



RTC-TH May 2013 Update

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Community-based environmental education for the self-sufficiency and sustainability of small rural family farms

ชุมชนตามสิ่งแวดล้อมศึกษาเพื่อการพึ่งตัวเองและยั่งยืนบนพืชนาขนาดเล็กครอบครัวฟาร์ม

You may post questions / comments to the Discussion area of our website

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Preparing for the Rainy Season



Nam Yang River at Ban Na Fa Bridge before (top) and after (bottom) the annual dredging and grading.



The annual dredging of the Nam Yang reached Ban Na Fa. Each year the government spends to prepare the river channel in an attempt to control erosion and flooding of the river. The valley floor has a shallow gradient toward the West. The many twists and turns are a direct result of the low slope. Erosion occurs on the outside of each turn. The dredging attempts to keep the channel clear and to

In This Issue

 RTC-TH Co-founders Greg & Salfon Lee	Preparing for the Rainy Season	1-2	Perspectives on Education Trends	7-8
	Dry Season Climate Watch	3	Flood Risk Self-Assessment	9-11
	Hail Falls on Thawangpha	3	Suggested Flood Risk Mitigations	12-13
	Carport Project Self-Assessment	4-6	Built-in Small Parts Storage Bins	14



protect the Ban Na Fa bridge abutments.

What is unusual about this year's activity is the long hours of the operation. The dredges start work early in the morning (about 5:30 am). They seem to work with few breaks through the day. And we have even heard them working past midnight (sometimes to 1 am!).

The dredging disturbs the normal river flow and life. Some folks take advantage of the disturbance to go fishing. The objects of their efforts range from dragonfly nymphs, to snails, to fish.



Gathering dragonfly nymphs



A young girl fishing with a dip net in the muddy river



A man using a throw net in shallow water



The dredging draws a crowd level was about 3 m.

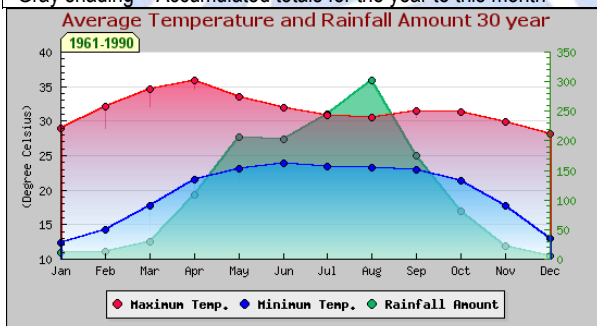
The flurry of activity attracts attention. Returning home from their fields, people stop at the bridge to watch. After dinner, they gather at the bridge to enjoy the cool evening breeze and the action.

So far we have been relatively lucky. Ban Na Fa is bounded on the south by the Nam Yang River. Our house is one of the last houses on the road leading to the bridge. Most of the village is on a bluff overlooking the river. Our house is about 5+ m above the river (at its low water mark). The 2011 flooding river

Several decades ago, Ban Na Fa was located on the opposite side of the river, just a bit farther East from our farm. At that time, a wooden bridge (at the same location of the present bridge) linked the village to Route 1170 that goes to Thawangpha. One year, a severe flood destroyed the bridge. The villagers were cut off for 3 days. After that, the villagers decided to move the village to its present location on the north banks of the Nam Yang. Tang Suttisan, Saifon's father, inherited the small plot of land along the river from his parents. Sometimes it would get flooded. About 15 years ago (after college and her father's death), Saifon worked and saved money to fill the land and built the present house. 🌐

2013 Dry Season Climate Watch

30 Yr Average			2012		2013	
Month	Rainfall (mm)	Rainy days	Rainfall (mm)	Rainy days	Rainfall (mm)	Rainy days
Nov	22.7	4	8.12	2	77.48	9
Dec	5.9	1	0	0	3.05	2
Jan	11.0	2	17.78	3	49.02	1
Feb	12.6	2	1.01	1	16.26	4
Mar	29.2	3	31.24	2	24.63	3
Apr	108.0	9	163.32	8	16.25	3
Dry Season 30YrAv	189.4	21	221.47	16	186.69	22
			Dry Season Acc Σ			
Brown Box = northern Thai Dry Season						
Red shading = data below 30 year average for Thawangpha						
Green shading = data above 30 year average for Thawangpha						
Gray shading = Accumulated totals for the year to this month						



The official data posted for Apr 2013 shows the month was significantly drier than the 30-year average for both the measured precipitation and the number of rainy days.

The tally for the 2013 dry season was close to the 30-year average for with one more rainy day than the climate average. We aren't clear on the Thai Meteorological Department's

functional definition of "drought". But locally, farmers lament the dryness of this particular season. Farmers closer to the river could pump water to their fields. We noticed several farmers in the floodplain invested in digging ponds down to the water table (~3m deep).

So far the only rain in our area has been from thunderstorms. We are still

waiting for the 2013 monsoon rainy season to begin. 🌍

Hail Falls On Thawangpha!

May 1, during an intense late night thunderstorm, pea sized hail fell on Thawangpha. It seems oxymoronic to have hail in the tropics. While not very common, we have found records as far back as 25 years mentioning hail in other parts of northern Thailand (e.g. Chiang Mai and Chiang Rai). No one locally ever mentioned hail in past conversations since we moved here.



Pea-sized hail collected by Pi Oi & Pi Noi in Thawangpha

Pi Oi and her husband Pi Noi ran out to see what all the noise was about. The ground was covered in white. Pi Noi ran to get a bowl and scooped up some of the hail to keep in the freezer for us the see the next day. Unfortunately, they didn't have a camera to take any photos of this unusual event. We got no hail in the village or farm; just strong gusts and intense rain. 🌍

New Carport Project Self-Assessment

In response to our summary photo reports on the “New Home for Sparky and Sam”, several readers emailed us with questions about the reasons for some of the building options employed. We thought the answers might be of wider interest. This



The completed carport structure; finishing details are underway.

is the story of considerations and compromises made in our building decisions for the warm tropical Thai climate. [Note: We also want to re-state our sincere gratitude to Pi Oi and Pi Noi, our eldest sister-in-law and her husband, for their generous donation of all the teak for this project.] The carport expansion project was the culmination of nearly 4 years of planning and compromising. We considered several sites: the Farm (5 sites, 22 plans), the Hill Top (3 sites, 17 plans), the town business property in Ban Wangwa (3 sites, 5 plans), and this actual construction site in Ban Na Fa (2 sites, 12 plans). In the beginning, the designs were hand drawn. The process evolved to using homemade computer templates.

Each site was evaluated using the summary chart (see next page) we compiled using our notes from a wide variety of sources about home building. Originally, we thought about building a new home. Obviously, a carport is not a home; it was a major compromise.

The general site constraints involved issues of full legal land title papers. Private land ownership for common people is a relatively new process in Thailand. It began as a populist land reform effort several years ago.



Various site studies and designs over the years.



Reluctantly, we trade ¾ of the garden for the new carport


Unfortunately, the process was disrupted by the recent political turmoil. It appears to be on hold, so some of the sites we considered were not fully “titled”. Other concerns involved proximity to power lines and infrastructure access. Locally available materials and construction skills posed major constraints. The uncertain economy caused us to avoid

<i>Building In a Hot Climate</i>				
Item	BEST	OK-better	OK-marginal	WORST
Pick the right lot	S Ideal; easy to make overhangs for shade	N OK if winter not too cold or windy	E Sun in morning, but cooler in afternoon	W Cool in morning; but max sun in afternoon
Pick the right building shape	Rectangular, long going E-W for best cross ventilation		Rectangular, long N-S makes for big sun exposure from West	
Spend your money on quality, durability, and beauty, not size	Smaller (right sized) with good design		Larger with poor design	
Shade, shade, shade	<ul style="list-style-type: none"> Shading outside the house works best: trees, covered porches, roof overhangs, awnings, etc. southern low-e window glass or solar screens. Double pane windows do not keep out the sun's hot rays; however, they do help retain heat in winter, are more secure, quieter, and reduce condensation on the glass 		<ul style="list-style-type: none"> No exterior shading Single pane windows; no UV film 	
Install a tile or metal roof	<ul style="list-style-type: none"> Long lasting and are a good surface for collecting rainwater. be sure you have roof radiant barrier and good attic ventilation (continuous under the eaves and at the ridge), or insulate at the rafters instead of the attic floor 		<ul style="list-style-type: none"> Dark tile roof Asbestos roofing materials 	
Don't put ductwork and cooling equipment in the attic	<ul style="list-style-type: none"> Ventilate attic (see cooling system below) Insulate underside of roof. Screen for pests 		In summer, attic temperatures may reach over 140 degrees.	
Get a well-designed and installed cooling system	<ul style="list-style-type: none"> Optimize cross ventilation Use solar chimneys to evacuate hot air from ceiling area 		<ul style="list-style-type: none"> Heavy reliance on Air conditioning Low ceilings 	
Pick light colors	<ul style="list-style-type: none"> Light exterior colors reflect the sun's heat. Light interior colors mean you will not need as much electric light inside. 		<ul style="list-style-type: none"> Medium to dark exterior colors Medium to dark interior colors and furniture 	
Avoid skylights, sunrooms, and low-quality recessed-can lights	<ul style="list-style-type: none"> If you need more light, paint the room white, install better lighting, or put in more windows facing north and south. 		<ul style="list-style-type: none"> Sky lights, west facing windows Large picture windows Recessed and track high intensity lighting 	
Install vent fans in high humidity areas	<ul style="list-style-type: none"> Get quiet, well-sized fans for kitchens, baths, and laundries, and be sure they are vented to the outside, not the attic. Get warm, damp air out of the house, so mold doesn't grow. 		<ul style="list-style-type: none"> No fans, small or no exterior windows in high humidity areas Poor ventilation 	
Minimize toxic fumes inside	<ul style="list-style-type: none"> Install hard surface flooring (ceramic tile, concrete, and wood) as much as possible. Minimize carpet. Avoid vinyl products. Use low-toxin paints and finishes (water-based, with VOC levels under 150 grams/liter). 		<ul style="list-style-type: none"> Synthetic floor covering Carpeted rooms High VOC paints and finishes 	
Plant a smart landscape	<ul style="list-style-type: none"> Choose plants that are native or well adapted to your area. Reduce lawn area Use porous pavers Landscape for fire prevention 		<ul style="list-style-type: none"> Exotics and non-native species; high water consumption Large lawn Large paved areas No fire mitigation plan implemented 	

taking out loans for the project. All these realities pointed to building the project at the existing house in Ban Na Fa.

This site was the smallest parcel (0.58 rai / 931 sq m). The existing house, garage, and carport imposed space and orientation limits: it was either the front yard / driveway or the side garden and adjacent carport. We opted for the later. It was set back farthest from the power lines along the street.

Introspection is a key part of our Community-based Education methods. At this point, we applied the “Building in Hot Climate” summary chart. We also used this checklist for a self-evaluation of our project. We like to think this prevents us from slipping into denial of any shortcomings or failures. It helps to ground us in reality and to avoid self-delusion regarding compromises.

Below is the summary of our efforts. Of the 12 items, only 9 applied to our project. If “Best” = 4 points and Worst = 1, our project scored 88%. What can we say? It is hard to be perfect. Life is full of compromises. 

<i>Building In a Hot Climate: Na Fa Site</i>		
Item	Rating	Remarks
Pick the right lot	Best	The new carport faces the river to the south, the house to the north. The dominant prevailing wind is associated with the SE Monsoons.
Pick the right building shape	Best	The new carport is rectangular, long going E-W. We opted for wood slat walls and a high (4m) vented ceiling to optimize airflow and cross ventilation. Unfortunately, this also means accepting dust inside the structure.
Spend your money on quality, durability, and beauty, not size	OK-Better	In contrast to a house, it is smaller; it's a carport. The overall design focused on practical function more than aesthetics. We compromised a lot of “beauty”, but that's in the eyes of the beholder (a value judgment). Teak is definitely durable.
Shade, shade, shade	Best	The new carport is shaded on the south side by fruit trees and on the north side by the house. [Note: Our latitude is 19N. So for 2 months of the year, the sun comes from the north.] The garage shades the west end. We get some early morning sun for a few hours on the east end. The ceiling slopes toward the river and is 3 m high on that side, with a 1 m roof overhang.
Install a tile or metal roof	Best	We paid extra for higher quality silver colored, sheet metal roofing with closed-cell foil-lined insulation. We vented the roof. We opted for the higher reflectivity, insulation, and lighter weight (in contrast to the traditional Thai ceramic tile roof).
Don't put ductwork and cooling equipment in the attic Get a well-designed and installed cooling system	N/A	There is no ductwork for the carport. The only cooling equipment planned is a single oscillating wall fan. The roof panels are insulated on the underside. We are holding off on screening for now (to maximize ventilation). So far, mid-afternoon interior ceiling temperatures reach 31° C in contrast to 61° C for uninsulated sheet metal roofing.
Pick light colors	Best	The lower concrete block wall sections will be painted off-white to match the house. The teak slats will be varnished. Any direct sunlight to the interior is naturally diffused due to the slats and the roof overhang.
Avoid skylights, sunrooms, and low-quality recessed-can lights	Best	There are no skylights, sunrooms; interior lighting is planned for only 2 florescent fixtures. Most lighting in the carport is task LED lighting using 12 VDC power from the ham radio station.
Install vent fans in high humidity areas	N/A	The new carport is a single large semi-enclosed area with no kitchen / bath. (There are no high humidity enclosed rooms.)
Minimize toxic fumes inside	OK-Marginal	The new carport has a concrete floor. Tile is a future option (for easier cleaning depending of dust levels). In Thailand, it is hard to live without plastic. A number of plastic storage cases and other plastic items will be kept here. The VOC issue may present a challenge. Thailand's standards in this area are minimal to none.
Plant a smart landscape	OK-Marginal	We gave up a lot of garden space to get the land for this project. Concrete paving was necessary to control drainage between the house and the new carport. The fruit trees remained in place for shade. The topography of being on a riverbank poses some fire risk from changes in the river channel.

Perspective on Education Trends

There is a growing concern that most public education systems around the world are inadequate for the global economy. Students graduating are unable to meet the needs of employers or the market place. Ben Hecht wrote an article identifying “5 Disruptive Education Trends That Address American Inequality”

(http://www.fastcoexist.com/1681576/5-disruptive-education-trends-that-address-american-inequality?goback=.gde_71923_member_229326497). We were pleasantly surprised to see



many of the elements of the 5 trends mentioned have been pillars of the RTC-TH Community-based Education (Cb-E) methods for over a decade.

Interactive computing is a dominant trait of these 5 trends. In contrast, the RTC-TH Cb-E is definitely low tech / no tech. [Note: We use computers to create our lessons. However, they could also be created manually using older technologies.] Our main concern about the reliance on digital technology is the lack of ready access to it in most of

the developing and less developed nations. Hecht's article focuses on American education while we operate in Thailand. However, 1) in the US, education is a State's concern. There is no central / National education policy as there is in Thailand; 2) there are many places in the US that are economically similar to some poor places in Thailand or some developing nations.

For a government to provide modern digital learning environments requires stability and money. Government involves politics, and politics often involves power, money, and the marginalization of portions of a society. In the developing and less developed areas of the world, instability and poverty are common. It would seem unlikely these residents have access to the 5 trends mentioned by Hecht. In fact, schools and teachers can often become the targets of violence. Education is something some governments want to restrict and control to their advantage. Globally, the gap continues to widen between the rich and the poor.

A fundamental difference with Hecht's article and our Cb-E is that the trends apply to institutional education systems on a national basis. The RTC-TH Cb-E is a supplement to traditional institutional education systems. It was not intended to change or replace them. For those unfamiliar with these trends, we offer the brief summary table below.

Hecht's 5 Trends	RTC-TH Cb-E
1: Creating adaptive and optimized learning environments. The key element is software that dynamically identifies individual learner interests. This uses the power of information technology to tabulate a person's preferences much as search engines identify sites frequented by computer users. Teachers can track student's present and changing interests to tailor lesson to match and customize their learning.	<ul style="list-style-type: none"> We based Cb-E on learner-centered models and on "self-selection". Students freely choose to join an activity. The "freedom of choice" is linked to responsibility and attendant consequences of the choices. Introspection and internalization of the lessons are key to the process The "teach back" and making learning a life-long experience are critical elements of Cb-E.
2: Sending education everywhere via distance learning and massive open online courses (MOOCs). The best teachers and courses are free of charge to anyone with internet access...BUT for no credit. This is the bait. The hope is the better students would then opt to pay for advanced classes and degrees. After all, the schools need money to create and maintain the courses and system to distribute the courses.	<ul style="list-style-type: none"> While we don't use computing technology to conduct classes, all Cb-E materials are free for individual, educational, and non-commercial use (distributed over the internet). People are free to contact us and dialog about the lessons. We have no plans to offer credit classes or to charge fees for our lessons

<p>3: Flipping the classroom to better utilize resources. This is the process of shifting the lectures and collective / group teaching duties to the students to do outside the classroom. Classroom time is spent in small learning groups with more teacher contact and emphasis on critical thinking, problem solving, and meeting the needs of not just the advanced / gifted, average, or slower learners. Posting lecture materials online reduces the negative impact of a student missing class, which is common for students from lower socio-economic groups.</p>	<ul style="list-style-type: none"> • Working outside the traditional school system, we make use of the community and the real world as the classroom. • RTC-TH guidelines encourage small groups (10 or less; 6 is optimum). • Lessons integrate problem solving, critical thinking, peer teaching, interpersonal skills, hands-on group projects with tangible results. • Lesson topics can be repeated as a small project with students "teaching back" to others. • There is no minimum class size for us to conduct a lesson.
<p>4: Using interactive content and gaming to engage students. Most students in developed countries grow up with computers and interactive digital games. In addition, games, digital or manual, are known to develop many higher-level mental skills. The idea is for programmers to focus on formally integrating academics and group dynamics to these learning games. Hecht contends, "textbooks are dead."</p>	<ul style="list-style-type: none"> • Traditional education is often compartmentalized for valid and not-so-valid reasons. Cb-E integrates knowledge and skills across these traditional academic discipline boundaries. • We use hands-on, interactive lessons involving groups in outdoor settings. Most projects commonly include math, science, geography, technology, and language instruction. Students are guided with facts and must apply the facts to solving the problems associated with a project relevant to the local community and environment. • In rural areas with a low density of digital technology, analog (non-digital oral and text) lesson materials are still widely used.
<p>5: Connecting with tutors and sharing skills online. The power and freedom of the Internet allows people direct access to information, teachers, and tutors. This greatly expands the learning options for people. Learning is no longer limited to schools. Hecht points out that you can find just about anything on the Internet. Individuals, for no fee, post a lesson video of their favorite recipe. There are many DIY (Do-It-Yourself) lessons available. It is a veritable free-for-all resulting in a pantheon of free choices.</p>	<ul style="list-style-type: none"> • We have made use of the Internet to distribute our lessons and have "fans" (some regular, others on an "as needed" or topic specific irregular contact). • Our lesson development process is guided by more than 2 ½ decades of professional teaching experience. This is our lesson quality control. The quality of Internet lessons can be highly variable. This is not to say that any particular individual is not qualified to teach. The point is for all the lessons on the Internet, there are few if any quality standards.

We have always believed that a person should not allow schools, teachers, or textbooks to set limits on their education. Community-based Education is all about empowerment of the mind. It is driven by self-selection and an individual's curiosity.

The RTC-TH is a grassroots organization. We feel grounded in our local reality through our demonstration farm. Our efforts in sustainable agriculture and self-sufficiency are based on the King's Theory and our personal life-style. We have neither desire nor power to change the existing educational bureaucracy anywhere in the world. When individuals approach us for information, we consider creating lessons to share with others (both in and outside the classroom). Cb-E is a local option to empower the rural poor to meet local education needs to improve their lives. We encourage people to take ownership of their education and to make it a life-long endeavor. 🌐



The REEEPP (Rural Environmental Education Enhancement Pilot Project, started 2004) was a demonstration of our suggestion to improve Thai rural public elementary school education.

Flood Risk Self-Assessment



The 2011 floods were extensive, deep, and long lasting.

The 2011 floods in Thailand revealed the relative unpreparedness of many people for the disaster. The magnitude was greater than any flood in the previous 45 years. Government and other relief services were stretched to the limits (and slightly beyond). Official post-flood studies noted a significant lack of preparedness especially on the part of many flood victims. They pointed fingers to the lack of public education regarding emergency preparedness.

Rather than relying on the government, the RTC-TH Emergency Preparedness program empowers individuals to be more self-sufficient in recognizing their vulnerability to floods. Using the “Flood Risk Self-Assessment” flowchart, people can increase their awareness of flooding hazards for their property. If they are unaware a problem exists, they certainly won’t be motivated to take any action at all.

We use the Geographic Systems Model to approach flood risk assessment. A flood is a situation when normally dry land is inundated with water. The conditions bringing more water to an area are usually storms increasing flows of normal surface waters, failures in water storage facilities (e.g. dams, reservoirs, tanks, etc.), or disruptions of infrastructures (e.g. breached levees, dikes, sea walls, etc.). Terrain plays a part in that low-lying areas tend to be inundated. Narrow canyons and the mouths of narrow canyons are areas prone to flash floods. Areas that are less susceptible to floods have higher elevation than their surroundings, are distantly located to surface water bodies, and are upstream or from dams and reservoirs.

Natural vegetation cover, especially well established fully forested areas are good examples for farmers. They protect bare soil from raindrop impact. Less vegetation covering the bare soil means a greater the risk for soil erosion. In our area, leaf litter covers the forest floor in the dry season. (The native vegetation is drought deciduous forest cover.) When the rains come, the soil is protected from rain drop impact by the living forest canopy AND the dead leaves covering the ground. Unfortunately, more forest is cleared each year despite the fact they are protected by law. There are many “reasons” (or excuses) for the lax enforcement. The loss of the forests moves us in the wrong direction.

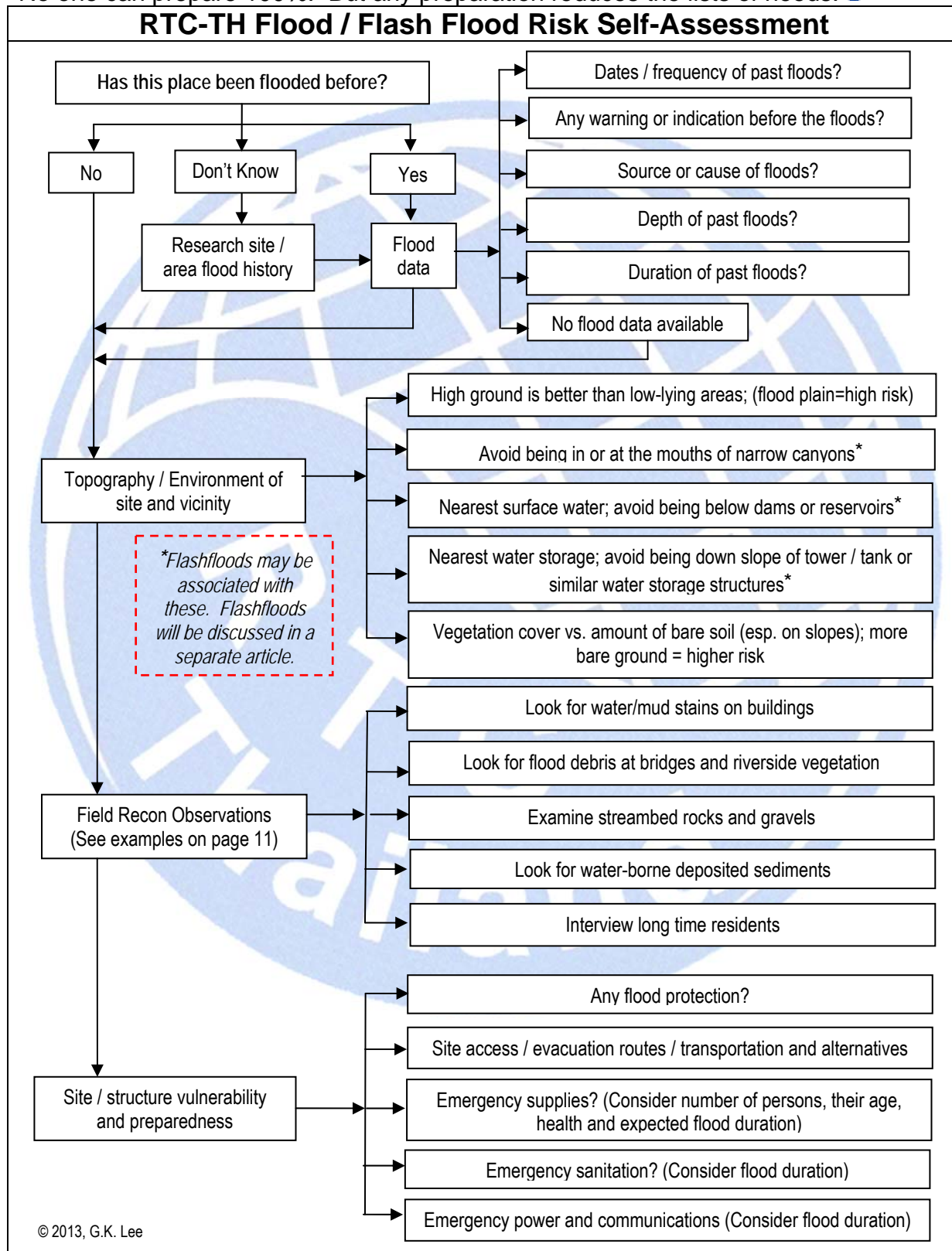


Law protects forests but enforcement is lax.

The RTC-TH policy is to avoid building in flood prone areas. The Geographic Systems Model provides a systematic method to flood awareness and risk management. Life is full of compromises. Careful decision-making empowers people to make effective choices and to try to minimize risk exposure. A study of past floods shows the primary needs of flood victims quickly become clean drinking water, food, shelter, and medical care. Past history helps determine how long it may take relief workers to respond. It makes sense for people to prepare to meet their

immediate needs before help arrives. Not everyone can afford to prepare, but when survival is at stake, we can only rely on self-selection to motivate people.

The checklist below helps people become aware of their flood risk potential. Once aware of the problem, they can choose to take action to prepare. If not, then they place themselves at the mercy of rescuers and become passive flood victims. No one can prepare 100%. But any preparation reduces the lists of needs. 🌐



Examples of Some Field Observations

Here are some examples of flood evidence you can look for in the field. The visual evidence can be direct or indirect. The direct evidence can be seen soon after the flood (often with floodwater still present). Some evidence remains long after a flood recedes (depending on the clean-up efforts) and become indirect indicators of past floods. Be aware of pending hazards when surveying flooded areas. For example, in flashflood prone areas, rain can be falling in an area far from your location. Yet the rain poses a flashflood hazard for you.



Water / mud stains of past flood levels



Past flood debris on bridge pylons and structures



Past flood debris on vegetation



Flashflood: Wide variety of stone sizes in stream beds



Deposits of sediments in low-lying areas



Road collapse near culverts

Suggested Flood Risk Mitigations

Avoid putting yourself in a place prone to floods. We recognize the some people have limited choices when it comes to relocation. Further, some folks have strong emotional ties to their present location and may feel they cannot leave no matter what the flood risk hazard may be. Each person makes their personal choice regarding the suggestions below. Be assured, once the flood begins, there will be a shortage of supplies.



Photo from the Internet: educational fair use clause

Are you prepared to protect your property in a flood?

Problem	Possible Action
Located in a Floodplain	<ul style="list-style-type: none"> Know the highest known flood water depth and direction from which flood waters approach your site; Build up the elevation of the site or raise the building on stilts above the highest known flood depth. If you can afford to, build even higher to have a safety margin. Keep ground level floor area open (no walls) to make it easier to clear after a flood. Grade the site to naturally drain floodwater from it. Consider additional flood protection (see below) for your site.
Located in a Flashflood Area	<ul style="list-style-type: none"> Build on higher ground away from the stream or flood zone. (If you cannot do this, see building suggestions for Floodplain sites above.) Consider additional Flood Protection (see "No Flood Protection" below) for your site.
Located Below a Dam / Reservoir	<ul style="list-style-type: none"> Be aware of safety announcements by the dam / reservoir operating officials. Determine if your site is in the direct or indirect flood path if the dam / reservoir failed. Know evacuation routes; have an emergency plan. See building suggestions for Floodplain sites (above) and additional Flood Protection (below).
Located Near a Water Storage Unit	<ul style="list-style-type: none"> Be aware of safety announcements by the water tank or storage unit operating officials. Determine if your site is in the direct or indirect flood path if the water tank or storage unit failed. Know evacuation routes; have an emergency plan. See building suggestions for Floodplain sites (above) and additional Flood Protection (below).
The Land Has Little or No Vegetation Cover	<ul style="list-style-type: none"> Mulch all bare soil Plant the area with vegetation with dense root systems to help anchor the soil. Plan land use based on surface slope angles. If slopes are moderate to steep, do not plant row crops; trees / orchards could be a better choice. Avoid over grazing once vegetation cover is established.
No Flood Protection	<ul style="list-style-type: none"> Consider emergency options (e.g. sand bagging, and have supplies and materials on hand) Consider more permanent options (e.g. flood barriers, riprap, drainage canals, etc.) Build barriers to deflect floodwater and debris from hitting your building. Look for and eliminate possible choke points where debris can accumulate and cause floodwater to approach your site.
Limited Site Access	<ul style="list-style-type: none"> Know exactly how you would evacuate your site. Know when and where floods can disrupt access to and from your site. When floods threaten, know the status of these vulnerable points and be prepared to decide when to evacuate (whether officially told to or not). Find alternative routes to and from your site. These may require various modes of transportation (including going by foot). Know the time it takes and the amount of things you can take with you for each mode. Consider the special needs of the very young, the very old, or the infirm. They may require more time to prepare or to evacuate if needed.
No Emergency Supplies	<ul style="list-style-type: none"> You need to prepare drinking water, a first aid kit, and some emergency food for at least 72 hours. These must be water proofed in order to be useable or you face increased health risks in a flood. The amount of supplies you need depends on if you are evacuating or sheltering in place. Select food based on whether you have the means to prepare and cook under flooded conditions.
No Emergency Sanitation	<ul style="list-style-type: none"> Sanitation will be difficult during a flood, but human / animal wastes will accumulate quickly. Improper disposal increases health threats to you and others.

No Emergency Sanitation (cont'd)	<ul style="list-style-type: none"> • Have a supply of sturdy plastic bags and a plan to safely secure / store these for proper disposal after the flood. • Floodwaters can be contaminated with all sorts of viruses, bacteria, chemicals, and biological wastes and dead animals and people. Keeping your skin clean and treating cuts / abrasions requires having the right materials and supplies on hand. These should be prepared BEFORE the flood.
No Emergency Power or Communications	<ul style="list-style-type: none"> • Flooded areas may lose all electrical power. Plan to have alternative sources and supplies for light and cooking. Know various ways to start a cooking fire. • Be sure to have a battery operated portable radio (and spare batteries) so you can get official announcements and news. • Cell phones and phone service may be disrupted. If not, you still face the problem of recharging your cell phone. Get a car adapter for your phone and / or a solar charger for your phone. • Consider getting a ham radio operator license and a portable ham radio (with car adapter and spare batteries). • Some people may have a portable generator. But you also need fuel. Storing fuel presents additional challenges and safety issues. • Most water pumps require electricity or fuel to work. During an emergency, you may not have power to run pumps. Have a backup plan.



Photo from the Internet: educational fair use clause

Filling the land or building on stilts could have helped protect this house from flooding

For additional flood preparation information, please see the following at the "Our Pages & Links" section at www.neighborhoodlink.com/org/rtcth :

- "Flood Emergency Toilets & Guidelines," More Fall 2011 Thai Flood Photos, Part 9, p.5;
- "Flood Planning Ideas for Your Home," RTC-TH Update Dec 2011, p. 5-8;
- "Emergency Drinking Water Resupply," RTC-TH Update Feb 2012, pp. 11-12;
- "RTC-TH Emergency Preparedness Strategy," RTC-TH Update May 2012, pp. 3-4
- "Practical Flood Preparations: Sand Bags", RTC-TH Update May 2012, pp. 8-9



Photo from the Internet: educational fair use clause

Sand bags can be effective flood protection



Photo from the Internet: educational fair use clause

If you must evacuate, how and where would you go?



Photo from the Internet: educational fair use clause

The elderly, very young, and infirm need special help.



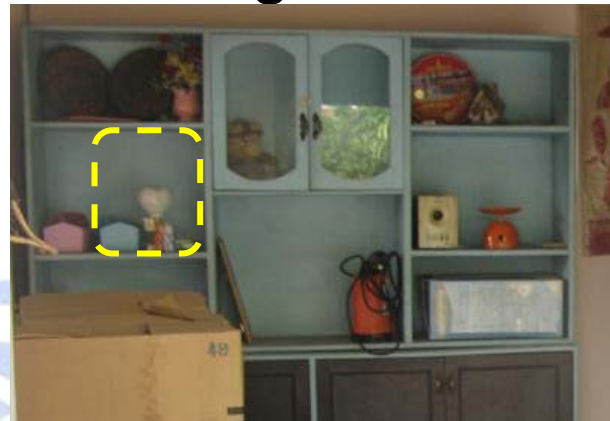
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Do you have a backup plan if your water pump fails?

Built-in Small Parts Storage Bins

We needed more storage space for small parts, screws, nails, and assorted fittings. So we decided to combine empty snack containers and carport construction materials to modify an old cabinet / shelf unit in the garage next to the new carport.

We cut and stapled empty containers from a popular dessert and our favorite soy beverage to make the storage drawers and bins. We cut scrap steel reinforcing rods to the needed length. These became the drawer support bars.



An old cabinet / shelf unit in the garage; new storage bins created in area enclosed by dashed yellow line.



Empty boxes diverted from the trash bin



Cut, folded, and stapled become small parts bins



Scrap wood with steel rods matched to drill holes in the existing cabinet / shelf unit = small parts storage



a tool room in the old garage adjacent to the new carport extension. 🌐

A scrap wood frame held the bars in carefully spaced holes. We drilled matching holes in the cabinet wall. Once in place, we began inserting the rods. The snug friction fit kept the rods in place. As you can see from the photo on the left, we have to collect more boxes to complete the entire installation.

The cabinet will find new life as a mini-work station next to a new workbench we hope to build in a month or so. We are one step closer to adding