

Issues within the Sub-Watershed: Thief River

What are the existing conditions, related potential problems and solution alternatives?

Issues related to: FLOOD DAMAGE	What is the NATURE of the problem?	How SEVERE is the problem? [high, moderate, low]	How wide spread or to what EXTENT is the problem?	What are the possible SOLUTIONS?
Flooding	Agland & farmstead flooding,	high	Mainly Mar. Co. area in RLWD	Impoundments; wet v dry v none?, ditch imprv., easements, set back levees, buyouts, ring dikes, diversions
	Overland flooding	High	Downstream of impoundments	Concerns about impoundment operation, wet versus dry operating plans, can they be drained down further? Coordinate with agencies.

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	Inadequate outlets			
	Ditch 20 overflow going to 200 system; Lost river pool and elm lake; weren't designed to handle additional flows from 20/200		Summer flooding problem is most severe, spring less so; starts in section 14/23; Lee Twp, Beltrami county, wetter years, 3" +event, DA 75 sqmi	
	Flooding adjacent to Agassiz; floodplain altered by berms			
	Subwatershed has more control structures (impoundments) than any other in RLWD		Relatively little vertical relief, creates siting problems	Location in watershed, strategy to placement and operating plan; system evaluation

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	Impoundment: refer back to urlr matrix under flooding			
Flood Damages <i>(crop land, pastures, residential, roads, etc.)</i>	Adjacent to agassiz (north) sections 7,8,9 whiteford twp, SD 83	high	3"+ events	Culverts; look at dikes along river (see overland above)
	Just downstream of elm lake, in crp now, floods frequently			
	Whole length of 200			

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	Public roads, safety and inconvenience,		53, 129, 54 are examples, 3"+	(have existing FEMA DSR information, need to review)
	Ring dikes around farmsteads along thief river, ds of thief lake, extremely frequent			Need more ringdikes,
	Goodridge potential for flooding,			RLWD permitted project to keep water in JD18 lateral
	Debris (woody, veg. Mats) catching under bridges, safety, scour around piers, have to shut down turbines			Veg mats come from Agassiz drawdowns

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Drainage	Better maint. On public systems	high	Area wide	
	Beaver problems	high	Area wide	
	Channel maint. On natural reaches	high	Area wide	
	Thief River flows into Agassiz			Could the Thief River be diverted around agassiz, and discharge directly into SD 83?
	Outlet of SD 83		There is a rock dam where SD 83 enters the Thief River	Remove dam, transition grade

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	Extensive ditch systems draining non-productive land		Eastern portion of subwatershed	Abandonment, retrofitting systems to perform according to land uses
	Subsurface drainage. On the increase?		Increasing?	Wq issues. Need to examine. Monitoring u.s. and d.s.; no \$\$ for implementation; subsurface v surface intakes
Drought				

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Stream Flows	Extended periods of high flow in Th. R. R. (SD #83)	high	Downstream of Mar. Co. Rd. #7	Set back levees, easements, buyouts, impoundments Work with agencies to evaluate target flood levels as well as target release levels within the impoundments
	Extended periods of low flow in Th. R. (SD #83)	Mod – water qual.concerns	Most of entire reach	Timed releases (minimize flashiness by “spreading out” discharge), aeration
	Flashiness in flow from Agassiz NWR	High	Downstream of Agassiz NWR	Moderate discharges over longer periods of time
	Subsurface drainage			May reduce flashiness?

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Lake Levels	Refuges; maintain adequate levels (for everyone)		Impacts on operations and habitat	Operating agency needs to be consulted,
	NRE v FDR		Loss of hatch, emigration; problems in wet years	Trade-offs versus balance
Groundwater	Subsurface drainage			Potential impacts on GW; dig up old 4 county study RL, Polk, Marshall, Pennington USGS
Other Flood Damage Issues	More info concerning ag- land tiling	low	Increase tiling acres each year questions concerning WQ	



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Erosion and Sedimentation <i>(stream, lake bank, ag and residential, ditches, etc.)</i>	River and Ditch Bank Failures	high	widespread	Stabilization measures, where applicable
	SCS study of erosion and sediment transport thief river versus redlake into pool;			Refer to old study, life-cycle of dredging; 50 year design v much shorter actual life cycle
	Ditch 20 sloughing and erosion on laterals			
	Active erosion section 1 northwood twp, MC TH 54 and bridge on moose river			EQIP priority funding area
	General problems of culverts and roads washing out; sedimentation		Immediately after spring thaw with large event	
	Ditch erosion			Change management practices when updating, side inlets

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	Marshall Co, CD 45, inspected, low grade 6:1 ss and still sloughing			Vegetation, other practices? Tough fix.
	Overall sloughing and sedimentation			Review of engineering practices and effectiveness, how to effectively solve problem
	SD 83, sedimentation, bank erosion within system v natural stream processes of saturation and sloughing			Vegetation, other bmps
	CD 18/30 bank sloughing, similar to Ditch 20			
	Sedimentation (deltas): Thief Lake, Agassiz, Elm Lake?,			

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Water Quality (point and nonpoint pollution, groundwater, etc.)	Agland tiling	mod	Questions concerning WQ in discharges	
	Channel and streambank erosion	High	Entire river	Grade/Bank Stabilization
	High total suspended solids and dissolved solids on the Mud R	moderate	At monitoring site at Hwy 89 crossing	Possible TMDL study, reduce erosion, riparian buffers
	High fecal coliform at Thief Lake Outlet, low DO from Agassiz NWR outlet to TRF, high TSS and TDS from Agassiz NWR outlet to TRF, high conductivity near TRF	High: TSS near TRF, TDS downstream of Agassiz NWR outlet All others are moderate	Entire watershed	Future TMDL studies and recommendations. Reduction in streambank erosion, aeration of water in winter (rock riffle structures downstream of Agassiz). Further study is needed.

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	Low DO on the Moose R	Moderate – partially supporting of aquatic life	Entire river, possibly due to low flow velocities as well as sediment and nutrients	TMDL Study
	Hydrogen Sulfide in TRF		Dissolved H ₂ S is created by anaerobic bacteria and released from shallow reservoirs in winter and early spring – it is then volatilized at the dam in TRF and creates an odor problem – possible health hazard as well.	Discontinue over- winter pool drawdowns, rock riffle structures upstream of TRF to maintain an area of open water to volatilize H ₂ S and re- aerate the water
	Generally poor water quality coming from impoundments		All impoundments	
	What are expectations for overall water quality? What were historic conditions?			TMDL? Other?

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Fish and Wildlife Habitat <i>(fish passage, waterfowl nesting habitat, beaver, otter, upland game, etc.)</i>	Beaver damage: rural and urban	mod	widespread	bounty
	Thief, Mud, Moose Rivers			Wildlife habitat corridors could be established; connect public lands
	Low flows		Through-out subwatershed	Landuse? Or natural?

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	Thief River, Section 19, Lost River: channel rehabilitation (verify location)			Rehab to improve riparian zone and aquatic habitat
	2002 Agassiz operation released sediment;			Operational plan needs to consider timing of release/ sedimentation
	High flows; flashy hydrographs		Through-out subwatershed	
	Mud River eastern edge of Agassiz & Eckvoll			Restore channelized area

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	Elm Lake deer wintering area			preserve
	Agassiz			CCP update
	Thief Lake management plan			Need water management section ie. floods
	Moose River impoundment			Try to maintain current operations

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	Fire suppression v active vegetation management			Brushland habitat for sharptail (crp lands, Agassiz, etc.)
Water-based Recreational Activities <i>(water access, fishing, hunting, recreational trails, etc.)</i>	Fourtown area (also trail system Marshall county, Grygla, Beltrami, Roseau counties)		Wide-spread	ATVs, etc. looking for new trails; corridor multi-use systems
	Boat ramps			Need frequent cleaning
	Good hunting in this subwatershed			Preserve it,

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	Sharptails;			preserve retired lands in Grygla area
Unique Water / Land Related Resources	Number of multi- purpose impoundments in this subwatershed			Unique in comparison to other parts of valley
	Part of Red Lake SNA (add to acronyms)			peatlands
	Several (100+) natural heritage elements			
	Fens			

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	Elk herd near Grygla (historic remnants)			
Other Natural Resource Issues				

OTHER COMMENTS/ISSUES TO COMPLETE THE “PICTURE!”

1. Water releases (timing critical); need to consider flooding impacts as well as F&W

THESE COMMENTS SHARED BY: _____ (NAME) _____ (TELEPHONE)

NOTE: Return this form to Myron Jesme, Red Lake Watershed District Office