

GPS Point Descriptions and Action Items

Point #	Description	Action Item	Key Partners	Red-Blue Priority	Comments
1	Incise Channel to Mouth: From this point to the mouth of Radley Run the channel is incised about 4 feet deep. The banks are eroded and little fish habitat is in place. This flatwater area could be made more attractive to migrating fish by enhancing fish habitat with random boulder placements.	Fish Habitat Improvement, Bank Stabilization	Partner with Municipality	Medium Priority	Project would likely be influenced by flooding of the Brandywine.
2	Sycamore Penninsula: A large sycamore tree grows into the stream in this area and would be a nice feature for a passive trail.	N/A	N/A	N/A	N/A
3	Nursery Swale: A vegetated swale discharges from a nursery into Radley Run. The swale is a potential source of nutrient discharge. A bioretention area in this location may showcase raingardening to the community and help reduce any nutrient discharges.	Retrofit Bioretention Area; Showcase Project for Business	Partner with Business	Medium Priority	Education and Nutrients
4	Buffer Encroachment: From this point to the mouth of Radley Run the stream buffer is wide and well developed and the stream is largely connected to the floodplain. Moving upstream, some encroachment into the stream buffer is located along the Northern bank.	Riparian Buffer Enhancement	Partner with Business	Low Priority	
5	Nursery Pump: Irrigation pump for landscaper and possible tile drain discharge. Start of invasive bamboo plantings on North bank.	Invasive Species Removal	Partner with Business	Low Priority	
6	Upstream End of Bamboo Plantings: Along the North bank the stream buffer is of minimal width (approx. 6 ft. wide) from this point to the SR-926 bridge.	Invasive Species Removal, Buffer Enhancement	Partner with Business	Low Priority	
7	Future Access Area: Access to the mouth of Radley Run and the confluence with the Brandywine would improve awareness of the river. This area should be considered for use as a passive recreation park with low impact trails and development that requires little infrastructure due to its location on the floodplain.	Improvement to River Access	Partner with Municipality	Low Priority	Long-Term Project
8	SR-926 Bridge, upstream edge of pavement: Confluence of tributary #1 from southeast. Begin horse pasture with new streambank fencing. On the date of the walk the livestock was rotated out of this pasture and the pasture appears in good condition. This area should be monitored for a change in grazing practices that would indicate a need for streambank fencing and buffer enhancement.	Monitor for continuation of appropriate grazing practices. Currently not a problem area.	N/A	N/A	

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9	Livestock/deer access to stream: This area is not much more than a deer crossing at this point. If grazing practices were to change in this area, a livestock crossing could be installed here to minimize livestock access to stream. Currently this is not a problem area.	Monitor for continuation of appropriate grazing practices. Currently not a problem area.	N/A	N/A	
10	Upstream end of pasture. Begin open space. The stream channel in this area is incised approximately 2 feet. Some tree plantings in this area would enhance the stream buffer.	Buffer Tree Plantings	BEST, Landowner	Low Priority	
11	Start of BEST riparian buffer plantings. Would be great to extend the plantings to the edge of the pasture downstream.	Monitor buffer to document problems or success.	BEST	Low Priority	
12	Concrete Pipe Outfall that is likely from a stormwater pipe. Pipe is approximately 80 percent blocked.	N/A	N/A	N/A	
13	Breached Dam Breast: Stream channel is incised approximately 3 feet below the dam breast and approximately 8 feet above the dam breast. Banks are highly eroded with little in-stream fish habitat. Yard waste dump along the stream in this area is a minor concern in comparison to the eroding streambanks from the impacted channel.	Floodplain Restoration with Fluvial Geomorphology (FGM) techniques.	Landowners, Agencies, BEST	High Priority	Most expensive project in the study. Wetland concerns. Permitting and funding constraints.
14	Confluence with unnamed tributary #2 from the east. This point marks the upstream limit of the most degraded section of stream. The banks are incised approximately 4 feet in this area. Looking upstream, the stream begins to meander and vegetation covers approximately 50 percent of the banks. Ideally, restoration would continue upstream, but should be focused between this point and the breached dam breast.	Continuation of Floodplain Restoration and FGM project above.	as above	as above	as above
15	Between points 22 and 23, the area is forested with 3-5 foot incised stream banks. There is a lack of in-stream fish habitat and the stream appears lacking in woody debris. While a large floodplain restoration project in this area may have the longest lasting impact, in-stream habitat projects such as rock veins, boulder placements, and mud sills may greatly improve the fish habitat and stream function in this area for a substantially smaller expense. At the sample point, the stream buffer is cleared to the stream bank from one lot on the north side of the stream and is low priority. Much of this area contains invasive species that could be removed in coordination with the project.	Fish Habitat Improvement or Floodplain Restoration with FGM techniques.	Landowners, Agencies, BEST	High Priority	Design and permitting needed. Access to the stream would require coordination.

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16	Concrete stormwater basin outfalls to stream on east bank. Invasive species in the basin could be replanted with natives. Not a major concern as the invasives are already throughout the watershed and this is likely not a source of new invasion.	Invasive species removal.	Landowners	Low Priority	
17	Pond outfall pipe that is rusted out with erosion around the pipe along the North bank. A good stream buffer is in place with a mix of herbaceous and woody vegetation. Minimal habitat is provided by a few meanders and a bit of in-stream woody debris. The stream bed is largely embedded stone in clay. Additional in-stream fish habitat such as woody debris would be of benefit.	Contact pond owner about outfall pipe, fish habitat improvement.	Landowners, Agencies, BEST	Medium Priority	Design and permitting needed. Access to the stream would require coordination.
18	Low dam on the mainstem. This dam includes the intake structure for the large offline pond to the north of Radley Run. This dam likely blocks fish passage. Periodic dredging of the dam could aid in removing some sediment from the system.	Retrofit Fish Passage to the Low Dam. Schedule Periodic Dredging	Landowner, Agencies, American Rivers	Medium Priority	
19	Tennis court outfalls including a 4 inch pipe, 1.5 inch pipe, and a 4 inch pipe.	N/A	N/A	N/A	
20	A stormwater swale flowing through the country club enters at this point. The streambank is mowed to the stream edge. Buffer plantings would enhance the stream environment.	Riparian Buffer Enhancement	Country Club	Medium Priority	Woody shrubs would enhance this area.
21	Several pipes have been exposed in this area by the meandering river. The streambank is unstable and eroding.	Streambank stabilization, Riparian Buffer Enhancement	Country Club, Agencies	Medium Priority	Requires minimal design and permitting
22	Tile drains discharge from the driving range area. Six inch pipes with 2 at this location and 2 approximately 120 feet upstream.	N/A	N/A	N/A	
23	A tile drain discharges from the golf course area. Between sample points 30 and 31 the stream is much less embedded and the in-stream habitat improves.	N/A	N/A	N/A	

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24	Three (3) tile drains discharge from the golf course area, one at the sample point and two approximately 20 feet upstream. At this point the forest buffer increases on the north side of the stream. The area includes abandoned pasture land that is reverting to forest. Moving upstream, a wetland buffers runoff from the agricultural fields. The stream banks are about 3 feet high and there appears to be some floodplain disconnection. Invasive species presence is the only real concern in this section of the watershed.	Invasive species removal	Landowners, BEST	Low Priority	
25	Forested buffer gives way to a shrub/scrub wetland with reed canary grass along the northern bank. The stream is incised 3-5 feet in this area.	N/A	N/A	N/A	
26	Pond outfall on an unnamed tributary enters on the south bank. The buffer narrows to about 15 feet on the south bank and 20 feet on the north bank. The stream is incised about 3 feet and is vegetated. Sediment in the streambed and invasive species are more of a concern here than downstream in woodlot.	Invasive species removal	Landowners, BEST	Low Priority	
27	Downstream limit of a stand of invasive bamboo that is within about 15 feet of the streambank on both sides	Invasive species removal	Landowners, BEST	Low Priority	
28	Tile drain discharges from south bank: 4" black corrugated plastic pipe	N/A	N/A	N/A	
29	Upstream limit of stand of invasive bamboo, a wetland enters the stream at this point. Looking upstream, the south bank is mowed to the top of bank.	Invasive species removal. Riparian Buffer Enhancement	Landowners, BEST	Low Priority	
30	End of buffer on the north side of stream. The north side is a fallow field while the south side is mowed lawn. The banks are badly eroded and incised approximately 3 feet. The substrate is primarily embedded stone with less silt than immediately downstream areas.	Streambank Stabilization. Riparian Buffer Enhancement	Landowners, Agencies, BEST	Medium Priority	
31	Multiflora rose/Phalaris 30 foot wide buffer begins on the north side, mowed to bank on south side.	Riparian Buffer Enhancement. Invasive Species Removal	Landowners, BEST	Low Priority	
32	Stormwater basin outfall on the south side of the stream.	Naturalized Basin Plantings	Landowners	Low Priority	
33	Birmingham Road Bridge with 32" corrugated metal pipe (CMP) built into bridge that conveys stormwater drainage from Birmingham Road entering from North bank of stream.	N/A	N/A	N/A	

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34	Telephone pole along Birmingham Road South of Bridge: Reference Point	N/A	N/A	N/A	
35	2-3 foot buffer on the North side, partly shaded but mowed to edge of stream. 3-4 foot banks on incised channel.	Riparian Buffer Enhancement. Ideal project would include some floodplain restoration work.	Landowner, BEST	Medium Priority	
36	Stormwater outfall flowing through rip-rap basin.	N/A	N/A	N/A	
37	End mowed to top of bank. Area appears periodically mowed. Discharge from Hamilton Place stormwater basin that is dry and mowed. Banks range from 6 inches and stable to 4 feet and severely eroded in this section. Riffles have stones less embedded here as opposed to downstream.	Naturalized Basin Plantings	Landowner	Low Priority	
38	Woodland buffer on both sides of streams. Banks stable except on outside of meander bends; embedded rocks in meanders.	N/A	N/A	N/A	
39	Confluence with unnamed tributary 3 (unimpaired tributary).	N/A	N/A	N/A	
40	A large emergent wetland lies to the north of the stream and drains into Radley Run at this point. In this area, the stream was entrenched, but erosion has slumped the banks and they are becoming stable with vegetation. On the outside of the meander bends the approximately 4 foot banks are eroding.	N/A	N/A	N/A	
41	Remains of an old bridge are located at this point. The stream does not appear heavily impacted by the remains.	N/A	N/A	N/A	
42	Unnamed tributary #4 enters from the north at this point.	N/A	N/A	N/A	
43	Unnamed tributary #5 enters the stream from the south. The tributary includes a forested wetland buffer of about 20 feet on each side and 2 ponds.	N/A	N/A	N/A	
44	Pond outfall in this location. The buffer is reduced to 0-10 feet on both the north and south banks. To the north is agricultural land; to the south is mowed lawn.	Riparian Buffer Enhancement	Landowner	Medium Priority	Restoration project would ideally begin here and extend to the New Street Bridge.
45	Pond intake with a small dam on the stream. A forested buffer with a few wetlands is located on the south bank. The north bank has minimal to no buffer along agricultural land.	Riparian Buffer Enhancement	Landowner	Medium Priority	

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46	Start of no buffer along the north side of stream with 4-5 foot eroded streambanks.	Riparian Buffer Enhancement. Streambank Stabilization with Floodplain Restoration	Landowner, Agencies	High Priority	Appears to be a great restoration project with no wetland concerns.
47	New Street Bridge edge of paved area and the end of potential restoration project. Access to the property upstream of the bridge was prohibited. Aerial photographs and view from New Street indicate that sections of the stream in that area lack adequate stream buffers.	Riparian Buffer Enhancement	Landowner	Low Priority	
48	Moving upstream from the SR-926 bridge over the upper Radley Run, the banks are incised approximately 3 feet, but they are stabilized with herbaceous vegetation. Multiflora rose is common in this area. At the point location, a WWTP outfall is discharging a slightly discolored plume of liquid into Radley Run.	Invasive Species Removal	Landowner	Low Priority	
49	Stream crossing with two culverts. Both culverts are partially clogged with debris.	N/A	N/A	N/A	
50	At this location tributary #6 with its forested buffer enters from the south.	N/A	N/A	N/A	
51	Incised stream channel with 3-4 foot eroding stream banks. The most severe area is approximately 50 feet downstream and 100 feet upstream from the sample point. The top of banks lack wetlands in this area.	Streambank Stabilization with Floodplain Restoration	Landowners, Agencies	Medium Priority	
52	Stormwater basin outfall on the south side of the stream.	Naturalized Basin Plantings	Landowners	Low Priority	
53	Double box culvert bridge. Looking upstream the banks are eroded and approximately five feet high. Wetlands on the top of banks create a potential permitting hurdle. Walking upstream from the point, the banks are slumped with some vegetation taking hold.	Streambank Stabilization with Floodplain Restoration	Landowners, Agencies	High Priority	Open space area that is likely controlled by a homeowners association.
54	At this point, forested buffer begins upstream with a large wetland to the north and a small wetland area to the south. The streambanks are mostly vegetated and approximately 2 feet high.	N/A	N/A	N/A	
55	Inlet of large dry stormwater basin below townhomes.	Naturalized Basin Plantings	Landowners	Low Priority	

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56	Outfall from large dry stormwater basin that is just east of the stream. Upstream, the stream buffer ranges from approximately 50-100 feet in width.	N/A	N/A	N/A	
57	Start of invasive bamboo plantings. Remnants of an off-line ice or watercress dam are located along the east side of the stream. The dam is breached with emergent wetland vegetation growing in it.	Invasive Species Removal	Landowner	Low Priority	
58	Bamboo area ends at this point. On the western streambank, a mowed lawn area is in place immediately adjacent to the stream.	Riparian Buffer Enhancement	Landowner	Low Priority	
59	At this point, forested buffer begins on both sides of the stream. The inflow from the relic ice dam was at this point and a small spring house exists approximately 40 feet west of the stream on a small seep.	N/A	N/A	N/A	
60	WWTP outfall.	N/A	N/A	N/A	
61	Unnamed tributary #7 enters from the west near Adam's Circle.	N/A	N/A	N/A	
62	Stormwater outfall from WWTP access road. Gabian baskets along the stream and then approximately 20 feet of mowed lawn.	N/A	N/A	N/A	
63	Constricted area of stream from a breached dam with approximately 2 foot eroded streambanks that have slumped and become stable.	Floodplain Restoration	Landowner, Agencies	Low Priority	
64	Stormwater outfall from WWTP access road.	N/A	N/A	N/A	
65	Large concrete culvert that is on the downstream end of an old road crossing. A large wetland is on the upslope side of the culvert.	Removal of Stream Encroachment	Landowner, Agencies	Low Priority	
66	Unnamed tributary #8 enters at this point and includes primarily stormwater from a car dealership along Rte. 202.	Stormwater Management Retrofits	Landowners, Agencies	Medium Priority	Additional investigations of the relative importance of stormwater inputs from the commercial areas along route 202 may reveal a need for stormwater management retrofits in this area.
67	At this point a stormwater swale discharges to Radley Run from the west and a large phragmites wetland begins.	Invasive Species Removal	Landowner	Low Priority	This wetland is quite large with a well established phragmites population.
68	Stormwater outfall to Radley Run.	N/A	N/A	N/A	

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69	Downstream center of culvert under Sumner Road. Phragmites wetland area ends approximately 75 feet downstream. The stream is likely ephemeral from this point upstream. Just upstream of the culvert is a large palustrine emergent wetland with no upland buffer.	Riparian Buffer Enhancement	Landowners	Low Priority	Upland vegetative buffer or environmentally sensitive lawn management should be considered
70	Mowed stormwater outfall to wetland.	Naturalized Swale Plantings	Landowners	Low Priority	Consider native vegetation in swale for better filtration of potential pollutants.
71	Downstream end of culvert pipe for mainstem. Channel is dry except for a seepy area of a palustrine emergent swale. Lawn is to edge of wetland. Upstream of culvert is a periodically mowed vegetative buffer.	Riparian Buffer Enhancement	Landowners	Low Priority	Upland vegetative buffer or environmentally sensitive lawn management should be considered.
72	Pond outfall from large stormwater/permanent pond. Periodic mowing is occurring in most of the upland riparian buffer near this point. Invasive species are common in this area.	Invasive Species Removal	Landowners	Low Priority	
73	Confluence of unnamed tributary #1. No buffer with mowed lawn to top of bank on both sides of the tributary.	Riparian Buffer Enhancement	Landowners, BEST	Medium Priority	
74	Middle of approximately 10 foot culvert.	N/A	N/A	N/A	
75	Center of 8 foot wood bridge. 3-4 foot banks with erosion on the outside of the meander bends.	Riparian Buffer Enhancement	as above	as above	
76	Center of a 5 foot wooden bridge with cedar shingles. On the south side of the stream, begin mature woods/periodic mowed buffer.	Riparian Buffer Enhancement	as above	as above	
77	Begin periodic mowed field with palustrine emergent (PEM) vegetation on the North side of the stream. A small seep with springhouse is at this location.	N/A	N/A	N/A	
78	Downstream end of culvert with sunfish and a snapping turtle in the pool at the outfall. Trees end approximately 20 feet downstream of outfall structure. The area upslope is periodically mowed. Upslope is an on-line pond that is mowed to the perimeter.	N/A	N/A	N/A	
79	Center of bridge at the head of a large on-line pond.	N/A	N/A	N/A	
80	Remains of an old bridge are located at this point.	N/A	N/A	N/A	

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81	Confluence of unnamed tributary #9. Area is periodically mowed meadow with open space riparian buffer. Moving upstream, a section of the tributary was not walked due to private property concerns of homeowners.	N/A	N/A	N/A	
82	Double culvert pipe under SR-926 begin mowed lawn upstream.	Riparian Buffer Enhancements	Landowners	Low Priority	
83	Downstream end of a driveway culvert. Lawn is mowed to the edge of the pond above the culvert.	Riparian Buffer Enhancements	Landowners	Low Priority	
84	Top of pond. Looking upstream, about a 5 foot buffer to mowed lawn on the north side and about a 70 foot buffer to the south side of stream.	Riparian Buffer Enhancements	Landowners	Low Priority	
85	Wetland swale with mowed lawn on both sides.	Riparian Buffer Enhancements	Landowners	Low Priority	
86	Start of an approximately 15 foot buffer on both sides of the stream. A small wooden bridge is approximately 35 feet downstream from the sample point. The streambanks are stable in this area while the stream bottom is covered with sediment.	N/A	N/A	N/A	
87	Functioning tile drain that is being exposed by meander erosion.	N/A	N/A	N/A	
88	Unnamed tributary #10 enters the stream at this point. Unnamed tributary #10 includes a large on-line pond that is mowed to edge. Unnamed tributary #1 crosses under SR-926.	N/A	N/A	N/A	
89	Downstream end of culvert under SR-926.	N/A	N/A	N/A	
90	Road drainage and a small wooded unnamed tributary #11 enter an inlet at this location. Unnamed tributary #11 includes a spring seep with a small bed and bank stream through mature upland forest that drains into a small wetland and then into the inlet at the sample point.	N/A	N/A	N/A	
91	Inlet to pipe under SR-926 for unnamed tributary #1. Looking upstream, the tributary runs along SR-926 then enters a mature forest. The stream has some 3 foot banks that are mostly stable.	Water Quality Stormwater Management Retrofits	PENNDOT, Municipality, Landowners	Low Priority	Water quality in this section of the unnamed tributary could potentially be improved by implementing BMPs such as bioretention areas.
92	Stormwater outlet from Radley Run Development access road. The unnamed tributary is very narrow and likely ephemeral above this point.	N/A	N/A	N/A	

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93	Lawn is mowed to within 3 feet of the top of the north bank. South bank is a mature forest.	Riparian buffer plantings	Landowner	Low Priority	
94	The mowed area is approximately 30 feet from the streambank at this point and the riparian buffer increases moving upstream.	N/A	N/A	N/A	
95	An unnamed tributary enters from the north at this location and drains a wetland that lies below a development and likely filters much of the pollutants that would be discharged in this area.	N/A	N/A	N/A	
96	Forested springhead along southern stream edge. Skunk cabbage dominates the wetland.	N/A	N/A	N/A	
97	Wooded pasture containing some Angus cattle. The pasture appears lightly stocked although the cattle do have unrestricted access to the stream. Streambank fencing in this area would be helpful in protecting this unimpaired section of the stream from degradation.	Streambank Fencing, Cattle Crossing	Landowner, NRCS, Conservation District	Medium Priority	
98	Edge of field/woods on unnamed tributary. The incised tributary has approximately 4 foot banks and a small phalaris/skunk cabbage wetland. The dense development in the headwaters of this tributary would indicate that stormwater discharges from this tributary are likely greatly increased over historic volumes.	Riparian Buffer Enhancement	Landowner	Medium Priority	