



Storm Water Advisory Team – SWAT

February 3, 2015 Meeting Minutes

221 Palafox Place, 4th Floor Training Room

In Attendance:

Committee: Mary Gutierrez, Garrett Walton, John Cheney, Dr. Elizabeth Benchley, Phil Turner, & Glenn Niblock

Staff: Joy Blackmon, Colby Brown, Keith Wilkins, Chris Curb, Carrie Stevenson, Chips Kirschenfeld

Citizens: Tim Haag, Roger Dreher, Lynda Austin, Jim Lee, Barbara Albrecht, Stella Wilson, Jim Jones, Dean Kirschner, Kyle Ross, R.H. Wilson, Christian Wagley, Vicki Rabb, Jim Waite, Daniel Broxson, Richard Brown, Jim Hunt, Joe Brewer, Karl Bayer, Fred Martin, Kenneth Owen

- **Welcome** – Mary Gutierrez
 - Mary Gutierrez, Chair, called the meeting to order at 10:35 a.m.
- **Meeting Properly Advertised** – Proof of Publication dated 1/24/15 and 1/31/15 in the Pensacola News Journal.
- **Approval of 01-06-15Minutes** - Ms. Gutierrez made a motion to approve the January 6, 2015 minutes. The motion was seconded by Mr. Niblock and carried unanimously.
- Mary Gutierrez announced to the committee that District 1 appointee, Mike Whitehead, had resigned his appointment and Colby Brown informed the committee that District 1 replacement , Nathan White, was being presented to the BCC on 2/5/15 for approval.
- Joy Blackmon gave an update on the Corry Bridge Replacement Project:
 - AT&T Fiber Optics Security Issue – Extensive utility conflicts caused the need for a temporary bridge to be installed until the utility issues are resolved.
 - Notice will be given when the project is able to move forward with the permanent bridge replacement.

- **Community Updates –**

- Mary Gutierrez discussed community involvement in District 3 and encouraged the other members to continue with community interactions.
- The lack of maintenance at Lake Charlene was discussed among committee members based upon citizens input at the last meeting.
- Joy Blackmon expressed the importance of following grant processes to take advantage of available funding.
- Allen Vinson continued the funding discussion stating that the Local Mitigation Strategy LMS committee makes recommendations to FEMA; March 9th deadline for application. Available options for funding are: FEMA, Public Assistance, Hazard Mitigation Grant Program (substantial funding available: \$750,000 for Jackson Creek with a 25% County Match; RESTORE: \$11M for Bayou Chico Water Quality Improvements & Flood Plain Capacity Improvements. Amendment 1: \$10 billion over the next 20 years available through multiple agencies; Water Management District: \$600M with available beginning in early summer.
- Chris Curb mentioned that the FDEM application alone is 850 pages long.
- Dr. Benchley – Discussed the need for implementation of Non-Construction Areas such as Aragon and other low lying wetland areas of the community. Joy Blackmon explained that codes have been updated to bring about sensible improvements; and that Grandfathering must be addressed.
- Keith Wilkins added that LDC efforts regarding environmental issues and property rights are being brought to a minimum in the LDC because the State requirements will prevent further damage. Chips Kirschenfeld stated that wetland buffer proposals are being submitted through ERP requirements. Keith Wilkins added that the Planning Board has Water Quality stand points for protection discussions underway that will later be submitted to the BCC.
- Phil Turner – Requested that the City identify and summarize areas of impact.
- Mary Gutierrez asked staff how we can ensure that impervious pavement doesn't continue to create or worsen current projects. Allen Vinson and Joy Blackmon discussed policy changes and LDC modeling for new development; and basin outfalls flowing through the same areas.

- **Grant Writing** – Ms. Gutierrez asked members to identify one small scale project from each district to be considered for grant funding and offered to write the grant applications.
- **Lake Charlene Discussion** – Allen Vinson gave an overview presentation of the Lake Charlene Basin Study, (13 square miles), Damage Assessment, Planned Improvements, and Funding Options. (Local Mitigation Strategies (LMS) recommendations to FEMA, Public Assistance, and Hazard Mitigation Grant Programs (HMGP) were all discussed.
 - Dean Kirschner addressed the committee stating that the dredging of the Lake Charlene canal and other projects need to begin to prevent property values from dropping and Lake Charlene being made into a flood zone.
 - Garrett Walton asked staff if there is a cost estimate for repairing the Lake Charlene drainage basin. Allen Vinson stated that an estimated \$5M/25 year storm event. Chris Curb further stated that basin lines are crossed; there is a concept to take \$2M staying in the same basin; which would take 89 homes out of the flood area. \$11M written, going to the BCC within the next month covering Bayou Chico, beach Haven, and Jackson Creek. Garret Walton asked if \$2M would take 89 homes out of the flood area; and \$1M of the \$11M from NFWF helps Jones Creek / Bayou Chico outfall; then what would be left. Chris Curb responded that 11 homes would be left in the 100 year flood plain out of the 100 homes that flooded during the April 2014 flood event.
 - Mary Gutierrez requested staff to provide an executive summary of grant funding available for Lake Charlene.
 - The group discussed flood mitigation eligibility and availability; and Garret Walton discussed NFIP annual notifications. Joy Blackmon stated that staff would be willing to contact the 11 homeowners in Lake Charlene regarding their mitigation options.
 - Glenn Niblock review handouts & charts with Committee members stating that in 53 years curves have not been updated and suggested that weather and statistic professionals be hired to evaluate the area's past 55 year history. Daniel Broxson explained that the NOAH Atlas has been updated and is in the process for adoption by the State; and that we are using updated numbers.
- **Public Comments** – The committee heard comments from the following:
 - Crescent Lake citizens, Fred and Melinda Martin, of 6105 East Shore Drive, indicated that they had not been contacted by County staff and

needed assistance. Chris Curb took their contact information and stated that he would be in touch with them.

- Carrie Stevenson – Discussed availability of Problem Areas & Flood Plain Maps.
- Tim Haag – Inflow & Infiltration in Area Waterways 15 Year Program
Working with the County makes future storm water problems come to light
- **White Paper – Draft** – Mary Gutierrez commented that a team has been hired to prepare the Scope; Committee input will be added at a later date; and finally Public Input Outreach will begin.
- **Next meeting Agenda/Date/Time** – Mary Gutierrez presented options for upcoming meetings. The committee agreed upon setting meetings on the **3rd Tuesday of each month beginning March 17th**. Meetings will begin at 4:00 p.m. depending upon the availability of a meeting room at the Central Office Complex.
 - a. Area of Discussion: Downtown Stormwater Study & Aragon – Presentation - Derrick Owens, City of Pensacola
 - i. Colby Brown - Basin Focus
 - ii. Garrett Walton – Problem Areas List (Including Where Each Project is on the list)
 - iii. Garrett Walton – LID Consideration Driven by Incentives
 - iv. Glenn Niblock – Open Items List
- 2. Adjourn – 12:24 p.m.

February 3, 2015

To: Storm Water Advisory Team

Elizabeth Benchley, City of Pensacola John Cheney, District 5
Mary Gutierrez, District 3 Phil Turner, City of Pensacola
Garrett Walton, District 4 Mike Whitehead, District 1

Copy to: Colby Brown

Subject: Intense Storm Rainfall Events

The design basis rainfall event raises a compound question of risk assessment. That compound question is: which rainfall events are likely to produce extensive flooding in Escambia County and what level of risk is considered acceptable? A design basis risk is generally stated in terms of the rainfall return period. It might be once per 25 years, once per 100 years, or an even higher value such as once per 500 years.

The U. S. Department of Agriculture prepared an extensive study of rainfall in the contiguous states and published it as Technical Report 40 in May 1961. It was repaginated and republished in 1963. A copy of the cover sheet for that report is attached as Exhibit 1.

A chart that shows lines of constant rainfall taken from Technical Paper No. 40 is attached as Exhibit 2. Note that the once per 100 year rainfall levels for Escambia County are 14 inches near the coast, 13 inches at mid-county, and 12 inches near the Alabama border. It is not easy to read but is the best copy I could get.

The USDA published *Urban Hydrology for Small Watersheds* as Technical Report 55 (TR-55) in 1975, and a second edition in 1986 that contained curves of constant rainfall. Exhibit 3 shows a chart with lines of constant rainfall taken from the TR-55 document. Please note that the lines of constant rainfall appear identical with those in the first chart. You may also note that the TR-55 report is referenced in the Warrington Basin report we just reviewed.

A presentation to SWAT on January 6, 2014 included another depiction of the TR-55 data as can be seen in Exhibit 4. The curves of constant peak rainfall show a rainfall intensity for a 100-year rainfall of 14 inches near the coast of Escambia County; 13 inches at mid-county; and 12 inches near the Alabama border, the same as in Technical Paper No. 40, and TR-55. The data has not been updated in over 50 years.

There is reason to suspect that the data used by the County understates the amount that should be used for the drainage system design basis. There have been four storms with intense rainfall that led to flooding since the county record rainfall of 15.29 inches in 1934. Those are tabulated in Exhibit 5. A frequency of four storms exceeding 13 inches in 80 years implies that the 100-year rainfall should be expected to be greater than 13 inches.

Exhibit 5 presents the results of an analysis of fifty years of maximum rainfall data for the Pensacola Airport. Maximum rainfall is the greatest 24-hour rainfall in a given year. More data are available but 50 years was selected as a large enough sample that gave some weight to more recent events. The 100-year (1% probability) rainfall from this analysis is 20.5 inches. For purposes of the analysis the April 29-30, 2014 rainfall was taken as 23 inches. To give some perspective, the raw data from NOAA are shown, as is a data point representing the four 13-inch or greater events in an 80 year span, along with the record 24-hour rainfall for Florida which occurred during Hurricane Easy (1950).

All of this data was transmitted to County engineers and managers months ago. I am baffled that there has not been more interest in an evaluation to establish a sound scientific basis for rainfall events specific to Escambia County. The design basis rainfall is the fundamental criterion for design of the storm water management system. If the design basis is lower than should reasonably be expected, we can count on a continuation of intermittent severe floods that occur more frequently than expected. In short, GIGO for the hydrological models that forecast flooding, and a flawed design basis.

The County can continue to use rainfall curves developed around 1961, which ignore data from the last 53 years, and keep relying on data that are not specific to Escambia County. But it seems prudent for the County to have weather and statistics experts evaluate data that includes many years and is specific to Escambia County. That is what I've recommended from the first. I recommend that the Storm Water Advisory Committee request an updated assessment of the rainfall design basis.

Respectfully submitted,

Glenn Niblock
District 2

U.S. DEPARTMENT OF COMMERCE
LUTHER H. HODGES, Secretary

WEATHER BUREAU
F. W. REICHELDERFER, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and
Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSHFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

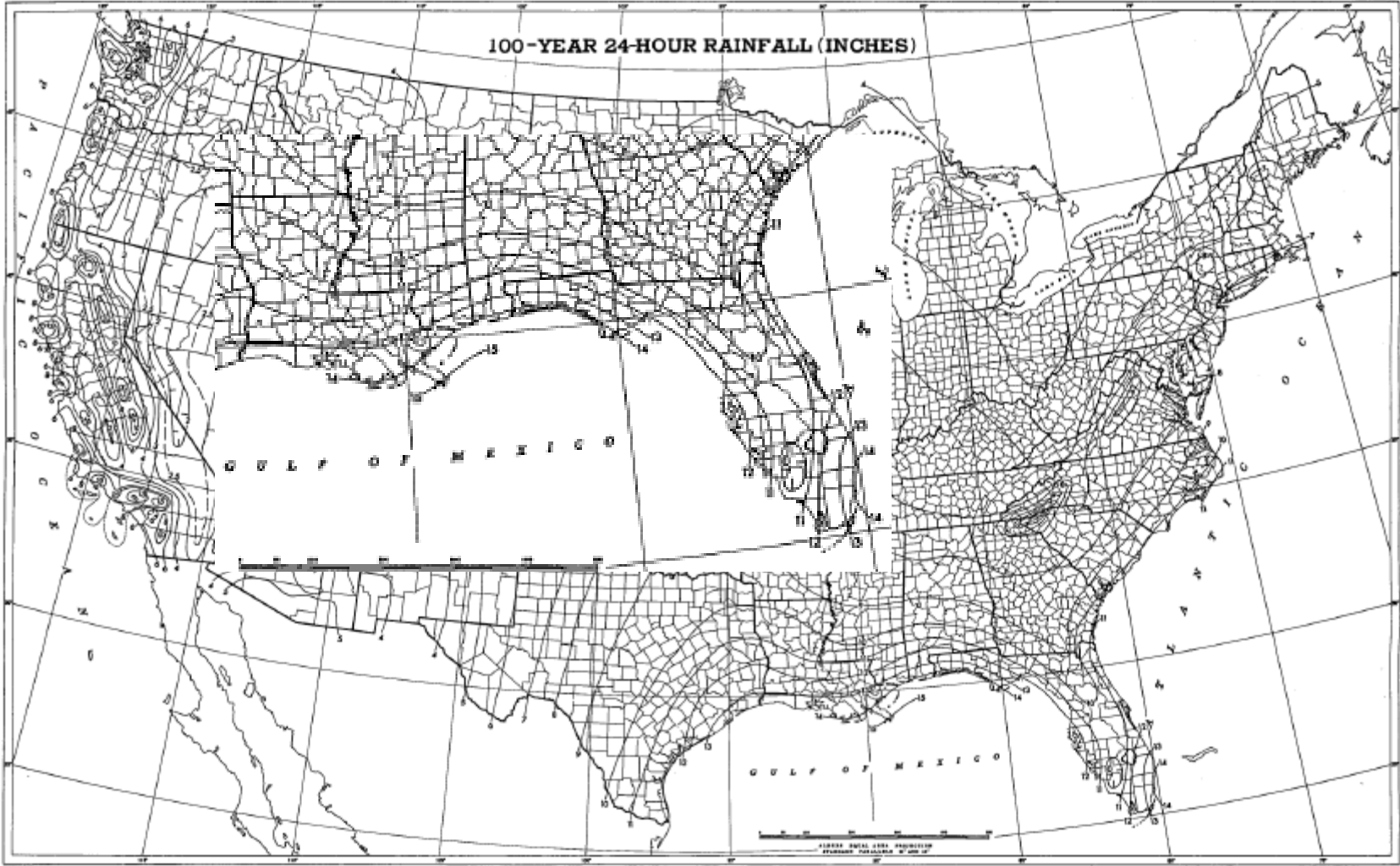


WASHINGTON, D.C.

May 1961

Repaginated and Reprinted January 1963

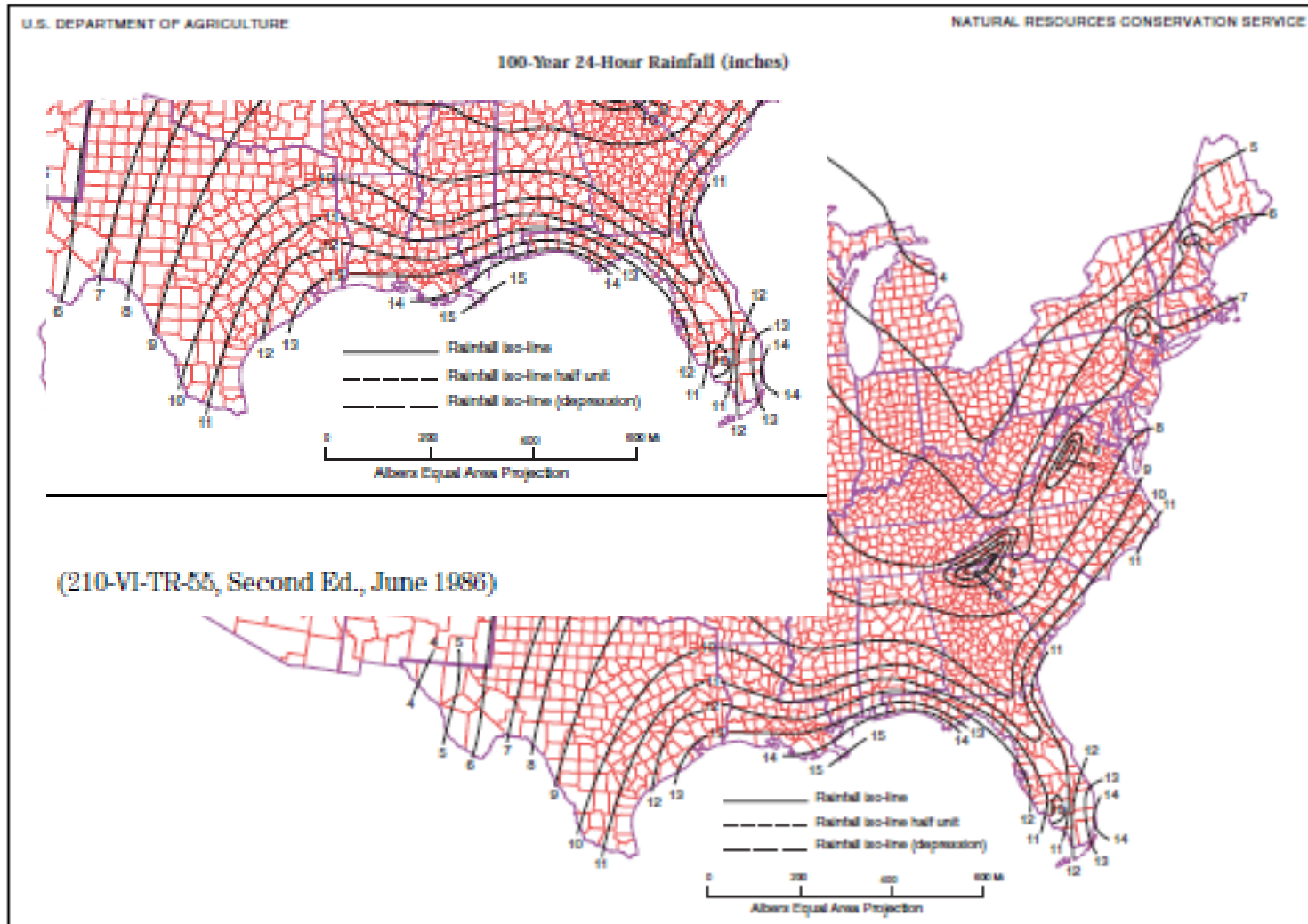
1961 Rainfall Data from Technical Paper 40



1975 & 1986 Rainfall Data from TR-55

Exhibit 3

Figure B-8 100-year, 24-hour rainfall



Storm Water Advisory Team

Escambia County, FL
January 6, 2014

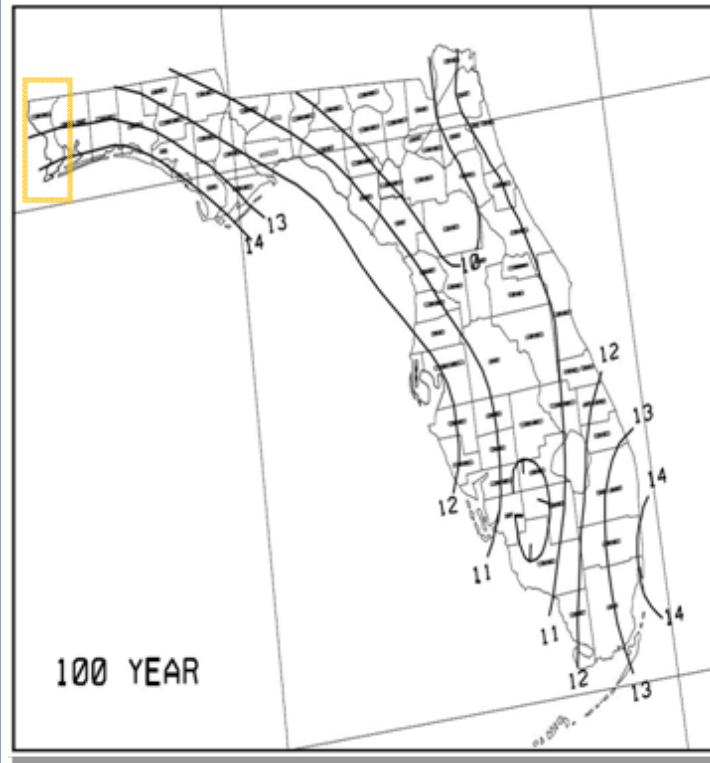
Technical Background



Exhibit 4

So what is a 100 year storm?

- As illustrated in the figure produced by FDOT, Escambia County could expect a different amount of rainfall for a 100 year event than other parts of the state.
- The IDF curves for this area show that the amount rainfall during a 100 year event over 24 varies from 13-14 inches



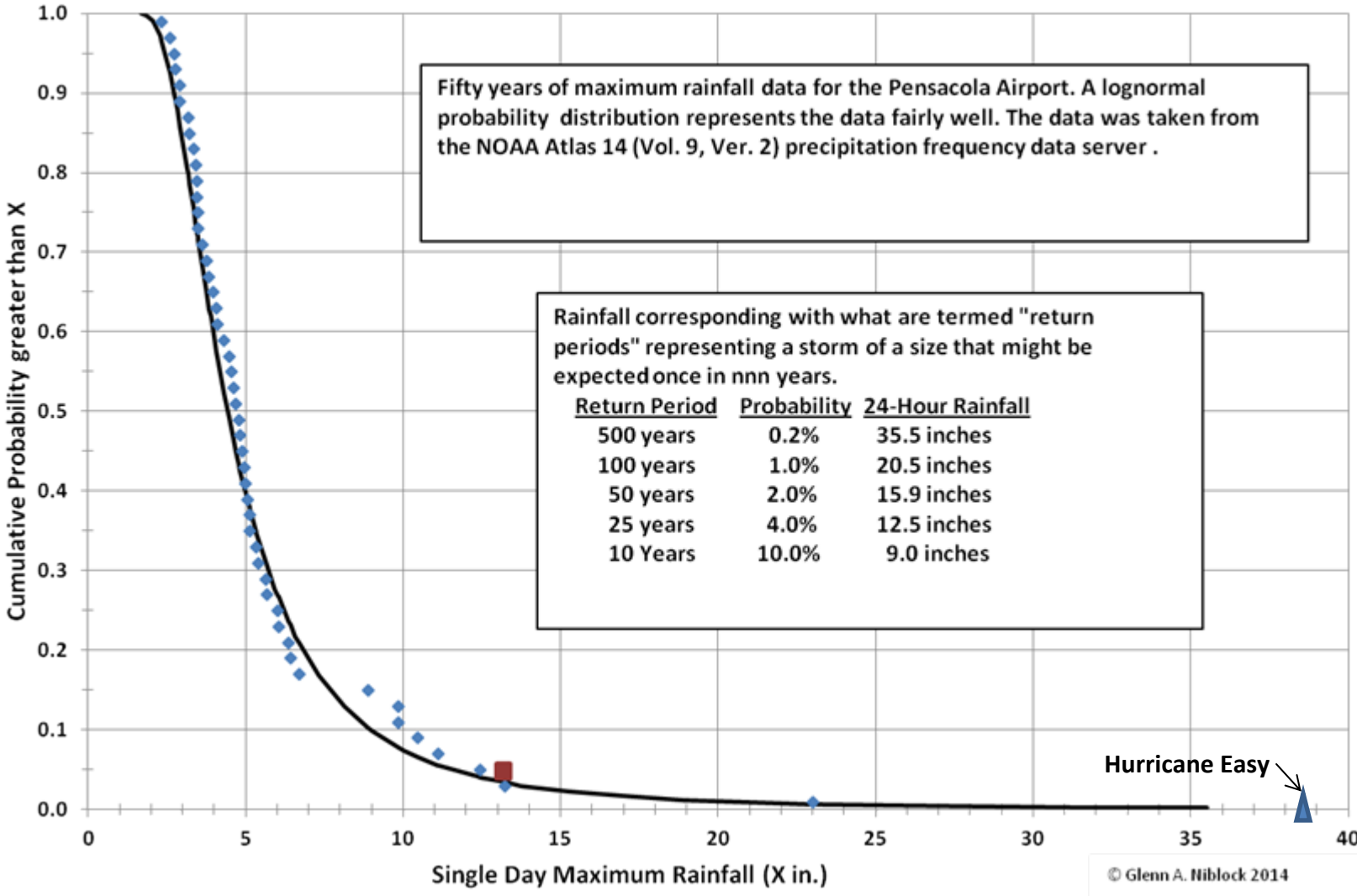
High Rainfall Events

Pensacola has had four intense flood-producing 24-hour rainfall totals over the last 80 years as tabulated below:

Year	24-Hour Rainfall (inches)
1934	15.29 inches
2005	13.96 inches
2012	13.22 inches
2014	20 inches (approx.)

This shows a rate of 4 rainfalls of at least 13.22 inches over a period of 80 years. This rate of 4 per 80 years is a frequency (probability) of 0.05 (5%).

Pensacola Airport Single Day Maximum Rainfall



Conclusions/Next Steps

Exhibit 7

- Rainfall data (curves) used by FDOT and Escambia County were developed over 50 years ago and have not been updated
- The basis for the rainfall curves was not specific to Escambia County
- Difficulties in determining probabilities of infrequent events may not have been as well known then
- More recent intense rainfall events indicate the 100-year storm rainfall is greater than the County's design basis
- The County should hire experts in weather and statistics to establish a design basis rainfall with more up-to-date rainfall data