometime	s Always				Erosion Height ((ft)	0.00	0.00	5.1 Bar Types			
W/in 1 Bankfill S	ometime	s Always	2.12 Substrate Comp	ositior	า	Revetmt. Type		None	None	Mid	Point	Sic	le
Texture	Cobbl	e Boulder	Bedrock	9	%	Revetmt. Length	(ft)	0	0	1	0	9	
1.5 Valley Features			Boulder	32	%	Near Bank Veg. 1	Туре	Left	Right	Diagonal	Delta	Isla	and
Valley Width (1	ft) 103		Cobble	36	%	Dominant	•••	iduous	Deciduous	0	0	0	
Width Determinatio	on Mea	sured	Coarse Gravel	13	%	Sub-dominant		None	None	5.2 Other Fea	tures	-	
Confinement Typ	be Nari	rowly	Fine Gravel	1	%	Bank Canopy		Left	Right	Flood Neck (Avulsion	Braiding
Rock Gorge	e? No		Sand	9	%	Canopy %		51-75	51-75	2 0		0	0
Human-caused chang	ged valley	y width? yes				Mid-Channel Ca	anopy		Open	5.3 Steep Riff	les and He	ad Cuts	-
						3.2 Riparian Buffe	er			Steep Riffles	Head Cu		Rejuv.
Notes:			Silt/Clay Present?	I	No	Buffer Width		Left	Right	0	0	<u> </u>	No
This reach was histo	rically da	mmed until the	Detritus	0	%	Dominant		51-100	51-100	5.4 Stream Fo	ord or Anim	al	No
1980's when the dam			# Large Woody		2	Sub-dominant		None	None	5.5 Straighten			Yes
"dismantle naturally". dam removal. There			2.13 Average Larges	t Partie	cle on	Buffer Veg. Type	е	Left	Right	Straighten	-		581
downstream of the da	•		Bed 0.0			Dominant	Mixe	d Trees	Mixed Trees	5.5 Dredging	g _eg		None
chutes that are acces			Bar 0.0			Sub-dominant		None	None	5.5 Dredging			None
flow has been in the	left most	channel, grade	Not Evalu	ated		3.3 Riparian Corr	ridor						
controlled area, for a	it least 30	years (local	2.14 Stream Type			Corridor Land		Left	Right				
interview).			Stream Type:	F		Dominant	Resi	idential	Forest				
			Bed Material:	Cobbl	е	Sub-dominant		None	None				
			Subclass Slope:				А	mount	Mean Height	Note:			
			Bed Form:	Riffle-	Pool	Mass Failures		One	50.00	Step 1.6 - Gr	ade Contro	ols and	
			2.15 Reference Strea	am Typ	pe	Gullies		None	0.00	Step 4.8 - Cł	nannel Con	strictions	
			(if different from F	hase	1)					are on The s report - Step			

Project: West River - Rock River Stream: Rock River Main Stem	Reach #	Phase T02.02	2 Segment S	annary	ge 1 of 2 gment: 0	May 17, 2007 Completion Date:	 FIT: Yes August 10, 2006
Organization: Landslide Natural Reso				,	Not assessed:		Rain: Yes
Segment Length (ft): 3,693	Segment Location:		1				
Step 1. Valley and Floodplain 1.1 Segmentation None	Step 2. Stream Chan 2.1 Bankfull Width	<u>nel</u> 96	Step 3 3.1 Stream Banks	8. Riparian Feat	ures	4.1 Springs / Seeps	& Flow Modifiers Some
1.2 Alluvial Fan None	2.2 Max Depth (ft)	3.00	Typical Bank Slo	_		4.2 Adjacent Wetlands	s None
1.3 Corridor Encroachments	2.3 Mean Depth (ft)	2.20	Bank Texture	Left	Right	4.3 Flow Status	Moderate
Length (ft) One Both	2.4 Floodprone Width (ft)	107	Upper			4.4 # of Debris Jams	0
Berms 0 0	2.5 Aband. Floodpln	9.00	Material Type	Sand	Sand	4.5 Impoundments	None
Roads 3,515 0	2.6 Width/Depth Ratio	43.64	Consistency	Non-cohesive	Non-cohesive	Impoundmt. Locatior	ı
Railroads 0 0	2.7 Entrenchment Ratio	1.11	Lower			4.6 # of Stormwater In	puts 0
Improved Paths 0 0	2.8 Incision Ratio	3.00	Material Type	Boulder/Cobbl E	Boulder/Cobbl	4.7 Upstream Flow	None
Development 281 638	2.9 Sinuosity	Low	Consistency	Non-cohesive	Non-cohesive	4.9 # of Beaver Dams	; 0
1.4 Adjacent Side Left Right	2.10 Riffles Type Not Ap	plicable	Bank Erosion	Left	Right	Affected Length (ft	t) O
Hillside Slope Flat Flat	2.11 Riffle/Step Spacing (ft) 0	Erosion Length ((ft) 0	0	Step 5. Channel Bed	and Planform Changes
Continuous w/ Always Sometimes			Erosion Height (ft) 0.00	0.00	5.1 Bar Types	
W/in 1 Bankfill Always Sometimes	2.12 Substrate Composition	<u>1</u>	Revetmt. Type	None	None	Mid Point	t Side
Texture Cobble Cobble	Bedrock 0	%	Revetmt. Length	(ft) 0	0	1 0	4
1.5 Valley Features	Boulder 26	%	Near Bank Veg. 1	Гуре <u>Left</u>	Right	Diagonal Delta	a Island
Valley Width (ft) 242	Cobble 44	%	Dominant	Deciduous	Coniferous	0 0	1
Width Determination Measured	Coarse Gravel 8	%	Sub-dominant	None	None	5.2 Other Features	
Confinement Type Semi-confined	Fine Gravel 12	%	Bank Canopy	Left	Right	Flood Neck Cutoff	Avulsion Braiding
Rock Gorge? No	Sand 10	%	Canopy %	51-75	51-75	1 0	0 0
Human-caused changed valley width? yes			Mid-Channel Ca	nopy	Open	5.3 Steep Riffles and H	Head Cuts
			3.2 Riparian Buffe	er		Steep Riffles Head	Cuts Trib Rejuv.
Notes:	Silt/Clay Present?	No	Buffer Width	Left	Right	0 0	No
This reach is located downstream of the	Detritus 0	%	Dominant	26-50	5-25	5.4 Stream Ford or An	imal No
village of Williamsville in a semi-confined	# Large Woody	2	Sub-dominant	None	None	5.5 Straightening	No
valley that is naturally straight. There is a gravel town road along the entire right bank	2.13 Average Largest Parti	cle on	Buffer Veg. Type	e <u>Left</u>	Right	Straightening Leng	yth: O
and the left corridor is almost entirely mowed	Bed N/A	inches	Dominant	Deciduous	Mixed Trees	5.5 Dredging	None
meadow though the stream bank is vegetated	Bar 23.0	inches	Sub-dominant	None	None	0 0	
along both banks. It is aggrading with historic			3.3 Riparian Corr	idor			
degradation and widening.	2.14 Stream Type		Corridor Land	Left	Right		
	Stream Type: F		Dominant	Нау	Forest		
	Bed Material: Cobb	е	Sub-dominant	Forest	None		
	Subclass Slope: None	Deal		Amount	Mean Height	Note:	
	Bed Form: Plane		Mass Failures	None	0.00	Step 1.6 - Grade Cor	
	2.15 Reference Stream Ty (if different from Phase		Gullies	None	0.00	Step 4.8 - Channel C are on The second pa report - Steps 6 throu	age of this

Project: West River - Rock River Stream: Rock River Main Sten			e 1 of 2 nent: 0	May 17, 2007 Completion Date: Au	FIT: Yes Igust 10, 2006
Organization: Landslide Natural Reso	Observers: ADS, J	C Why N	ot assessed:		Rain: Yes
Segment Length (ft): 7,999	Segment Location: Willian	nsville Station 1.5 miles upstrear	n.		
Step 1. Valley and Floodplain	Step 2. Stream Channel 2.1 Bankfull Width 115	Step 3. Riparian Feature 3.1 Stream Banks	Step 4. Flow & Flow Modifiers 4.1 Springs / Seeps Abundant		
I.2 Alluvial Fan None	2.2 Max Depth (ft) 3.40	Typical Bank Slope Steep		4.2 Adjacent Wetlands	None
1.3 Corridor Encroachments	2.3 Mean Depth (ft) 1.67	Bank Texture Left	Right	4.3 Flow Status	Moderate
Length (ft) One Both	2.4 Floodprone Width (ft) 161	Upper		4.4 # of Debris Jams	0
Berms 240 0	2.5 Aband. Floodpln 8.40	Material Type Boulder/Cobbl Bo	ulder/Cobbl	4.5 Impoundments	None
Roads 834 323	2.6 Width/Depth Ratio 68.86	Consistency Non-cohesive	Non-cohesive	Impoundmt. Location	
Railroads 0 0	2.7 Entrenchment Ratio 1.40	Lower		4.6 # of Stormwater Inputs	0
Improved Paths 0 0	2.8 Incision Ratio 2.47	Material Type Boulder/Cobbl	Gravel	4.7 Upstream Flow	None
Development 0 1,378	2.9 Sinuosity Low	Consistency Non-cohesive	Non-cohesive	4.9 # of Beaver Dams	0
I.4 Adjacent Side Left Right	2.10 Riffles Type Complete	Bank Erosion Left	Right	Affected Length (ft)	0
Hillside Slope Extremely Very Steep	2.11 Riffle/Step Spacing (ft) 274	Erosion Length (ft) 0	241	Step 5. Channel Bed and	Planform Change
Continuous w/ Always Sometimes		Erosion Height (ft) 0.00	0.00	5.1 Bar Types	j.
W/in 1 Bankfill Always Sometimes	2.12 Substrate Composition	Revetmt. Type Rip-Rap	Hard Bank	Mid Point	Side
Texture Bedrock Boulder	Bedrock 1 %	Revetmt. Length (ft) 483	256	0 0	10
.5 Valley Features	Boulder 31 %	Near Bank Veg. Type Left	Right	Diagonal Delta	Island
Valley Width (ft) 191	Cobble 38 %		Coniferous	0 0	3
Width Determination Measured	Coarse Gravel 17 %	Sub-dominant None	None	5.2 Other Features	-
Confinement Type Semi-confined	Fine Gravel 6 %	Bank Canopy Left	Right		ulsion Braiding
Rock Gorge? No	Sand 7 %	Canopy % 76-100	76-100	2 0	0 0
luman-caused changed valley width? no		Mid-Channel Canopy O	pen	5.3 Steep Riffles and Head	d Cuts
		3.2 Riparian Buffer	-	Steep Riffles Head Cuts	
Notes:	Silt/Clay Present? No	Buffer Width Left	Right	6 0	No
This reach is dominated by ledge outcrops	Detritus 0 %	Dominant >100	>100	5.4 Stream Ford or Animal	No
that have created a series of deep pools	# Large Woody 8	Sub-dominant None	None	5.5 Straightening	No
(heavily used for swimming) and riffles. It	2.13 Average Largest Particle on	Buffer Veg. Type Left	Right	Straightening Length:	0
historically incised, perhaps when the dam at T08.03 was present, and widened. It is	Bed 24.0 inches		Coniferous	5.5 Dredging	None
currently aggrading. We saw a mink on	Bar 24.0 inches	Sub-dominant None	None	5.5 Dreuging	None
08/10/2006.		3.3 Riparian Corridor			
	2.14 Stream Type	Corridor Land Left	Right		
	Stream Type: B	Dominant Forest	Forest		
	Bed Material: Cobble	Sub-dominant None	None		
	Subclass Slope: c		Mean Height	Note:	
	Bed Form: Riffle-Pool	Mass Failures None	0.00	Step 1.6 - Grade Controls	and
	2.15 Reference Stream Type	Gullies Multiple	32.50	Step 4.8 - Channel Const	rictions
	(if different from Phase 1)			are on The second page report - Steps 6 through 7	

Project:West River - Rock RiverPhaseStream:Baker BrookReach #T2.0Organization:Landslide Natural ResourceObservers:ADS,	
Segment Length (ft):6,190Segment Location:Bake	Brook, along Baker Brook Rd near Parish Hill Rd
1.6 Grade Controls None	Step 7. Rapid Geomorphic Assessment Data
Type Location Total Height Photo Take GPS	Confinement Type Confined
Above Water	Score STD Historic
	7.1 Channel Degradation 5 C to F Yes
	7.2 Channel Aggradation 10 None No
	7.3 Widening Channel 13 Yes
	7.4 Change in Planform 13 No
	Total Score 41
	Geomorphic Rating 0.5125
	Channel Evolution Model F
	Channel Evolution Stage IV
	Geomorphic Condition Fair
	Stream Sensitivity Extreme
4.8 Channel Constrictions	Step 6. Rapid Habitat Assessment Data Stream Gradient Type High
Photo GPS Channel Floodprone	Score
Type Width Taken? Taken? Constriction? Constriction?	6.1 Epifaunal Substrate - Available Cover 13
Bridge 37.0 Yes Yes No Yes	6.2 Embeddedness 11
Problem Deposition Above	6.3 Velocity/Depth Patterns 19
·	6.4 Sediment Deposition 12
	6.5 Channel Flow Status 14
	6.6 Channel Alteration 11
	6.7 Frequency of Riffles/Steps 20
	6.8 Bank Stability Left: 8 Right: 9
	6.9 Bank Vegetation Protection Left: 7 Right: 10
	6.10 Riparian Vegetation Zone Width Left: 2 Right: 9
	Total Score145
	Habitat Rating 0.725
Narrative:	Habitat Stream Condition Good

Aggradation with historic degradation.

Project: Stream: Organizatic Segment Lu		ok		Observers:	•	-	page 2 of 2 Segment: 0 amsville Village	Completion	n Date: 🖌 Rain: 🏾	May 17, 2007 August 24, 2006 Yes
	de Controls		oogine				Step 7. Rapid Geomo	rnhic Assessn	nent Data	<u> </u>
			Total Heigh	t Photo Ta	^{ke∵} GPSTaken	C	onfinement Type Plane			_
Туре	Location	Total	Above Wate	er	GPSTaken			Score	STD	Historic
Ledge	Mid-Segment	3.00	1.00			7.1 Channel I	Degradation	5	B to F	Yes
Ledge	Mid-Segment	2.00	0.00			7.2 Channel	•	11	None	No
						7.3 Widening		13		Yes
						7.4 Change ir	n Planform	15		Νο
							Total Score	44		
							Geomorphic Rating	0.55		
							Channel Evolution Model	F		
							Channel Evolution Stage	IV		
							Geomorphic Condition	Fair		
							Stream Sensitivity	Extreme		
	anal Constrictions						Step 6. Rapid Habitat Asses	ssment Data High		
4.8 Char	nnel Constrictions			Floodneono				-	Score	
Туре				Floodprone Constriction?		6.1 Epifaunal S	ubstrate - Available Cover		14	
	i ultoriti						6.2 Embeddedness		8	
Bedrock	x 0.00 Yes roblem None	Yes	Νο	No		6.	3 Velocity/Depth Patterns		17	
Bridge		Yes	No	No			6.4 Sediment Deposition		14	
	roblem Deposition						6.5 Channel Flow Status		16	
Bridge		Yes	No	No			6.6 Channel Alteration		14	
Pi	roblem Deposition	n Above,D	eposition Be	low		6.7 F	Frequency of Riffles/Steps		5	
							6.8 Bank Stability		Right:	
							ank Vegetation Protection		Right: 1	
						6.10 Riparia	an Vegetation Zone Width		Right: 1	10
							Total Score		.31	
							Habitat Rating	0.	655	
Narrative	2:						Habitat Stream Condition	1	Good	

Aggradation with historic degradation.

Project: Stream: Organizatior Segment Lei	n: Landslid	Rock River iver Main S e Natural R 7,821	item Resource	Observers:	•	ch Summary nain stem, throu	page 2 of 2 Segment: 0	Completio	n Date: Rain:	May 17, 2007 August 22, 2006 Yes
	le Controls No	-	Segn				Step 7. Rapid Geomo	rnhic Assess	mont Da	
1.0 0100			. Total Heig				onfinement Type Plane	•		
Туре	Location	Tota	Above Wa	ter	^{ike∼} GPSTaken			Score	STD	Historic
						7.1 Channel [Degradation	5	C to F	Yes
						7.2 Channel A	Aggradation	11	None	Νο
						7.3 Widening	Channel	14		Νο
						7.4 Change ir	Planform	8		Νο
							Total Score	38		
							Geomorphic Rating	0.475		
							Channel Evolution Model	F		
							Channel Evolution Stage	IV		
							Geomorphic Condition	Fair		
							Stream Sensitivity	Extreme		
							Step 6. Rapid Habitat Asse	ssment Data		
4.8 Chanr	nel Constrictior	S				S	tream Gradient Type	High		
	Photo		Channel	Floodprone					Score	
Туре	Width Taker		Constriction?	Constriction?	,	6.1 Epifaunal Su	ıbstrate - Available Cover		7	
Bridge	32.6 Yes	Yes	No	Yes			6.2 Embeddedness		6	
	blem None	105	No	105		6.3	3 Velocity/Depth Patterns		7	
Bridge	21.3 Yes	Yes	Yes	Yes			6.4 Sediment Deposition		9	
	-		,Deposition B				6.5 Channel Flow Status		12	
Bridge	33.6 Yes	Yes	No	Yes			6.6 Channel Alteration		12	
Pro	obiem Depos	ition Above	,Deposition B	elow		6.7 F	requency of Riffles/Steps		6	
							6.8 Bank Stability		6 Right	
							ank Vegetation Protection		Right	
						6.10 Riparia	n Vegetation Zone Width	Left: 2	Right	t: 8
							Total Score		99	
							Habitat Rating	0	.495	
Narrative:							Habitat Stream Condition	ı	Fair	

Planform with minor aggradation & historic degradation.

Project: Stream: Organizati	Та	ver - Roc ft Brook dslide Na			Reach # Observers:	Phase 2 Read T02.11-S1.01 ADS, CH	-	page 2 of 2 Segment: C	Completio	n Date: Rain:	May 17, 2007 August 23, 2006 Yes
-	ength (ft):		4,038			•	se farm to end	of reach.			
1.6 Gra	ade Controls	S						Step 7. Rapid Geomo	orphic Assess	ment Da	ita
Tuno	Locatio	'n	Tota	Total Heig	ht Photo Ta	^{k∉™} GPSTaken	Co	onfinement Type Confin	ed		
Туре				ADOVE Wa	ter	Grandken			Score	STD	Historic
Ledge	Upstre	eam	7.00	6.00			7.1 Channel I	Degradation	5	B to F	Yes
							7.2 Channel	Aggradation	16	None	Νο
							7.3 Widening	Channel	12		Νο
							7.4 Change i	n Planform	8		No
								Total Score	41		
								Geomorphic Rating	0.5125		
								Channel Evolution Model	F		
								Channel Evolution Stage	IV		
								Geomorphic Condition	Fair		
								Stream Sensitivity	Extreme		
								Step 6. Rapid Habitat Asse	ssment Data		
4 8 Cha	nnel Constr	ictions					S	Stream Gradient Type	High		
			GPS	Channel	Floodprone				-	Score	
Туре			Taken?	Constriction?	Constriction?		6.1 Epifaunal S	ubstrate - Available Cover		13	
Bridge	11.0		Yes	Yes	Yes			6.2 Embeddedness		12	
	Problem No		165	Tes	Tes		6.	3 Velocity/Depth Patterns		15	
	m 4.60		Yes	Yes	Yes			6.4 Sediment Deposition		12	
P	roblem De	eposition	Above,	Deposition Be	elow,Scour			6.5 Channel Flow Status		10	
	m 2.90 `		Yes	Yes	Yes			6.6 Channel Alteration		9	
Р	Problem De	eposition	Above,	Deposition Be	elow		6.7 F	requency of Riffles/Steps		19	
								6.8 Bank Stability	Left: 6	6 Right	t: 4
							6.9 B	ank Vegetation Protection	Left: 5	Right	: 10
							6.10 Riparia	an Vegetation Zone Width	Left: 2	Right	t: 8
								Total Score		125	
								Habitat Rating	0	.625	
Narrativ	e:							Habitat Stream Condition	n	Fair	

Narrative:

Planform with historic degradation is the dominant adjustment process.

Project: Stream: Organizatio		atural Res		bservers:	Phase 2 Reac T02.11-S1.01 ADS, CH		page 2 of 2 Segment: B		Rain	May 17, 2007 : August 23, 2006 : Yes
	2 ()	2,749	Segment	Location:	Mid-segment	grade control	to u/s of farm oper	-		
1.6 Gra	ade Controls						Step 7. Rapid C	•	ssessment D	ata
Туре	Location	Total	Total Height Above Water	Photo Ta	ke GPSTaken	C	Confinement Type C	Confined Sco	re STD	Historic
Ledge	Mid-Segment	6.00	4.00			7.1 Channel	Degradation	15	None	No
Ledge	Mid-Segment	5.00	4.00			7.2 Channel	Aggradation	10	Othe	r No
Ledge	Mid-Segment	4.00	3.00			7.3 Widening		14		Νο
Ledge	Mid-Segment	2.00	1.00			7.4 Change		13		Νο
Ledge	Mid-Segment	0.00	0.00				Total S Geomorphic R			
Ledge	Mid-Segment	4.00	2.00				Channel Evolution N Channel Evolution S Geomorphic Cono Stream Sensi	Stage IV dition Good		
							Step 6. Rapid Habita Stream Gradient Type		Data	
4.8 Cha	nnel Constrictions						Stream Gradient Type	ingn	Score	
Туре				odprone nstriction?		6.1 Epifaunal S	Substrate - Available Co	over	5	
Bridge	i ditteriti i	Yes	No	Yes			6.2 Embeddedr		7	
	Problem Deposition					6	.3 Velocity/Depth Patte		8	
	-	-	-				6.4 Sediment Deposi		7	
							6.5 Channel Flow St		9	
						67	6.6 Channel Altera		20 5	
						0.7	Frequency of Riffles/S 6.8 Bank Stat	•	o eft: 8 Righ	nt: 3
						6.9 F	Bank Vegetation Protect		eft: 8 Righ	
							an Vegetation Zone W		eft: 10 Rig	
							Total So Habitat Ra	core	101 0.505	
Narrative	e:						Habitat Stream Co	ndition	Fair	

Stream type departure B to Cb. Aggradation is the dominant adjustment process and is compounded by a debris jam at the down stream end of the reach and major erosion at the farm at the upstream end of the reach.

Project: Stream: Organizatio		k Iatural Res		Observers:	•	-	page 2 of 2 Segment: A	Completio	n Date: Rain:	May 17, 2007 August 23, 2006 Yes
Segment L		4,571	Segmer	it Location:	First reach of	laft west of Ea				
1.6 Gra	ade Controls						Step 7. Rapid Geomo	•	ment Da	ita
Туре	Location	Total	Total Height Above Water	Photo Ta	^{k∉™} GPSTaken	Co	onfinement Type Confin	ed Score	STD	Historic
Ledge	Downstream	7.00	5.00	Yes	Yes	7.1 Channel [Degradation	5	B to F	Yes
Ledge	Downstream	8.00	5.00	Yes	Yes	7.2 Channel A	•	16	None	No
-						7.3 Widening		12		No
Ledge	Downstream	3.00	2.00	Yes	Yes	7.4 Change ir		8		Νο
Type Bridge Pi Instrear Pi Instrear Pi Instrear	nnel Constrictions Photo Width Taken? 7.00 Yes roblem Depositio m 8.20 Yes roblem Depositio m 7.00 Yes roblem Depositio m 8.10 Yes	Taken? C Yes n Above,Do Yes n Above,Do Yes n Above,Do Yes	onstriction? C Yes eposition Belo Yes eposition Belo Yes eposition Belo Yes	Yes ow Yes ow Yes	, ,	6.1 Epifaunal Su	Geomorphic Rating Channel Evolution Model Channel Evolution Stage Geomorphic Condition Stream Sensitivity Step 6. Rapid Habitat Asse Stream Gradient Type Ubstrate - Available Cover 6.2 Embeddedness 3 Velocity/Depth Patterns 6.4 Sediment Deposition 6.5 Channel Flow Status 6.6 Channel Alteration Frequency of Riffles/Steps 6.8 Bank Stability	High	Score 13 12 15 12 10 9 19 5 Right	
	roblem Depositio		•			6.9 Ba	ank Vegetation Protection	Left: 5	Right	: 10
Bridge	21.4 Yes roblem Depositio	Yes	No Production Bold	No			an Vegetation Zone Width		Right	
	m 6.50 Yes	Yes	Yes	Yes			Total Score		125	
	roblem Depositio			103			Habitat Rating	0	.625	
Narrative	2.						Habitat Stream Condition	n	Fair	

Narrative:

Planform with historic degradation is the dominant adjustment process.

Project: Stream: Organizatio		r Main Stem		Reach # Observers:		ch Summary	page 2 of 2 Segment: 0	Completic	n Date: Rain:	May 17, 2007 August 30, 2006 Yes
	ength (ft):	3,873	Segme	ent Location:	Rock River m	nain stem, betwe	een Brookside and East	Dover		
1.6 Gra	ade Controls						Step 7. Rapid Geomo		ment Da	ta
Туре	Location	Total	Total Heigh Above Wat	nt Photo Ta er	ke [∼] GPSTaken	Co	nfinement Type Confin	ed Score	STD	Historic
Dam	Downstream	10.00	4.00			7.1 Channel D	egradation	5	None	No
Ledge	Downstream	6.00	3.00			7.2 Channel A	•	14	None	No
Ledge	Downstream	6.00	4.00			7.3 Widening		14		No
-						7.4 Change in	Planform	16		No
Ledge	Downstream	5.00	2.00				Total Score	49		
Ledge	Downstream	3.00	2.00				Geomorphic Rating	0.6125		
Ledge	Downstream	4.00	2.00				Channel Evolution Model	F		
Ledge	Downstream	6.00	2.00				Channel Evolution Stage	IV		
Ledge	Downstream	6.00	3.00				Geomorphic Condition	Fair		
-							Stream Sensitivity	High		
Ledge	Upstream	16.00	11.00				Step 6. Rapid Habitat Asse	ssment Data		
Ledge	Upstream	4.00	2.00			-	· · ·	High		
	Photo	GPS Ch	hannel	Floodprone			,,	-	Score	
Туре				Constriction?		6.1 Epifaunal Su	bstrate - Available Cover		13	
Instrea	m 23.4 Yes	Yes	Yes	Yes			6.2 Embeddedness		9	
	Problem None	100	100	1.65		6.3	8 Velocity/Depth Patterns		20	
							6.4 Sediment Deposition		8	
							6.5 Channel Flow Status		13	
							6.6 Channel Alteration		19	
						6.7 Fi	requency of Riffles/Steps		20	
							6.8 Bank Stability	Left: 7	' Right	: 8
						6.9 Ba	nk Vegetation Protection	Left: 9	Right :	10
						6.10 Riparia	n Vegetation Zone Width	Left: 9	Right :	10
							Total Score		155	
							Habitat Rating	C	.775	
Narrativ	e:						Habitat Stream Condition	n	Good	

Aggradation with historic degradation is the dominant adjustment process.

Stream:Rock River Main StemReach # T02.10Organization:Landslide Natural ResourceObservers:ADS, CH	each Summary page 2 of 2 May 17, 2007 Segment: 0 Completion Date: August 30, 2006 Rain: Yes
1.6 Grade Controls None	Step 7. Rapid Geomorphic Assessment Data
Total Height Photo Take GPSTake Above Water	Score STD Historic
	7.1 Channel Degradation 5 B to F Yes
	7.2 Channel Aggradation 13 None No
	7.3 Widening Channel 13 No
	7.4 Change in Planform 11 No
	Total Score 42
	Geomorphic Rating 0.525
	Channel Evolution Model F Channel Evolution Stage III Geomorphic Condition Fair Stream Sensitivity Extreme
4.8 Channel Constrictions	Step 6. Rapid Habitat Assessment Data Stream Gradient Type High
Photo GPS Channel Floodprone	Score
Type Width Taken? Taken? Constriction? Constriction?	6.1 Epifaunal Substrate - Available Cover 17
	6.2 Embeddedness 14
Bridge 52.0 Yes Yes No Yes Problem Deposition Above, Deposition Below	6.3 Velocity/Depth Patterns 16
	6.4 Sediment Deposition 15
	6.5 Channel Flow Status 15
	6.6 Channel Alteration 10
	6.7 Frequency of Riffles/Steps 19
	6.8 Bank Stability Left: 9 Right: 5
	6.9 Bank Vegetation Protection Left: 6 Right: 10
	6.10 Riparian Vegetation Zone Width Left: 2 Right: 6
	Total Score 144
	Habitat Rating 0.72
Narrative:	Habitat Stream Condition Good

Planform with historic degradation is the dominant adjustment process.

tream:Rock River Main StemReach # T02.09organization:Landslide Natural ResourceObservers:ADS, CH	ach Summary page 2 of 2 Segment: 0	May 17, 2007 Completion Date: August 18, 2006 Rain: No
egment Length (ft): 4,506 Segment Location: Rock River	•	
1.6 Grade Controls None	Step 7. Rapid Geomorp	
Total Height Photo Take GPSTaken	Confinement Type Confined	Score STD Historic
	7.1 Channel Degradation	5 None Yes
	7.2 Channel Aggradation	10 None No
	7.3 Widening Channel	10 Yes
	7.4 Change in Planform	13 No
	Total Score	38
	Geomorphic Rating	0.475
	Channel Evolution Model	=
		V
	-	 Fair
		ligh
	Step 6. Rapid Habitat Assess	ment Data
4.8 Channel Constrictions	Stream Gradient Type Hi	gh
Photo GPS Channel Floodprone		Score
Type Width Taken? Taken? Constriction? Constriction?	6.1 Epifaunal Substrate - Available Cover	10
Bridge 92.0 Yes Yes No No	6.2 Embeddedness	13
Problem Deposition Above, Deposition Below	6.3 Velocity/Depth Patterns	9
Bridge 220. Yes Yes No No	6.4 Sediment Deposition	12
Problem Deposition Above, Deposition Below	6.5 Channel Flow Status	12
	6.6 Channel Alteration	11
	6.7 Frequency of Riffles/Steps	20
	6.8 Bank Stability	Left: 6 Right: 4
	6.9 Bank Vegetation Protection	Left: 7 Right: 9
	6.10 Riparian Vegetation Zone Width	Left: 3 Right: 8
	Total Score	124
	Habitat Rating	0.62
Narrative: Aggradation with historic widening.	Habitat Stream Condition	Fair

Project: Stream: Organizatio	R on: La	River - Roc Rock River ndslide Na	Main Ste atural Re	source	Reach # Observers:	ADS, CH	-	page 2 of 2 Segment: 0		Rain: N	
Segment L			1,781	Segme	nt Location:	ROCK RIVER M	ain stem, aion	g Dover Rd, ending just	-		
1.6 Gra	de Contro	ois None		Total Usiak	+ _, _			Step 7. Rapid Geomo	•	ent Data	-
Туре	Locat	ion	Total	Total Heigh Above Wate	r Photo Ta er	ke GPSTaken		onfinement Type Confir	Score	STD	Historic
							7.1 Channel	-		None	Yes
							7.2 Channel			None	No
							7.3 Widening		11		No
							7.4 Change i		15		No
								Total Score Geomorphic Rating	36 0.45		
								Channel Evolution Model Channel Evolution Stage Geomorphic Condition Stream Sensitivity	IV		
								Step 6. Rapid Habitat Asse	essment Data		
4.8 Char	nnel Cons	trictions N	lone					Stream Gradient Type	High		
		Photo (GPS	Channel	Floodprone				So	core	
Туре	Width	Taken?			Constriction?		6.1 Epifaunal S	ubstrate - Available Cover		3	
								6.2 Embeddedness		9	
							6	.3 Velocity/Depth Patterns		9	
								6.4 Sediment Deposition	1	2	
								6.5 Channel Flow Status		9	
								6.6 Channel Alteration		1	
							6.7	Frequency of Riffles/Steps		5	
								6.8 Bank Stability	Left: 8	-	
								ank Vegetation Protection	Left: 10	_	
							6.10 Ripari	an Vegetation Zone Width	Left: 1	-	8
								Total Score		9 10 F	
								Habitat Rating	0.4	195	
Narrative		dominant :	- d* e					Habitat Stream Conditio	n	Fair	

Aggradation is the dominant adjustment process.

Project: Stream: Organizatio	on: Landslide I	er Main Ste Natural Res	source Obse	each # T ervers: A	NDS, CH	-	page 2 of 2 Segment: 0		Rain:	
	ength (ft):	3,802	Segment Lo	cation: R	Rock River ma	ain stem, along	g Dover Rd, beginnin	-		
1.6 Gra	ade Controls None							eomorphic Assess	ment Da	ita
Туре	Location	Total	Total Height Pl	hoto Take	GPSTaken	Co	onfinement Type Pla	ane Bed		
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Above Water					Score	STD	Historic
						7.1 Channel [Degradation	13	C to F	Yes
						7.2 Channel A		14	None	Νο
						7.3 Widening		11		Νο
						7.4 Change ir		10		Νο
							Total Sc			
							Geomorphic Ra	ting 0.6		
							Channel Evolution Mo	odel F		
							Channel Evolution St			
							Geomorphic Condi	-		
							Stream Sensiti	ivity Very High	n	
							Step 6. Rapid Habitat	Assessment Data		
4 8 Cha	nnel Constrictions					S	Stream Gradient Type	High	-	
1.0 Chu	Photo	GPS (Channel Flood	nrone				-	Score	
Туре	Width Taken?			riction?		6.1 Epifaunal Su	ubstrate - Available Cov	ver	3	
Bridge	38.0 Yes	Yes		es			6.2 Embeddedne	ess	11	
			cour Above,Scour			6.	3 Velocity/Depth Patter	rns	8	
							6.4 Sediment Depositi	ion	14	
							6.5 Channel Flow Stat	tus	12	
							6.6 Channel Alterati	ion	12	
						6.7 F	Frequency of Riffles/Ste	eps	4	
							6.8 Bank Stabil	lity Left: 9	Right	: 10
						6.9 Ba	ank Vegetation Protecti	ion Left: 10	0 Right	t: 10
						6.10 Riparia	an Vegetation Zone Wic	dth Left: 9	Right	: 10
							Total Sco		122	
							Habitat Rati	ng	0.61	
							Habitat Stream Con	dition	Fair	
Narrativ	e:				I			aldon	i un	
Dlanform	is the dominant ac	diuctmont pr	rococc							

Planform is the dominant adjustment process.

Project: Stream: Organizatio	on: Landslide	er Main St Natural Ro	esource	Reach # Observers:	ADS, CH		page 2 of 2 Segment: B	Completion	Date: A Rain: N	May 17, 2007 August 17, 2006 No
Segment L		1,428	Segm	ent Location:	Southwest of	Deer Hill, end	s at Stratton Hill Road.			
1.6 Gra	ade Controls None		Tatal Usia	hh			Step 7. Rapid Geomo	•	ent Data	<u>1</u>
Туре	Location	Tota	Total Heig Above Wa	nt Photo Ta ter	^{ike∵} GPSTaken		onfinement Type Plane	Score	STD	Historic
						7.1 Channel	Degradation	14	None	Yes
						7.2 Channel	Aggradation	15	None	Νο
						7.3 Widening	g Channel	15		Νο
						7.4 Change	n Planform	16		Νο
							Total Score	60		
							Geomorphic Rating	0.75		
							Channel Evolution Model	F		
							Channel Evolution Stage	IV		
							Geomorphic Condition	Good		
							Stream Sensitivity	Moderate		
							Step 6. Rapid Habitat Asse	ssment Data		
4 8 Cha	nnel Constrictions	None					·	High		
1.0 Cha	Photo	GPS	Channel	Floodprone				S	core	
Туре	Width Taken?		Constriction?	Constriction?	,	6.1 Epifaunal S	Substrate - Available Cover		3	
							6.2 Embeddedness	:	12	
						6	.3 Velocity/Depth Patterns		9	
							6.4 Sediment Deposition	:	14	
							6.5 Channel Flow Status	:	10	
							6.6 Channel Alteration	:	11	
						6.7	Frequency of Riffles/Steps		4	
							6.8 Bank Stability	Left: 6	Right:	8
						6.9 E	Bank Vegetation Protection	Left: 10	Right :	8
						6.10 Ripari	an Vegetation Zone Width	Left: 10	Right:	2
							Total Score		07	
							Habitat Rating	0.	535	
Narrative Minor ag	e: Igradation.						Habitat Stream Condition	n	Fair	

Project: Stream: Organizatio	Roc ion: Lands	ver - Rock River ck River Main St Islide Natural R	Stem Resource	Observers:	-		page 2 of 2 Segment: A	Completior	n Date: <i>I</i> Rain: I	May 17, 2007 August 12, 2006 No
	Length (ft):	3,931	Segmer	nt Location:	: West of South	n Newfane.				
1.6 GF	rade Controls	None	Total Hoigh	·+ ~, -		1	Step 7. Rapid Geomo		nent Dat	<u>.a</u>
Туре	Location	n Tota	al Total Height Above Water	Photo Ia	ake GPSTaken		Confinement Type Plane I	Score	STD	Historic
						7.1 Channe	el Degradation	5	C to F	Yes
							el Aggradation	11	None	No
						7.3 Widenin		10		No
							e in Planform	5		No
						1	Total Score	31		
							Geomorphic Rating	0.3875		
						1	Channel Evolution Model	F		
						(Channel Evolution Stage			
						[Geomorphic Condition			
							Stream Sensitivity			
							Step 6. Rapid Habitat Asses	essment Data		
4 & Ch;	annal Constri	ctions None				(High		
4.0 Chu		Photo GPS	Channel F	Floodprone				-	Score	
Туре		aken? Taken?		Constriction?	,	6.1 Epifaunal	Substrate - Available Cover		4	
			Consciences			-	6.2 Embeddedness		13	
						1	6.3 Velocity/Depth Patterns		12	
						(6.4 Sediment Deposition		14	
						[6.5 Channel Flow Status		12	
						1	6.6 Channel Alteration		14	
						6.7	7 Frequency of Riffles/Steps		7	
						[6.8 Bank Stability	Left: 3	Right:	.: 7
						6.9	Bank Vegetation Protection	Left: 9	Right:	.: 8
						6.10 Ripa	arian Vegetation Zone Width	Left: 10	0 Right	t: 4
						1	Total Score		117	
						1	Habitat Rating	0,	.585	
Narrativ Planform						i	Habitat Stream Condition	n	Fair	

Project: Stream: Organization	M n: Lai	larlboro ndslide	ock River Branch Natural Re		Observers:	•		page 2 of 2 Segment: 0	·	Rain:	
Segment Le			5,876	Segm	ent Location:	From just pas	st the confluer	ce with Adam's Brook	_	-	
1.6 Grad	de Contro	Is None		-				Step 7. Rapid Geo	•	ment Dat	a
Туре	Locat	ion	Tota	Total Heigl Above Wat	nt Photo Ta er	^{ke™} GPSTaken	C	Confinement Type Con	f ined Score	STD	Historic
							7.1 Channel 7.2 Channel 7.3 Widening 7.4 Change	Aggradation g Channel	13 16 15 10	None None	Yes No No No
								Total Scor Geomorphic Ratin	g 0.675		
								Channel Evolution Mod Channel Evolution Stag Geomorphic Conditic Stream Sensitivit	e IV n Good		
								Step 6. Rapid Habitat As			
4.8 Chan	nel Const	rictions						Stream Gradient Type	High	_	
Туре	Width	Photo Taken?	GPS Taken?	Channel Constriction?	Floodprone Constriction?		6.1 Epifaunal S	Substrate - Available Cove		Score 14	
Bedrock		No	No	Yes	Yes			6.2 Embeddedness .3 Velocity/Depth Patterns	5	15 19	
Bedrock		No	No	Yes	Yes			6.4 Sediment Deposition		13	
	oblem							6.5 Channel Flow Status		14	
Bedrock Pro	0.00 oblem	Νο	No	Yes	Yes		6.7	6.6 Channel Alteration Frequency of Riffles/Step: 6.8 Bank Stability	5	8 20 Bight	. 5
							605	Bank Vegetation Protection		5 Right 8 Right	
								an Vegetation Zone Width		Right:	
								Total Score		143	
								Habitat Rating	0	.715	
Narrative			1.12					Habitat Stream Condit	ion	Good	

Planform with historic degradation and widening.

Project: Stream: Organizatio Segment L	on: Landslid	Rock River ro Branch e Natural Ro 2,372		Observers:	•		page 2 of 2 Segment: 0 Road after Lahar	Pd hos	·	Rain: `	
	ade Controls Nor	-	Segin		continues ald	ng Augemole					
1.0 Gr	ade controis Nor	ie	. Total Heig	ht phata Ta			Step 7. Rapic Confinement Type	u Geomol Unconf		ient Data	3
Туре	Location	Tota	Above Wat	ter	^{ik∉} GPSTaken	L L	commentent Type	Uncom	Score	STD	Historic
						7.1 Channel	•		13	None	No
						7.2 Channel 7.3 Widening	••		13 13	None	No
						7.3 Widening 7.4 Change	-		13		No No
						7.4 Change		al Score	52		INO
							Geomorphic		52 0.65		
							Geomorphic		0.05		
							Channel Evolution		F		
							Channel Evolution	-	IV		
							Geomorphic Co		Good		
							Stream Se	nsitivity	High		_
							Step 6. Rapid Hab	itat Asses	sment Data		
4.8 Cha	nnel Constriction	S					Stream Gradient Ty	pe 🖡	ligh		
	Photo	GPS	Channel	Floodprone						core	
Туре	Width Taken	? Taken?	Constriction?	Constriction?		6.1 Epifaunal S	Substrate - Available			13	
Bridge	50.3 Yes	Yes	No	Yes			6.2 Embedde			12	
	roblem Deposi	tion Below				6	.3 Velocity/Depth Pa			18	
							6.4 Sediment Dep			12	
							6.5 Channel Flow			16	
						6.7	6.6 Channel Alte			11	
						6./	Frequency of Riffles	•		20	_
						C O F	6.8 Bank S		Left: 6	-	
							Bank Vegetation Prot		Left: 9	-	
						6.10 Kipar	ian Vegetation Zone	l Score		Right: 51	δ
										.51 755	
							Habitat	Rauny	0.	/ 33	
Narrativ	e:						Habitat Stream	Condition		Good	

Project: Stream: Organizatio	on: Landslide	o Branch Natural Re		Observers:	•		page 2 of 2 Segment: 0		Rain:	
	ength (ft):	6,788	Segmer	nt Location:	From the con	fluence with t	he Gulf Brook, the reach			
1.6 Gra	ade Controls Non	e	Total Usight				Step 7. Rapid Geomo	•	nent Dat	ta
Туре	Location	Total	Total Height Above Wate		^{ike∵} GPSTaken	(Confinement Type Confin	Score	STD	Historic
						7.1 Channel	Degradation	5	C to F	Yes
							Aggradation	11	None	Νο
						7.3 Widenin		10		Νο
						7.4 Change	in Planform	10		Νο
							Total Score	36		
							Geomorphic Rating	0.45		
							Channel Evolution Model	F		
							Channel Evolution Stage	IV		
							Geomorphic Condition	Fair		
							Stream Sensitivity	High		
							Step 6. Rapid Habitat Asse	ssment Data		
4.8 Cha	nnel Constrictions						Stream Gradient Type	High		
	Photo	GPS	Channel F	loodprone				S	core	
Туре	Width Taken			Constriction?		6.1 Epifaunal	Substrate - Available Cover		18	
Bridge	57.7 Yes	Yes	No	Yes			6.2 Embeddedness	:	13	
	Problem Deposit			100		e	5.3 Velocity/Depth Patterns	:	17	
Bridge	48.5 Yes	Yes	No	Yes			6.4 Sediment Deposition		14	
P	roblem None						6.5 Channel Flow Status		15	
							6.6 Channel Alteration		8	
						6.7	Frequency of Riffles/Steps		20	
							6.8 Bank Stability	Left: 8	-	
							Bank Vegetation Protection	Left: 9	-	
						6.10 Ripar	ian Vegetation Zone Width	Left: 6		: 9
							Total Score		.53	
							Habitat Rating	0.	765	
Narrativ	e:						Habitat Stream Condition	n (Good	

Planform and widening are the major adjustments.

Project:West River - Rock RiverPhase 2 RealStream:Marlboro BranchReach #T02.05-S1.0Organization:Landslide Natural ResourceObservers:ADS, CH	2 Segment: 0 Completion Date: September 1, Rain: Yes
	g, beginning where the Marlboro Branch moves west away from the road
1.6 Grade Controls None	Step 7. Rapid Geomorphic Assessment Data
Type Location Total Height Photo Take GPSTaken	Confinement Type Unconfined Score STD Historic
	7.1 Channel Degradation12NoneNo7.2 Channel Aggradation13NoneNo7.3 Widening Channel9No7.4 Change in Planform9No
	Total Score 43 Geomorphic Rating 0.5375
	Channel Evolution Model F Channel Evolution Stage III Geomorphic Condition Fair Stream Sensitivity Very High
	Step 6. Rapid Habitat Assessment Data
4.8 Channel Constrictions	Stream Gradient Type High
Photo GPS Channel Floodprone Type Width Taken? Taken? Constriction? Constriction?	Score 6.1 Epifaunal Substrate - Available Cover 14
	6.2 Embeddedness 10
Bridge 56.0 Yes Yes No Yes Problem Deposition Above, Deposition Below	6.3 Velocity/Depth Patterns 18
Problem Deposition Above, Deposition Below	6.4 Sediment Deposition 8
	6.5 Channel Flow Status 12
	6.6 Channel Alteration 12
	6.7 Frequency of Riffles/Steps 20
	6.8 Bank Stability Left: 4 Right: 6
	6.9 Bank Vegetation Protection Left: 10 Right: 9
	6.10 Riparian Vegetation Zone Width Left: 9 Right: 6
	Total Score138Habitat Rating0.69
Narrative:	Habitat Stream Condition Good

Entrenched, widening and migrating laterally through bank erosion.

Project:West River - Rock RiverPhase 2 ReadStream:Marlboro BranchReach #T02.05-S1.03Organization:Landslide Natural ResourceObservers:ADS, CHComment Length (ft):2 260Comment Length (comment Length (comment Length))Storte in Comment Length (comment Length)	1Segment: 0Completion Date: August 31, 2006 Rain: Yes
	th Newfane at the confluence with the Rock and continues south .44 miles
1.6 Grade Controls None	Step 7. Rapid Geomorphic Assessment Data
Type Location Total Height Photo Take GPSTaken	Confinement Type Confined
Above water	Score STD Historic
	7.1 Channel Degradation 13 None Yes
	7.2 Channel Aggradation13OtherNo
	7.3 Widening Channel13No
	7.4 Change in Planform15No
	Total Score 54
	Geomorphic Rating 0.675
	Channel Evolution Model F
	Channel Evolution Stage IV
	Geomorphic Condition Good
	Stream Sensitivity High
4.8 Channel Constrictions	Step 6. Rapid Habitat Assessment Data Stream Gradient Type High Score
Photo GPS Channel Floodprone Type Width Taken? Taken? Constriction? Constriction?	6.1 Epifaunal Substrate - Available Cover 10
	6.2 Embeddedness 12
Bridge 133. Yes Yes No Yes Problem Deposition Below	6.3 Velocity/Depth Patterns 17
	6.4 Sediment Deposition 13
	6.5 Channel Flow Status 15
	6.6 Channel Alteration 16
	6.7 Frequency of Riffles/Steps 5
	6.8 Bank Stability Left: 7 Right: 9
	6.9 Bank Vegetation Protection Left: 6 Right: 6
	6.10 Riparian Vegetation Zone Width Left: 7 Right: 5
	Total Score 128
	Habitat Rating 0.64
Narrative:	Habitat Stream Condition Fair

Addradation is the dominant adjustment process.

Stream:Rock River Main StemReach # T02.05Organization:Landslide Natural ResourceObservers:ADS, JC	Ach Summary page 2 of 2 May 17, 2007 Segment: C Completion Date: August 11, 2006 Rain: Yes
	ane Village to covered bridge in Williamsville.
1.6 Grade Controls None	Step 7. Rapid Geomorphic Assessment Data
TypeLocationTotalTotal Height Above WaterPhoto Take GPSTaken	Confinement Type Plane Bed Score STD Historic
	7.1 Channel Degradation 13 None No
	7.2 Channel Aggradation 16 None No
	7.3 Widening Channel13No
	7.4 Change in Planform 15 No
	Total Score 57
	Geomorphic Rating 0.7125
	Channel Evolution Model F Channel Evolution Stage I Geomorphic Condition Good Stream Sensitivity Moderate
	Step 6. Rapid Habitat Assessment Data
4.8 Channel Constrictions	Stream Gradient Type High Score
Photo GPS Channel Floodprone	6.1 Epifaunal Substrate - Available Cover 15
Type Width Taken? Taken? Constriction? Constriction?	6.2 Embeddedness 14
Bridge 149. Yes Yes No Yes	6.3 Velocity/Depth Patterns 18
Problem Deposition Above, Deposition Below	6.4 Sediment Deposition 15
	6.5 Channel Flow Status 15
	6.6 Channel Alteration 11
	6.7 Frequency of Riffles/Steps 19
	6.8 Bank Stability Left: 9 Right: 8
	6.9 Bank Vegetation Protection Left: 8 Right: 7
	6.10 Riparian Vegetation Zone Width Left: 4 Right: 2
	Total Score 145
	Habitat Rating 0.725
Narrative:	Habitat Stream Condition Good

Minor widening and degradation are the dominant adjustment processes.

Project: West River - Rock River Stream: Rock River Main Organization: Landslide Natura	in Stem Reach # al Resource Observers:	ADS, SH	Segment: B	Rain:	May 17, 2007 August 16, 2006 Yes
Segment Length (ft): 1,10	Segment Location:	In middle of reach at ri	prapped and over widened a	-	
1.6 Grade Controls None	-		Step 7. Rapid Geomo		ata
Type Location	Total Height Photo Ta Total Above Water	^{k∉} GPSTaken	Confinement Type Plane	Bed Score STD	Historic
		7.1 Cha	nnel Degradation	14 C to F	Yes
		7.2 Cha	nnel Aggradation	12 None	Νο
		7.3 Wid	ening Channel	14	Νο
		7.4 Cha	nge in Planform	8	Νο
			Total Score	48	
			Geomorphic Rating	0.6	
			Channel Evolution Model	F	
			Channel Evolution Stage	IV	
			Geomorphic Condition		
			Stream Sensitivity	Extreme	
4.8 Channel Constrictions Photo GPS	Channel Floodprone		Step 6. Rapid Habitat Asse Stream Gradient Type	essment Data High Score	
Type Width Taken? Taker		6.1 Epifau	nal Substrate - Available Cover	10	
			6.2 Embeddedness	16	
			6.3 Velocity/Depth Patterns	10	
			6.4 Sediment Deposition	6	
			6.5 Channel Flow Status	9	
			6.6 Channel Alteration	14	
			6.7 Frequency of Riffles/Steps	5	
			6.8 Bank Stability	Left: 4 Righ	it: 9
			5.9 Bank Vegetation Protection	Left: 9 Righ	it: 4
		6.10 F	iparian Vegetation Zone Width	Left: 10 Rig	ht: 3
			Total Score	109	
			Habitat Rating	0.545	
Narrative: Planform is the dominant adjustme	ont process		Habitat Stream Condition	n Fair	

Planform is the dominant adjustment process.

Project: Stream: Organizati	on: Landslid	iver Main S e Natural F	Stem Resource	Observers:		-	page 2 of 2 Segment: A		Rain:	May 17, 2007 August 11, 2006 Yes
	_ength (ft):	3,533	Segn	nent Location:	South Newfa	ne village to co	vered bridge west of			
1.6 Gr	ade Controls Noi	ne	Tabalilaia	L L .			Step 7. Rapid Ge	•	ment Da	ita
Туре	Location	Tota	al Total Heig Above Wa	int Photo Ta Iter	^{ike∵} GPSTaken	Ca	onfinement Type Pla	ane Bed Score	STD	Historic
						7.1 Channel	Degradation	13	None	No
						7.2 Channel	Aggradation	16	None	Νο
						7.3 Widening	Channel	13		Νο
						7.4 Change i	n Planform	15		Νο
							Total Sc	ore 57		
							Geomorphic Rat	ing 0.7125		
							Channel Evolution Mo	del F		
							Channel Evolution Sta			
							Geomorphic Condit	-		
							Stream Sensitiv			
							Step 6. Rapid Habitat A	Assessment Data	<u> </u>	
4.8 Cha	nnel Constriction	S				S	Stream Gradient Type	High		
	Photo	 GPS	Channel	Floodprone					Score	
Туре	Width Taker	n? Taken?	Constriction?	Constriction?	•	6.1 Epifaunal S	ubstrate - Available Cov	ver	15	
							6.2 Embeddedne	SS	14	
						6.	3 Velocity/Depth Patter		18	
							6.4 Sediment Deposition		15	
							6.5 Channel Flow Stat		15	
							6.6 Channel Alteration	-	11	
						6.7 F	requency of Riffles/Ste		19	
							6.8 Bank Stabili		9 Right	
							ank Vegetation Protection		8 Right	
						6.10 Riparia	n Vegetation Zone Wid		4 Right	t: 2
							Total Sco		145	
							Habitat Ratir	ng).725	
Narrativ	re:						Habitat Stream Conc	dition	Good	
	egradation and w	idening.								

Project: Stream: Organizatio	on: Landslide I	er Main Ste Natural Re	source	Observers:		-	page 2 of 2 Segment: 0		Date: Rain:	May 17, 2007 August 11, 2006 Yes
Segment L		2,582	Segine		FIOIII COVEIEC					
1.6 Gra	ade Controls None		Total Heigh	+		6-	Step 7. Rapid Geomo	•	ient Dat	<u>a</u>
Туре	Location	Total	Above Wate		ake GPSTaken		nfinement Type Confin	ed Score	STD	Historic
						7.1 Channel D	•		C to F	Yes
						7.2 Channel A			None	No
						7.3 Widening		9		No
						7.4 Change in		9		No
							Total Score	39 0.4875		
							Geomorphic Rating	0.4075		
							Channel Evolution Model	F		
							Channel Evolution Stage	III		
							Geomorphic Condition	Fair		
							Stream Sensitivity	High		
							Step 6. Rapid Habitat Asse	ssment Data		
4.8 Cha	nnel Constrictions					S	tream Gradient Type	High		
	Photo	GPS	Channel	Floodprone				S	core	
Туре	Width Taken?			Constriction?)	6.1 Epifaunal Su	Ibstrate - Available Cover	:	13	
Bridge	87.5 Yes	Yes	No	Yes			6.2 Embeddedness	:	14	
	roblem Depositio		no	100		6.3	3 Velocity/Depth Patterns	:	16	
	•						6.4 Sediment Deposition	:	14	
							6.5 Channel Flow Status	:	11	
							6.6 Channel Alteration		14	
						6.7 F	requency of Riffles/Steps	:	15	
							6.8 Bank Stability	Left: 7	Right	: 7
							nk Vegetation Protection	Left: 7	-	
						6.10 Riparia	n Vegetation Zone Width	Left: 8		8
							Total Score		41	
							Habitat Rating	0.3	705	
Narrativo	e:						Habitat Stream Condition	ו (Good	

Planform and widening are the dominant adjustment processes.

Project: Stream: Organizatio Segment L		Main Ster	ource		Phase 2 Read T02.03 ADS, JC, SH In Village of ¹	-	page 2 of 2 Segment: 0		Completion	Date: Rain:	May 17, 2007 August 16, 2006 Yes
1.6 Gra	ade Controls						Step 7. Rapid	Geomor	phic Assessm	nent Dat	а
Turne	Lastian	Total	Total Height	Photo Ta	^{k∉™} GPSTaken	Co	<u> </u>	Confine			_
Туре	Location	Total	Above Water		GPSTaken				Score	STD	Historic
Ledge	Downstream	9.00	5.00			7.1 Channel D	Degradation		5	C to F	Yes
Ledge	Mid-Segment	5.00	2.00			7.2 Channel A	Aggradation		10	None	Νο
Ledge	Upstream	6.00	2.00			7.3 Widening	Channel		16		Νο
Lougo	opstream	0100	2.00			7.4 Change in	Planform		10		Νο
								Score	41		
							Geomorphic I	Rating	0.5125		
							Channel Evolution	Model	F		
							Channel Evolution		IV		
							Geomorphic Cor	-	Fair		
							Stream Sen		Extreme		
							Step 6. Rapid Habit	at Asses	sment Data		
4.8 Cha	nnel Constrictions					S	tream Gradient Typ	e H	ligh		
		GPS C	hannel Fl	oodprone						core	
Туре	Width Taken?	Taken? C	onstriction? Co	onstriction?		6.1 Epifaunal Su	ıbstrate - Available (10	
Bridge	76.0 Yes	Yes	No	Yes			6.2 Embeddeo			16	
P	roblem Deposition	Above,De	eposition Belo	ow			3 Velocity/Depth Pat		:		
							6.4 Sediment Depo			10	
							6.5 Channel Flow S			9	
							6.6 Channel Alter			16	
						6.7 F	requency of Riffles/	-		5	_
							6.8 Bank Sta	•	Left: 7	-	
							ink Vegetation Prote		Left: 9	-	
						6.10 Riparia	n Vegetation Zone \		Left: 7		.7
							Total			22	
							Habitat R	ating	0.	.61	
Narrativo	e:						Habitat Stream C	Condition	C	Good	

Aggradation and planform are the dominant adjustment processes on this reach.

Project: Stream: Organizatio	Rock	er - Rock River k River Main Si slide Natural R	esource	Reach # Observers:	ADS, JC	-	page 2 of 2 Segment: 0		Completior	n Date: Rain:	May 17, 2007 August 10, 2006 Yes
Segment L	,	3,693	Segmer	it Location:	Just east of v	villiamsville a	nd Williamsville b	-			
1.6 Gra	de Controls		-						rphic Assessn	nent Da	ita
Туре	Location	Tota	ADOVE Wale	Photo Ta	ke GPSTaken		Confinement Type	Plane I	Score	STD	Historic
Ledge	Upstrea	m 15.00	0 11.00			7.1 Channe	el Degradation		5	C to F	Yes
							el Aggradation		12	None	No
						7.3 Widenir			10		Yes
						7.4 Change	e in Planform		17		No
							Tota	al Score	44		
							Geomorphic	Rating	0.55		
							Channel Evolution	n Model	F		
							Channel Evolutio		IV		
							Geomorphic Co	-	Fair		
							Stream Se		Very High		
4.8 Char	nnel Constrict	ions None					<u>Step 6. Rapid Hab</u> Stream Gradient Ty		ssment Data ligh		
-110 01101		oto GPS	Channel F	loodprone					S	core	
Туре		ken? Taken?	Constriction?	•		6.1 Epifaunal	Substrate - Available	e Cover		11	
							6.2 Embedde	edness		18	
							6.3 Velocity/Depth Pa	atterns		18	
							6.4 Sediment Dep	osition		11	
							6.5 Channel Flow	Status		10	
							6.6 Channel Alte	eration		14	
						6.7	7 Frequency of Riffles	s/Steps		5	
							6.8 Bank S	tability	Left: 9	Right	t: 9
						6.9	Bank Vegetation Pro	tection	Left: 10	Right	t: 10
						6.10 Ripa	rian Vegetation Zone		Left: 4		t: 4
							Tota	l Score		.33	
							Habitat	Rating	0.	665	
Narrative			, historia dograda				Habitat Stream	Condition	1	Good	

The reach is in minor aggradation with historic degradation and widening.

Project:West River - Rock RiverPhase 2 RestStream:Rock River Main StemReach #T02.01Organization:Landslide Natural ResourceObservers:ADS, JCSegment Length (ft):7,999Segment Location:Williamsvill	Inch Summary page 2 of 2 May 17, 2007 Segment: 0 Completion Date: August 10, 2006 Rain: Yes
1.6 Grade Controls None	Step 7. Rapid Geomorphic Assessment Data
Type Location Total Total Height Photo Take GPSTaken	Confinement Type Confined
Type Location Total Above Water GPSTaken	Score STD Historic
	7.1 Channel Degradation 5 None Yes
	7.2 Channel Aggradation 12 None No
	7.3 Widening Channel 8 Yes
	7.4 Change in Planform 13 No
	Total Score 38
	Geomorphic Rating 0.475
	Channel Evolution Model F
	Channel Evolution Stage IV
	Geomorphic Condition Fair
	Stream Sensitivity High
	Step 6. Rapid Habitat Assessment Data
4.8 Channel Constrictions	Stream Gradient Type High
Photo GPS Channel Floodprone	Score
Type Width Taken? Taken? Constriction? Constriction?	6.1 Epifaunal Substrate - Available Cover 15
Bridge 150. Yes Yes No Yes	6.2 Embeddedness 18
Problem Deposition Above, Deposition Below	6.3 Velocity/Depth Patterns 19
	6.4 Sediment Deposition 14
	6.5 Channel Flow Status 11
	6.6 Channel Alteration 19
	6.7 Frequency of Riffles/Steps 16
	6.8 Bank Stability Left: 9 Right: 7
	6.9 Bank Vegetation Protection Left: 9 Right: 7
	6.10 Riparian Vegetation Zone Width Left: 8 Right: 6
	Total Score 158
	Habitat Rating 0.79
Narrative:	Habitat Stream Condition Good

The reach is aggrading with historic degradation and widening.

Rock River Phase 2 Stream Geomorphic Assessment

Appendix C – Data CD

Rock River Phase 2 Stream Geomorphic Assessment

Appendix D – QA/QC Report

Phase 2 Quality Assurance Worksheet

	Stream Name A Team Leader R Team Leader	Amy Sheldon	<u>k</u>		West River Landslide, Inc.		Date	<u>18-May-07</u>
Chask and an		Phase 2	\checkmark	Segment/Read documentation	ch sketch and ma completed	ар	\checkmark	
Check one or indicate the ty		QA		Phase 1 Asses	ssment used in F	hase 2	\checkmark	
sponsored tra by field team r				ANR SGA Har used exclusive	ndbook Protocols ely.	and Databases	\checkmark	
				Other protocol	s used.		None	
Phase 1 Step		Confidence	Date		Date of Local QA Team	Date of State		
Number	Collect Data Visual	Level	Complete	Date Udated	Review	QA Review	Con	nments
	observations; tape measure;							
Step 1	rod	High	Sept. 2006		January, 2007	February, 2007		
	Observations, rod, tape, ruler, digital						See QA/QC regarding R	report AF & glacial
Step 2	camera.	High	Sept. 2006		January, 2007	February, 2007	terraces.	Ū
Step 3	Visual observations.	High	Sept. 2006		January, 2007	February, 2007		oding banks ected.
Step 4	GPS, digital camera, visual obs.	High	Sept. 2006		Januarv. 2007	February, 2007		
Step 5	Visual obs.	High	Sept. 2006		January, 2007	February, 2007		
Step 6	Visual obs.	High	Sept. 2006		January, 2007	February, 2007		
Step 7	Visual obs.	High	Sept. 2006		January, 2007	February, 2007		

MEMORANDUM

TO: Amy Sheldon, Landslide Natural Resource Planning

FR: Shannon Pytlik, Agency of Natural Resources, River Management Section

DATE: February 25, 2007

RE: Rock River Phase 2 QA Report

Hi Amy – The project wide general comments are on the first pages. Reach specific comments on following pages.

No dredging is noted in the entire data set for the Rock River. The Phase 1 report notes that the mainstem was dredged and one specific site on the mainstem just upstream of Williamsville (seems like T2.04), yet nothing is indexed in Phase 2?

The only reach that I have information for dredging is T2.04 and that is from an interview. I did not see "evidence of removal of sediments and other material from the channel" (P55 of P2 Protocols) or I would have noted it.

We look for brief notes describing the reach and a SGA narrative. Only a few reaches have adequate notes to get an idea of what is going on or any peculiarities.

I have these in the draft report and will add them to the DMS.

In general the cross sections did not extend far enough into the valley to characterize the streams relationship with old terraces and the valley walls.

I have added valley walls and terraces.

Recently Abandoned Floodplain seems to be an issue in this data set. Recently abandoned floodplains are not shown as a feature on cross sections and should be since they are a major feature in the SGA. This is one of the most important pieces of data collected during the Phase 2. A lot of the data is based on this number and how it relates to the bankful elevation.

Do you have this data in your paper copy of the cross sections? I have reviewed the RAF's extensively on my own and with you. I have added them to the cross sections and made changes as noted below. I am looking forward to a field visit with you and George this spring to evaluate the RAF's.

Can it be added to the cross sections? Yes. It is done.

In most of the reaches I noticed you had the RAF the same as the "bank height" in the cross section. These are not the same thing. You can have no RAF and then it is the same as the

bankful elevation, resulting in a incision ratio of 1. You will have to re-evaluate all of RAF and see if that impacts the Degradation scores.

How confident are you on your bankful elevations and your RAF's?

I am very confident in my field measurements. I spent a day with you early on in my field work (August 16th) on the Rock and you and I did cross sections together on T2.01, T2.03, T2.05B. I also spent two days in the field with Ty later in the summer on the New Haven Tribs and my measurements were not corrected or questioned by either of you at the time they were taken.

A lot hinge on these numbers and you seem to have a lot of incision and STD's to F's. It is certainly possible, but I want to make sure you are confident in this representation of the watershed. The RAF's specifically make me nervous because they coincide with your TOB and they don't always in reality. Maybe we need to do a field day and go back and double check some of the cross sections?

We have discussed this issue extensively. In general, this river is very wide and has very likely experienced a great deal of channel moving, which would result in incision. I have looked at historical topographic maps and there are numerous places the river was pushed to the side of the valley. I will include these maps in my report. Also – upon further consideration, I think the road bed has been raised in a number of places where we have changed the RAF to BFK. The valleys are generally narrow and the roads are often adjacent to the stream.

I wonder how much of the incision is recent and how much was due to the stream cutting through the glacial fluvial soils thousands of years ago. Especially since they appear to be fairly stable with no erosion. Did you look into the glacial history for the region? Are there old glacial terraces in this basin that you were confusing with the RAF?

I have looked at the source material for the soils in the river corridors. There is a fair amount of alluvium in the valleys.

When to select poor for the overall adjustment: In order for the RGA to be forced to poor you have to have BOTH the highlighted boxes checked, except for Degradation in which case you only need one. This is a problem on a lot of reaches where you had poor for only one of the top 2 boxes and selected 5 as the score. These will all have to be re-evaluated.

I did think these were the same (only one poor = poor overall). A note on the field form would help a lot (EITHER on the line between the first two steps for degradation and BOTH on the line between the first two steps for the rest would be a helpful reminder. I have made the necessary changes.

I noticed you have NA noted for riffle types on F stream types (T2.07 & T2.08, maybe others?). I would expect the riffles to be eroded. They certainly area applicable on reference c stream types.

I have checked them all and made appropriate changes. Thank you.

Pebble counts don't work the way you entered them into the spreadsheet. Data should either be collected with all of the categories or not entered into the spreadsheet.

This was suggested by either Shayne or Ty in your absence as the best way to enter the data. I have deleted the pebble count data from the cross section worksheets.

Reach Specific Comments

<u>T02.01</u>

Since this stream is incised and wide it should be in stage 3 or 4 of CEM. I have changed it to IV since there are numerous side bars, steep riffles, two flood chutes and three islands. Aggradation is the current dominant adjustment process.

Cross sections do not extend far enough into the valley to get an idea of entrenchment and relationship with the valley. If the 9.4 is the low bank height than is that a flat terrace? Yes. If it is then you will need to have the cross section extend beyond that point to show the feature. I have added it. You have 9.4 as both the TOB and RAF? How was this low bank height selected? Is it a feature that the stream use to access at bankful and now does not access? Yes. You might recall it was the trail/old road bed that we walked to the site on. The valley wall is adjacent to it. The left bank is the valley wall.

Head cuts indicate active incision, yet you indicate historic? These are all steep riffles, not head cuts.

Based on the incision ratio I would call this an F stream type and have a STD of C to F. With entrenchment coming in at 1.4 and reference stream type being a B, I kept it B.

What evidence do you have that the stream would be a plane bed by reference? Maybe the Phase 1 ST was wrong and should be updated.

I already changed reference to riffle pool. I'm not sure what data you are looking at but I just double checked the DMS and it has P1 and P2 as riffle pool.

T2.02

What is the human caused change in valley width? This is only applicable where the valley is reduced by a human made feature in the valley. There is a town road to year round houses along the entire right bank of this reach.

You have this reach as actively widening in stage III with no erosion. Is this possible? No. The widening is historic. I have changed it to stage IV.

Where is the RAF in the cross section? If this is a feature then it should be in the cross section. I have added the RAF to the cross section. Right top of bank is a low terrace with houses and a road on it that the stream does not access it at this time.

How was this number determined? It is the low terrace that the stream is not accessing today.

<u>T2.03</u>

An incision ratio of almost 2 in reference condition for degradation is inconsistent. You and I did this cross section together. There is a note saying "NO RAF" and bankful has been entered. Planform of 5 with practically no erosion? You say "low to moderate" for erosion in Planform RGA, yet practically none indexed? Maybe this is a typo because you have Good, Poor, Reference, Reference and yet it is a 5?

Same error with the little black boxes at the top of the form – I thought one put it into poor. The number is adjusted in the DMS.

What is the human caused change in valley width? The road.

This is a C in Phase 1 and you have it as an F in Phase 2, yet no STD? Is this a reference F? If so it needs to change in the Phase 1 DMS. I see your note that it may be a reference F, either change the Phase 1 to an F or have a STD in Phase 2 so they are consistent. Whichever one you decide is more accurate for this reach.

I think this is reference C that is in major adjustment from having been dammed. It is currently over-widened, aggrading and has two big flood chutes

Again, how was the RAF determined? On this reach it corresponds with the FPA (it does?) but they are very different pieces of data. Is this an abandoned terrace that is just not shown on the cross section?

We determined out in the field that there was no RAF on this reach. It has been corrected.

Dredging noted in Phase 1 data for this reach.

I did not see "evidence of removal of sediments and other material from the channel" (P55 of P2 Protocols) or I would have noted it.

<u>T02.04</u>

The entrenchment has a +/- 0.2 so this could be an F as well. What made you decide on a B? I made this a B because the reach is moderately entrenched, not entrenched but after our conversation, I am good with our change to F.

For RGA Widening Row 1, why didn't you sent poor since the w/d ratio is 48? Why did you select 5 with a good, fair, fair, fair, reference? None of them are in poor and yet you select poor? Maybe the Row 1 is a typo and you meant to select poor?

Same error with the little black boxes at the top of the form – I thought one put it into poor. The number is adjusted in the DMS. The Geomorphic Assessment was also changed for Planform for the same reason.

If the stream has incised it cannot be the D CEM. This STD was created to explain systems that do not go through the F CEM due to some bed resistance.

I used the D model because I'm thinking it was a C that went to B, is wide and moderately entrenched. Perhaps the language in Appendix C "Channel Evolution Models" could be changed from "In some situations" to something more definitive if the direction for its use as it relates to bed resistance is that strong. I changed it to F III.

With both widening and planform in poor I would expect more erosion.

23% of the left bank is eroding and there are two gullies and a mass failure.

T02.05A

What is the human caused change in valley width. None for this segment - it is changed in the DMS.

<u>T02.05B</u>

What is the human caused change in valley width. The road.

What is the "other" aggradation STD? Step 7.2 in the DMS has none for STD. I'm not sure what you're referring to. Planform score changed to 8 from 5.

T02.05C

On the reports I printed a while ago the constriction is noted on A, but in the DMS is it now under C. Is this something you fixed? I just checked and it is already fixed – thanks!

T02.05-S1.01

What is the other for STD? This should be in the notes. Riffle pool to plane bed.

Why did you select 5 for the aggradation when you have Poor, G, R, G, R, G? Same error with the little black boxes at the top of the form -I thought one put it into poor. The number is adjusted to 15 in the DMS.

Abandoned floodplain not shown in the cross section as a bench. Where did this number come from?

It is now labeled on the cross section.

T02.05-S1.02

Why the D CEM? Looks like F, I to me. Changed to III as it is entrenched, widening, and migrating laterally.

Great cross section, this is what we are looking for. Except we also need the abandoned floodplain noted in the cross section. Again, it does not show up as a bench or anything. What is this feature?

LTOB – it is now labeled.

Cross section listed as "A" in excel. This could be confusing in the future can you change it to 0?

No. The spreadsheet is locked with segments pre-set.

What is an "hx cchannel"? Abandoned channel.

T02.05-S1.03

Why the D CEM? Looks like F, I to me.

I have a IV F on my data sheet and in the SGA. This has a stream type departure C to F with aggradation and planform as the dominant adjustment processes.

I would call this an F stream type since the entrenchment has a +/- 0.2. Changed.

Head cut indicates active incision. These are all steep riffles.

Seems like you may be using the "bank height" as the RAF elevation? These are not the same thing.

In this case, there is a distinct RAF which is now labeled on the cross section.

Cross section says "A" yet no B, should be 0. The spreadsheet is locked with segments pre-set.

Dredging noted in Phase 1 data for this reach. I would like to know what indicators you are looking for for dredging. I saw no evidence of bar scalping or equipment in the channel.

T02.05-S1.04

Cross section says "A" yet no B, should be 0. The spreadsheet is locked with segments pre-set.

Again, the bank height is not the same as the RAF! In this case, the RAF is the same as the RTOB. I have added information to the cross section to show the abandoned channel.

Good cross section, extends from VW to VW.

T02.05-S1.05

An incision ratio of >3 on a reference B stream type is unlikely. Are you sure the feature you called the RAF was a feature the stream once had access to? You can have no RAF and then it is the same as the bankful elevation, resulting in a incision ratio of 1. Again, the bank height is not the same as the RAF, ever!

RAF and low bank height can be the same feature and often are in this watershed. Because this is a B stream type and there are only pockets of alluvium shown on the soils map, I have changed the RAF to bankful for this reach. Due to entrenchment of 1.4 the reach remains a "poor" in degradation.

What is the "other" for STD on degradation? It won't let me have "none" with a poor rating. .

Head cut indicates active incision. These are steep riffles.

<u>T02.06 A</u>

Is this a reference C or B? C.

This came out as a 5 in Degradation because of the incision ratio, but the RAF is wrong. You will have to re-evaluate all of RAF and see if that impacts the Degradation scores. This reach is incised and entrenched and it is located in alluvium. Perhaps this is one we can visit with George Springston.

Why is this a 5 for Aggradation with a P, G, G, R, R? Same error with the little black boxes at the top of the form – I thought one put it into poor. The number is adjusted in the DMS.

Great cross section other than RAF not included! It's been added.

<u>T02.06 B</u>

Great cross section other than RAF not included! Added.

Why CEM stage of %? Does not appear to have widened and created a lower floodplain. Maybe stage 1 if truly incised? It is in stage IV of F.

<u>T2.07</u>

Typo in cross section, TE should be TW. Done. Please fix this (and A to 0) and re-upload. The spread sheet is locked for editing.

Is the RAF a feature, just looks like a point on a slope? It is a flat terrace.

T02.08

Channel slope of almost 4%, yet you have it as a sub-class slope of C? Phase 1 error that was just caught.

Due to a lot of aggradation, I would say stage IV rather than III. Yes.

<u>T02.09</u>

Dredging noted in Phase 1 data for this reach.

The only dredging I have confirmed, through an interview with Merrill Mundell, is on T08.04 just u/s of Williamsville.

More likely stage IV than III. Yes.

Would this really be a C by reference or was Phase 1 wrong?

I re-calculated the slope using my GPS points and the slope is actually 3.1% though the valley type in Phase 1 is Broad, I found it to be Narrowly Confined, due to the presence of the town road. You and I changed the reference stream type to B.

Huge amount of incision noted. Is the RAF noted really an abandoned floodplain? Did the stream have access to the floodplain 13 feet above the current bed elevation? The RAF has been changed to BKF.

<u>T02.10</u>

Is the TOB really the RAF or an abandoned glacial feature? Looks really high to be an RAF and for a stream with a high slope? RAF changed to BKF. Practically no erosion with lots of planform adjustment? Seems inconsistent? Comments changed.

Incision seems really high for a reference B? RAF changed to BKF.

<u>T02.11</u>

Dredging noted in Phase 1 data for this reach. Maybe at the upstream end of the reach, above the second gorge where there is easy access, though I didn't see any evidence.

You noted gorges in the notes, how long are they? Should they be segmented out? I had long discussions with Ty about segmenting this reach. The gorges are at the extreme downstream end and then again pretty high up so the entire reach is affected by them.

Shannon – when we reviewed this reach together, we decided it did not have an RAF and changed the degradation score and other related scores. The entrenchment on this reach is 1.2 so the degradation score must remain poor. I have changed the related data back to reflect this. Stream type departure had to be changed to "other" because the DMS will not allow a "poor" without a stream type departure.

T02.11-S1.01

Dredging noted in Phase 1 data for this reach.

<u>T02.12</u>

Dredging noted in Phase 1 data for this reach. There is a lot of berming in this reach, but again, I didn't see anything like dredging.

You note stage V, is this reach stable with new floodplain? New bench not shown in the cross section. Just looks wide.

Changed to aggradation, planform and stage IV.

Incision Ratio is not reasonable.

We reviewed this one together and agreed it is incised.

T2.11-S1.01 A, B & C

Great notes! This is what we need for each reach so people get an idea of what is going on when they look at the data sheet. Is it possible you selected a low bankful? Segments A & C are incised. Segment B is not and I would like to re-visit it in the spring.

Great cross section from VW to VW!

These segments have a slope of 6%, yet IR's of almost 3?

T2.03-S2.01

IR is not reasonable. I have changed the RAF to BKF. It is difficult to tell on this one and I would like to bring George here. The road bed may have been elevated on the LB.

Great notes! Thanks.

Widening should not be in poor with a P, R, P, G, R? Especially with practically no erosion? Same error with the little black boxes at the top of the form – I thought one put it into poor. The number is adjusted in the DMS.

T02.03-S2.02

Cross section does not extend enough. Should not end at the RAF? Where is the valley wall? Is this reach really that incised?

Cross section goes from VW to VW. This issue is with the RAF.